# ENVIRONMENTAL IMPACT STATEMENT
# STATELINE ASPHALT PTY LTD
# 133 SOMERSBY FALLS ROAD, SOMERSBY NSW 2250

***Prepared for:*** Paul Anderson, PM Anderson Consulting Pty Ltd
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***Report No:*** 221145_EIS_Rev3
November 2023
(Released: 10 November 2023)

Benbow
ENVIRONMENTAL

*Engineering a Sustainable Future for Our Environment*

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Form 2

**Submission of**
**environmental impact statement (EIS)**
**prepared under the Environmental Planning and Assessment Act 1979 Section 78(A)**

**EIS prepared by**

| | |
|---|---|
| name | Richard T Benbow |
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in respect of

**development application**

| | |
|---|---|
| applicant name | Paul Anderson |
| applicant address | 133 Somersby Falls Road, Somersby NSW 2250 |
| land to be developed: address | 133 Somersby Falls Road, Somersby NSW 2250 |
| lot no, DP/MPS, vol/fol etc | 3/-/DP1292653 |
| proposed development | |

or
☐ map(s) attached

**environmental impact statement**

☑ an environmental impact statement (EIS) is attached

**certificate**

I certify that I have prepared the contents of this Statement and to the best of my knowledge

- it is in accordance with Schedule 2 of the Environmental Planning and Assessment Regulation 2000,
- contains all available information that is relevant to the environmental assessment of the development, activity or infrastructure to which the statement relates, and
- the information contained in the statement is neither false nor misleading.

| | |
|---|---|
| signature | |
| name | Richard T Benbow |
| date | 14 November 2023 |

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| | | |
| Ian Black | Cubo Consulting | Water Cycle Management Plan, Civil Site Plans, Stormwater Drainage Plans, Cut and Fill Plans, Swept Path Plans, Sediment and Erosion Control Plan |

**ABBREVIATIONS**

| | |
|---|---|
| ABL | Assessment background level |
| ABS | Australian Bureau of Statistics |
| ADG code | Australian code for the Transport of Dangerous Goods by Road and Rail |
| AHD | Australian Height Datum |
| AMMAAP | Approved Methods for the Modelling and Assessment of Air Pollutants in NSW |
| ARI | Average Recurrence Interval – the average or expected value of the period between exceedances of a given rainfall event or discharge |
| BCA | Building Code of Australia |
| BOM | Bureau of Meteorology |
| DA | Development Application |
| DCP | Development Control Plan |
| DECC | Department of Environment and Climate Change (now NSW EPA) |
| DEWHA | Department of the Environment, Water, Heritage and the Arts |
| DPI | Department of Primary Industry |
| DNR | Department of Natural Resources |
| DoP | Department of Planning |
| DoP&E | Department of Planning and Environment |
| DWE | Department of Water and Energy |
| EEC | Endangered Ecological Community |
| EIA | Environmental Impact Assessment |
| EIS | Environmental Impact Statement |
| EMP | Environmental Management Plan |
| EPA | Environment Protection Authority |
| EP&A Act | Environmental Planning and Assessment Act 1979 |
| EPBC Act | Environment Protection and Biodiversity Conservation Act 1999 (Cmth) |
| EPL | Environment Protection Licence |
| ESD | Ecological Sustainable Development |
| FRL | Fire Resistance Level |
| GDE | Groundwater Dependent Ecosystem |
| GHS | Globally Harmonised System of Classification and Labelling of Chemicals |
| INP | Industrial Noise Policy (guidelines developed by the EPA) |
| JRPP | Joint Regional Planning Panel |
| LALC | Local Aboriginal Land Council |
| LEP | Local Environment Plan |
| LPG | Liquefied petroleum gas |
| Mbgl | Metres below ground level |
| NES | National Environmental Significance |
| NPI | National Pollutant Inventory |
| NRC | Natural Resources Commission |
| NOW | New South Wales Office of Water |
| NSW | New South Wales |
| NSW EPA | New South Wales Environment Protection Authority |
| NSW RNP | New South Wales Road Noise Policy |
| OSD | On-site detention |
| $PM_{2.5}$ | Particulate matter of size 2.5 μm |
| $PM_{10}$ | Particulate matter of size 10 μm |
| PSI | Preliminary Site Investigation |
| RAP | Reclaimed asphalt pavement |
| RBL | Rating background level |
| RNP | NSW EPA Road Noise Policy |

| | |
|---|---|
| ROW | Right of Way |
| RSD | Roller Shutter Door |
| RMS | Roads and Maritime Services |
| RTA | Roads and Traffic Authority |
| SEPP | State Environmental Planning Policy |
| TMP | Traffic Management Plan |
| Tpa | Tonnes per annum |
| TSC Act | Threatened Species Conservation Act 1995 |
| TSP | Total suspended particulates |
| VENM | Virgin Excavated Natural Material |
| WSP | Water Sharing Plan |

**UNITS OF MEASUREMENT**

| | | |
|---|---|---|
| °C | degree centigrade | (unit of temperature) |
| dB(A) | A-weighted decibels | (unit of noise) |
| dB(lin) | Linear-weighted decibels | (unit of noise) |
| ha | hectares | (unit of area) |
| g | gram | (unit of mass) |
| kg | kilogram | (unit of mass) |
| kL | kilolitre | (unit of volume) |
| KPa | kilopascal | (unit of pressure) |
| km | kilometre | (unit of length) |
| KT | kilo Tonnes | (unit of mass) |
| Mt | million tonnes | (unit of mass) |
| m | metre | (unit of length) |
| $m^2$ | squared metre | (unit of area) |
| $m^3$ | cubic meter | (unit of volume) |
| MVA | Mega Volt Amp | (unit of power) |
| ODU | odour detection unit | (unit of odour) |
| OU | odour unit | (unit of odour) |
| T | Tonne (1000 kg) | (unit of mass) |
| μg | microgram | ($10^{-6}$ gm – unit of mass) |
| $\mu g/m^3$ | microgram/cubic meter | (concentration) |

# EXECUTIVE SUMMARY

Stateline Asphalt Pty Ltd proposes to establish an asphalt batching plant to be located at 133 Somersby Falls Road, Somersby 2250. The proposed development includes installation of an asphalt mixing plant with a capacity to produce approximately 200 tonnes of asphalt per hour - approximately 200,000 tonnes of new asphalt material per annum.

The development area would be limited to approximately 900 square metres of the 9730 $m^2$ site and would be situated on vacant land. The facility would consist of several components including a control system, vibrating screens, dryers, burners, mixers, weighing equipment, aggregate storage and hot storage silos for bitumen with circulation and supply equipment. The plant would also be equipped with a dust collection system to capture any dust and fumes generated by the process. The plant would be designed so that the individual components are concealed from public view to maintain visual amenity of the area. The company is currently in discussions with suppliers to determine the most effective options for plant design. The facility will aim to operate 24 hours per day, 7 days per week.

In simple terms, the operation of the facility involves the following activities to be undertaken on site:

- Receival of reclaimed asphalt pavement, recovered aggregates, bitumen and cement and lime powders;
- Storage of reclaimed asphalt pavement, recovered aggregates in bunkers;
- Storage of bitumen and cement and lime powders in silos;
- Drying of aggregates;
- Screening of aggregates; and
- Mixing of materials.

Benbow Environmental was commissioned by Stateline Asphalt Pty Ltd to prepare an Environmental Impact Statement (EIS) to support the development application. This EIS addresses the requirements of the Department of Planning Industry and Environment, Central Coast Council, the NSW Environment Protection Authority, Transport for NSW. The environmental and planning issues that were raised in these requirements and in the consultation undertaken for the project that warrant detailed assessment include strategic and statutory context, suitability of the site, waste management, air quality, noise and vibration, hazard and risk, soil and water, traffic and transport, community and stakeholder engagement, biodiversity, visual and heritage.

A summary of the detailed assessments is included below:

## STRATEGIC CONTEXT

The land zoning for the subject land is described as E4 – General Industrial and RU1 – Primary Production under the provisions of the *Central Coast Council Local Environmental Plan 2022*, which applies to the subject site. The proposed development is an asphalt batching plant and is permissible with consent within the zone.

The proposal constitutes designated development under Schedule 3 of the *Environmental Planning and Assessment Regulation 2021.*

The proposal constitutes integrated development as an environment protection licence (EPL) is required for storage and processing of reclaimed asphalt pavement.

The proposed development is not state significant.

## JUSTIFICATION

The proposed operations would enable a new business venture to proceed that would focus on providing a local resource for asphalt and road-making materials upon an undeveloped site.

## SITE SUITABILITY

The site is located within an currently expanding industrial area. It is a prime location for an asphalt batching plant, as nearby residential receivers are widely distributed over the nearby rural areas.

## AIR QUALITY

An Air Quality Impact Assessment has been undertaken for the proposed development. A full copy of the AQIA is provided as Appendix 1.

TSP, $PM_{10}$ and $PM_{2.5}$ emissions were modelled for the operation of the proposed development in accordance with the "*Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales*" (EPA 2016).

A summary of the findings is presented below.

The proposed development will comply with the Approved Methods criteria for all pollutants of concern at all receptors. No further controls are recommended.

## NOISE AND VIBRATION

A noise impact assessment was undertaken to assess the potential noise emissions from the proposed asphalt batching plant at 133 Somersby Falls Road, Somersby. The site is proposed to generate up to 200,000 tonnes of new asphalt material per annum.

The noise impact assessment was undertaken in accordance with the following guidelines:

- NSW Environment Protection Authority Noise Policy for Industry 2017;
- NSW Interim Construction Guidelines (DECCW, 2009)
- NSW Road Noise Policy (DECCW, 2011).

The nearest receivers and noise criteria were identified. The site operations were modelled using the predictive noise software, SoundPlan.

This noise impact assessment finds that predicted noise levels exceed the Noise Policy for Industry 2017 Project Noise Trigger Levels for a residential land use at R1 (126 Somersby Falls Road). Additionally sleep disturbance $L_{Amax}$ levels are exceeded from trucks entering and leaving

the site. As asphalt batching plants require truck movements during night-time hours due to road works occurring at these times, compliance at this receiver is not considered achievable.

Based on consultation with the neighbour, R1 is looking to be re-zoned to industrial, and considering the surrounding land zoning, it would be an appropriate planning decision. Therefore, exceedances of the residential criteria will not be of concern, and it is recommended the operational certificate not be issued until rezoning of this property is complete. Operational noise is predicted to comply with all other residential receptors with the recommended noise controls presented.

The predicted noise levels associated with construction exceed the noise management level at residential receiver R1, compliance is achieved at all other receivers. None of the predicted noise levels exceed the highly noise affected management level of 75 dB(A). Standard construction hours and universal work practices are recommended.

The site is predicted to comply with the Road Noise Policy.

Vibration impacts from the proposed asphalt batching plant are considered negligible.

## SOIL AND WATER

A soil and water assessment was undertaken to assess the potential impacts on stormwater and ground cover. The site does not contain a waterbody, with the closest natural water source being Leask approx. 670 m due south followed by Piles Creek approx. 680 m due east. Both creeks are headwaters and south flowing before they converge and later flow into Mooney Mooney which is a tributary of the Hawksbury River.

Overland flooding is not an issue, as it does not fall within a flood-risk area according to Central Coast Council mapping tools.

The proposed stormwater system upgrade involves construction of a stormwater detention tank to the east of the site. This system will capture and direct all stormwater flowing across the site into the basin. In addition, a rainwater tank will be installed to collect rainwater from the roof area of the office building.

The proposed development would not use or require mains water. All water for use in the office, amenities and dust suppression systems would be recycled water sourced from the stormwater detention basin and rainwater tank.

Potential impacts to water are from pollutants entering the stormwater system and being discharged from the site. These primary pollutants of concern are total suspended solids (TSS), nitrogen, and phosphorus.

As stormwater is intended to be collected by stormwater detention tank for settling and reuse onsite, contaminates in surface waters will also be captured and removed.

The below measures will be taken during operation:

***During Operation***

- Stormwater detention tank;
- Rainwater tank
- Gross pollutant traps
- Reuse of collected stormwater;
- Spill kits;
- Environmental Management Plan;
- Self-bunded diesel tank with concrete barriers; and
- General housekeeping.

On-site construction for the proposed development will be minimal. There will not be any excavation activity on site during operation and truck filling will be the main source of dust or fume emission. So, the design of this plant will fully enclose truck filling operations.

## TRAFFIC AND PARKING

The proposal will lead to a slight increase in traffic, with 10 truck movements every hour (5 entering and 5 leaving) continuously throughout the week. This will have a negligible effect on the junction of Somersby Falls Road and Wisemans Ferry Road. The site access meets AS2890 standards, ensuring safe entry and exit for vehicles. Observations during morning peak hours show that the main intersection of Somersby Falls Road and Wisemans Ferry Road functions efficiently with few delays. The site's parking meets the staffing needs.

## WASTE MANAGEMENT

The main waste type generated as a result of the proposed development during construction and ongoing operations would be that of General solid waste (non-putrescible). The main waste type accepted on site as part of the ongoing business operations of the proposed development would also be that of General solid waste (non-putrescible). Occasionally, other waste types like Hazardous waste may enter the subject site; for example, in the case of asbestos containing material being found within aggregate loads accepted at the proposed facility. The necessary management plans to prevent acceptance of unwanted waste types on site have been identified in the unexpected finds protocol.

## HAZARDS AND RISK

The main hazards and risks associated with the proposal include storage and use diesel and bitumen and associated fire and spillage incidents.

A preliminary risk screening and preliminary hazard analysis (PHA) of the proposed development in accordance with State Environment Planning Policy (Resilience and Hazards) 2021 Chapter 3. The assessment has found that the proposed development meets the criteria stipulated in the HIPAP No. 4 – Risk Criteria for Land Use Safety Planning (HIPAP No. 4) and the Multi-Level Risk Assessment guidelines.

The assessment has predicted outcomes that the proposed development would not cause any risk (significant or minor) to the community. It is the conclusion of this PHA that the proposed development meets all the safety requirements stipulated within the Department of Planning and Infrastructure guidelines and is then considered to be non-offensive or a non-hazardous development.

The bushfire report concluded that if the proposed acceptable solutions and recommendations are implemented, the proposed development would comply with the performance criteria of the PBP.

These are as follows:

- Asset protection areas
  - Maintain landscaped areas regularly.
  - Hazardous/flammable material storage should be avoided on the southern and western portions of the property.
- Construction standards
  - Construct the proposed development to comply with the relevant provisions of the NCC.
- Property access and evacuation safety
  - Safe access will be provided via Somersby Falls Road.
  - Any new internal access road should provide compliance with Table 7.4a of the PBP.
- Emergency management
  - A Bushfire Emergency Management and Evacuation Plan is to be prepared in accordance with the NSW Rural Fire Service's guidelines.
- Water and utility Services supply
  - The site is connected to the reticulated supply of water (hydrant <70 m from the site). All new water services will comply with Table 7.4a of the PBP.

## BIODIVERSITY

There are no threatened or endangered flora or fauna populations or sightings listed or recorded on the NPWS Atlas for threatened or endangered species on the subject site. There have been no reported sightings within the extent chosen for the last five years. The site is zoned industrial and is a grassed area. Biodiversity impacts are negligible.

## HERITAGE

No items of European or Aboriginal cultural heritage are located at the site.

## CONSULTATION

The EIS addresses issues raised through the consultation process with Central Coast Council.

A community consultation leaflet was prepared and sent to selected surrounding landowners and occupiers via post on May 10, 2023.

Approval of the development is requested.

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Bethany Carlyon
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# 1. INTRODUCTION

Benbow Environmental (BE) has been engaged by Stateline Asphalt Pty Ltd ('the proponent') for the preparation of an Environmental Impact Statement (EIS) for a proposed asphalt batching plant to be established at a vacant site located at 133 Somersby Falls Road, Somersby 2250, also known as Lot 3 DP129653.

The project involves the construction and operation of an asphalt batching plant which will produce up to 200,000 tonnes per annum (tpa), a (Reclaimed asphalt Pavement) RAP yard, office and depot.

This EIS addresses the requirements of the Department of Planning and Environment, Central Coast Council, and the NSW Environment Protection Authority.

The EIS presents the findings of the specialist assessments of the environmental impacts considered necessary to be assessed for the proposed development.

The EIS results in a compilation of environmental safeguards recommended for the proposed development.

A Statement of Commitments is provided in Section 12. The statement of Commitments summarises the commitment made by the proponents to the environmental controls designed into the development. This statement bears the signatures of the proponents.

## 1.1 INTRODUCTION TO THE PROPONENT

Stateline Asphalt is a full-service civil construction company that was established in 2009. With a focus on providing high-quality service and delivering superior products, the company has built a reputation for excellence in the construction of roads, highways, residential, council, and commercial buildings. Their extensive range of services includes everything from driveways, carparks, and games courts to road construction, asphalt and concrete pavement, kerbs and guttering, excavation, retaining wall, stormwater drains, subdivision and land development, planning, design, and construction. At Stateline Asphalt, the company values relationships with their clients and strives to exceed expectations with every project they undertake.

## 1.2 PROJECT OUTLINE

This section of the EIS outlines the project. This includes the objectives of the project, the need for the project, purposes of the EIS, structure of the document, and statutory requirements.

### 1.2.1 Objectives of the Proposal

The objective of this development are:

- Create a new local resource for asphalt and road-making materials by establishing a new business.
- Construct and operate a modern and purpose-built asphalt facility that incorporates several technical innovations to significantly reduce emissions and showcase world's best practice in asphalt manufacturing.
- Provide a facility for recycling road-base material as an additional activity to asphalt production.

- Offer a local supply of asphalt and road-base material to trucking and road contractors, reducing the need for transportation from distant facilities.
- Design the facility for 24/7 operation, enabling night-time asphalt production for road projects with minimal impact on the environment.
- Fully develop a previously vacant site.
- Support the growth of local businesses and create job opportunities in the community.

### 1.2.2 Need for Development

This development is essential for the Somersby/Central Coast region due to the increasing demand for a local supplier of asphalt. The area's rapid growth requires a nearby source of hot mix asphalt that can recycle road pavements generated from repairs. It is crucial that this waste is recycled within the region, and the introduction of this plant will address this need. Moreover, the plant will create a more competitive market for the northwest area of Sydney, providing benefits to several local councils.

### 1.2.3 Purpose of the EIS

The purpose of the EIS is to document the existing environment and assess the potential environmental impacts from the proposal.

The EIS process for the proposed development has identified the constraints on the development and the environmental engineering controls needed to achieve compliance with the criteria that hv been applied.

The purpose of the EIS is also to provide the consent authority, the community, government authorities, and the applicant with sufficient information to make informed decisions in relation to the proposed development.

The consent authority is Central Coast Council.

The proposed activities are industrial and are appropriate within the surrounding area. Its development to allow for a purpose-built asphalt facility and ancillary recycling operation is enabled by the EIS.

### 1.2.4 Structure of the EIS

The EIS is organised into the following three main sections:

- Executive Summary
  This summarises the proposed development, justification and the environmental assessment of the proposal.

- Main Contents of the EIS
  The main contents of the EIS describe the development in detail, the environmental assessment of the issues, the impacts, and the safeguards measures.

- Appendices & Attachments
  The appendices and attachments contain the Secretary's Environmental Assessment Requirements (SEARs) of the Department of Planning & Environment, and technical support documents.

### 1.2.5 Statutory Requirements

The statutory requirements to be satisfied are those contained within the Environmental Planning and Assessment Act 1979 and the associated Environmental Planning Instruments and Regulations.

The EIS also addresses the Secretary's Environmental Assessment Requirements (SEARs Reference No. 1655) relating to applicable environmental planning instruments that apply to the site.

In accordance with requirements under the EP&A Regulations 2021, the SEARs for the preparation of an EIS for the proposed development were obtained.

The key environmental planning issues that were raised in these requirements include the following:

- The EIS must include an assessment of all potential impacts of the proposed development on the existing environment (including cumulative impacts if necessary) and develop appropriate measures to avoid, minimise, mitigate and/or manage these potential impacts. As part of the EIS assessment, the following matters must also be addressed:

- **Strategic and Statutory Context** – including:
  - Detailed justification for the proposal and sustainability of the proposed land use in that location, taking into consideration the potentially offensive nature of the development
  - A demonstration that the proposal is consistent with all relevant planning strategies, environmental planning instruments, development control plans (DCPs), or justification for any inconsistencies
  - A list of any approvals that must be obtained under any other Act or law before the development may lawfully be carried out.

- **Suitability of the Site** – including:
  - A detailed justification that the site can accommodate the proposed processing capacity, having regard to the scope of the operations and its environmental impacts and relevant mitigation measures
  - Site plans depicting the proposed layout, including the location of stockpiles, machinery and equipment.

- **Waste Management** – including:
  - Details of the type, quantity and classification of waste to be received at the site
  - Details of the resource outputs and any additional processes for residual waste
  - Details of waste handling including transport, identification, receipt, stockpiling and quality control
  - The measures that would be implemented to ensure that the proposed development is consistent with the aims, objectives and guidelines in the *NSW Waste Avoidance and Sustainable Materials Strategy 2041*.

- **Air Quality** – including:
  - A description of all potential sources of air and odour emissions during construction and operation
  - A quantitative air quality impact assessment in accordance with relevant Environment Protection Authority guidelines with consideration of nearby residences

- A description and appraisal of air quality impacts mitigation and monitoring measures.

- **Noise and Vibration** – including:
  - A description of all potential noise and vibration sources during construction and operation, including road traffic noise and the potential for sleep disturbance
  - A quantitative noise and vibration assessment in accordance with relevant EPA guidelines with consideration of nearby residences
  - A description and appraisal of noise and vibration mitigation and monitoring measures.

- **Hazard and Risk** – including:
  - A preliminary risk screening completed in accordance with State Environmental Planning Policy (Resilience and Hazards) 2021, Chapter 3 and Applying SEPP 33 (DoP, 2011), with a clear indication of class, quantity and location of all dangerous goods and hazardous materials associated with the development. Should preliminary screenings indicate that the project is "potentially hazardous" a Preliminary Hazard Analysis (PHA) must be prepared in accordance with Hazardous Industry Planning Advisory Paper No. 6 – Guidelines for Hazard Analysis (DoP), 2011) and Multi-Level Risk Assessment (DoP, 2011)
  - An assessment of the risk of bushfire, including addressing the requirements of *Planning for Bush Fire Protection 2019* (RFS). Any proposed Asset Production Zones must not adversely affect environmental objectives (e.g. buffers).

## 1.3 LICENCES AND APPROVALS

A number of approvals permits and licences would be required prior to operations of the proposed development commencing on site. The following table identifies the majority of these approvals and the responsible regulatory/governing body.

| Approval Required | Approving Body | Description/Comment |
|---|---|---|
| Development Consent | Central Coast Council | Under Environmental Planning & Assessment Act 1979. |
| Environment Protection Licence | NSW Environment Protection Authority | Scheduled activity under the Protection of the Environment Operations Act 1997. |

## 1.4 IDENTIFICATION AND PRIORITISATION OF ISSUES

The identification and prioritisation of the potential environmental impacts of the proposed development was a fundamental step in preparing the EIS.

This process involved the following stages:

- Inspection of the site and surrounding environment, identification of potential sensitive receptors and preparation of a scoping report;
- Identification of planning requirements;
- Consultation with Central Coast Council and NSW EPA requirements and expectations; and
- Assessment of requirements for the EIS from the SEARs.

These steps led to the design and objectives of the Proposal.

The statutory requirements and government guidelines in conjunction with the government consultation process confirmed the presence of issues including:

- Hazards and risk;
- Waste management;
- Traffic and transport;
- Soil and water;
- Air quality and odour;
- Noise and vibration;
- Biodiversity impacts;
- Visual impacts; and
- Heritage impacts including Aboriginal Cultural heritage.

## 1.5 RELATIONSHIP WITH OTHER INDUSTRIES AND FACILITIES

Stateline Asphalt has established a robust network of relationships with various industries and facilities in the Central Coast region of NSW. The company offers a range of asphalt materials and paving services to both residential and commercial customers, as well as local councils for road and car park projects. Stateline Asphalt's services promote sustainability through the reuse of road surface materials extracted during the resurfacing of roads in the area.

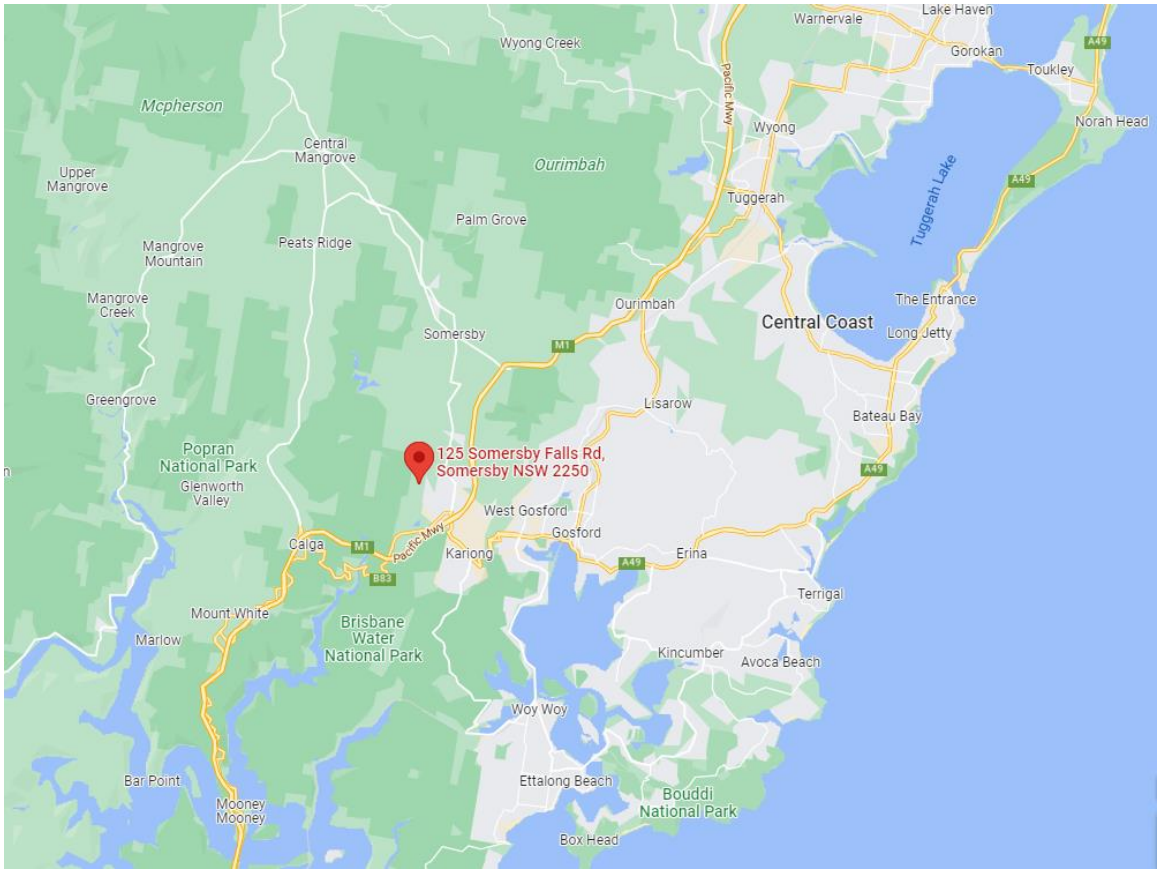
# 2. LOCATION AND SETTING

## 2.1 SITE LOCATION

The site is located at 133 Somersby Falls Road, Somersby NSW 2250. It is legally designated as Lot 3 DP129653. The site is located within an industrial and rural area, which is surrounded by other industry buildings to the north, east and south a large expanse of flora, fauna and waterways to the west and further around the industrial area.

The site has an area of approximately 9730 $m^2$ and can be accessed from Somersby Falls Road. It is located at the edge of an industrial precinct, adjacent receptors are industrial, rural and environmental.

Figure 2-1: Site Location in a regional context




**Source:** Google Maps 2022

| | | |
|---|---|---|
| ↑N<br>Not to scale | | Benbow Environmental<br>25-27 Sherwood Street,<br>Northmead NSW 2152 |

Figure 2-2: Aerial View of Site

Image date: 2022

## 2.2 HOURS OF OPERATION

The proposed facility will operate 24/7.

## 2.3 DESCRIPTION OF THE SURROUNDING AREA

The locality is characterised by mostly small-scale industrial buildings with a number of industrial activities including but not limited to reinforced concrete, nursery and construction products. To the south of the site the land occupied by a museum which has been closed for several months. To the west is a vacant lot. Surrounding the site to the north and east are typical industrial suppliers. The character is typical of a general/light industrial zone.

## 2.4 NEAREST SENSITIVE RECEPTORS

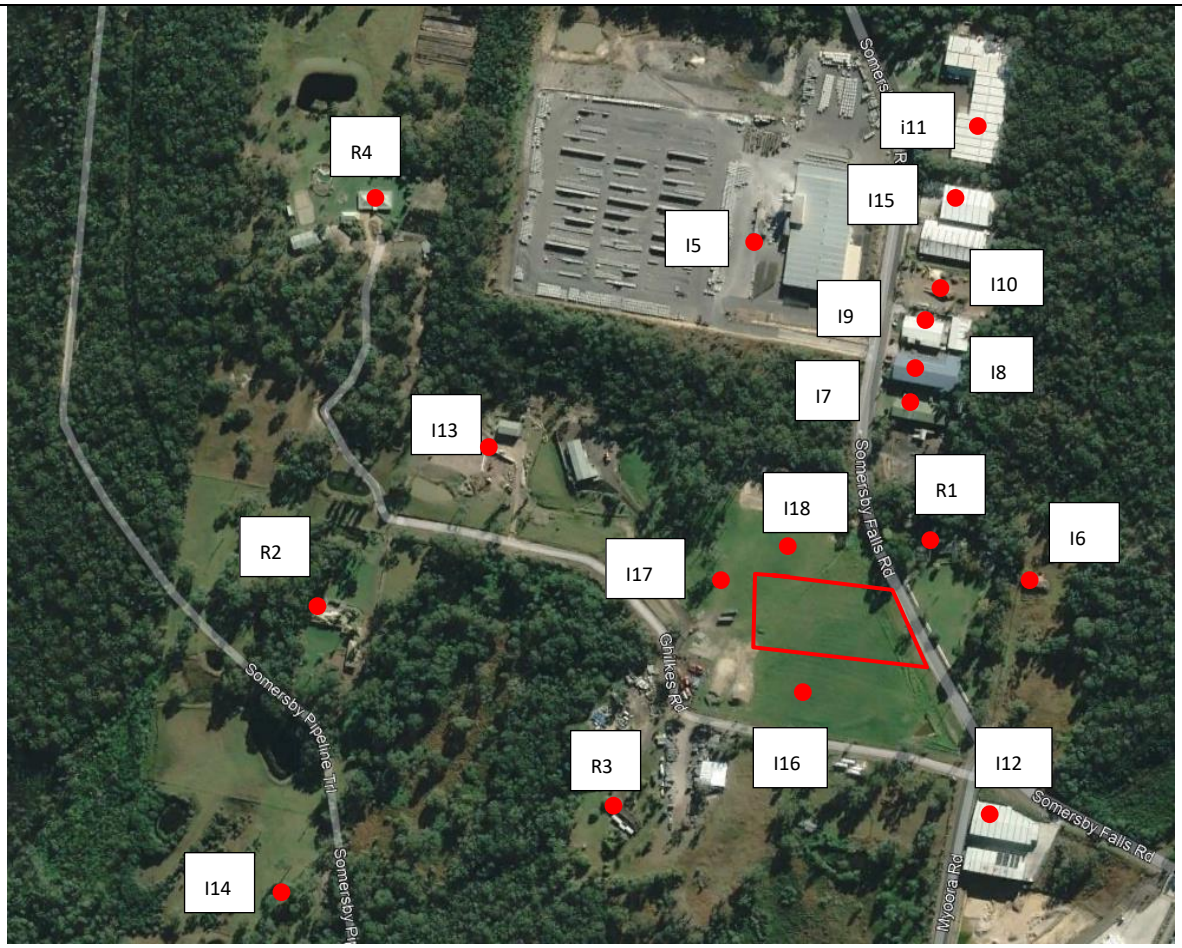
Table 2-1 lists the location of representative potentially affected receivers that are considered in this assessment. The locations are shown in Figure 2-3.

Table 2-1: Table of Nearest Receptors

| Receptor ID | Address | Lot & DP | Approx. Distance from Proposed Development | Direction from Site | Type of Receptor |
|---|---|---|---|---|---|
| R1 | 126 Somersby Falls Road, Somersby | 1/ DP712505 | 35 m | E | Residential |
| R2 | 63 Ghilkes Road Somersby | 502/ DP712506 | 350 m | W | Residential |
| R3 | 29 Ghilkes Road, Somersby | 3/ DP712505 | 60 m | S | Residential/ Commercial |
| R4 | 64 Ghilkes Road, Somersby | 501/ DP712506 | 340 m | NW | Residential/ Commercial |
| I5 | 149 Somersby Falls Road, Somersby | 4/ DP654894 | 160 m | N | Industrial |
| I6 | 110 Somersby Falls Road, Somersby | 1/ DP510364 | 60 m | E | Industrial |
| I7 | 134 Somersby Falls Road, Somersby | 1/ DP787857 | 140 m | NE | Industrial |
| I8 | 142 Somersby Falls Road, Somersby | 2/ DP787857 | 200 m | NE | Industrial |
| I9 | 150 Somersby Falls Road, Somersby | 3/ DP787857 | 240 m | NE | Industrial |
| I10 | 156 Somersby Falls Road, Somersby | 9/ DP546768 | 305 m | NE | Industrial |
| I11 | 170 Somersby Falls Road | 7/ DP787857 | 435 m | NE | Industrial |
| I12 | 2/61 Somersby Falls Road, Somersby | 29/ DP1093201 | 130 m | S | Industrial |
| I13 | 125 Somersby Falls Road, Somersby | 5/ DP1292653 | 229 m | NW | Industrial |
| I14 | 63 Ghilkes Road, Somersby | 502/ DP712506 | 590 m | SW | Industrial |
| I15 | 164 Somersby Falls Road, Somersby | 6/ DP787857 | 363 m | NE | Industrial |
| I16 | 129 Somersby Falls Road, Somersby | 4/ DP1292653 | 30 m | S | Industrial |
| I17 | 125 Somersby Falls Road, Somersby | 5/ DP1292653 | 48 m | W | Industrial |
| I18 | 139 Somersby Falls Road, Somersby | 2/ DP1292653 | 35 m | N | Industrial |

**Note:** distances measured from the boundaries of the site

Figure 2-3: Map of Nearest Receptors




**Source: Google Earth 2022**

| | | |
|---|---|---|
| N<br>Not to scale | LEGEND:<br>Site<br>Receptor | Benbow Environmental<br>25-27 Sherwood Street,<br>Northmead NSW 2152 |

## 2.5 LOCAL COMMUNITY

### 2.5.1 Somersby and the Surrounding Area

The suburb of Somersby is located approximately 10 km north-west of Gosford. It is within the Central Coast Council. Surrounding suburbs include Palm Grove, Lisarow, West Gosford and Peats Ridge.

Somersby has one public school.

There are several bus stops within Somersby.

### 2.5.2 Population Demographics

The Australian Bureau of Statistics (ABS) conducts a national census every 4 years. Data presented below has been sourced from the last census survey conducted in 2021.

At the time of the 2021 census, the population was approximately 1087, of which 49.6% were male and 50.4% were female. Of the total persons residing in Somersby, 581 were reported as being employed, with approximately 55.9% working full-time and 30.3% working part-time. The largest occupation represented 21.1% managers, followed by 17.2% professionals, 16.3% technicians and trade workers, 11.3% clerical and administrative workers, 10.4% labourers, 8.2% community and personal service workers, 7.0% machinery operators and drivers and 6.3% sales workers.

## 2.6 SITE HISTORY

The objective of the site history review is to ensure that there are no gaps in the information obtained which is relied upon to document the activities conducted at the site.

A review of the site history was carried out and comprised the following:

- Review of current and historical land title search;
- Review of historical aerial photographs;
- Review of NSW EPA records;
- Review of Central Coast Council records; and
- Review of Section 10.7 planning certificate.
- A search of the Safe Work Hazardous Chemical Registry was unable to be performed.

## 2.7 TITLE SEARCH

A title search was undertaken on 16/03/2023 for the land holding at Lot 2 DP712515. These are presented in Attachment 1. For this land holding there are three (3) notifications:

1. Land excludes minerals and is subject to reservations and conditions in favour of the Crown - see Crown grant(s)
2. DP555439 right of carriageway appurtenant to the land above described (n170975)

* 3 AQ953627 caveat by blue op partner Pty limited, Eric Alpha

3. Operator corporation 2 Pty limited, Eric Alpha

Operator corporation 1 Pty Limited, Eric Alpha
Operator corporation 4 Pty Limited & Eric Alpha
Operator corporation 3 Pty Limited

NOTATIONS

UNREGISTERED DEALINGS: DP1292653.

## 2.8 HISTORICAL TITLE SEARCH

A Historical Land Title Search was conducted for the land holding Lot 3 DP129653. The findings are presented in Table 2-2 below. The Historical Land Title Search documents have been included in Attachment 4.

Table 2-2: Historical Land Title Findings

| Recorded | Number | Type of Instrument | C.T. Issue |
|---|---|---|---|
| 21/08/1985 | DP712505 | Deposited Plan | Folio Created<br>Edition 1 |
| 29/01/1987 | W722084<br>W722085 | Transfer<br>Mortgage | Edition 2 |
| 1/11/1990 | Z318292<br>Z318293 | Discharge of mortgage<br>Transfer | Edition 3 |
| 31/7/1991 | Z818019 | Mortgage | Edition 4 |
| 15/08/1994 | U525376<br>U525377<br>U525378 | Discharge of mortgage<br>Transfer<br>Mortgage | Edition 5 |
| 9/02/2003 | 6547874<br>6547875<br>6547876 | Discharge of mortgage<br>Transfer<br>Mortgage | Edition 6 |
| 11/02/2003 | 9366391<br>9366392 | Discharge of mortgage<br>Mortgage | Edition 7 |
| 09/09/2018 | AN695392 | Departmental dealing | Edition 8 |
| 13/04/2021 | AQ953627 | Caveat | |
| 15/03/2023 | AS925229 | Discharge of mortgage | Edition 9 |
| end of search | | | |

### 2.8.1 DA History

Information acquired from the Central Coast Council regarding past, refused and approved development applications at the site is summarised below in Table 2-3.

Table 2-3: Past Consents (Development Applications)

| DA # | Address | Development Description | Determination Date | Determination |
|---|---|---|---|---|
| 51000/2016 Part 1 | 125 Somersby Falls Rd, Somersby | Subdivision Industrial One (1) Lot into Five (5) Lots | 9/03/2017 | Consented (lapsed 9/03/2022) |
| DA52504/2017 Part 1 and Part 2 | 125 Somersby Falls Rd, Somersby | Single story dwelling house | 11/08/2017 | Consented |
| DA52504/2017.2 | 125 Somersby Falls Rd, Somersby | Minor modification | 11/09/2017 | Consented |
| DA52504/2017.3 | 125 Somersby Falls Rd, Somersby | Amendment change floor construction from bears and joists to slab on ground | 02/04/2020 | Consented |
| DA52504/2017.4 | 125 Somersby Falls Rd, Somersby | Minor modifications | 09/09/2020 | Consented |
| DA 10192/2000 | 341 Wisemans Ferry Rd Somersby | For lot 2 DP712505, erection of shed for machinery | 24/04/2001 | Consented |
| DA/51000/2016 DA/51000/2016/A | 125 Somersby Falls Rd, Somersby | Subdivision Industrial - Stage 1 Proposed Lots 1-5 | 02/03/2023 | Consented |

### 2.8.2 Aerial Photographs

Aerial photographs obtained from the NSW Department of Lands, Google Earth and Apple Maps for the following years, were reviewed to describe the site features and surrounding areas at various timelines:

- 1966;
- 1976;
- 1984;
- 1994;
- 2001;
- 2016; and
- 2022.

A summary of the review is presented in Table 2-4 below.

Table 2-4: Summary of Historical Aerial Photographs

| Year | Site | Surrounding Areas |
|---|---|---|
| 1966 | The site is part of a larger area that has been mostly cleared of vegetation. Some large trees are present in the site's middle. The site's western area borders a large, forested area. The cleared areas do not appear to be cultivated or contain livestock animals. | The surrounding area is predominantly rural, containing farms and agricultural plots possibly citrus plantations. Large areas are undeveloped and covered in (presumedly) native vegetation. Few buildings are visible. Immediately below and joining the site are two large buildings situated together (possibly a farmhouse and shed?) these are located close to Ghikes Rd. |
| 1976 | Tree canopy has increased. Somersby Falls Rd has been realigned to pass through the larger property thus marking the site's eastern boundary. | No change. |
| 1984 | Tree canopy and undergrowth has increased within the western half of the site. The remaining eastern area remains cleared. | The large dwelling has been removed with the other structure still visible. Possible building (?) debris appears to be scattered on the area above the remaining structure. Somersby's water treatment facility is now visible south of the site. |
| 1994 | Tree canopy has increased across the middle of the site, but the undergrowth has been cleared on either side. | The region still contains largely agricultural plots, but larger commercial structures are now visible to the East and SE of the site. Additional roads have been built or surfaces sealed. |
| 2006 | The site's undergrowth has been removed and trees thinned. The border along Somersby Rd now contains a long line of planted trees. | The site is now part of a larger developed block. A large structure is now located immediately NW. The forested area immediately west has been extensively thinned and cleared in most places. Development has increased with the addition of large commercial structures to the SE. The number of small dams has increased in the surrounding properties. |
| 2016 | The site has been completely cleared with only a solitary tree remaining | Above the site a large area of land has been cleared for a commercial facility. An established commercial area, SE of the site has expanded northwards with additional buildings. Agricultural plots still dominate the northern areas. Additional roads have been built. |

Table 2-4: Summary of Historical Aerial Photographs

| Year | Site | Surrounding Areas |
|---|---|---|
| 2022 | The last tree has been removed including the line of trees along the eastern boundary. Soil has been disturbed leading into the site from Somersby Rd from the NE corner. The grassed surface is marked with long lines possibly caused from the tracking of heavy vehicles. | The large, cleared area above the site now contains an established commercial business (concrete pipe manufacturer). Further development has continued in the eastern commercial zoned area. |

# 3. PLANNING FRAMEWORK

This chapter will summary the Commonwealth and NSW regulatory and policy framework for State Significant Development.

Development consent is required under Division 4.7 of the EP&A Act 1979. This chapter describes the assessment pathway under these pieces of legislation and identifies other approvals under State and Commonwealth legislation which are required.

## 3.1 ASSESSMENT REQUIREMENTS

The SEARS require the EIS to address legislative and policy requirements, which are listed in the following table.

Table 3-1 Legislation and policy related SEARs.

| **Requirement** | **Section where addressed** |
|---|---|
| The Environmental Impact Statement (EIS) for the development must meet the form and content requirements in sections 190 and 192 Schedule 2 of the Environmental Planning and Assessment Regulation 2021 | 3. |
| Consideration of all relevant environmental planning instruments, including identification and justification of any inconsistencies with these instruments. | |
| An assessment of the potential impacts of all stages of the development, including any cumulative impacts, taking into consideration relevant guidelines, policies, plans and statutes. | |
| Detailed justification that the proposed land use is permissible with consent. | |

| | |
|---|---|
| Demonstration that the proposal is consistent with all relevant planning strategies, environmental planning instruments, adopted precinct plans, draft district plan(s) and adopted management plans and justification for any inconsistencies. This includes, but is not limited to:<br>• State Environmental Planning Policy (Resilience and Hazards) 2021 (Chapters 3 and 4)<br>• State Environmental Planning Policy (Transport and Infrastructure) 2021 (Chapter 2)<br>• State Environmental Planning Policy (Biodiversity and Conservation) 2021(Chapter 2)<br>• Central Coast LEP 2022<br>• relevant development control plans and section 7.11 plans. | |

## 3.2 COMMONWEALTH LEGISLATION

### 3.2.1 Commonwealth Environmental Protection and Biodiversity Conservation Act 1999

*The EPBC Act provides the legal basis to protect and manage internationally and nationally important flora, fauna, ecological communities, heritage places and water resources which are deemed to be matters of national environmental significance (MNES). MNES, as defined under the EPBC Act, are:*

- world heritage properties;
- places listed on the National Heritage Register;
- wetlands of international significance listed under the Ramsar Convention;
- threatened flora and fauna species and ecological communities;
- migratory species;
- Commonwealth marine areas;
- Great Barrier Reef Marine Park;
- nuclear actions (including uranium mining); and
- water resources, in relation to coal seam gas or large coal mining development.

Under the EPBC Act, actions that will, or are likely to, have a significant impact on a MNES are deemed to be controlled actions and can only proceed with the approval of the Commonwealth Minister for the Environment. An action that may potentially affect a MNES has to be referred to the Department of Agriculture, Water and the Environment for determination as to whether it is a controlled action.
There are no MNES that are relevant to the project given the recent survey and development on site.

### 3.2.2 Commonwealth Native Title Act 1993.

The Commonwealth Native Title Act 1993 recognises and protects native title rights in Australia.

It allows a native title determination application (native title claim) to be made for land or waters where native title has not been validly extinguished, for example, extinguished by the grant of freehold title to land.

Applications for compensation for extinguishment or impairment of native title rights can also be made. All native title claims are subjected to a registration test and will only be registered if claimants satisfy a number of conditions. A register of native title claims is maintained by the National Native Title Tribunal.

Proposed activities or development that may affect native title are called 'future acts'. Claimants whose native title claims have been registered have the right to negotiate about some future acts, including mining and granting of a mining lease over the land covered by their native title claim.
Where a native title claim is not registered, a development can proceed through mediation and determination processes, though claimants will not be able to participate in future act negotiations.

The subject land has been the subject of a grant of freehold title and as a result there are no native title claims registered on the Register of Native Title Claims.

### 3.2.3 Commonwealth National Greenhouse and Energy Reporting Act 2007.

The Commonwealth National Greenhouse and Energy Reporting Act 2007 (NGER Act) provides a single national framework for the reporting and dissemination of information about the greenhouse gas emissions, greenhouse gas projects, and energy use and production of corporations. It makes registration and reporting mandatory for corporations whose energy production, energy use or greenhouse gas emissions meet specified thresholds.

Stateline Asphalt currently does not trigger the threshold for reporting under the NGER Act, and reports energy use and greenhouse gas emissions from its operations.

Stateline Asphalt will continue to monitor and report energy use and greenhouse gas emissions associated with the project under its obligations under the NGER Act.

## 3.3 STATE LEGISLATION

### 3.3.1 NSW Environmental Planning and Assessment Act 1979

The EP&A Act and NSW Environmental Planning and Assessment Regulation 2021 (EP&A Regulation) form the statutory framework for planning approval and environmental assessment in NSW. Implementation of the EP&A Act is the responsibility of the Minister for Planning, statutory authorities and local councils. It contains three parts that impose requirements for planning approval:

- Part 4, which provides for control of 'development' that requires development consent from the relevant consent authority. A division of Part 4 (Division 4.7) provides for the assessment of SSD where the Minister for Planning (or delegate) or the Independent Planning Commission (IPC) is the consent authority.
- Part 5, which provides for control of 'activities' that do not require approval or development consent under Part 4.
- Division 5.2, which provides for control of State Significant Infrastructure that does not require approval or development consent under Part 4.

The requirement for development consent is set out in Environmental Planning Instruments (EPIs), being State Environmental Planning Policies (SEPPs) or Local Environmental Plans (LEPs).

### 3.3.2 State Significant Development

Part 4, Division 4.7 of the EP&A Act relates to the assessment of development deemed to be significant to the State (i.e., SSD). Under Section 4.36(2) a development is SSD if it is declared by a SEPP. The relevant SEPP to the project is the State Environmental Planning Policy (Resilience and Hazards) 2021. State Environmental Planning Policy (Resilience and Hazards) 2021, does not define a bitumen or premix facility or a waste management facility utilising 30,000 TPA of RAP to be an SSD.

Therefore, the project is not an SSD.

The relevant factors in the assessment and determination of the project are addressed in the following sections.

### 3.3.3 Designated Development

The development is defined as a waste or resource management facility and asphalt plant (Bitumen pre-mix and hot-mix facilities).

The proposed waste or resource management facility and asphalt plant (Bitumen pre-mix and hot-mix facilities) is subject to the (Resilience and Hazards SEPP) under Part 3. The proposed facility can be defined as a "potentially hazardous industry" and "potentially offensive industry" under Clause 3.2 defined as:

**potentially hazardous industry** means a development for the purposes of any industry which, if the development were to operate without employing any measures (including, for example, isolation from existing or likely future development on other land) to reduce or minimise its impact in the locality or on the existing or likely future development on other land, would pose a significant risk in relation to the locality—

(a) to human health, life or property, or
(b) to the biophysical environment,

and includes a hazardous industry and a hazardous storage establishment.

**potentially offensive industry** means a development for the purposes of an industry which, if the development were to operate without employing any measures (including, for example, isolation from existing or likely future development on other land) to reduce or minimise its impact in the locality or on the existing or likely future development on other land, would emit a polluting discharge (including for example, noise) in a manner which would have a significant adverse impact in the locality or on the existing or likely future development on other land and includes an offensive industry and an offensive storage establishment.

Under Schedule 3 part 2 of the *Environmental Planning and Assessment Regulation 2021* the development would be designated by virtue of the limits prescribed by the regulation. In this case the proposed development will produce 200,000 TPA of Bitumen on the site and process 30,000 TPA of recycled Asphalt Products (RAP).

The development is also defined as Regionally significant development under clause 2.19(1) of the *State Environmental Planning Policy (Planning Systems) 2021* due to the volumes of the material proposed to be used. As a result of these proposed volumes the development will be designated and Regionally Significant Development and will be subject to a determination from the Regional Planning Panel.

The Objectives under Section 1.3 of the *EP&A Act* are broadly defined as seeking to promote the conservation and management of resources (natural and artificial) while permitting appropriate development to occur. It is considered that the proposed development is consistent with these objectives.

## 3.4 PERMISSIBILITY

The site is located within the Somersby Business Park and is Zoned E4 – General Industry under the Central Coast LEP 2022 (CLEP). Under the CCLEP the proposed use of the site (General Industry and Waste or resource management facility – resource recovery facility) is permitted with consent.

The development proposed is as a waste or resource management facility and asphalt plant (Bitumen pre-mix and hotmix facilities), it is most accurately defined as a general industry (within the group term industry) which provides the following: **Industry** means any of the following:

(a) general industry,
(b) heavy industry,
(c) light industry,

but does not include:

(d) rural industry, or
(e) extractive industry, or
(f) mining.

**General industry** means a building or place (other than a heavy industry or light industry) that is used to carry out an industrial activity.

**Industrial activity** means the manufacturing, production, assembling, altering, formulating, repairing, renovating, ornamenting, finishing, cleaning, washing, dismantling, transforming, processing, recycling, adapting or servicing of, or the research and development of, any goods, substances, food, products or articles for commercial purposes, and includes any storage or transportation associated with any such activity.

The proposed development is classified as a general industry as the subject site and proposed building and structures are to be utilised for an industrial activity as the development comprises an asphalt plant which produces asphalt (bitumen and aggregate) and a reclaimed asphalt pavement processing area which will recycle waste asphalt.

General industry is permissible in the E4 General Industry zone.

The Land use table of the Central Coast LEP 2022 is reproduced here.

**Central Coast LEP 2022 Land Use Table Zone E4.**

- **Zone E4 General Industrial**

**1 Objectives of zone**

- To provide a range of industrial, warehouse, logistics and related land uses.
- To ensure the efficient and viable use of land for industrial uses.
- To minimise any adverse effect of industry on other land uses.
- To encourage employment opportunities.
- To enable limited non-industrial land uses that provide facilities and services to meet the needs of businesses and workers.
- To ensure that retail, commercial or service land uses in industrial areas are of an ancillary nature.
- To support and protect industrial land for industrial uses.

**2 Permitted without consent**

Recreation areas

**3 Permitted with consent**

Depots; Food and drink premises; Freight transport facilities; Garden centres; General industries; Goods repair and reuse premises; Hardware and building supplies; Industrial retail outlets; Industrial training facilities; Kiosks; Landscaping material supplies; Light industries; Liquid fuel depots; Local distribution premises; Neighbourhood shops; Oyster aquaculture; Plant nurseries; Rural supplies; Take away food and drink premises; Tank-based aquaculture; Timber yards; Vehicle sales or hire premises; Warehouse or distribution centres; Any other development not specified in item 2 or 4

**4 Prohibited**

Boat sheds; Camping grounds; Caravan parks; Cemeteries; Charter and tourism boating facilities; Commercial premises; Correctional centres; Eco- tourist facilities; Educational establishments; Entertainment facilities; Environmental facilities; Exhibition homes; Exhibition villages; Extractive industries; Farm buildings; Forestry; Heavy industrial storage establishments; Heavy industries; Home-based child care; Home businesses; Home occupations; Home occupations (sex services); Hospitals; Information and education facilities; Marinas; Mooring pens; Moorings; Open cut mining; Public administration buildings; Residential accommodation; Tourist and visitor accommodation; Water recreation structures

## 3.5 ECOLOGICALLY SUSTAINABLE DEVELOPMENT

One of the objects in Section 1.3 of the EP&A Act is "to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment". Section 1.4 (Definitions) of the EP&A Act defers to the NSW Protection of the Environment Administration Act 1991 (POEA Act) for a definition of ESD. Section 6.2(2) of the POEA Act defines ESD as:

*…ecologically sustainable development requires the effective integration of social, economic* and environmental considerations in decision-making *processes.*

Ecologically sustainable development can be achieved through the implementation of the following principles and programs:

a. the precautionary principle—namely, that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In the application of the precautionary principle, public and private decisions should be guided by:
   i. careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment, and

ii. an assessment of the risk-weighted consequences of various options,

b. inter-generational equity—namely, that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations,

c. conservation of biological diversity and ecological integrity—namely, that conservation of biological diversity and ecological integrity should be a fundamental consideration,

d. improved valuation, pricing and incentive mechanisms—namely, that environmental factors should be included in the valuation of assets and services, such as:

i. polluter pays—that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement,

ii. the users of goods and services should pay prices based on the full life cycle of costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste,

iii. environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.

The following sections consider the relation of the project to ESD.

- **Precautionary principle**

Where there are threats of serious or irreversible environmental damage, a lack of full scientific certainty should not be used as a reason for postponing measures to prevent such damage. As described in this EIS, baseline environmental characteristics have been monitored to understand the condition of the existing environment at and around the site, and to understand the environmental impacts of previous operations. This data in combination with publicly available
data for the region has been used by the technical specialists to predict the project's environmental impacts.

As described in this report, environmental aspects requiring assessment were considered and the level of assessment detail for each aspect was proportional to environmental risk.
Project options were considered throughout the EIS process, which resulted in optimisation of components based on the interactions of profitability, location/layout of components and environmental constraints.

Management measures have been proposed where serious or irreversible damage to the environment is likely to be unavoidable.

- **Inter-generational equity**

Inter-generational equity is the concept that the present generation should ensure the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.

As described in this report the project will reuse waste materials which may have otherwise been landfilled. This will have the benefits of avoiding the use of land for landfilling and the use of raw extracted materials in production of asphalt. Therefore, there will be land and resources available for future generations to economically exploit.

As described in this report, the project will not have significant impacts on surface and ground water availability/quality or air quality. As described in Section 13.2.3, stormwater is likely to be harvested using water tanks and stormwater detention and retention facilities, which will reduce demand on reticulated water (for non-potable uses).

This asphalt plant will be of a design which enables greater energy efficiency, produces less greenhouse gas emissions and has improved stack emissions compared to other asphalt plants considered for the site. This design choice will result in better air quality outcomes than other designs considered.

Therefore, the project will not detract from future generation's access to and equal enjoyment of water and clean air.

- **Conservation of biological diversity and ecological integrity**

This is the concept that conservation of biological diversity and ecological integrity should be a fundamental consideration. The project will not adversely impact threatened species or ecological communities.

## 3.6 Environmental Planning and Assessment Regulation 2021

Section 4.39 of the *EP& A* Act refers to the EIS form and content provisions of the *EP&A Regulation 2021.* The regulation described the form and content of an EIS. This EIS satisfies these provisions.

## 3.7 Section 4.15 Matters for Consideration

The following assessment addresses the matters required to be considered under Section 4.15 of the *Environmental Planning and Assessment Act 1979.*

***(1) Matters for consideration—general***

*In determining a development application, a consent authority is to take into consideration such of the following matters as are of relevance to the development the subject of the development application:*

*(a) the provisions of:*

*(i) any environmental planning instrument*

**Comment:** the proposal has been assessed against the CCLEP 2022 and relevant State Environmental Planning Policies. The proposal is permissible in the zone.

*(ii) any draft environmental planning instrument that is or has been placed on public exhibition and details of which have been notified to the consent authority (unless the Director-General has notified the consent authority that the making of the draft instrument has been deferred indefinitely or has not been approved)*

**Comment:** The site is not subject to any draft environmental planning instruments

*(iii) any development control plan*

**Comment:** the proposal has been assessed against Central Coast DCP 2022 and is generally consistent with relevant DCP requirements.

*(iiia) any planning agreement that has been entered into under section 93F, or any draft planning agreement that a developer has offered to enter into under section 93F*

**Comment:** There is no planning agreement relevant to the subject land or the proposal

*(iv) the regulations (to the extent that they prescribe matters for the purposes of this paragraph), that apply to the land to which the development application relates*

**Comment:** There are no matters prescribed in the regulations that impact on the proposal.

*(b) the likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality*

**Comment:** As detailed in the EIS, environmental impacts have been considered and addressed for the proposal.

*(c) the suitability of the site for the development*

**Comment:** As detailed in the EIS, the site is suitable for the proposed development and allows for the sustainable reuse of an existing building on site.

*(d) any submissions made in accordance with this Act or the regulations.*

**Comment:** This is a matter Council will consider once the application has been notified.

*(e) the public interest*

**Comment:** the proposal will provide a use that will result in the continual development of the central coast, with a very low impact use and in this regard is in the public interest.

## 3.8 LEGISLATION TO BE APPLIED CONSISTENTLY WITH AN APPROVAL NSW PROTECTION OF THE ENVIRONMENT OPERATIONS ACT 1997

Under Section 48 of the POEO Act, an EPL is required for premises-based activities listed in Schedule 1 of the Act.

The proposal satisfies clause 34 of Schedule 1 of the Act, being 'resource recovery'. Resource recovery is defined as recovery of general waste meaning the receiving of waste (other than hazardous waste, restricted solid waste, liquid waste or special waste) from off site and its processing, otherwise than for the recovery of energy.

The proposal satisfies clause 31A of Schedule 1 of the Act, being 'Petroleum products and fuel production'. This is defined as "the production of petroleum products (including…bitumen) by any

means including by…blending". "The activity to which this clause applies is declared to be a scheduled activity if there is capacity to produce more than 100 tonnes of petroleum products per year".

Accordingly, an EPL will be required for the development Stateline Asphalt Downer Will apply to the EPA for an EPL for the project.

- **Roads Act 1993**

Consent is required from the relevant road's authority under Section 138 of the NSW Roads Act 1993 (Roads Act) for any work in, on or over a public road. A Road Access Crossing and driveways will be constructed off Somersby Falls Road. These works will require Section 138 approval under the Roads Act.

## 3.9 OTHER STATE LEGISLATION AND REGULATIONS

The project may also require, in addition to the requirements under part 4 of the *EP&A Act,* other additional approvals and licenses and/or authorisations under other various items of legislation.

### 3.9.1 NSW Crown Lands Act 1989

This act provides for the administration and management of Crown Lands. The subject site is not subject to any crown land.

### 3.9.2 NSW Water 1912 and NSW Water Management Act 2000

The NSW *Water Act 1912* (Water Act) and WM Act regulate the management of water by granting licenses, approvals for taking and using water, and trading groundwater and surface water. The WM Act applies to those areas where a water sharing plan has commenced. Alternatively, if a water sharing plan has not yet commenced, the Water Act applies. The WM Act is progressively replacing the Water Act as relevant water sharing plans are introduced across the State.

Water sharing plans have commenced for most of NSW. Licensing of monitoring bores continues under the Water Act until a regulation for aquifer interference gives a mechanism to approve these activities.

The project will not involve the extraction of surface or ground water.

### 3.9.3 NSW Biodiversity Conservation Act 2016

The NSW *Biodiversity Conservation Act 2016* (BC Act) replaced the NSW *Threatened Species Conservation Act 1995,* NSW *Native Vegetation Act 2003* and the flora and fauna provisions of the NP&W Act.

The BC Act protects threatened flora and fauna species and ecological communities and their habitats in NSW. Section 7.7 of this Act requires that a development application under part 4 of the EP& A act be accompanied by a biodiversity development assessment report (BDAR) where the proposal is likely to significantly impact threatened species.

This site has been the subject of a recent approval for a subdivision and is clear of any native vegetation and no ecological issues have been raised by Central Coast Council in the consultation as part of this EIS.

### 3.9.4 NSW Protection of the Environment Operations (Waste) Regulation 2014

The EPA is permitted under clause 91 of the NSW *Protection of the Environment Operations (Waste) Regulation 2014* (POEO Reg) to grant an exemption to a person from provisions of the POEO Act or POEO Reg. Clause 92 of the POEO Reg allows the EPA to make an exemption for resource recovery relating to application of waste to land. The EPA made the Reclaimed Asphalt Pavement Order 2014 and Reclaimed Asphalt Pavement Exemption (RAP order and exemption) 2014.

The RAP Exemption exempts, amongst other clauses and sections, the requirement for an EPL under clause 39 (waste disposal – application to land) of the POEO Act and tracking of certain waste under Part 4 of the POEO Reg. This enables an end user of RAP such as that proposed to be produced to be applied to land for use as a road construction material without requiring an EPL for each construction site at which it is proposed to be used.

## 3.10 Environmental Planning Instruments

### 3.10.1 State Environmental Planning Policy (Transport and Infrastructure) 2021

Under this SEPP the consent authority is required to consider any submission from TfNSW with respect to traffic impacts as a result of the development. The EIS is accompanied by a traffic impact assessment from SECA traffic. This impact assessment suggests that the development will not have an adverse impact on the traffic or capacity of the roads in the vicinity and that the development is supportable on traffic and parking grounds.

### 3.10.2 State Environmental Planning Policy (Resilience and Hazards) 2021

Under this SEPP in Chapter 3 the consent authority is required to consider whether a development proposal is a potentially hazardous industry or a potentially offensive industry.

This EIS illustrates that the development via a preliminary hazard analysis (PHA) report will not be hazardous or offensive industry under the SEPP.

Under Chapter 4 the SEPP aims to provide a state-wide planning approach to the remediation of contaminated land and to reduce the risk of harm to human health and the environment by consideration of contaminated land as part of the planning process. Under The SEPP a consent authority must not consent to the carrying out of development on land unless it has considered potential contamination issues.

The land was recently the subject of a Development Application with Central Coast Council to subdivide the land. On this basis it is considered that the land is suitable for the development as proposed given that the subdivision was only registered in early 2023.

### 3.10.3 State Environmental Planning Policy (Biodiversity and Conservation) 2021

This SEPP aims to provide state-wide controls for the clearing of native vegetation and the protection of Koala habitats.

The land was recently subject to the approval and completion of a subdivision approved by Central Coast Council. The site is clear of native vegetation and does not contain a habitat suitable to sustain a koala population.

Specific issues with respect to water quality and management are dealt with in the EIS.

### 3.10.4 Central Coast Local Environmental Plan 2022

As mentioned above the site is zoned E4 – General Industry under the provisions of the CCLEP. The use of this site for a waste management facility – resource recovery facility and general industry (Bitumen premix and hot mix facility) are a permitted use within the zone.

The project is compatible with the zone objectives of the E4 – General Industry zone and the development standards contained within the LEP as the below table illustrates as follows;

Table 3-2 LEP Compliance Table

| LEP Provision | Comments | Compliance |
|---|---|---|
| **Permissibility** | The proposal involves the development a waste management facility – resource recovery facility and general industry (Bitumen premix and hot mix facility) development which are permitted within the zone. | **Yes** |
| **E4 Zone Objectives**<br>• To provide a wide range of industrial and warehouse land uses. | The proposal is consistent with the zone objectives as it proposes an industrial use. | **Yes** |
| • To encourage employment opportunities. | The development will cater for and enhance employment opportunities in the industrial estate. | **Yes Yes** |
| • To minimise any adverse effect of industry on other land uses. | The proposed development concentrates industrial development into an existing centre rather than fragmenting development and will not have an adverse impact to the adjoining land uses. | **Yes** |
| • To support and protect industrial land for industrial uses. | The development proposes industrial developments to the site maintaining the use of the estate for industrial purposes. | |
| • To enable other land uses that provide facilities or services to meet the day to day needs of workers in the area. | The proposal creates industrial development satisfying this objective. | **Yes** |
| To ensure retail, commercial or service land uses in industrial areas are of an ancillary nature. | The proposal does not include retail or commercial activities. | |
| **Clause 2.6 - Subdivision** | The land is able to be subdivided under this clause, however subdivision is not proposed in this application. | **N/A** |
| **Part 4 Principal Development Standards Clause 4.1** Minimum allotment size | The site has an area of approximately 9730m$^2$ and satisfies the minimum allotment size for an industrial Development. preserve and maintain the site for education and cultural recognition. | **Yes** |

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| **Clause 6.2 Public Utility Infrastructure** | The site has recently been subject to a development consent for subdivision. This subdivision was registered early in 223. The provisions of public utility infrastructure was resolved as part of DA/51000/2016. | |

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| **Part 7 Additional Local Provisions**<br>**Clause 7.1 – Acid Sulfate Soils.** | The site is not mapped as being impacted by acid sulfate soils and as a result does not require the creation of an acid sulfate soils management plan. | **Yes** |
| **Clause 7.2 – Drinking water catchments** | The site is not mapped as being in the drinking water catchment map plans. | **Yes** |
| **Clause 7.6 – Essential Services** | The site is currently services with water, Electricity, Sewer and telecommunications. Natural gas supply is available to the site. These matters were dealt with under DA 51000/2016 for the subdivision of the land. | **Yes** |
| **Clause 7.12 – Somersby Business Park** | The land is not subject to the Draft plan of management for the Somersby business park given its location and the boundaries of the study area undertaken with the plan. Having said that the proposal has been considered against the principle and objectives of the plan and the issues raised have been addressed in both this application and the previous consent issued for the subdivision of<br>the land under DA/51000/2016. | **Yes** |

### 3.10.5 Central Coast Development Control Plan 2022

Consistency with the provisions of the Central Coast DCP 2022 are set out in Table x below. The requirements for industrial developments are set out in Chapter 2 part 2.9. The development is compatible with the matters listed for consideration in chapter 2 of this part and the table will principally deal with chapters 3 and 4.

In assessing the proposal against the provisions of the Central Coast DCP 2022 it is recognised that *the Environmental Planning and Assessment Act*, 1979 reinforces that the provisions contained in a DCP are to provide guidance and to be flexibly applied (Section 3.42). Non-compliance can be addressed through alternative solutions or addressing how a proposal otherwise meets the objectives of the DCP or section.

<u>Chapter 2.9 INDUSTRIAL DEVELOPMENT</u>

Chapter 2.9 of the DCP contains the provisions for industrial developments to be considered with development applications. The subject site is zoned IN1 and therefore these provisions apply to this application.

Chapter 2.9 deals with the context and setting of developments under this part. The proposed development within an existing approved subdivision is considered to satisfy the provisions of this section.

| DCP Control/Standard | Proposal | Complies |
|---|---|---|
| **2.9.2.1 Floor Space Ratio** | The proposed is well under the maximum floor space ratio adopted as the acceptable standard under the DCP of 0.8:1 based on the land having an area of 9730m$^2$. | **Yes** |
| **2.9.2.2 Site Coverage** | The proposed building has a modest site coverage of 10% of the site. The hardstand areas are 80% of the total site. | **Yes** |
| **2.9.2.3 Setbacks** | The proposed building is to be setback more than 10.0m from Somersby Falls Road in accordance with the requirements of the DCP. The set back from the side boundary is in excess of 3.0m | **Yes** |
| **2.9.2.4 Design and Appearance of buildings** | The proposed administrative/office building has been designed to ensure that it has architectural merit and does not portray excessive bulk and scale. The use of selected external materials and finishes ensures that the building is compatible with the local environment. | **Yes** |
| **2.9.2.52/2.9.2.6 /2.13 Carparking and Manoeuvring** | The proposed development is designed to ensure that all vehicles that enter and leave the site can do so in a forward motion.<br>Formal Carparking has been provided on site to cater for the use of the building accordance with the DCP. Additional spaces in provided to cater for the office space as required. The internal space of the proposed building has sufficient space for the storage of bicycles on site. | **Yes** |
| **2.9.2.7 Stormwater Management** | All vehicles associated with the delivery of raw and waste materials for the production of the asphalt and the delivery of the asphalt product are able to safely manoeuvre on the site and are able to enter and leave in a | **Yes** |

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| | forward motion. The traffic impacts of the proposed development have been addressed by Seca Solutions in their traffic impact assessment. | |
| **2.9.2.8 Earthworks and Retaining Walls** | The site will be drained to the existing stormwater infrastructure in Somersby Falls Road.<br>The proposal involves some minor excavation and filling of the site to facilitate drainage to Somersby Falls Road and access to the site and building. Final design details on the internal facing retaining walls will be provided with CC stage of the development. There are no walls on the boundary which will impact the structural integrity of adjoining sites or walls. | **Yes** |
| **2.9.2.10 – Thematic Links** | The building has been designed so that it is compatible with the style and configuration of industrial developments on adjacent properties. | **Yes** |
| **2.9.2.11 - Landscape works** | The site will be landscaped in accordance with the requirements of the DCP. Actual formal landscaping provisions will be provided with the CC application. The only storage external to the building may be the storage of plant when not in use elsewhere on projects. | **Yes** |
| **2.9.2.12 – Storage areas** | The building by its design affords surveillance over Somersby Falls Road. Public and private spaces will be clearly delineated with appropriate signage. The site will also be enclosed with appropriate high quality security fencing commensurate with the surrounding developments. | **Yes** |
| **2.9.2.13/2.9.2.14 – Design for safety/ Safety fencing** | The site will be fitted with external security and flood lighting over the hardstand areas to enable visibility of these areas as required. | **Yes** |
| **2.9.2.15 – Lighting** | The proposed building is to be provided with business identification signage as per the development plans. This signage | **Yes** |
| **2.9.2.16 - Site Signage** | | **Yes** |

| | | |
|---|---|---|
| | complies with the provisions of the SEPP. | |
| **2.9.2.18 – Air quality and odour** | The proposed development is not anticipated to create any undue impacts to air quality or odour. | **Yes** |
| **2.9.2.19 – Noise generation** | The proposed development will not create undue noise generation. There are no residential developments with 50m of the proposed development. | **Yes** |
| **2.9.2.20 – Fire Mitigation and Control** | The proposal has been assessed against the planning for bushfire provisions 2019. The building will comply with the fire separation principles of the BCA/NCC. | **Yes** |
| **2.9.2.21 – Waste Minimisation and Disposal** | The waste management plan is included as part of the DA which outlines the waste minimisation approach to the development. | **Yes** |
| **2.9.2.23 – Disabled Access** | Access for persons with a disability will be provided to the entry of the building and internal public spaces in accordance with the requirements of AS 1428.1 | **Yes** |
| **2.15. Signage** | The proposed development is to be provided with business identification signage in accordance with the provisions of SEPP (Industry and Employment) 2021. | **Yes** |
| **3.5 Tree and Vegetation Removal** | The site where the development is proposed is predominantly cleared of vegetation. The site is not included on the mapped biodiversity values map, nor does it contain any areas of Ecologically endangered communities as per Council's mapping system. | **Yes** |

Table – CCDCP 2022 compliance table.

### 3.10.6 Central Coast Regional Plan 2041

The Central Coast Regional Plan 2041 is the key strategic plan for the central coast region, replacing the former 2036 regional plan. It was produced and endorsed by the State Government in 2021 and was placed on public exhibition prior to being adopted by the State in 2022. The new plan is set to guide and manage the development and growth of the Central Coast as a vibrant and growing region with population and economic growth and will coordinate planning between the Hunter and Central Coast.

The plan has a bold vision of "ONE central Coast, connected to Country with Jobs close to home, sustainable 15-minute neighbourhoods and a vibrant capital at its heart". The plan also endorses settlements being concentrated around existing urban and employment areas such as the Warnervale and Wadalba release areas where residents can take advantages of employment services and access to transport. The plans big direction is a set of 15-minute communities where residents can walk, cycle, utilise public transport or drive to enjoy most of the employment and service provisions.

The plan identifies 9 key objectives to be delivered for the central coast over the life of the plan. These key areas are -

- A prosperous coast with more jobs close to home.
- Support the rights of aboriginal residents to economic self-determination.
- Create a 15-minute region made up of mixed, multi-modal, inclusive and vibrant local communities.
- An interconnected central Coast without the need for car dependent communities.
- Plan for "Nimble Neighbourhoods', diverse housingand sequenced development.
- Conserve heritage, landscapes, environmentally sensitive areas, waterways and drinking water catchments.
- Reach net zero and increase resilience and sustainable infrastructure.
- Plan for businesses and services at the heart of healthy, prosperous and innovative communities, and
- Sustain and balance productive rural landscapes.

The plan outlines the regions desirable attributes and the importance of maintaining these natural areas and the relative affordability of the region for housing and development. The plan also identifies that development is a fantastic method to be employed to generate local employment opportunities and improve the availability and choice of housing stock. The plan provides for an infrastructure-first and place- based approach to development that requires infrastructure providers, the development industry, and public authorities to take an integrated and coherent place-based approach to land use planning. The site the subject to this application has sufficient and adequate infrastructure to support the development proposal and ultimate development on site. The plan identifies the regions' ability to host diverse and specialised industrial development that will provide employment and opportunities within existing business and industrial parks. This development proposal meets that objective by delivering a development that will afford additional employment opportunities within the existing industrial estate. The development will also deliver a need for such a service on the coast to assist in meeting the infrastructure delivery needed to ensure the prosperity and development of the region.

### 3.10.7 Section 7.11 Plans

The subject site is not subject to a specific Section 7.11 contributions plan. The site is subject to the Central Coast Regional Section 7.12 Development Contributions Plan by virtue of the fact that there are no other plans applying the subject site.

## 3.11 SUMMARY OF APPROVALS REQUIREMENTS

The development will be required to seek approvals and licenses from other bodies past the development consent. The licenses, approvals and permits that are likely to be required for the project are summarised below.

| Legislation | Authorisation | Consent/Approval authority |
|---|---|---|
| EP&A Act | Development Consent | Central Coast Council/Central Coast and Hunter Regional Planning Panel |
| POEO Act | EPL Resource Recovery | EPA |
| POEO Act | Resource Recovery exemption for RAP | EPA |
| Roads Act | Section 138 permit for works within the road reserve | Central Coast Council |
| POEO Act | Consent from Council to lawfully dispose of trade wastewater. | Central Coast Council |
| LG Act | Section 68 approval for the disposal of Stormwater from the site | Central Coast Council. |

# 4. CONSULTATION

## 4.1 STAKEHOLDER ENGAGEMENT

### 4.1.1 Department of Planning and Environment

A request for the Secretary's Environmental Assessment Requirements (SEARs was sent to the Planning Services Division and SEARs (document reference SEAR 1655) with the requirements attached (Attachment 2).

### 4.1.2 Transport for NSW

Transport for NSW has requested in the SEARS that a Traffic Impact Assessment (TIA) be prepared for a proposed development. The TIA should be in compliance with the Austroads Guide to Traffic Management Part 12, the complementary TfNSW Supplement, and the Roads and Maritime Guide to Traffic Generating Developments. The assessment should include a map of the surrounding road network, a detailed assessment of relevant vehicular transport routes, an evaluation of the impact on the road network, and consideration of ancillary infrastructure works. The TIA should also assess any necessary road network infrastructure upgrades, proposed measures to ameliorate the impacts of road traffic noise, dust, and/or glare generated along the proposed transport route/s, and consideration of cumulative impacts. Full SEARS requirements are provided in Attachment 2. The traffic impact assessment and traffic management plan are provided in Appendix 9.

### 4.1.3 Darkinjung Local Aboriginal Land Council

Consultation with Darkinjung Local Aboriginal Land Council was undertaken by PM Anderson Consulting on 28th August 2023. As of 6th November 2023, a response has not been received. The latter has been provided as Attachment 11.

### 4.1.4 Central Coast Council

The pre-DA meeting with Central Coast Council occurred on 17th April 2023. The minutes were received 4th May 2023. Within the minutes, Council addressed the main points of potential concern in regards to the proposed development. The main assessments to provide were:

- Noise Impact Assessment – determine the noise levels of all proposed machinery and impacts, as well as mitigation measures to reduce noise levels at sensitive receivers.

- Air Quality Impact Assessment – determine the dust, odour and potential pollutant (VOCs, PAH, SO2, NOx and CO) of the development on sensitive receivers and detail any mitigation measures necessary to reduce levels.

- Traffic Impact Assessment –
  - the impact on the proposed development on the surrounding road network
  - compliance of the proposed access and parking arrangements with AS2890.
  - vehicular swept turning paths indicating vehicles can enter and exit the site in a forward direction.

- compliance of proposed car parking spaces with Council's numerical requirements.
- any requirements raised by other external agencies, e.g., Transport for NSW.

- Water Cycle Management Plan
  - Water Retention: Roof water is to be retained for reuse within the development.
  - Water Quality: Nutrient/pollution controls are to be provided to achieve the pollution reduction targets specified in the DCP.
  - Water Quantity: On-Site Detention (OSD) is to be provided to limit post development flows back to predevelopment flows for all storms up to and including the 1%AEP recurrence interval. A runoff routing method is to be utilised in the design and analysis of the OSD system.
  - Overland flows. Details are to also indicate how the provision of an open drain / table drain constructed within the southern boundary of the site will remain or be provided for in the site to ensure nuisance flows from the site do not enter adjoining properties.
  - Connection of stormwater from the development (including the proposed detention basin) to the Council system located in Somersby Falls Road. The drainage connection construction with DA/51000/2016 is to be utilised to connect stormwater from the site to Council's piped drainage system in Somersby Falls Road.
  - Any conflict with the proposed vehicle access crossing arrangements and Council's kerb inlet pits in Somersby Falls Road will require additional drainage works to be undertaken in Somersby Falls Road to convert the kerb lintel to a heavy-duty double v-grate and an additional kerb inlet pit and associated drainage to maintain the capture of stormwater flows into Council's drainage system.
  - Stormwater plans detailing the proposed stormwater measures.
  - Operation and maintenance plan for the stormwater measures.

- Soil and Water Management Plan –
  - a) a site survey which identifies contours and approximate grades and the direction(s) of fall;
  - b) locality of site and allotment boundaries;
  - c) location of adjoining road(s) and all impervious surfaces;
  - d) location of site within catchment including an estimate of flows through the site;
  - e) existing vegetation and site drainage;
  - f) nature and extent of clearing, excavation and filling;
  - g) diversion of run off around disturbed areas;
  - h) location and type of proposed erosion and sediment control measures;
  - i) location of site access and stabilisation of site access;
  - j) location of material stockpiles;
  - k) location and engineering details with supporting design calculations for all necessary sediment retention basins;
  - l) location and concept plans of proposed constructed wetlands/ gross pollutant traps, trash racks or trash collection / separator units;
  - m) proposed site rehabilitation and landscaping;
  - n) detailed staging of construction works (breaking down of catchment disturbed), and
  - o) maintenance program for erosion and sediment control measures.

- Crime and Safety Report
  - A report is required to ensure the proposal has been designed following consideration of the Crime Prevention through Environmental Design (CPTED) strategies relating to surveillance, access control, territorial reinforcement, and space management.

- Section 307 certificate – upon submission of the EIS, a section 307 certificate will be applied for.
- Crime Prevention through Environmental Design (CEPTED) Report

- **The surrounding landowners and occupiers that are likely to be impacted by the proposal**

Consultation with the community has occurred via the distribution of a leaflet. Details are provided within the next section.

## 4.2 COMMUNITY CONSULTATION

The resident to the east of the site address 126 Somersby Falls Road Somersby is currently zoned as RU1 primary production, which is intended for agricultural and primary production activities. However, the property is surrounded by E4 general industrial zoning on all four sides. The resident has expressed interest in rezoning the property to industrial in the future, which has been acknowledged and addressed in the environmental. Both future industrial and existing impacts have been addressed.

A community consultation leaflet was prepared and sent to selected surrounding landowners and occupiers via post on 10th May 2023 (Attachment 1) These locations were based on the nearest affected industrial receivers and the nearest residential areas and are shown in Table 4-1.

Table 4-1: Distribution of community leaflet

| Address | Direction from Subject Site | Noise/Air Receptor ID |
|---|---|---|
| 380 Somersby Falls Road Somersby NSW 2250 | NW | - |
| 270 Grants Road Somersby NSW 2250 | NNW | - |
| 255 Grants Road Somersby NSW 2250 | NNW | - |
| 265 Somersby Falls Road Somersby NSW 2250 | NNW | - |
| 249 Somersby Falls Road Somersby NSW 2250 | NNW | - |
| 250 Somersby Falls Road Somersby NSW 2250 | NNW | - |
| 92 Howes Road Somersby NSW 2250 | NNE | - |
| 191 Somersby Falls Road Somersby NSW 2250 | NNE | - |
| 201 Somersby Falls Road Somersby NSW 2250 | NNE | - |
| 29 Viitasalo Road South Somersby NSW 2250 | N | - |
| 64 Ghilkes Road Somersby NSW 2250 | NNW | R4 |
| 71 Viitasalo Road Somersby NSW 2250 | SSE | - |
| 79 Howes Road Somersby NSW 2250 | NNE | - |
| 45 Howes Road Somersby NSW 2250 | NNE | - |
| 25 Howes Road Somersby NSW 2250 | NNE | - |
| 39 Howes Road Somersby NSW 2250 | NNE | - |
| 37 Howes Road Somersby NSW 2250 | NNE | - |
| 90 Howes Road Somersby NSW 2250 | NNE | - |
| 70 Howes Road Somersby NSW 2250 | NNE | - |
| 60 Howes Road Somersby NSW 2250 | NNE | - |
| 50 Howes Road Somersby NSW 2250 | NNE | - |
| 36 Howes Road Somersby NSW 2250 | NNE | - |

Table 4-1: Distribution of community leaflet

| Address | Direction from Subject Site | Noise/Air Receptor ID |
|---|---|---|
| 281 Wisemans Ferry Road Somersby NSW 2250 | NE | - |
| 30 Viitasalo Road South Somersby NSW 2250 | NNE | - |
| 311 Wisemans Ferry Road Somersby NSW 2250 | NNE | - |
| 341 Wisemans Ferry Road Somersby NSW 2250 | NNE | - |
| 375A Wisemans Ferry Road Somersby NSW 2250 | NNE | - |
| 371 Wisemans Ferry Road Somersby NSW 2250 | NNE | - |
| 401 Wisemans Ferry Road Somersby NSW 2250 | NNE | - |
| 409 Wisemans Ferry Road Somersby NSW 2250 | NNE | - |
| 423 Wisemans Ferry Road Somersby NSW 2250 | NNE | - |
| 379 Wisemans Ferry Road Somersby NSW 2250 | NNE | - |
| 419 Wisemans Ferry Road Somersby NSW 2250 | NNE | - |
| 282 Wisemans Ferry Road Somersby NSW 2250 | NE | - |
| 30 Ulinga Road Somersby NSW 2250 | NE | - |
| 21 Ulinga Road Somersby NSW 2250 | NE | - |
| 51 Ulinga Road Somersby NSW 2250 | NE | - |
| 65 Ulinga Road Somersby NSW 2250 | NE | - |
| 360 Wisemans Ferry Road Somersby NSW 2250 | NE | - |
| 30 Bimbil Road Somersby NSW 2250 | NE | - |
| 376 Wisemans Ferry Road Somersby NSW 2250 | NNE | - |
| 32 Bimbil Road Somersby NSW 2250 | NE | - |
| 37 Bimbil Road Somersby NSW 2250 | NE | - |
| 23 Bimbil Road Somersby NSW 2250 | NE | - |
| 46 Debenham Road Somersby NSW 2250 | NE | - |
| 420 Wisemans Ferry Road Somersby NSW 2250 | NNE | - |
| 209 Debenham Road North Somersby NSW 2250 | NE | - |
| 141 Debenham Road North Somersby NSW 2250 | NE | - |
| 137 Debenham Road North Somersby NSW 2250 | NE | - |
| 107 Debenham Road North Somersby NSW 2250 | NNE | - |
| 22 Reeves Street Somersby NSW 2250 | NNE | - |
| 20 Wirrinda Road Somersby NSW 2250 | NNE | - |
| 59 Debenham Road North Somersby NSW 2250 | NNE | - |
| 49 Debenham Road North Somersby NSW 2250 | NNE | - |
| 27 Debenham Road North Somersby NSW 2250 | NNE | - |
| 1 Debenham Road North Somersby NSW 2250 | NNE | - |
| 56 Wirrinda Road Somersby NSW 2250 | NNE | - |
| 139 Debenham Road North Somersby NSW 2250 | NE | - |
| 63 Ghilkes Road Somersby NSW 2250 | SW | R3 |
| 64 Myoora Road Somersby NSW 2250 | S | - |
| 36 Myoora Road Somersby NSW 2250 | S | - |
| 945 Old Pacific Highway Somersby NSW 2250 | SSE | - |
| 66 Myoora Road Somersby NSW 2250 | SSE | - |

Figure 4-1: Map showing distribution of community leaflet

| | | | |
|---|---|---|---|
| ↑N<br>Not to scale | **Legend:**<br>Leaflets distributed to residences within the red boundary<br>Leaflets distributed to receivers identified in the noise & air reports **+R** | | Benbow Environmental<br>25-27 Sherwood Street,<br>Northmead NSW 2152 |

### 4.2.1 Community Consultation Feedback

A resident from Ghilkes Rd Somersby expressed concerns about the proposed batching plant in Somersby. Key concerns include:

- Precedents of similar-sized asphalt batching plants near residential properties.
- Maintenance of the visual amenity given the plant's location.
- The proposed height of the development and its visibility to nearby properties.
- Specific location of the batching facility on the site.
- Measures to contain noise pollution and prevent residents from hearing the plant 24/7.
- Measures to limit noise, air, and visual pollution for surrounding residents.
- Assurances regarding no impact from fumes or air pollution.
- Consideration of potential breaches of operational consents in acoustic assessments.
- Limitations on operations during sensitive hours.
- Use of Ghilkes Road as an access road.
- Waste product removal methods.

- Parking arrangements for employee vehicles.
- Overall impact of the development on resident amenity.

**Summary of Response:**

The respondent acknowledged the concerns, especially regarding air emissions from the proposed asphalt plant operations. After site visits and assessments:

- The asphalt industry has developed control measures to contain, capture, and remove the "blue smoke" from the heated bitumen.
- Bitumen tanks vent to a scrubber or dust collector.
- Truck loading bays have doorways to capture "blue smoke" during hot mix pouring.
- Odour levels have been modelled and meet NSW EPA odour criteria.
- The EIS will detail the air emission assessment.

## 4.3 SECRETARY'S ENVIRONMENTAL ASSESSMENT REQUIREMENTS (SEARS)

In accordance with requirements under Schedule 3 of the *Environmental Planning and Assessment (EP&A) Regulation 2021*, Secretary's Environmental Assessment Requirements (SEARS) were obtained for the proposed development. The SEARS are tabulated below, and a copy is presented in Attachment 2.

Key environmental planning issues raised by the requirements and subsequently addressed in this EIS are identified in the table below.

Table 4-2: Secretary's Environmental Assessment Requirements (SEARS)

| Requirement | EIS Reference | |
|---|---|---|
| | Section | Page No. |
| **DEPARTMENT OF PLANNING** | | |
| **General Requirements** | | |
| The Environmental Impact Statement (EIS) must comply with the assessment requirements and meet the minimum form and content requirements in sections 190 and 192 of the Environmental Planning and Assessment Regulation 2021. | | |
| **KEY ISSUES** | | |
| The EIS must include an assessment of all potential impacts of the proposed development on the existing environment (including cumulative impacts if necessary) and develop appropriate measures to avoid, minimise, mitigate and/or manage these potential impacts. As part of the EIS assessment, the following matters must also be addressed: | 8<br>9<br>10 | 8-1<br>9-1<br>10-1 |
| • **strategic and statutory context** – including: | 5 | 5-1 |
| ► detailed justification for the proposal and suitability of the proposed land use in that location, taking into consideration the potentially offensive nature of the development. | 5.1 | 5-1 |
| ► A demonstration that the proposal is consistent with all relevant planning strategies, environmental planning instruments, development control plans (DCPs), or justification for any inconsistencies. | 3 | 10 |
| ► A list of any approvals that must be obtained under any other Act or law before the development may lawfully be carried out. | 3 | 10 |
| • suitability of the site – including: | | |
| ► a detailed justification that the site can accommodate the proposed processing capacity, having regard to the scope of the operations and its environmental impacts and relevant mitigation measures. | 5.1 | 5-1 |
| ► site plans depicting the proposed layout, including the location of stockpiles, machinery, and equipment. | 6.2.1 | 6-2 |

Table 4-2: Secretary's Environmental Assessment Requirements (SEARS)

| Requirement | EIS Reference | |
|---|---|---|
| | Section | Page No. |
| • **Waste management** – including: | 8.5 | 8-12 |
| ► Details of the type, quantity, and classification of waste to be received at the site. | 8.5.4.1 | 8-18 |
| ► Details of the resource outputs and any additional processes for residual waste | 8.5.4.1<br>Appendix 5 | 8-18 |
| ► Details of waste handling including transport, identification, receipt, stockpiling and quality control | 8.5.2<br>Appendix 5 | 8-15 |
| ► The measures that would be implemented to ensure that the proposed development is consistent with the aims, objectives and guidelines in the *NSW Waste Avoidance and Sustainable Materials Strategy 2041.* | 8.5.2.3.1 | 8-17 |
| • **Air quality** – including: | 8.1 | 8-1 |
| ► A description of all potential sources of air emissions and odour during construction and operation. | | |
| ► A quantitative air quality impact assessment in accordance with relevant Environment Protection Authority Guidelines with consideration of nearby residence. | Appendix 1 | |
| ► A description and appraisal of air quality impact mitigation and monitoring measures. | 10.4.3 | 10-4 |
| • **Noise and vibration** – including: | 8.2 | 8-2 |
| ► A description of all potential noise and vibration sources during construction and operation, including road traffic noise and the potential for sleep disturbance. | 8.2.1 | 8-2 |
| ► A quantitative noise and vibration impact assessment in accordance with the relevant Environment Protection Authority Guidelines with consideration of nearby residences. | Appendix 2 | |
| ► A description and appraisal of noise and vibration mitigation and monitoring measures. | 8.2.2<br>10.4.4 | 8-4<br>10-5 |
| • **Hazards and risk** – including: | 8.6<br>Appendix 6 | 8-1 |
| ► A preliminary risk screening completed in accordance with *State Environmental Planning Policy (Resilience and Hazards) 2021, Chapter 3 and Applying SEPP 33 (DoP, 2011),* with a clear indication of class, quantity and location of all dangerous goods and hazardous materials associated with the development. Should preliminary screening indicate that the project is "potentially hazardous" a Preliminary Hazard Analysis (PHA) must be prepared in accordance with *Hazardous Industry Planning Advisory Paper No. 6 – Guidelines for Hazard Analysis (DoP, 2011)* and *Multi-Level Risk Assessment (DoP, 2011).* | | |

Table 4-2: Secretary's Environmental Assessment Requirements (SEARS)

| Requirement | EIS Reference | |
|---|---|---|
| | Section | Page No. |
| • **Soil and water** – including: | Appendix 4 | |
| ► A description of local soils, topography, drainage, and landscapes | 7.4 7.5 7.6 | 7-6 7-8 7-10 |
| ► Details of water usage for the proposal including existing and proposed water licencing requirements in accordance with the *Water Act 1912* and/or the *Water Management Act 2000.* | 8.3.3 | 8-9 |
| ► An assessment of potential impacts on floodplain and stormwater management and any impact to flooding in the catchment | 8.3.4 8.3.5 | 8-9 8-11 |
| ► Details of sediment and erosion controls | 8.3.7 | 8-11 |
| ► A detailed site water balance | 8.3.3 | 8-9 |
| ► An assessment in accordance with ASSMAC Guidelines for the presence and extent of acid sulfate soils (ASS) and potential acid sulfate soils (PASS) on the site and, where relevant, appropriate mitigation measures | 7.5.1 | 7-8 |
| ► An assessment of potential impacts on the quality and quantity of surface and groundwater resources | 8.3.5 | 8-11 |
| ► Details of the proposed stormwater and wastewater management systems (including sewage), water monitoring program and other measures to mitigate surface and groundwater impacts | 8.3.7 | 8-11 |
| ► Characterisation of the nature and extent of any contamination on the site | 7.7 | 7-14 |
| • **Traffic and transport** – including:<br>- Details of road transport routes and access to the site.<br>- Road traffic predictions for the development during construction and operation with consideration of cumulative impacts from Somersby Industrial Park.<br>- Swept path diagrams depicting vehicles entering, exiting and manoeuvring throughout the site.<br>- an assessment of impacts to the safety and function of the road network and the details of any road upgrades required for the development. | 9.6 | 9-7 |

Table 4-2: Secretary's Environmental Assessment Requirements (SEARS)

| Requirement | EIS Reference | |
|---|---|---|
| | Section | Page No. |
| • **community and stakeholder engagement** – including:<br>▸ a detailed community and stakeholder participation strategy which identifies who in the community has been consulted and a justification for their selection, other stakeholders consulted and the form(s) of the consultation, including a justification for this approach.<br>▸ A report on the results of the implementation of the strategy including issues raised by the community and surrounding occupiers and landowners that may be impacted by the proposal.<br>▸ Details of how issues raised during community and stakeholder consultation have been addressed and whether they have resulted in changes to the proposal.<br>▸ Details of the proposed approach to future community and stakeholder engagement based on the results of the consultation. | 4 | 4-1 |
| • **Biodiversity impacts** – including:<br>▸ A description of any potential vegetation clearing needed to undertake the proposal and any impacts on flora and fauna. | 8.4 | 8-11 |
| • **Visual impacts** – including:<br>▸ An impact assessment at private receptors and public vantage points. | 9.3 | 9-3 |
| • **Heritage impacts** – including:<br>▸ An assessment of Aboriginal Cultural Heritage. | 9.4 | 9-4 |
| **ENVIRONMENTAL PLANNING INSTRUMENTS and OTHER POLICIES** | | |
| The EIS must assess the proposal against the relevant environmental planning instruments, including but not limited to:<br>• State Environmental Planning Policy (Infrastructure) 2007;<br>• State Environmental Planning Policy (Resilience and Hazards) 2021 (Chapters 3 and 4)<br>• State Environmental Planning Policy (Transport and Infrastructure) 2021 (Chapter 2)<br>• State Environmental Planning Policy (Biodiversity and Conservation) 2021 (Chapter 2)<br>• Gosford Local Environment Plan 2014<br>• Relevant development control plans and section 7.11 plans | 3.10 | 20 |

Table 4-2: Secretary's Environmental Assessment Requirements (SEARS)

| Requirement | EIS Reference | |
|---|---|---|
| | Section | Page No. |
| **GUIDELINES** | | |
| During the preparation of the EIS you should consult the Department's Register of Development Assessment Guidelines which is available on the department's website at https://www.planning.nsw.gov.au/Assess-and-Regulate/Development-Assessment/Industries.<br>Whilst not exhaustive, this Register contains some of the guidelines, policies and plans that must be taken into account in the environmental assessment of the proposed development. | | |
| **CONSULTATION** | | |
| During the preparation of the EIS you should consult the relevant local, State and Commonwealth government authorities, service providers and community groups and address any issues they may raise in the EIS. In particular, you should consult with the: | 4 | 4-1 |
| • Department of Planning and Environment, specifically the:<br>▸ Environment Protection Authority; | 4.1.1 | 4-1 |
| • Transport for NSW | 4.1.2 | 4-1 |
| • Darkinjung Local Aboriginal Land Council | 4.1.3 | 4-1 |
| • Central Coast Council | 4.1.4 | 4-1 |
| • The surrounding landowners and occupiers that may be impacted by the proposal. | 4.2 | 4-3 |
| Details of the consultation carried out and issues raised must be included in the EIS. | | |
| **FURTHER CONSULTATION AFTER 2 YEARS** | | |
| If you do not lodge an application under Section 4.12(8) of the *Environmental Planning and Assessment Act 1979*, within 2 years of the issue date of these SEARs, you must consult with the Secretary in relation to any further requirements for lodgement. | N/A | |

A summary of the key information requirements the NSW Environment Protection Authority require to issue general terms of approval are listed in Table 4-3.

Table 4-3: Compliance with Secretary's Environmental Assessment Requirements (SEARS) —NSW EPA

| Requirement | EIS Reference | |
|---|---|---|
| | Section | Page No. |
| **KEY INFORMATION REQUIREMENTS** | | |
| • Waste Management;<br>• Water Management;<br>• Air quality; and<br>• Noise. | 8.5<br>8.3<br>8.1<br>8.2 | 8-12<br>8-8<br>8-1<br>8-2 |
| In carrying out the assessment, the proponent should refer to the relevant guidelines as listed in Attachment C and any relevant industry codes of practice and best practice management guidelines. | | |
| **1. AIR** | | |
| The EIS must:<br>• Identify all sources or potential sources of air emissions from the development. Note: emissions can be classed as either<br>▸ point (e.g. emissions from stack or vent) or<br>▸ fugitive (from wind erosion, leakages or spillages, associated with loading or unloading, conveyors, storage facilities, plant and yard operation, vehicle movements (dust from road, exhausts, loss from load), land clearing and construction works).<br>• Provide details of the project that are essential for predicting and assessing air impacts including:<br>a) a) the quantities and physio-chemical parameters (e.g. concentration, moisture content, bulk density, particle sizes etc) of materials to be used, transported, produced or stored<br>b) b) an outline of procedures for handling, transport, production and storage<br>c) c) the management of solid, liquid and gaseous waste streams with potential to generate emissions to air. | 8.1<br>Appendix 1 | 8-1 |

Table 4-3: Compliance with Secretary's Environmental Assessment Requirements (SEARS) —NSW EPA

| Requirement | EIS Reference | |
|---|---|---|
| | Section | Page No. |
| **2. NOISE and VIBRATION** | | |
| The EIS must provide details of: | | |
| • Identify all noise sources or potential sources from the development (including both construction and operation phases). Detail all potentially noisy activities including ancillary activities such as transport of goods and raw materials. | 8.2.1 | 8-2 |
| • Specify the times of operation for all phases of the development and for all noise producing activities. | 2.2 | 2-2 |
| • For projects with a significant potential traffic noise impact provide details of road alignment (include gradients, road surface, topography, bridges, culverts etc), and land use along the proposed road and measurement locations – diagrams should be to a scale sufficient to delineate individual residential blocks. | NA | |

Table 4-3: Compliance with Secretary's Environmental Assessment Requirements (SEARS) —NSW EPA

| Requirement | EIS Reference | |
|---|---|---|
| | Section | Page No. |
| **3. WATER** | | |
| The EIS must: | Appendix 4 | |
| • Provide details of the project that are essential for predicting and assessing impacts to waters including: | 8.3.5 | 8-11 |
| a) the quantity and physio-chemical properties of all potential water pollutants and the risks they pose to the environment and human health, including the risks they pose to Water Quality Objectives in the ambient waters (as defined on http://www.environment.nsw.gov.au/ieo/index.htm, using technical criteria derived from the Australian and New Zealand Guidelines for Fresh and Marine Water Quality, ANZECC 2000) | | |
| b) the management of discharges with potential for water impacts | | |
| c) drainage works and associated infrastructure; land-forming and excavations; working capacity of structures; and water resource requirements of the proposal. | | |
| • Outline site layout, demonstrating efforts to avoid proximity to water resources (especially for activities with significant potential impacts e.g. effluent ponds) and showing potential areas of modification of contours, drainage etc. | Attachment 4<br>Attachment 5 | |
| • Outline how total water cycle considerations are to be addressed showing total water balances for the development (with the objective of minimising demands and impacts on water resources). Include water requirements (quantity, quality and source(s)) and proposed storm and wastewater disposal, including type, volumes, proposed treatment and management methods and re-use options. | 8.3.3 8.3.4<br>8.3.5 8.3.7 | 8-9 8-9<br>8-11 8-11 |

Table 4-3: Compliance with Secretary's Environmental Assessment Requirements (SEARS) —NSW EPA

| Requirement | EIS Reference | |
|---|---|---|
| | Section | Page No. |
| **4. WASTE and CHEMICALS** | | |
| Provide details of the quantity and type of both liquid waste and non-liquid waste generated, handled, processed or disposed of at the premises. Waste must be classified according to the EPA's Waste Classification Guidelines 2014 *(as amended from time to time)* | Appendix 5<br>Appendix 6 | |
| • Provide details of liquid waste and non-liquid waste management at the facility, including:<br>a) the transportation, assessment and handling of waste arriving at or generated at the site<br>b) any stockpiling of wastes or recovered materials at the site<br>c) any waste processing related to the facility, including reuse, recycling, reprocessing (including<br>d) composting) or treatment both on- and off-site<br>e) the method for disposing of all wastes or recovered materials at the facility<br>f) the emissions arising from the handling, storage, processing and reprocessing of waste at the facility the proposed controls for managing the environmental impacts of these activities. | 8.5.4.1 | 8-18 |
| • Provide details of spoil disposal with particular attention to:<br>a) the quantity of spoil material likely to be generated<br>b) proposed strategies for the handling, stockpiling, reuse/recycling and disposal of spoil<br>c) the need to maximise reuse of spoil material in the construction industry<br>d) identification of the history of spoil material and whether there is any likelihood of contaminated material, and if so, measures for the management of any contaminated material<br>e) designation of transportation routes for transport of spoil. | | |
| • Provide details of procedures for the assessment, handling, storage, transport and disposal of all hazardous and dangerous materials used, stored, processed or disposed of at the site, in addition to the requirements for liquid and non-liquid wastes. | Appendix 5 | |
| • Provide details of the type and quantity of any chemical substances to be used or stored and describe arrangements for their safe use and storage. | 6.6.4<br>8.6.1 | 6-16<br>8-1 |
| • Reference should be made to the guidelines: EPA's Waste Classification Guidelines 2014 (as amended from time to time) | 8.5.1.1 | 8-12 |

Table 4-3: Compliance with Secretary's Environmental Assessment Requirements (SEARS) —NSW EPA

| Requirement | EIS Reference | |
|---|---|---|
| | Section | Page No. |
| **ESD**<br>Demonstrate that the planning process and any subsequent development incorporates objectives and mechanisms for achieving ESD, including:<br><br>a) an assessment of a range of options available for use of the resource, including the benefits of each option to future generations<br>proper valuation and pricing of environmental resources<br>**b)** identification of who will bear the environmental costs of the proposal. | 9.5 | 9-4 |

Requirements of the Roads and Maritime Services in regards to the EIS for the proposed development are listed in Table 4-4.

Table 4-4: Compliance with Secretary's Environmental Assessment Requirements (SEARS) — Transport for NSW (TfNSW)

| Requirement | EIS Reference | |
|---|---|---|
| | Section | Page No. |
| TfNSW requests that a Traffic Impact Assessment (TIA) be prepared by a suitably qualified person/s in accordance with the Austroads Guide to Traffic Management Part 12, the complementary TfNSW Supplement and Roads and Maritime Guide to Traffic Generating Developments.<br><br>The TIA should be tailored to the scope of the proposed development and include, but not be limited to, the following: | Appendix 8 | |
| A map of the surrounding road network identifying the site access, nearby accesses, intersections, relevant transport route/s, transport related facilities and connections to the classified (State) road network. | Appendix 8 | |
| Detailed assessment of all relevant vehicular transport routes, relevant intersections and connections to the classified State) road network for access to / from the proposed development site/s (including ancillary sites). Vehicle types to be considered:<br>• Commuter (employee and contractor) light vehicles and pool vehicles,<br>• Heavy (haulage) vehicles,<br>• Over size and over mass (OSOM) vehicles. | Appendix 8 | |

Table 4-4: Compliance with Secretary's Environmental Assessment Requirements (SEARS) — Transport for NSW (TfNSW)

| Requirement | EIS Reference | |
|---|---|---|
| The total impact of existing and proposed development on the road network with consideration for a 10-year horizon. This should include:<br>• Identify Annual Average Daily Traffic (AADT) volumes with percentage heavy vehicles along the transport route/s and diagrammatically demonstrate AM and PM peak hour movements at key intersections.<br>• Background traffic data from published sources and/or recent survey data. The source of data and any assumptions are to be clearly explained and justified, including the growth rate applied to the future horizon. Due to the impact of COVID-19 on travel patterns, traffic counts undertaken at this time may not be representative of normal volumes. Alternative approaches to understanding the impact of COVID-19 on traffic patterns should be discussed with TfNSW.<br>• The volume and distribution of any existing and proposed trips to be generated by the construction, operational and decommission phases of the development. This should identify the maximum daily and hourly demands generated by the development, particularly where they coincide with the network peak hour.<br>• The type and frequency of design vehicles accessing the development site. | Appendix 8 | |
| Assessment of any ancillary infrastructure works of the development. Including but not limited to impacts of construction, haulage/transportation routes, traffic generation (individual and cumulative with all the project's components) and distribution for the transportation of staff/personnel and materials during construction, operation, and decommissioning stages. | Appendix 8 | |
| Traffic analysis of any major / relevant intersections impacted, using SIDRA or similar traffic model, including:<br>• Current traffic counts and 10-year traffic growth projections<br>• With and without development scenarios<br>• 95th percentile back of queue lengths<br>• Delays and level of service on all legs for the relevant intersections<br>• Electronic data for TfNSW review. | Appendix 8 | |

Table 4-4: Compliance with Secretary's Environmental Assessment Requirements (SEARS) — Transport for NSW (TfNSW)

| Requirement | EIS Reference | |
|---|---|---|
| Details of the road geometry and alignment along the identified transport route/s, including existing formations, crossings, intersection treatments and any identified hazards. This should include:<br>• Available sight distances at intersections along the proposed transport routes, the site access and any constraint to achieving the required sight distance for the posted speed limit.<br>• An assessment of turn treatment warrants in accordance with the Austroads Guide to Traffic Management Part 6 and Austroads Guide to Road Design Part 4A for intersections along the identified transport route/s, including connections to the classified (State) road network, identifying the existence of the minimum basic turn treatments and addressing the need for any warranted higher order treatments.<br>• Swept path analysis demonstrating the largest design vehicle entering and leaving the development, and moving in each direction through intersections along the proposed transport route/s. | Appendix 8 | |
| Identify any necessary road network infrastructure upgrades that are required to maintain existing levels of service on both the local and classified road network for the development.<br><br>Strategic (2D) design drawings for any proposed road upgrades and the site access should demonstrate the scope, estimated cost and constructability of works required to mitigate the impacts of the development on road safety, traffic efficiency and the integrity of transport infrastructure. All proposed works must be:<br>• Designed in accordance with Austroads Guidelines, Australian Standards and TfNSW Supplements<br>• Appropriately designed for the existing posted speed limit.<br>• To the satisfaction of TfNSW and/or Council in accordance with relevant Roads Act functions.<br>• Submitted with the EIS and TIA. | Appendix 8 | |
| Details of measures to ameliorate the impacts of road traffic noise, dust, and/or glare generated along the proposed transport route/s. | Appendix 8 | |
| Site plan demonstrating site access, internal manoeuvring, servicing and parking areas consistent with the relevant parts of AS2890 and Council requirements. | Appendix 8 | |

Table 4-4: Compliance with Secretary's Environmental Assessment Requirements (SEARS) — Transport for NSW (TfNSW)

| Requirement | EIS Reference | |
|---|---|---|
| Consideration of cumulative impacts:<br>• Identify and assess the implications of any road and / or rail projects that will potentially be occurring simultaneously with the scheduling of the OSOM movements along the proposed OSOM routes.<br>• An assessment should be undertaken as a part of the EIS and TIA, to identify where projects will have overlapping construction periods within the vicinity of the project site. The assessment should consider the following:<br>► The cumulative impacts from traffic generated from the construction workforces in terms of the routes, access, AM/PM peaks where there is overlap with other projects.<br>► The cumulative impacts of heavy vehicle movements in terms of AM/PM peaks and routes where there is an overlap with other projects.<br>► Cumulative impacts and consideration in relation to the timing of movements of OSOMs where other projects will be utilising the same routes as proposed for this development.<br>► Any potential for future expansion of the subject development and the potential impacts any such expansion would have on the development, the broader road network and the AM/PM peaks. It should be noted, any future expansion beyond the scope of the subject application, will require additional applications and approvals. | Appendix 8 | |
| Details of measures to address impacts and/or provide connections for public transport services and active transport modes, such as, public and school bus services, walking and cycling. | Appendix 8 | |
| A review of crash data along the identified transport route/s for the most recent 5-year reporting period and an assessment of road safety along the proposed transport route/s considering the safe systems principles adopted under Future Transport 2056. | Appendix 8 | |

Table 4-4: Compliance with Secretary's Environmental Assessment Requirements (SEARS) — Transport for NSW (TfNSW)

| Requirement | EIS Reference | |
|---|---|---|
| Details of any Traffic Management Plan (TMP) proposed to address the construction and operation phases of the proposed development. The TMP should be prepared and implemented in accordance with *Australian Standard 1742.3* and the *Work Health and Safety Regulation 2017.* It is recommended that any TMP include, but not necessarily limited to, the following;<br>• A map of the primary transport route/s highlighting critical locations.<br>• An induction process for vehicle operators and regular toolbox meetings.<br>• Procedures for travel through residential areas, school zones and/or bus route/s.<br>• any proposed temporary measures such a Traffic Guidance Scheme (TGS)<br>• A Driver Code of Conduct for heavy vehicle operators.<br>• A complaint resolution and disciplinary procedure.<br>• Community consultation measures proposed for peak periods. | Appendix 8 | |

# 5. STRATEGIC CONTEXT

The aim of this section is to evaluate how the proposal aligns with the objectives of pertinent Government policies, strategies, and plans, in order to demonstrate the necessity of the proposal. It provides a strategic rationale for the suggested development by explaining how it can contribute towards achieving Government objectives for waste and energy, particularly when viewed as a component of an integrated waste management strategy. Furthermore, it examines the alternative sites that were evaluated for the proposed development, assesses the suitability of the preferred site, and presents the various alternative layouts and designs that were considered within the site.

## 5.1 PROJECT JUSTIFICATION

The proposed construction and operation of an asphalt batching plant that will produce up to 200,000 tonnes per annum, a RAP yard, office and depot, is justified by a number of factors. Firstly, the project's objectives include meeting the local demand for asphalt and road-making materials, constructing and operating a modern and environmentally-friendly asphalt facility that incorporates technical innovations, providing a facility for recycling road-base material, offering a local supply of asphalt and road-base material to reduce the need for transportation from distant facilities, and creating job opportunities in the community. The need for the development is highlighted by the increasing demand for a local supplier of asphalt in the Somersby/Central Coast region, where rapid growth requires a nearby source of hot mix asphalt that can recycle road pavements generated from repairs. The proposed site was selected based on its ability to meet all necessary selection criteria, including size, suitability for intended site activities, compatibility with adjoining properties, flatness, immediate access to necessary services, and ample space for required facilities. Alternative sites were considered but deemed less suitable due to future growth, lack of flat land, and proximity to residential areas.

## 5.2 STRATEGIC POLICY

The use of reclaimed asphalt pavement (RAP) in the proposed asphalt batching plant aligns with the strategic outcomes of the National Waste Policy - Less Waste, More Resources 2018, the NSW Waste Avoidance and Resource Recovery (WARR) Act 2001, and the NSW Waste and Sustainable Materials Strategy 2041 Stage 1: 2021 - 2027. By using RAP in the asphalt production process, the proposed plant will help to reduce waste by reusing materials that would otherwise be sent to landfill. This is consistent with the principles of the National Waste Policy and the NSW WARR Act, which promote the avoidance, reduction, and recovery of waste.

The NSW Waste and Sustainable Materials Strategy 2041 Stage 1: 2021 – 2027 specifically highlights the importance of increasing the use of recycled materials in infrastructure projects to achieve waste reduction and resource recovery targets. By using RAP in the proposed asphalt batching plant, the project will contribute to achieving these targets and support the NSW WASM Strategy's focus on reducing waste generation and increasing resource recovery. Additionally, the project will demonstrate best practice in asphalt manufacturing by incorporating technical innovations to reduce emissions and showcase sustainable production methods, aligning with the principles of the National Waste Policy and the NSW WARR Act.

## 5.3 KEY FEATURES OF THE SITE AND SURROUNDS

### 5.3.1 Key Features

The site and remaining areas within the lot number are situated within two different land zones, which are E4 - General Industrial and RU1 - Primary Production, as designated by the Central Coast Local Environment Plan 2022. To the east of the lot are areas zoned as RU1, while to the north, west, and south are areas designated as C2 - Environmental Conservation, with E4 to the south. Surrounding the site, there are E4 zones to the north, east, and south, RU1 zones to the north and south, C1 - National Parks and Nature Reserves to the west, and C4 - Environmental Living to the south. The zoning of the land reflects the intended uses and development objectives for different areas, such as the promotion of industrial activities in the E4 zones and protection of environmental conservation areas in the C2 zones. These zones are used to manage and regulate land use and development in a way that is consistent with the overall planning goals of the local area.

### 5.3.2 Key Hazards

The key hazards associated with the proposed development include noise from equipment, air quality impacts for batching house main stack, and transport-related hazards. These hazards will be addressed in this Environmental Impact Statement (EIS) through various assessments, such as noise impact assessment and air quality impact report. Other potential hazards to be addressed in the EIS include soil and water impacts, chemical storage and handling, and potential impacts on biodiversity. The EIS will also evaluate the environmental management safeguards to ensure they are sufficient to mitigate any potential environmental harms.

## 5.4 CONSIDERATION OF ALTERNATIVES

This section of the EIS discusses alternatives to the development in regard to both the site and proposed methods of operation. The criteria for selection are firstly discussed.

### 5.4.1 Criteria for Selection

The selection of this site is based on several key factors, including:

- Meeting the local demand for asphalt for road projects in the area;
- Having sufficient size to accommodate the required facilities;
- Being suitable for the intended site activities;
- Being compatible with adjoining properties;
- Providing ample space for construction of the asphalt facility, storage of raw and recyclable materials, car parking, offices, and a weighbridge;
- Being flat and having immediate access to necessary services;

Overall, the land and location of the proposed site successfully meet all the necessary selection criteria and have been chosen accordingly.

### 5.4.2 Alternative Sites

The selected development site is located in a newly developing industrial area and was chosen from among several alternative sites in the surrounding region. While there were other options available in industrial areas, however the majority of these sites were not as well situated as the chosen location.

The future growth of the land around the alternative sites made it clear that flat land in an existing industrial area was the best choice. Additionally, most of the alternative sites were more exposed to residential areas. This context makes it an ideal location for the development, despite the additional cost of incorporating pollution controls into the site design.

### 5.4.3 Alternative Design and Methods

Several alternative layouts were considered for the asphalt plant, and the chosen layout was selected based on material flow and traffic flow considerations. The height of the plant was also taken into account, as it affects production and storage capacity. The design of an asphalt plant is limited by its fundamental components, but it is possible to vary the height for greater production and storage capacity.

Various designs were considered, and discussions were held with suppliers.

### 5.4.4 The “No Project” Option

Choosing not to proceed with the project would mean that the local community would miss out on the advantages of having a nearby supplier of asphalt and recycled road-base for their road projects. Instead, materials would have to be brought in from farther areas of south-west and western Sydney, leading to increased transportation distances and longer travel times to deliver materials to local road projects.

# 6. PROJECT DESCRIPTION

The purpose of this section of the report is to provide a clear and comprehensive description of the project, which is crucial for obtaining development consent, evaluating the project's merits, ensuring compliance.

## 6.1 PROJECT OVERVIEW

A project overview is provided in the following table.

Table 6-1: Project Overview

| Project Element | Summary of the project |
|---|---|
| Description | Construction and operation of an asphalt batching plant that will produce up to 200,000 tonnes per annum (tpa), a (Reclaimed asphalt Pavement) RAP yard, office and depot. |
| Asphalt Batching Process | The plant crushes raw materials, including reclaimed asphalt pavement, and combines them with new materials in correct proportions, heats them in a drum dryer, adds binder bitumen, and carefully controls the temperature to produce a workable final product which is transferred directly into hotmix trucks. |
| Area | Approximately 1 ha |
| Annual Production | 200,000 tpa |
| Management of Raw Materials | Aggregates, sands and RAP stored in covered bays at rear of the site.<br>Bitumen stored in vertical bitumen tank. |
| Operational Workforce | 50 |
| Hours of Operation | 24/7 |
| Capital Investment | $8.0m |

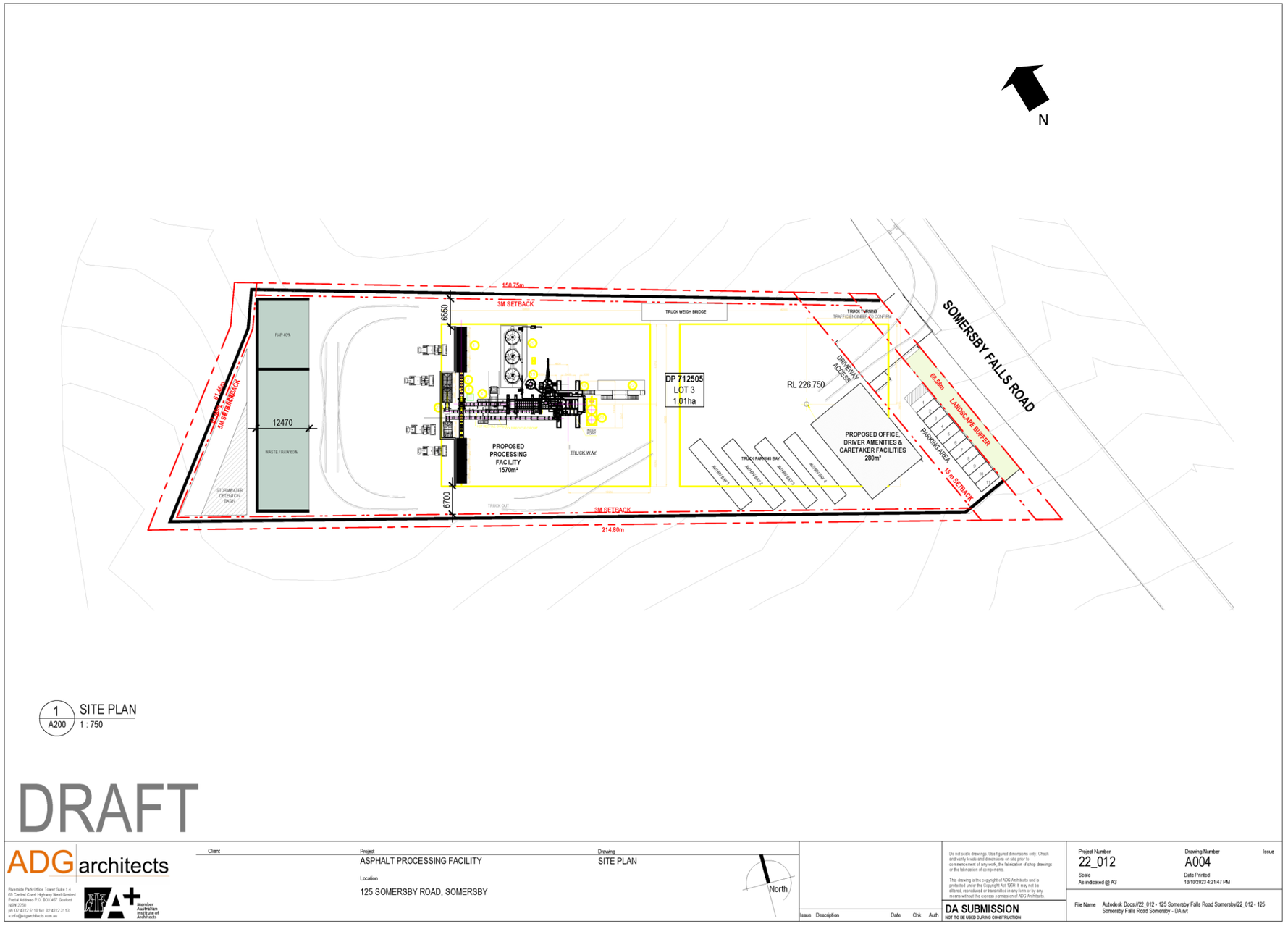
## 6.2 DESCRIPTION

The asphalt batching plant produces coated roadstone, such as asphalt concrete, using a variety of aggregates, sand, and filler materials in precise proportions. The plant begins by crushing the raw materials, including reclaimed asphalt pavement (RAP), to the desired size. The RAP is then combined with new materials in the correct proportions and heated in a drum dryer. A binder, bitumen, is added to the mixture, and the temperature is carefully controlled to ensure the final product is workable.

The plant has several components, including a cold aggregate supply system, this is fed from storage bays via front end loader into hoppers, a drum dryer, a dust collector, a hot aggregate elevator, a vibrating screen, a filler supply system, a weighing and mixing (pugmill) system, a pollution control unit, asphalt storage, and a bitumen supply system. The quality of the asphalt produced is affected by each of these components, as well as the proportion of reclaimed asphalt used.

### 6.2.1 Site Layout and Design

Figure 6-1: Site Plan



### 6.2.2 Uses and Activities

This section of the report will provide a description that includes the land uses, activities, scale and intensity of activities, transportation of materials and people, and process flow diagrams

#### 6.2.2.1 Existing Land Uses

The existing land is located on industrial zoned land but is vacant.

#### 6.2.2.2 Proposed Activities

For the purposes of this process description, the liquid binder raw material is referred to as 'bitumen'. The finished product of the plant is called 'asphalt'. A full description of the raw materials and finished product can be found in Sections 6.2.2.2.2 and 6.2.2.2.3 respectively.

The aggregates will be stored in bays within the aggregate storage building at the west of the site. A front-end loader operating 24/7 will transfer the aggregates to the ground level hoppers. The aggregates are then conveyed to the aggregate dryer drum, a burner supplies heat which removes the moisture from the aggregates. After the moisture is removed, the aggregates are conveyed to the top of the main section of the plant (often called the stack) using a bucket elevator. Several screens then sort the aggregates into hoppers within the stack based on their size. A control valve releases the aggregates into the pugmill, the proportions of which vary based on the grade of asphalt concrete produced.

The liquid bitumen is heated in vertical insulated storage tanks maintained at approximately 160°C and pumped via pipes to above the pugmill where it is added into the pugmill and mixes with the aggregates and other materials. Approximately 5% of bitumen is used in making hot mix asphalt concrete.

The RAP material is stored in stockpiles at the north of the site. It is then transferred to the mobile crusher, which prepares it before entering the pugmill.

Powders and other additives in this plant are stored within the main stack and are added to the pugmill.

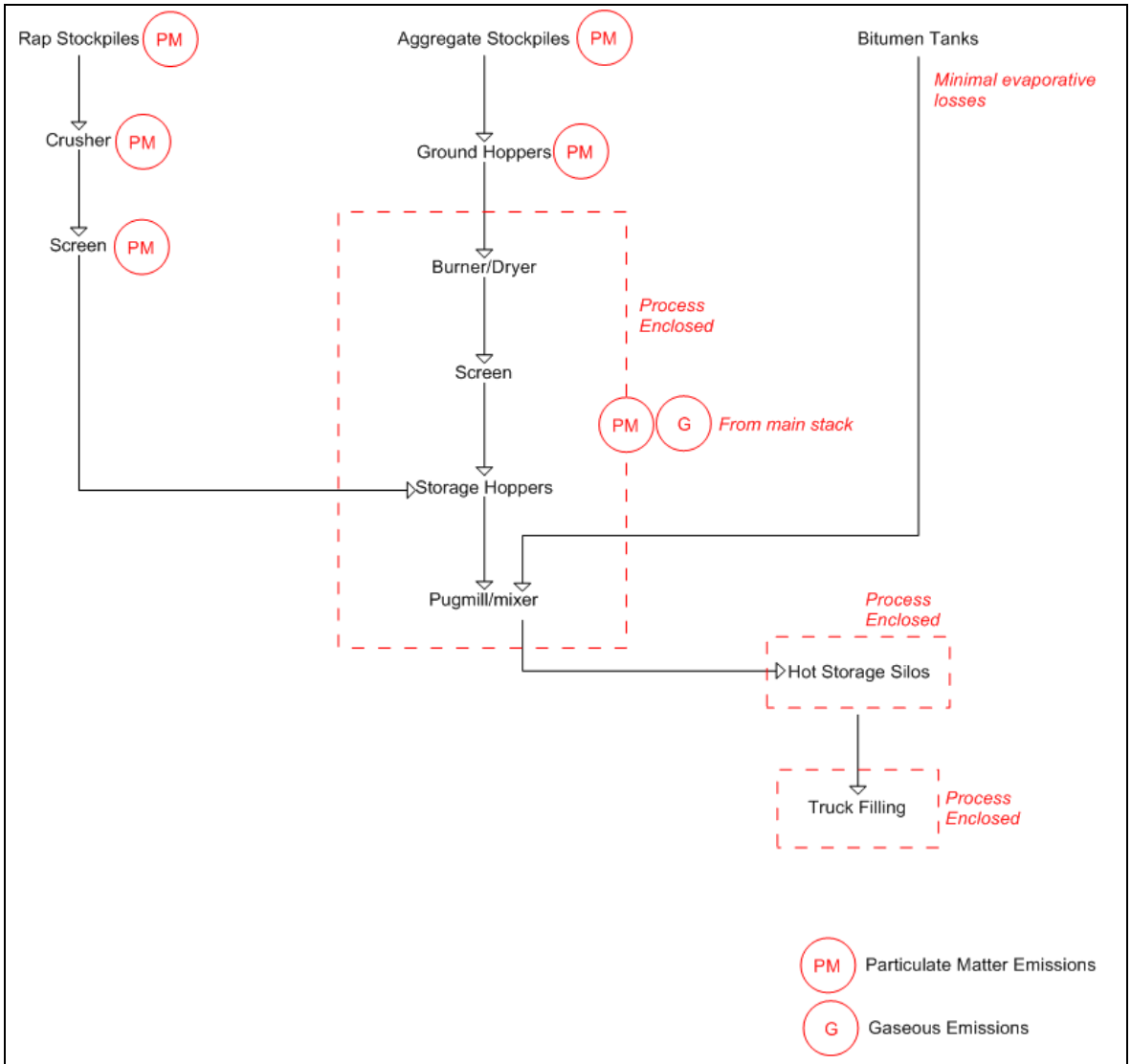
The pugmill mixes the aggregates and/or crushed RAP, bitumen, powders and additives to produce the final product, asphalt concrete, also called asphalt pavement. The pugmill has a 3-tonne capacity. Mixing requires around 1–1½ minutes at approximately 160°C.

This transfer equipment, including the skip, the skip rails and the framework would all be enclosed to ensure there is no release of "blue smoke".

##### *6.2.2.2.1 Process Description*

Figure 6-2 shows a typical process flow chart of a hot mix asphalt plant and likely emission points.

Figure 6-2: Process flow chart showing emission points




**Source:** Benbow Environmental

| | | | |
|---|---|---|---|
| Not to scale | | | Benbow Environmental<br>25-27 Sherwood Street,<br>Northmead NSW 2152 |

#### *6.2.2.2.2 Raw Materials*

The materials added to an asphalt plant are:

- Bitumen;
- Aggregates including crushed stone, gravel, sand and crusher dust;
- Reclaimed Asphalt Pavement (RAP); and
- Powders.

Each of these materials are discussed below.

(1) Bitumen

Bitumen would be stored in four 60 $m^3$ vertical insulated tanks which would be heated either by electrical means or by hot oil. There is the potential for fumes to be released through manhole covers on the tanks.

(2) Aggregates

Australia uses washed aggregates in asphalt which substantially reduces the release of $PM_{2.5}$, $PM_{10}$ and TSP from materials handling. These would be stored at ground level in two locations in bunkers that will be roofed.

(3) Reclaimed Asphalt Pavement (RAP)

Reclaimed asphalt pavement, also referred to as reclaimed asphalt pavement or RAP is an asphalt matrix which was previously used as an engineering material.

(4) Powders

Cement and lime would be delivered in bulk tankers and transferred by pneumatic means into an internal silo within the main stack that has two sections – an upper one for cement, and the lower half for lime. These additives improve the material properties of the final product including toughness, resistant to rutting, durability, resistance to age hardening.

#### *6.2.2.2.3 Finished Goods*

The finished good is "hot mix asphalt concrete" also called asphalt pavement which is a combination of aggregates and bitumen that is used for road construction.

The hot mix asphalt concrete needs to be delivered 'hot' and therefore needs to be manufactured as required. The site will contain hot storage silos to hold the asphalt concrete at the required elevated temperatures until a truck is available for loading. As the majority of road construction projects are undertaken during the night, the provision of hot storage silos would allow for some manufacturing to be undertaken during the day.

#### *6.2.2.2.4 Waste*

Reclaimed asphalt pavement (RAP) used in the process. Up to 30,000 tpa of RAP will be received each year. Up to 850 tonnes of RAP will be stored on site at any one time.

#### *6.2.2.2.5 Equipment*

The list of equipment is as follows:

- Ground level hoppers;
- Heated bitumen tanks;
- Powder silos;
- Storage silos;
- Truck filling area;
- Skip bin and belt conveyor for transfer of aggregates;
- Conveyors and bucket elevators;
- Burner drum / aggregate burner;
- Aggregate screening equipment;

- Aggregate storage hoppers;
- Mobile crushing and screening equipment;
- Bitumen storage/dispensing tanks;
- Bitumen tanks heating equipment;
- Asphalt (finished product) storage silos;
- Weigh hoppers and augers;
- Pugmill mixer;
- Dust collector, baghouse and stack; and
- Control room for operating and process controls;

#### *6.2.2.2.6 Capacity*

The proposed asphalt batching plant will produce up to 200,000 tonnes per annum (tpa).

#### 6.2.2.3 Employment

The proposed development will employ approximately 50 people. There will be approximately 3 people operating the plant, 3 admin staff and 20 drivers over 2 shifts.

### 6.2.3 Hours of Operations

The proposed asphalt batching plant and recycling facility will be designed to operate 24 hours per day, 365 days per year.

The nature of the industry is such that road projects more often than not are required to be undertaken at night. Thus, it is expected that the majority of asphalt production would take place during the night. The facility will have heated storage vessels for pre-made asphalt that would enable it to be stored until it is required.

#### 6.2.3.1 Construction Details

The proposed development will involve purchasing prefabricated plant components. Prior to delivery, site works must be completed, including the construction of hard stand areas, internal access roadways, and a concrete slab for the plant. Additionally, a site drainage network must be installed with sumps, interceptor traps, and connection to Council storm water and sewer.

The plant components will be delivered to the site for installation and commissioning once site preparation is complete. Plant fabrication and installation is expected to take between 4 to 6 months, with the majority of the construction taking place offsite prior to shipping. After installation, cladding of the plant and installation of bunding and other safeguards would be undertaken.

Construction is only permitted between 7:00am and 6:00pm Monday to Friday and 8:00am and 4:00pm on Saturdays.

## 6.3 DESIGN OF THE DEVELOPMENT

The facility has been designed using a best environmental practice approach and would set a new environmental standard for air emission controls in Australia and most other developed countries. The following sections detail the environmental factors and design features of the proposed development in relation to aspects including water quality, air quality and odour, noise amenity, fire safety, waste management, visual amenity and traffic management.

Section 6.3.2 provides details of the best environmental practice management (BEPM) techniques that would be adopted at the site.

### 6.3.1 Environmental Factors and Design Features

#### 6.3.1.1 Water Quality

Water use will be limited to mains water supply to the office and amenities. No water is required for process or cleaning and no wastewater will be generated. Some water may be used, when required, for dust suppression.

An OSD basin will be installed to collect stormwater runoff from the fully bunded working and storage area. Bunding consists of a drainage slope so that surface water drainage is directed into the OSD basin.

#### 6.3.1.2 Air Quality and Odour

The proposed development has been specifically designed to minimise air emissions as follows:

- The site surface is to be hardstand, which reduces the potential for wind erosion of site surfaces and wheel generated emissions.

- The Asphalt plant, truck loading areas, skip conveyor and storage silos of hot bitumen are fully enclosed.

- The aggregate and RAP stockpile areas are enclosed on three sides and have an additional roof awning to minimise the potential for wind erosion to occur.

- While usually in asphalt plants truck filling is a potential emissions point, the design of this plant fully encloses truck filling operations and thus odour and emissions blue smoke and VOCs are captured and passed through the dust extractor so as to remove blue smoke particulates and exhausted via the plant's exhaust stack.

With these controls implemented to minimise air emissions, the following are the potential sources of air emissions:

- Emissions of dust from truck unloading of materials to stockpiles.
- Wind erosion from aggregate and RAP stockpile areas.
- Front end loader transport of materials from the storage bunkers to ground hoppers is a potential source of dust emission.
- Pollutants generated from plant activities that are exhausted from the exhaust stack include dust, odour, VOC's, PAH, $SO_2$, $NO_x$ and CO.

The height of the designed exhaust stack and comparatively with ambient temperature, high exhaust discharge temperature, both promote dispersion of pollutants and dilution with external air so as to decrease ground level concentrations as experienced at the nearby sensitive receptors.

Venting of bitumen can be a source of blue smoke and would be ducted to a separate dust collector or scrubber or alternately to the central dust collector.

Air quality is assessed in Section 8.1.

#### 6.3.1.3 Noise Amenity

Noise is considered as an important aspect to be managed at the site due to the close proximity of residential receptors.

The noise impact assessment presented in Section 5.2 assesses the noise in accordance with the NSW *Noise Policy for Industry*.

A noise management plan would be implemented that would establish work practices to limit intrusive noise sources and prevent noise sources with potentially annoying characteristics occurring at nighttime.

The noise management plan is needed prior to construction so that it also attends to this phase of the development.

#### 6.3.1.4 Fire Safety

A fire safety study was prepared for the proposed development and is provided as Appendix 7.

The site would be protected in accordance with requirements of the National Construction Code. Fire issues associated with the proposal are in relation to the storage and use of bitumen and diesel, and the heated processes.

Fire services required consist of hydrants, hose reels and specifically placed fire extinguishers. Foam needs to be added to hose reels to provide a credible first response to a fire.

The buildings being occupied during working hours would reduce the risk of a fire being initiated and not being noticed.

Containment of firefighting water has been considered a requirement for this site and fire management and containment issues are addressed in the Fire Safety Study.

#### 6.3.1.5 Visual Amenity

The proposed infrastructure would change the visual amenity from residential locations with line of sight to the proposed development, however, the cladded buildings would be what is expected of an industrial plant in this area. The height at the highest point be approximately 22 m with the stack. The shorter building, walls and raw material silos would also be visible but would be enclosed by cladding, providing very even surfaces that are not considered to be visually intrusive.

The proposed facility would change the visual amenity of the area. The proposed buildings and infrastructure have been designed to be of a colour and material expected of industry in this area and would fit in with the surroundings.

#### 6.3.1.6 Traffic Management

The site has been designed to allow ample room for on-site manoeuvring of trucks, allowing them to enter and leave in a forward direction. Sufficient on-site parking is provided for peak staff numbers.

A traffic impact assessment provided in Appendix 8 found that the proposed asphalt batching plant would have good access to the classified road network and will have a low traffic impact on surrounding roads.

### 6.3.2 Best Environmental Practice Management

Best Available Technology (BAT) refers to the 'most effective, economically achievable, and state-of-the-art technology currently in use for controlling pollution' (US EPA). Other terms used to describe BAT are 'Best Practice Technology' 'Best Available Techniques' or 'Best Environmental Practice Management' (BEPM).

A literature review was undertaken to research best environmental practice management (BEPM) used in the asphalt manufacturing industry. Sources from Europe, the United States, Canada and Australia were used and include:

- European Asphalt Pavement Association, 2007, Environmental Guidelines on Best Available Techniques (BAT) for the Production of Asphalt Paving Mixes, Belgium, June 2007;
- Ontario Hot Mix Producers Association, 2010, Ontario Hot Mix Asphalt Plants Environmental Practices Guide.
- Brisbane City Council, 2000, Pollution Solutions Asphalt Manufacturers Operator's Environmental Guide for Environmentally Relevant Activities 59: Asphalt Manufacturing, July 2000
- Department of Ecology State of Washington, 2011, Technical Support Document for the Asphalt Plant (Portable and Stationary) General Order, Section 4: Determination of Best Available Control Technology (BACT), January 2011

Table 6-2 presents a selection of the most effective and rigorous examples of BEPM used in the design of hot mix asphalt concrete manufacturing facilities extrapolated from the listed documentation. The table also illustrates which of these BEPM have been incorporated into the design of the Stateline Asphalt facility.

In the far-right hand column of Table 6-2, N/A is entered because if the implementation is already agreed to then there is no potential for implementation.

Table 6-2: Best Environmental Practice Management for design of hot mix asphalt concrete manufacturing facilities

| Best Environmental Practice Management | To be implemented at the Site | Potential for implementation |
|---|---|---|
| **LOADING and TRANSPORTING** | | |
| Specify speed limits on exposed road surfaces. | Yes | N/A |
| Regularly water unsealed roads. | Yes – during construction. Not required during operation due to sealed surfaces | N/A |
| To minimise airborne dust:<br>• Seal or turf the site;<br>• Cover the site with a dust suppressant such as compacted road base or aggregate;<br>• Use organic dust-binding agents | Yes – sealed surfaces | N/A |
| Immediately clean up material spilt on traffic areas before it can be mobilised by vehicle movement | Yes | N/A |
| Wet down truckloads of sand or other aggregates prior to unloading onto stockpiles. | Not required. Trucks would be covered, and storage areas covered. | N/A |
| Cover truckloads of sand or aggregate during transport to prevent dust emissions | Yes | N/A |
| Minimise transport distances from storage areas to process areas within the plant | Yes | N/A |
| **RAW MATERIAL HANDLING & STORAGE** | | |
| Enclose sand and aggregate stockpiles by walls on at least three sides at all times. Stockpile heights must be at least 0.5 metres below the tops of the walls and at 0.5 metres inside the open ends of the enclosures. | Yes | N/A |
| Cover any raw material with a high dust generating potential in addition to using sidewalls and as an alternative to using water for dust suppression. A high moisture content lowers emissions but increases energy consumption in the drying process. | Yes | N/A |
| Store all fine material (under 3 mm) in silos or covered storage for ordinary day to day use. | Yes | N/A |
| Rubbing type seals fitted to maintain negative pressure at the connection to the dryer/collection system. | Recommended | Yes |
| Tight seals to be maintained at connections between elevators and screens. | Recommended | Yes |
| Elevator and plant tower should be inspected for cracks and leaks and repaired as required. | Yes | N/A |
| Transfer points in the system should be minimised at the design stage. | Yes | N/A |
| **CONVEYOR SYSTEMS** | | |
| Enclose all above ground conveyor belts and transfer points should be fitted with flexible seals on inlet and exits | Yes | N/A |
| Install spill trays in area under conveyor systems and clean regularly | Recommended | Yes |

Table 6-2: Best Environmental Practice Management for design of hot mix asphalt concrete manufacturing facilities

| Best Environmental Practice Management | To be implemented at the Site | Potential for implementation |
|---|---|---|
| Surround conveyor belt feeder points for fly ash and crusher dust with dust control screens to minimise dust emissions caused when the material is dropped onto the conveyor. | Recommended | Check once operations have commenced. |
| Install belt scraping devices on the head pulleys of the conveyor belts and regularly sweep away debris. Recycle removed material. | Recommended | Check once operations have commenced. |
| Use water spray systems to suppress dust on conveyor systems. | Recommended | Check once operations have commenced. |
| **FILLER SILOS / HOPPERS** | | |
| Control emissions from silos or weigh hoppers by scrubbers, fabric filters or similar to contain dust | Yes | N/A |
| Silos should have overflow catchers or filters and should be backed up by electronic shut off valves and alarm systems to warn the plant operator. | Yes | N/A |
| Hydrated lime and cement storage silos to be equipped with a ventilation filter and a vent valve and vented through a coupling to dust collection system. | Recommended | Yes |
| **ASPHALT MANUFACTURE** | | |
| To control generating odour, avoid heating bitumen in hot storage over 160°C. | Yes | N/A |
| Inject bitumen into the drum-mixer at a point where the burner flames do not impinge directly on the bitumen. | Recommended | To be investigated. |
| Ensure combustion is efficient. Instruments measuring oxygen or carbon dioxide/carbon monoxide at the drier exit can monitor this. | Recommended | To be investigated. |
| Incorporate alarm systems into the different process steps to ensure correct process conditions and minimise the generation of off-specification product. | Recommended | Yes |
| Dryer end seals must be maintained properly to prevent air leakage. Flap gates at the inlet and discharge chutes should be properly maintained to operate effectively and prevent leakage. | Recommended | Yes |
| Establish enclosures around the drying and mixing equipment and capture emissions from these processes and vent these to the baghouse. | Yes | N/A |
| Keep fuel burner tips clean to maintain efficient combustion. | Recommended to be included in EMP | Yes |
| Select low sulphur content fuels when using liquid or solid fuel burners. | Recommended | Yes |
| Use clean burning fuels (e.g. LPG and natural gas) | Recommended | Yes |
| Do not use untreated, unrefined recycled sump oil or similar products in the manufacturing process. | Recommended | Yes |
| Specify the burner design to achieve low levels of oxides of nitrogen (NOx) in the products of combustion. (e.g.: low NOx burners) | Recommended | To be investigated. |

Table 6-2: Best Environmental Practice Management for design of hot mix asphalt concrete manufacturing facilities

| Best Environmental Practice Management | To be implemented at the Site | Potential for implementation |
|---|---|---|
| Use "warm asphalt" production – tests indicate this uses less energy as the temperature is reduced, however additional additives are required which make the method more expensive. The technique is still developing | No | No |
| **EMISSION CONTROL** | | |
| Determine stack height using pollution dispersion modelling. | Yes | N/A |
| Emissions must comply with relevant state regulations. | Yes | To be confirmed upon commencement of operations |
| Regularly maintain baghouse as per manufacturer's instructions. Immediately replace blocked, frayed or leaking baghouse filters. Keep spare bags on-site. | Recommended | Yes |
| Install primary dust removal equipment such as cyclones or separators in front of the filter bags to reduce the amount of larger particles that reach the baghouse. This protects the baghouse from abrasion from heavier particles. | Recommended | To be investigated. |
| Where bag filters are used, design filters with an air-to-cloth ratio of 1.5 m/min at maximum gas flow. | Recommended | To be investigated. |
| Baghouse collection efficiency for particles 10 micrometres to 1 micrometre in diameter should be greater than 99% | Yes | N/A |
| Establish appropriate procedures to ensure proper collection and control efficiencies in the baghouse and primary dust removal equipment. | Yes | N/A |
| Maintain proper air to fuel ratio in the aggregate dryer burner in order to completely burn the fuel provided. | Recommended | Yes |
| Spray dusty roads inside the plant area during dry weather to minimise fugitive air emissions caused by traffic from the loader and the incoming and outgoing trucks. | If required. | Yes |
| Regularly check that off-site odours are not occurring | Yes | Yes |
| Reduce odour emissions by:<br>• Use closed housing for the essential parts of the plant where odour can be emitted;<br>• Use water syphoning and vapour recovery on delivery systems for filling the bitumen tanks;<br>• Automated opening of the asphalt storage silos (with short openings);<br>• Use a closed system starting from the mixer unit until and including the storage or the hot mix. The gases can be extracted through the baghouse filter system and led to the stack;<br>• Build the loading area in such a way that the emissions can be extracted and led to the stack. | Recommended | Yes |
| Consider the use of chemical additives in the asphalt mixture to either mask or neutralise odour. | To be investigated if required | To be investigated if required |

Table 6-2: Best Environmental Practice Management for design of hot mix asphalt concrete manufacturing facilities

| Best Environmental Practice Management | To be implemented at the Site | Potential for implementation |
|---|---|---|
| **EMISSION MONITORING** | | |
| Undertake regular monitoring. Install monitors at each process stage. | Recommended | Yes |
| Install monitoring ports in all stacks and any other air emission discharge points. Measurement of stack particulate emissions should be undertaken every 1 to 3 years combined with daily visual inspection and good plant management. | Recommended | Yes |
| Regularly check air emissions (e.g.: black smoke) and follow up adverse events by corrective action. | Recommended | Yes |
| Keep a register of all air quality indicator levels measured | Recommended | Yes |
| Keep a record of all complaints about emissions or odours. | Yes | N/A |
| **STORMWATER MANAGEMENT** | | |
| Cover and bund areas that may become contaminated | Yes | N/A |
| Store wastes undercover | Wastes stored in covered bins | N/A |
| **FUEL & CHEMICAL HANDLING & MANAGEMENT** | | |
| Store fuels and chemicals in a secure covered area within an impervious bunded compound. The capacity of the bunding shall be at least the capacity of the largest tank within the bund. | Yes | N/A |
| Storage must be away from any heating or ignition sources | Yes | N/A |
| Storage must be provided with adequate ventilation relevant to the nature of the substance. | Yes | N/A |
| Keep safety data sheets (SDS) for all hazardous substances stored on site. | Yes | N/A |
| **NOISE MANAGEMENT** | | |
| Use the layout of buildings and the natural topography as noise barriers where possible. | Yes | N/A |
| Install a sound absorber or insulation screen at the intake of the burner. | Yes | N/A |
| Install sound absorbers inside the exhaust stack or between ventilator and exhaust. | To be investigated if required | To be investigated if required |
| Avoid using public address systems | Yes | N/A |
| Ensure silencers are fitted to air compressors, pumps, fans and blowers and other noisy machinery | Yes | N/A |
| Enclose or acoustically screen noisy equipment or locate equipment away from noise sensitive land uses. | Yes | Investigate upon commencement of operations |
| Reduce structural-borne noise and vibration by mounting equipment on vibration isolating platforms, rubber mats or by increasing the mass weight of the equipment | Recommended | To be investigated |
| Fit mechanical ventilation systems (air conditioners, fans) with noise-proof ducting and acoustically designed intake and exhaust openings | Recommended | To be investigated |

Table 6-2: Best Environmental Practice Management for design of hot mix asphalt concrete manufacturing facilities

| Best Environmental Practice Management | To be implemented at the Site | Potential for implementation |
|---|---|---|
| Close windows and roller doors facing noise sensitive premises and seal all unnecessary openings | Yes | N/A |
| Only operate heavy vehicles in daylight hours | Not viable | Not viable |
| Regularly maintain all equipment and vehicles and attend promptly to faulty components. This should be addressed through regular maintenance schedule and correct staff training. | Yes | N/A |
| **WASTE MANAGEMENT** | | |
| Implement a waste recycling (reuse) system and avoid disposal of waste generated | Yes | N/A |
| Provide separate waste receptacles in covered areas. | Yes | N/A |
| **GENERAL SITE ENVIRONMENTAL MANAGEMENT & MONITORING** | | |
| Adequate supplies of spill response equipment should be maintained in accessible locations. Staff are to be adequately trained in the use of these materials. | Yes | None required |
| Ensure lighting of premises does not cause annoyance to neighbouring residential areas | Yes | N/A |
| Provisions should be put in place to respond to a spill and ensure it is contained, and all spilled liquids should be recovered immediately. The spilled liquid and other clean-up waste should be properly disposed of. | Yes | None required |
| Entire enclosure of the modules gives the plant a more contemporary appearance and a more positive environmental image. | Yes | N/A |
| Landscape around the plant to assist in minimising the visibility of the plant | Yes | N/A |
| Environmental policy developed and widely disseminated to staff | To be implemented on commencement of operations | N/A |
| Environmental Management System to address noise, air quality, waste and other relevant environmental issues needs to be developed, implemented and continuously reviewed. An EMS should include the key components:<br>• Monitoring and reporting;<br>• Records;<br>• Training of employees;<br>• Complaint response; and<br>• Emergency and incident responses | Yes | N/A |

## 6.4 CLEANER PRODUCTION ACTIONS

"Cleaner Production" is a continuous approach to improving business sustainability by implementing techniques to reduce resource usage, including energy, water and raw materials, and waste generation, in order to increase efficiency, reduce costs and improve environmental performance.

Cleaner Production actions would be implemented at the site through a site Environmental Management Plan and work instructions. Examples of cleaner production actions that would be implemented at the site include:

**Waste and Recycling Initiatives**

The finished hot mix asphalt concrete product of the facility would incorporate reclaimed asphalt pavement (RAP) as a raw material. The RAP would be sourced from old roads that are being demolished or repaired and would be utilised in the manufacturing process. This approach ensures that waste is diverted from landfill and repurposed, which helps conserve virgin materials and reduce the use of valuable landfill space.

**System Maintenance and Improvements**

To maintain a high level of efficiency and keep energy and resource consumption to a minimum, the equipment and on-site machinery will be regularly maintained in accordance with the manufacturer's specifications. Additionally, ongoing checks for leaks and wear will be carried out, and any identified issues will be rectified promptly.

**Water Management Systems**

In accordance with the company's EMP, regular reviews of the water management systems, including all potential sources of water pollution, and maintenance of the on-site stormwater infrastructure would be conducted. Ongoing inspections of bunding and water containment systems would also be carried out.

To improve the quality of rainwater runoff into the stormwater system, particulate filters would be installed in the stormwater pits located throughout the site.

## 6.5 STAGING OF THE DEVELOPMENT

The development would proceed in one stage.

## 6.6 UTILITY DETAILS

The following sections provide operational utility details of the proposed facility.

### 6.6.1 Water

The site would use mains water supply. A Section 307 certificate will be applied for after submission of the DA. Wastewater is not generated by the processes therefore a Trade waste Agreement is not required. Adequate stormwater infrastructure would be established for the facility.

### 6.6.2 Sewage

The site will be connected to the sewer system, as required. The sewerage system would be sufficient for handling sewerage generated by the proposed development.

### 6.6.3 Electricity and Telecommunications

The site will be connected to all utilities required for the proposed use, including electricity.

### 6.6.4 Fuel and Chemicals

Chemicals stored on site include:

- 240,000 Litres of heated bitumen, which is classified as a Dangerous Goods Class 9, Miscellaneous, Packing Group III, elevated temperature liquid;
- 30,000 Litres of diesel fuel, which is classified as a Dangerous Goods C1 Combustible Liquid only for storage purposes (not for transport); and
- Minor storage of solvents within a small bunded dangerous goods cabinet.

The bitumen tanks would be heated using either natural gas or fuel oil.

Asphalt is not classified as a dangerous good by the criteria of the Australian Dangerous Goods Code.

Further details of fuels and chemicals are provided in Section 8.6 and also in the Preliminary Hazard Analysis (PHA) provided as Appendix 6.

# 7. EXISTING ENVIRONMENT

This section describes the existing site and the location for the development. The surroundings are characterised and a general description of the environment that is likely to be affected is provided.

## 7.1 EXISTING AND SURROUNDING LAND USE

The subject site is located at 133 Somersby Falls Road, Somersby, NSW 2250. The subject site land is an irregular shaped lot. The development area would be limited to approximately 900 square metres of the 9730 $m^2$ site with driveway access to Somersby Falls Road and Myoora Road. Somersby is a suburb located approximately 47 km northwest of the Sydney Central Business District (CBD).

The site location is presented in Figure 7-1 and an aerial view presented in Figure 7-3 shows the general nature of the surrounding lands. The site is bordered by other industrial premises.

There is no natural surface watercourse on the subject site. The nearest watercourse is Piles Creek about 2 Km to the east of the site and is a tributary of Mooney Mooney Creek. The latter is about 3 km to the west at its nearest point to the site. There is a pond on an adjacent site which mainly appears to receive runoff from offsite, but some water may flow into it via a dry waterway bed running along the subject site's southern boundary after heavy rain. Potential impacts of the proposed development on the nearest catchment, stormwater run-off and the use of water for the proposed activities is be discussed in the EIS in Section 8.3.

The site is situated in E4 – General Industrial land use zoning under the Central Coast Local Environmental Plan (LEP) 2022, though it is noted that south-western corner of the site is designated as RU1 – Primary Production. It is located at the edge of an industrial precinct, adjacent receptors are industrial, rural and environmental.

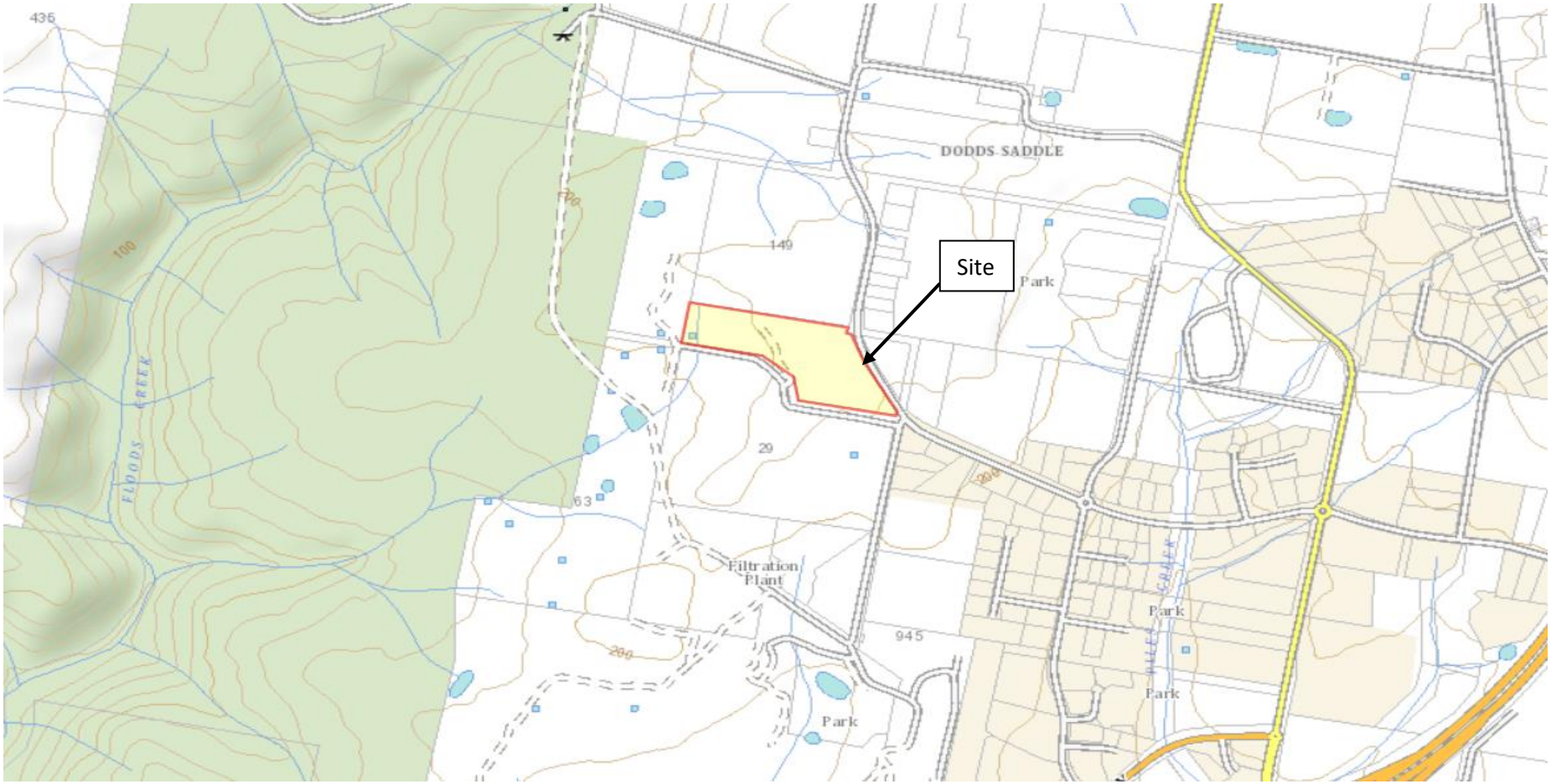
Immediately surrounding the lot are RU1 to the east, C2 – Environmental Conservation to the north, west and south and E4 to the north, east and south also. Further surrounds are E4 to north, east, and south, RU1 to the north and south, C1 – National Parks and Nature Reserves to the west and C4 – Environmental Living to the south. The land zoning map is shown below in .
Note: **Standard Instrument (Local Environmental Plans) Amendment (Land Use Zones) Order 2021**

A reference to an Environment Protection zone E1, E2, E3 or E4 within a Land Zoning Map should be taken to be a reference to a Conservation zone C1, C2, C3 or C4. For further information please see Standard Instrument (Local Environmental Plans) Amendment (Land Use Zones) Order 2021.

Maps with a commencement date of 26 April 2023 will introduce Employment zones into LEPs. These maps are likely to change prior to commencement to reflect adjustments to the State cadastre. The maps should be used for information purposes and should not be relied upon for the lodgement of a development application without first speaking with the relevant council.

Surrounding areas are used for industrial and conservation purposes. Several industrial firms are established, and Brisbane Water National Park is slightly west of the site. Rural areas to the north, east and south are used for active recreation, entertainment and agricultural means.
Impacts at potentially affected areas that are considered sensitive according to the relevant environmental guidelines and under the definitions of land use zones from Central Coast Council LEP were considered in the individual environmental assessments included in Section 3.10.4.

Figure 7-1: Site Location




**Source:** Six Maps, NSW Government Land and Property Information

↑N
Not to scale

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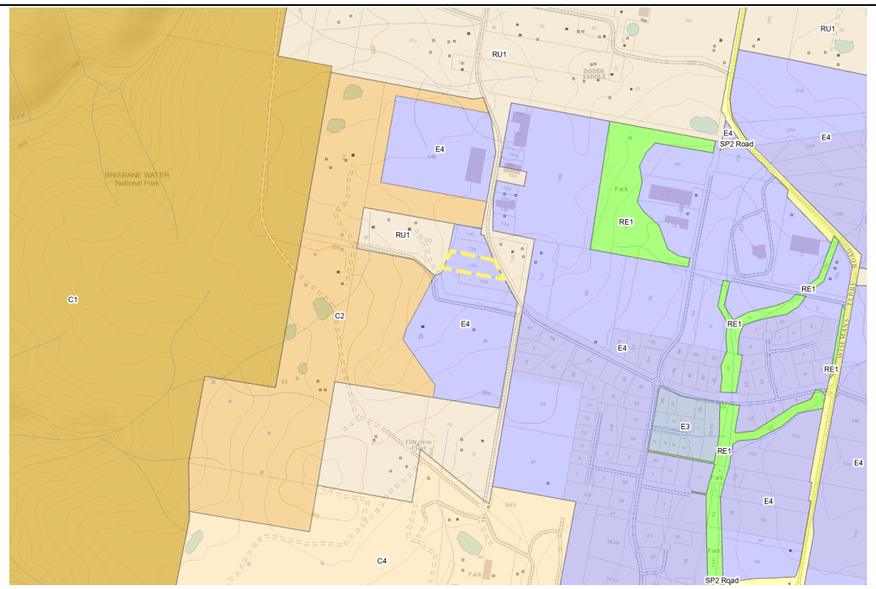
Figure 7-2: Land Zoning Map




**Source:** ePlanning Spatial Viewer 2023

LEGEND (see note above)

Site boundary

Land zone

| | |
|---|---|
| C1 | National Parks and Nature Reserves |
| C2 | Environmental Conservation |
| C3 | Environmental Management |
| C4 | Environmental Living |
| E1 | Local Centre |
| E2 | Commercial Centre |
| E3 | Productivity Support |
| E4 | General Industrial |
| MU1 | Mixed Use |
| R1 | General Residential |
| R2 | Low Density Residential |
| R3 | Medium Density Residential |
| R5 | Large Lot Residential |
| RE1 | Public Recreation |
| RE2 | Private Recreation |
| RU1 | Primary production |
| RU2 | Rural Landscape |
| RU3 | Forestry |
| RU5 | Village |
| RU6 | Transition |
| SP1 | Special Activities |
| SP2 | Infrastructure |
| SP3 | Tourist |
| SP4 | Enterprise |
| UL | Unzoned Land |
| W1 | Natural Waterways |
| W2 | Recreational Waterways |
| W4 | Working Waterfront |
| DM | Deferred Matter |

↑N

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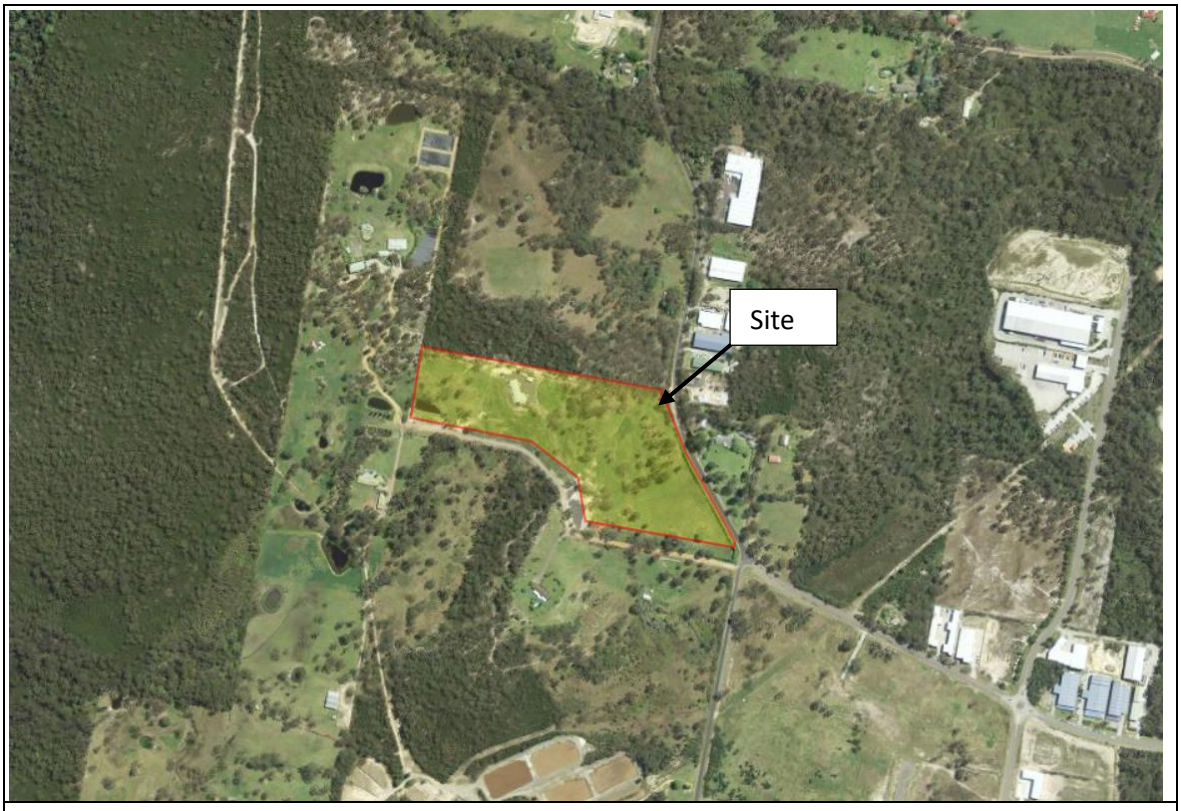
Figure 7-3: Aerial View of the Site




**Source:** Six Maps, NSW Government Land and Property Information

| | | |
|---|---|---|
| ↑N<br>Not to scale | | Benbow Environmental<br>25-27 Sherwood Street,<br>Northmead NSW 2152 |

### 7.1.1 Existing Infrastructure

There is no existing infrastructure on the site.

## 7.2 LOCAL COMMUNITY

### 7.2.1 Somersby and Surrounds

Somersby is a semi-rural locality of the Central Coast region of New South Wales, Australia, to the northwest of Gosford along the Pacific Highway. The region is predominantly industrial, residential and rural. The nearest waterway is Piles Creek approximately 2 km to the east. There is a pond on an adjacent site which mainly appears to receive runoff from offsite, but some water may flow into it via a dry waterway bed running along the subject site's west boundary after heavy rain. Floods Creek is located approximately 3 km west of the site.

### 7.2.2 Population Demographics

The Australian Bureau of Statistics conducts a national census every 4 years. Statistics have been taken from the latest census carried out in 2021.

In the 2021 census the population of Somersby was 1087 and is comprised of approximately 50.4% females and 49.6% males. The median/average age of the population of Somersby is 47 years of age.

62.5% of the people living in Somersby over the age of 15 and who identify as being in the labour force are employed full time, 30.3% are working on a part time basis. Somersby has an unemployment rate of 3.3%. The main industries people from Somersby work in are Construction, Manufacturing, Retail trade, Agriculture, forestry and fishing, Health care and social assistance, Professional, scientific and technical services, Education and training, Accommodation and food services, Transport, postal and warehousing.

### 7.2.3 Nearest Residences

The nearest residences to the subject site are located towards the south-east and east of the site, as seen in Figure 7-8 and listed in Table 7-2. The nearest residence is located approximately 35 m E, with the next 350 m W. The closer resident was in correspondence with BE at the start of our involvement with the project, prior to starting the EIs report.

## 7.3 FLORA AND FAUNA

The site has not yet been developed. At present, the site mostly consists of grass and a few small shrubs (approximately 10) and several trees around the perimeter of the site. These trees around the perimeter will remain.

There are no threatened or endangered flora or fauna populations or sightings listed or recorded on the NPWS Atlas for threatened or endangered species at the site. Flora and fauna are discussed further in Section 8.4.

## 7.4 TOPOGRAPHY

Three-dimensional views of the local topography surrounding the site have been provided as Figure 7-4 and Figure 7-5, showing the location of the site. The first figure shows the terrain with all axes equally scaled, depicting the terrain as it actually exists when viewed in a conventional three-dimensional view. The second figure shows the terrain with the z-axis (i.e. vertical axis) exaggerated by a factor of 10 (i.e. a given distance on the x-axis or y-axis appears three times as great on the z-axis) in order to provide a clearer description of the topography. A coloured scale bar shows elevations corresponding to the colours used in the figures. It should be noted that these figures are an approximation of the actual terrain, based on terrain information available from USGS (U.S. Geological Survey).

Figure 7-4: Local Topography of Site, no vertical exaggeration

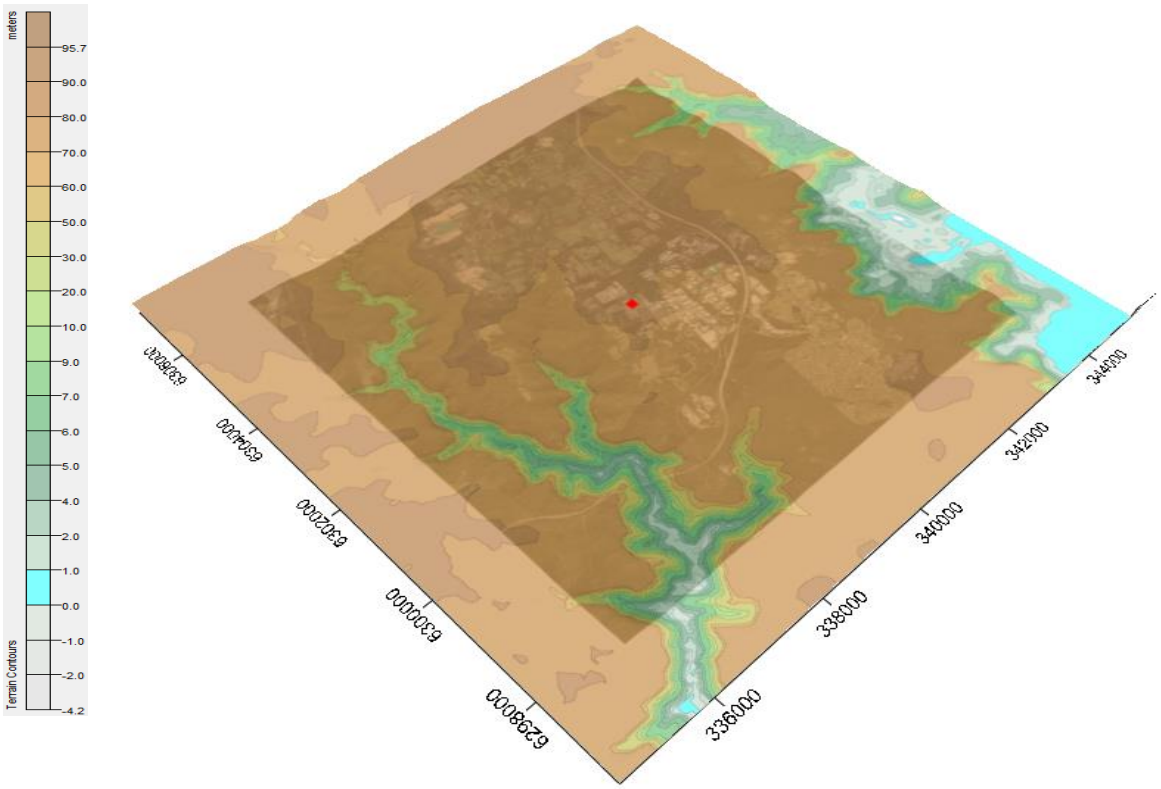
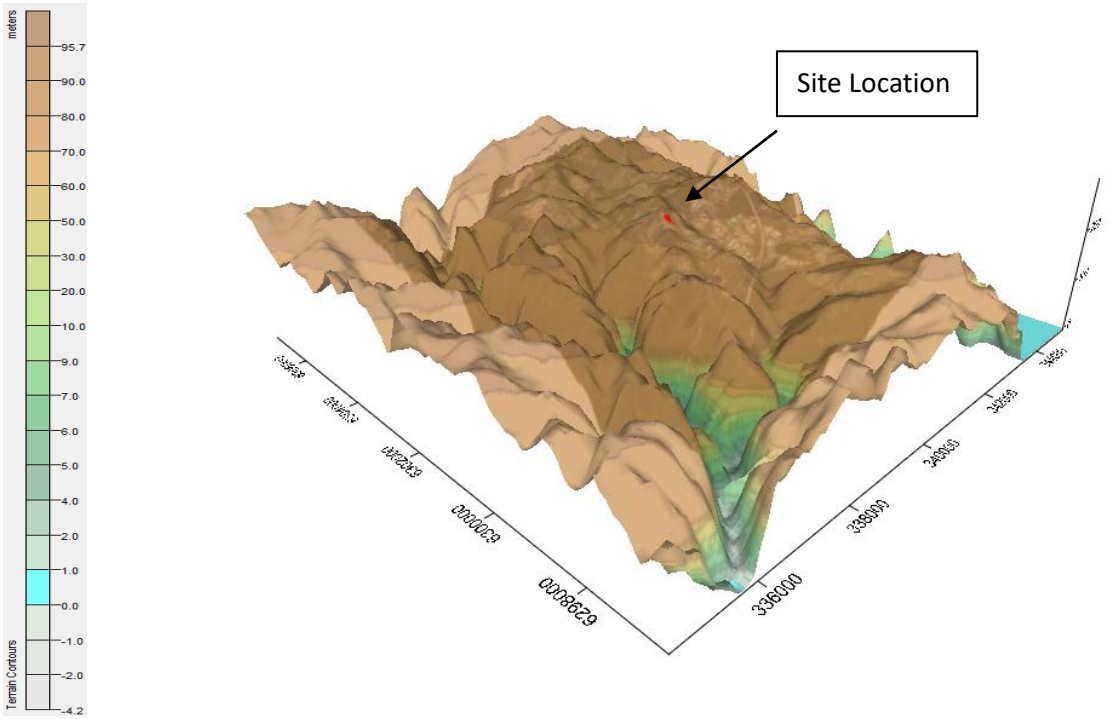



Figure 7-5: Local Topography of Site, factor of 10 vertical exaggeration



## 7.5 SOIL

The site is not developed and is mainly unsealed.

The CSIRO eSpade interactive web portal provides the following information for the regional area's geology and soil landscape. (Reference: Kovac and Lawrie 1991) The soil landscape is described as "Sydney Town" with the dominant lithology coarse quartz sandstone.

*Geological Unit*: The area is underlain by Middle Triassic sandstone.

*Parent Rock*: Hawkesbury Sandstone, medium to coarse grained quartz sandstone, minor laminated mudstone and siltstone lenses.

**Soil Landscape:** - *Undulating to rolling low hills and moderately inclined slopes on quartz sandstone (Hawkesbury Sandstone and Terrigal Formation: Narrabeen Group) along the edge of the Somersby Plateau and as ridges and crests in the Macdonald Ranges and Watagan Mountains. Local relief to 80 m. Slope gradients 5–25%. Ridges and crests are moderately broad, slopes moderately inclined and drainage lines narrow. Occasional rock benches are present. Extensively cleared low eucalypt open woodland.*

**Soils**: —*Shallow to deep (150 cm) Yellow Earths (Gn2.21, Gn2.24), Earthy Sands (Uc5.22) and some Siliceous Sands (Uc1.21) on crests and slopes; shallow to moderately deep (150 cm) Siliceous Sands (Uc1.21), Leached Sands (Uc2.23) and Grey Earths (Gn2.81) in poorly drained areas and drainage lines; moderately deep (100–150 cm) Yellow Podzolic Soils (Dy2.21, Dy5.21) and Gleyed Podzolic Soils (Dg4.53) associated with shale lenses*

**Limitations to Development**— *very high erosion hazard, permanent waterlogging (localised), highly permeable, strongly acid soils with very low fertility, high potential aluminium toxicity and strong sodicity .*

### 7.5.1 Acid Sulphate Soils

The site is highly unlikely to contain ASS therefore the risk from ASS is very low.

The CSIRO's Acid Sulfate Soil Risk Map, accessed through eSpade interactive web portal, shows the subject site is not located near land classified for acid sulfate soil risk. This means ASS occurrence on the site is highly unlikely.

### 7.5.2 Salinity

The landscapes within this region are formed upon Triassic Period sandstone (Hawkesbury and Narrabeen Sandstone). Hawkesbury and Narrabeen Sandstones have a low salt store. Therefore the risk from salinity for this site is considered as very low.

### 7.5.3 Erosion and Water Logging

The site has a high risk from water erosion and water logging. Exposed soils would not be resistant to rain events. During construction, proper erosion controls are essential to prevent soil loss from rain events. The site also has a high risk from water logging with shallow soils underlain by bedrock being slow to drain.

These risks and limitations need to be considered when planning and constructing buildings at the site.

## 7.6 HYDROLOGY

The following section details the hydrological aspect of the site and region. Specifics on the surface water, waterways and groundwater have been addressed, as well as overall catchment issues.

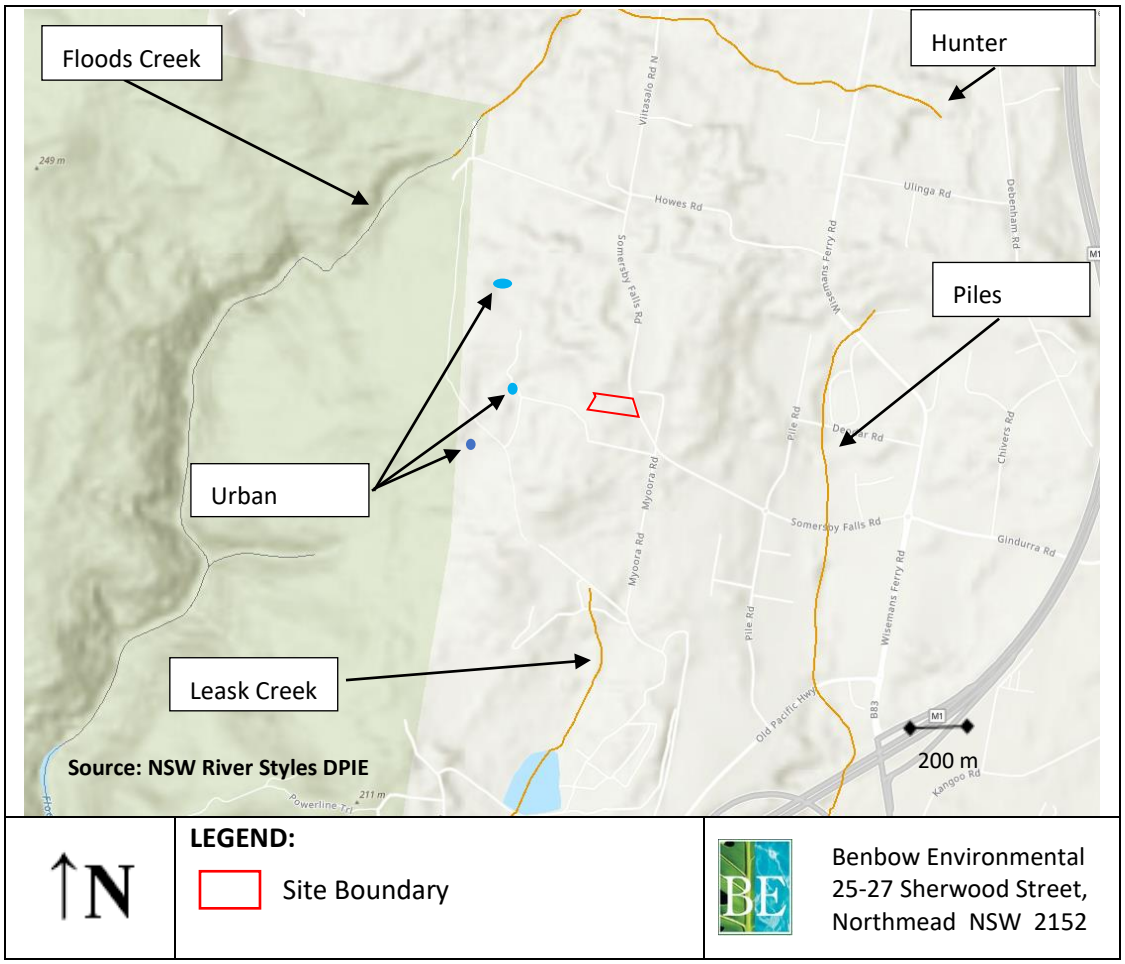
### 7.6.1 Surface and local Hydrogeology

The Site does not contain any water bodies. Three small human constructed ponds exist to the west, northwest and southwest of the site and appear to be independent from the local waterways. A number of creeks are within a kilometre of the site, the closest, as measured from the site's boundaries, is Leask Ck approx. 670 m due south followed by Piles Ck approx. 680 m due east. Both creeks are headwaters.

A number of creeks are within a kilometre of the site, the closest as measured from the site's boundaries, is Leask Ck and is approx. 670 m due south followed by Piles Ck approx. 680 m due east. Both creeks are headwaters see Figure 7-6 below for locations of all waterways.

The site is on a slope and prone to water logging in areas due to shallow soil layers over the bedrock.

Figure 7-6: Location of the Nearest Waterbodies to the Site



### 7.6.2 Catchment

The waterways are within the Hawkesbury-Nepean Catchment Area, which is approximately 21,400 square kilometres, being one of the largest coastal basins in NSW.

#### 7.6.2.1 State of the Catchments (SOC) – Hawkesbury-Nepean Region

The Hawkesbury-Nepean catchment is one of the largest coastal basins in NSW with almost half the catchment area being protected in national parks and water catchment reserves. The Hawkesbury-Nepean catchment has a population of approximately 800,000 (Waterscapes n.d.).

Figure 7-7: Hawkesbury-Nepean water management area

**Source:** NSW Government – Department of Primary Industries Office of Water

↑N
Not to scale

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### 7.6.3 Surface Water

The Site has less than a 10 m gradient over the approximately 300 m length of the site (~3% gradient). The site currently contains minimal infrastructure and any rainwater infiltrates into the soil. This would change with the development of the site.

All local rivers are too far from the site to be affected, except possibly during a major flood when the whole area could be inundated (see Section 8.3.4). If a major flood occurred, the dilution of any runoff would minimise or remove any pollution issue.

#### 7.6.3.1 Nearest Waterway

There is no natural surface watercourse on the subject site. The nearest watercourses are Piles Creek about 2 km to the east of the site, Floods Creek approximately 3 km to the west and both of these streams flow into Mooney Mooney Creek, which eventually reaches its confluence with the Hawkesbury River. There is a pond on an adjacent site which mainly appears to receive runoff from offsite, but some water may flow into it via a dry waterway bed running along the subject site's north-western boundary after heavy rain.

The ambient Water Quality and River Flow Objectives for the receiving waters have been investigated for the site. The NSW Water Quality Objectives identify the agreed environmental values and long-term goals for NSW's surface waters.

These objectives set out:

> *The community's values and uses for our rivers, creeks, estuaries and lakes (i.e. healthy aquatic life, water suitable for recreational activities like swimming and boating, and drinking water); and*
>
> *A range of water quality indicators to help us assess whether the current condition of our waterways supports those values and uses.*

However, the NSW Water Quality Objectives does not provide objectives for the Hawkesbury-Nepean catchment area. Public enquiries for this catchment had been completed or substantially completed by the Healthy Rivers Commission (HRC).

#### 7.6.3.2 Healthy Rivers Commission (HRC)

The Healthy River Commission was discontinued in 2004 and was replaced by the Natural Resources Commission (NRC). Outstanding Healthy River Commission recommendations have been incorporated by the NRC into Catchment Action Plans and Government programs.

#### 7.6.3.3 Catchment Action Plan (CAP)

The Hawkesbury-Nepean Catchment Action Plan (Hawkesbury-Nepean Catchment Management Authority 2007-2016) sets out an action plan to improve the catchments area, including the Penrith Local council area. The Catchment Action Plan is identified by the Sydney Metropolitan Strategy which is a strategic plan for the metropolitan area a large part of which is within the Hawkesbury-Nepean Catchment management authority area including the subject site.

The NSW Government have endorsed state-wide targets from the recommendations of the Natural Resources Commission (NRC). The targets for water include:

Macro-environmental targets consist of:

- *By 2015 there is an increase in native vegetation extent and an improvement in native vegetation condition*
- *By 2015 there is an increase in the number of sustainable populations of a range of native fauna species*
- *By 2015 there is an improvement in the condition of riverine ecosystems*
- *By 2015 there is an improvement in the ability of groundwater systems to support groundwater-dependent ecosystems and designated beneficial uses*

- *By 2015 there is no decline in the condition of marine waters and ecosystems*
- *By 2015 there is an improvement in soil condition Specific priorities*

Specific priorities include:

- *By 2015 there is an increase in the recovery of threatened species, populations and ecological communities*
- *By 2015 there is a reduction in the impact of invasive species*
- *By 2015 there is an improvement in the condition of important wetlands and the extent of those wetlands is maintained*
- *By 2015 there is an improvement in the condition of estuaries and coastal lake systems*
- *By 2015 there is an increase in the area of land that is managed within its capability*
- *Natural resource decisions contribute to improving or maintaining economic sustainability and social wellbeing*
- *There is an increase in the capacity of natural resource managers to contribute to regionally relevant natural resource management*

#### 7.6.3.4 NSW Salinity Strategy

The NSW Salinity Strategy was introduced by the NSW government to slow down the increase in salinity over the next 10 years. However, management targets and actions for the site-specific Hawkesbury-Nepean Catchment area have yet to be published. The NSW Government is working with the Hawkesbury-Nepean Catchment Management trust to develop these targets and actions.

### 7.6.4 Groundwater

There are five groundwater bores within 500 m of the site, the nearest (GW100931) approximately 550 m east with a depth of around 97.5 m. The second nearest is GW202161 which is 600 m away in a north-east direction. GW201052, GW073409 , GW073523 are approximately 500 m away and in east direction of the site and GW073409 is located in south . The depths are 174, 76.5 and 18.3 respectively. No data was available for salinity at these locations.

Table 7-1: Data Extracted from Registered Natural Resources Atlas Database Boreholes

| Borehole ID number | Easting | Northing | Water Bearing zones (m below surface) | Bore Usage |
|---|---|---|---|---|
| GW100931 | 339391 | 6302312 | 97.5 | Monitoring |
| GW202161 | 339437 | 6302423 | 102 | Water supply |
| GW201052 | 339741 | 6301458 | 174 | Water supply |
| GW073523 | 339767 | 6302396 | 18.3 | Water supply |
| GW073409 | 339397 | 6301876 | 76.5 | Monitoring |

Groundwater samples will be collected to assess baseline water quality data and if necessary, a new groundwater well can be installed just downgradient of the site. Borehole water samples should be tested for salinity, pH, heavy metals (particularly lead), BTEX, nutrients, redox potential, dissolved oxygen and temperature. Such data would indicate whether there were any pollution issues that could possibly be linked to the Somersby Falls Road site. The pond mentioned above should also be sampled to assess its baseline water chemistry.

## 7.7 STATUS OF CONTAMINATION

- Based on the available documentation it was determined that no evidence was found in the site history of any site contaminating activities or contaminating activities from surrounding sites allowing contamination to migrate onto the subject site;
- The exposed soil at the site boundary on Somersby Falls Rd is believed to have likely originated from Council works from the adjoining grass verge;
- A Detailed Site Investigation is not considered warranted.

## 7.8 NOISE AMENITY

This section describes the noise amenity of the area.

### 7.8.1 Nearest Sensitive Receptors

Table 7-2 provides the details of the nearest identified sensitive receptors.

Figure 7-8 shows the location of the nearest receptors.

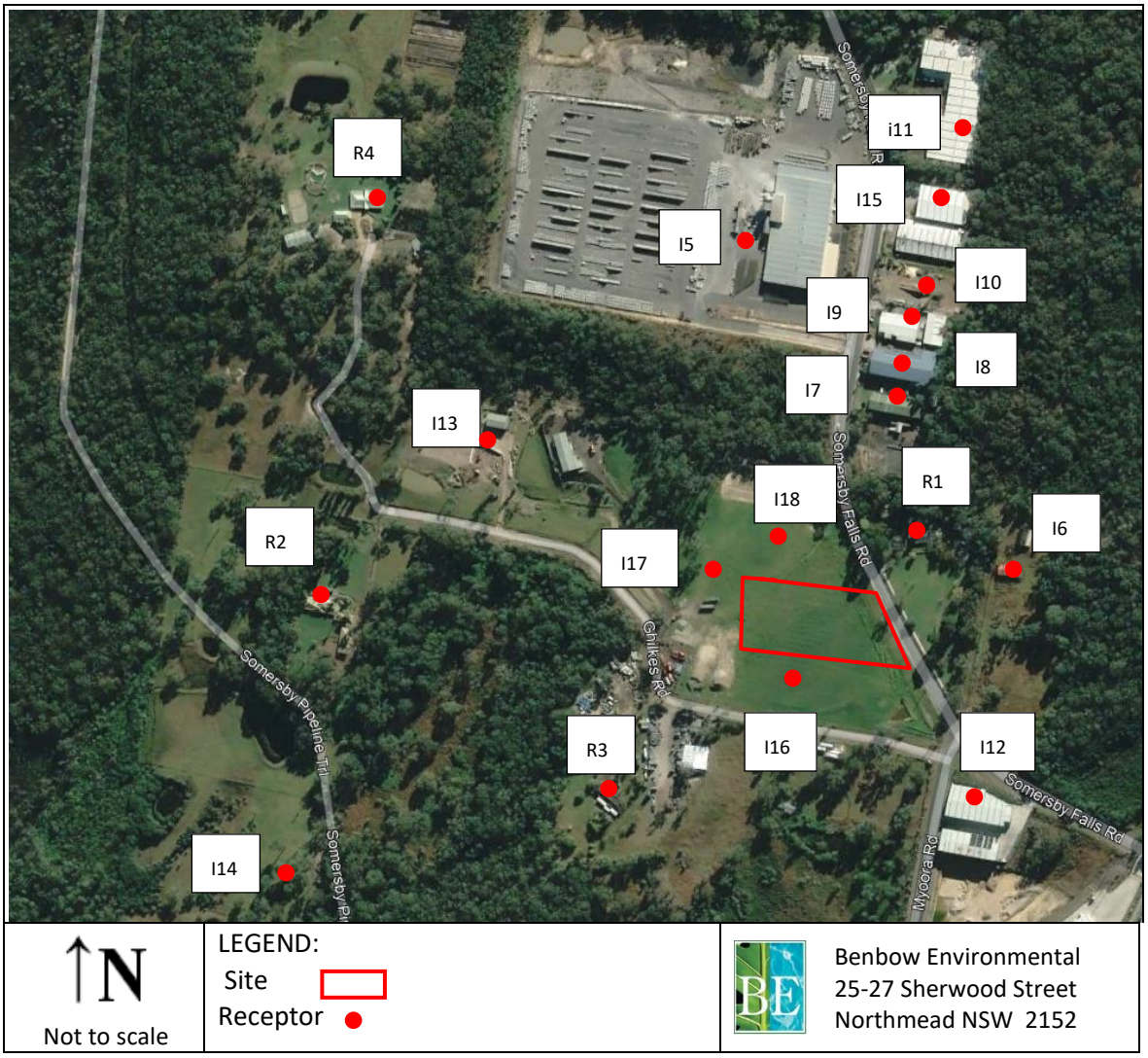
Table 7-2: Nearest Sensitive Receptor Details

| Receptor ID | Address | Lot & DP | Direction from Site | Approximate distance to site boundary (m) | Type of Receptor |
|---|---|---|---|---|---|
| R1 | 126 Somersby Falls Road, Somersby | 1/ DP712505 | 35 m | E | Residential |
| R2 | 63 Ghilkes Road Somersby | 502/ DP712506 | 350 m | W | Residential |

Table 7-2: Nearest Sensitive Receptor Details

| Receptor ID | Address | Lot & DP | Direction from Site | Approximate distance to site boundary | Type of Receptor |
|---|---|---|---|---|---|
| R3 | 29 Ghilkes Road, Somersby | 3/ DP712505 | 60 m | S | Residential/ Commercial |
| R4 | 64 Ghilkes Road, Somersby | 501/ DP712506 | 340 m | NW | Residential/ Commercial |
| I5 | 149 Somersby Falls Road, Somersby | 4/ DP654894 | 160 m | N | Industrial |
| I6 | 110 Somersby Falls Road, Somersby | 1/ DP510364 | 60 m | E | Industrial |
| I7 | 134 Somersby Falls Road, Somersby | 1/ DP787857 | 140 m | NE | Industrial |
| I8 | 142 Somersby Falls Road, Somersby | 2/ DP787857 | 200 m | NE | Industrial |
| I9 | 150 Somersby Falls Road, Somersby | 3/ DP787857 | 240 m | NE | Industrial |
| I10 | 156 Somersby Falls Road, Somersby | 91/ DP546768 | 305 m | NE | Industrial |
| I11 | 170 Somersby Falls Road | 7/ DP787857 | 435 m | NE | Industrial |
| I12 | 2/61 Somersby Falls Road, Somersby | 29/ DP1093201 | 130 m | S | Industrial |
| I13 | 125 Somersby Falls Road, Somersby | 5/ DP1292653 | 229 m | NW | Industrial |
| I14 | 63 Ghilkes Road, Somersby | 502/ DP712506 | 590 m | SW | Industrial |
| I15 | 164 Somersby Falls Road, Somersby | 6/ DP787857 | 363 m | NE | Industrial |
| I16 | 129 Somersby Falls Road, Somersby | 4/ DP1292653 | 30 m | S | Industrial |
| I17 | 125 Somersby Falls Road, Somersby | 5/ DP1292653 | 48 m | W | Industrial |
| I18 | 139 Somersby Falls Road, Somersby | 2/ DP1292653 | 35 m | N | Industrial |

Figure 7-8: Nearest Sensitive Receptors




### 7.8.2 Existing Acoustic Environment

A summary of the existing acoustic environment is outlined below. For a detailed analysis please see Appendix 2.

The environmental noise loggers were utilised to measure the existing ambient and background noise environment. Unattended long-term noise monitoring was undertaken from 30th November 2022 to 9th December 2022 at two (2) representative locations. The noise logger locations are shown in Figure 7-9 and listed below.

- **Location A** – 126 Somersby Falls Road, Somersby
- **Location B** – 29 Ghilkes Road, Somersby

Figure 7-9: Noise Logging Location

**Source:** Six Maps 2019

| | | |
|---|---|---|
| ↑N<br>Not to scale | **Legend**:<br>Noise logging and Attended location ●<br>Site Boundaries ▭ | Benbow Environmental<br>25-27 Sherwood Street,<br>Northmead NSW 2152 |

Attended noise monitoring was conducted at locations A and B on 30th of November 2022. The measured noise levels have been considered as being representative of the existing ambient and background noise levels in the area.

A summary of the short term attended noise monitoring results is given below:

Table 7-3: Attended Noise Monitoring Results, dB(A)

| Location / Time | Address | Noise Descriptor | | | | Comments |
|---|---|---|---|---|---|---|
| | | $L_{Aeq}$ | $L_{A90}$ | $L_{A10}$ | $L_{A1}$ | |
| Location A<br>30/11/2022 16:47 | 126 Somersby Falls Road, Somersby | 52 | 44 | 57 | 63 | *Cars < 62 dB(A)*<br>*Distant Traffic < 50 dB(A)*<br>*Wind, < 51 dB(A)*<br>*Birds< 49 dB(A)*<br>*Machinery < 49 dB(A)* |
| Location B<br>30/11/2022 17:35 | 29 Ghilkes Road, Somersby | 47 | 39 | 49 | 58 | *Cars < 57 dB(A)*<br>*Trucks < 55 dB(A)*<br>*Wind, < 51 dB(A)*<br>*Birds< 65 dB(A)*<br>*Helicopter < 65 dB(A)*<br>*Plane <49 dB(A)* |

A summary of the long-term unattended noise monitoring results, measured in accordance with the NSW Industrial Noise Policy are summarised in the table below:

Table 7-4: Unattended Noise Monitoring Results, dB(A)

| Logger | Result Type | ABL ($L_{90}$) | | | $L_{eq}$ | | |
|---|---|---|---|---|---|---|---|
| | | Day | Evening | Night | Day | Evening | Night |
| Logger A | Median (RBL) | 42 | 41 | 35 | * | * | * |
| | Logarithmic Average | * | * | * | 68 | 55 | 50 |
| Logger B | Median (RBL) | 35 | 38 | 34 | * | * | * |
| | Logarithmic Average | * | * | * | 64 | 45 | 44 |

* Indicates values that are not relevant to that noise descriptor

### 7.8.3 Meteorological Conditions

Wind and temperature inversions may affect the noise impact at the receptors. Therefore adverse weather conditions should be assessed when wind and temperature inversions are considered to be a feature of the area. These meteorological conditions have been assessed in the Noise Impact Assessment (Appendix 2).

Wind was found to be a feature of the area and was considered in the assessment. However temperature inversion was not found to be a feature and was not assessed.

## 7.9 Air Quality

Background air quality parameters were obtained from the NSW EPA ambient air monitoring station located at Wyong, NSW. The relevant assessable pollutant parameters available from the monitoring station are $PM_{2.5}$, PM10, $SO_2$, $NO_2$ and CO 24-hour maximum and annual average values from March 2022 to March 2023, which have been provided in Table 7-5.

Table 7-5: Ambient Air Quality Data for Pollutants Levels 2022

| Pollutant | Averaging Period | Concentration (µg/m³) |
|---|---|---|
| $PM_{2.5}$ | Max 24 Hours (10/02/2022) | 11.5 |
| | Annual | 4 |
| $PM_{10}$ | Max 24 Hours (17/01/2022) | 27.4 |
| | Annual | 11.7 |
| $SO_2$ | Max 1 Hour (21/10/2022) | 117.9 |
| | Max 24 Hours (21/102022) | 18.3 |
| $NO_2$ | Max 1 Hour (23/12/2022) | 58.2 |
| | Annual | 3.7 |
| CO | Max 1 Hour (07.12.2022) | 1 |
| | Max 8 Hours (19.08.2022) | 0.3 |

## 7.10 CLIMATE

This section will provide background information on the meteorological condition of the existing area surrounding the proposed site.

The closest BOM weather station to the Site is at Ourimbah (Dog Trap Road), #061093, which is approx. 6.8 km SW. However this station does not collect temp. data. The Peats Ridge station (#061351), although closed in 2015, was at a similar elevation to the subject site (280 m AHD) and has historical data available. This has also been accessed. See Table 7-6 below for a summary of the climate data. Data is taken from the year the station opened (1981) until 2012.

March has the highest average rainfall with 176.8 mm, with September the lowest at 65.4 mm. The yearly average is 1,383.2 mm with the monthly average 115.3 mm.

For the Peats Ridge station, January has the highest average temperature of $27.4^0$, with July having the coldest average temperature $6.1^0$. The yearly average is $22^0$. The dominate winds come from the SW and NW.

Table 7-6: Summary of the Climate Statistics

| | Ourimbah | Peats Ridge |
|---|---|---|
| Mean max. temp. (annual) | - | $21.9^0$ |
| Mean min. temp (annual) | - | $20.7^0$ |
| Highest average temp. | - | $23.0^0$ |
| Hottest month | - | January |
| Coldest month | - | July |
| Annual avg. rainfall | 1,383.2 mm | 1,248.6 mm |
| Dominate wind direction | - | SW (21%) and NW (20%) |

### 7.10.1 Wind

Prognostic meteorological data for the year 2022 was obtained from Lakes Environmental Services. Seasonal wind rose plots for the site using this prognostic data for 2022 is provided below in Figure 7-10. 2022 weather data is considered the most representative year due to the availability of data based on an analysis of weather from BOM mangrove mountain AWS for the last 5 years.

A summary of the prognostic wind conditions utilised in the model are provided below:

The annual average wind speed is 3.85 m/s with a calms frequency of 0.55%. Most winds occurred from the northeast at 17.5% frequency.

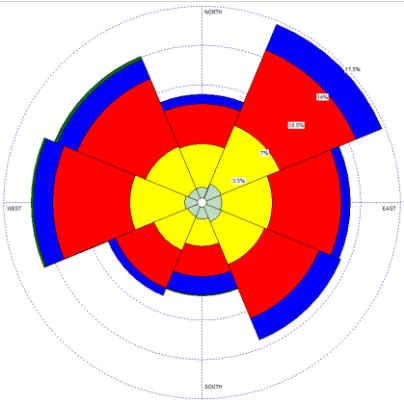
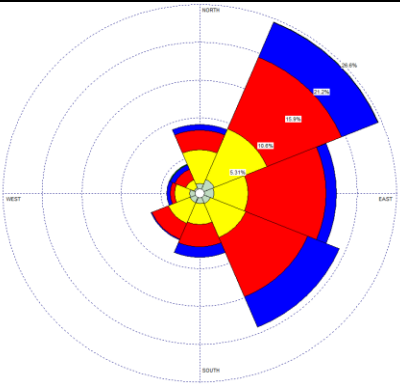
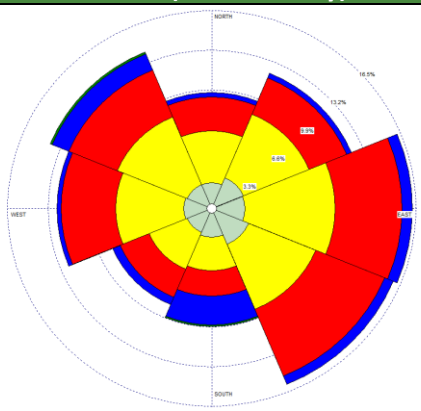
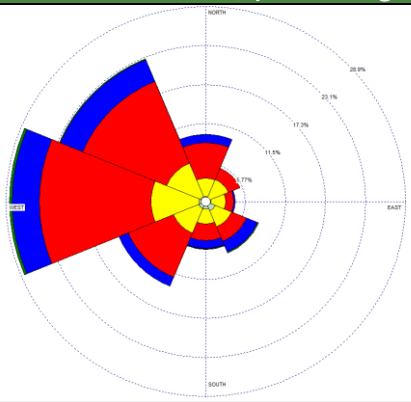
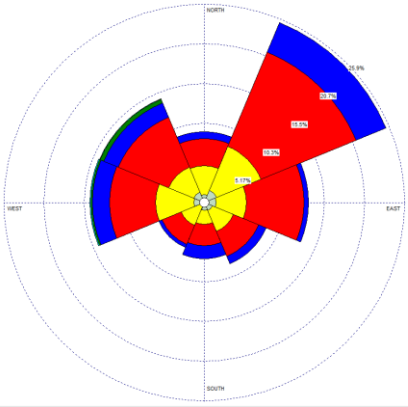
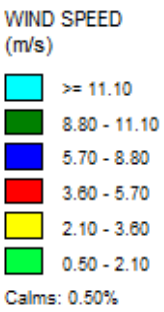
In the summer, winds blew mostly from the northeast at 26.6% frequency, southeast at 21.2% and east at 15.9%. The average wind speed was 3.94 m/s.

In autumn, the average wind speed was 3.31 m/s. Most winds came from the east and south-east at 16.5% frequency, northwest at 13.2% frequency and west at 9.9% frequency.

In the winter, dominant winds blew from the west at 28.9%, north-west at 23.1% and south-west at 11.5%. The average wind speed was 4.11 m/s.

The average wind speed in the spring was at 4.07 m/s. North-easterly winds occurred at 25.9%, westerly winds at 15.5%, and easterly winds at 10.3%.

Figure 7-10: Wind rose plots – Lakes Environmental Prognostic Surface Data (2022)

| All Seasons | Summer Season (December – February) |
|---|---|
|  |  |
| Average Wind Speed: 3.85 m/s<br>Calms Frequency: 0.55%<br>Axis Frequencies: 3.5%, 7%, 10.5%, 14%, 17.5% | Average Wind Speed: 3.94 m/s<br>Calms Frequency: 0.51%<br>Axis Frequencies: 5.31%, 10.6%, 15.9%, 21.2%, 26.6% |
| **Autumn Season (March – May)** | **Winter Season (June – August)** |
|  |  |
| Average Wind Speed: 3.31 m/s<br>Calms Frequency: 1.09%<br>Axis Frequencies: 3.3%, 6.6%, 9.9%, 13.2%, 16.5% | Average Wind Speed: 4.11 m/s<br>Calms Frequency: 0.32%<br>Axis Frequencies: 5.77%, 11.5%, 17.3%, 23.1%, 28.9% |
| **Spring Season (September – November)** | **Legend** |
|  |  |
| Average Wind Speed: 4.07 m/s<br>Calms Frequency: 0.27%<br>Axis Frequency: 5.17%, 10.3%, 15.5%, 20.7%, 25.9% | |

## 7.11 HERITAGE

A search for heritage places and items was conducted on 5th May 2023 via the OE&H State Heritage Inventory, an online heritage database which includes listings from Aboriginal Places, State Heritage Register, Interim Heritage Orders, State Agency Heritage Registers and Local Environmental Plans.

The subject land does not contain and is not in the vicinity of any Aboriginal Places and State Heritage Register items; it is also not affected by an Interim Heritage Order under the provisions of the NSW Heritage Act 1977.

The site is also not listed as being a heritage item or containing heritage items under the Central Coast LEP 2022.

# 8. ENVIRONMENTAL IMPACTS AND SAFEGUARDS – PHYSICAL ENVIRONMENT

## 8.1 AIR QUALITY

An Air Quality Impact Assessment has been undertaken for the proposed development. A full copy of the AQIA is provided as Appendix 1.

TSP, $PM_{10}$, $PM_{2.5}$, odour, VOC's, PAH, $SO_2$, $NO_x$ and CO emissions were modelled for the operation of the proposed resource recovery facility in accordance with the "*Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales*" (EPA 2016).

A summary of the findings are presented below.

The predicted cumulative impacts of TSP, $PM_{10}$, $PM_{2.5}$, odour, VOC's, PAH, $SO_2$, $NO_x$ and CO at all identified receptors for the relevant averaging periods were below the specified criteria.

Therefore, the "*Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales*" criteria are satisfied at all residential receptors for all particulate air pollutants modelled. No further controls are recommended.

## 8.2 NOISE

A Noise Impact Assessment has been undertaken for the proposed development. A full copy of is provided as Appendix 2.

### 8.2.1 Operational Noise

A noise impact assessment was undertaken to assess the potential noise emissions from the proposed asphalt batching plant at 133 Somersby Falls Road, Somersby. The site is proposed to generate up to 200,000 tonnes of new asphalt material per annum.

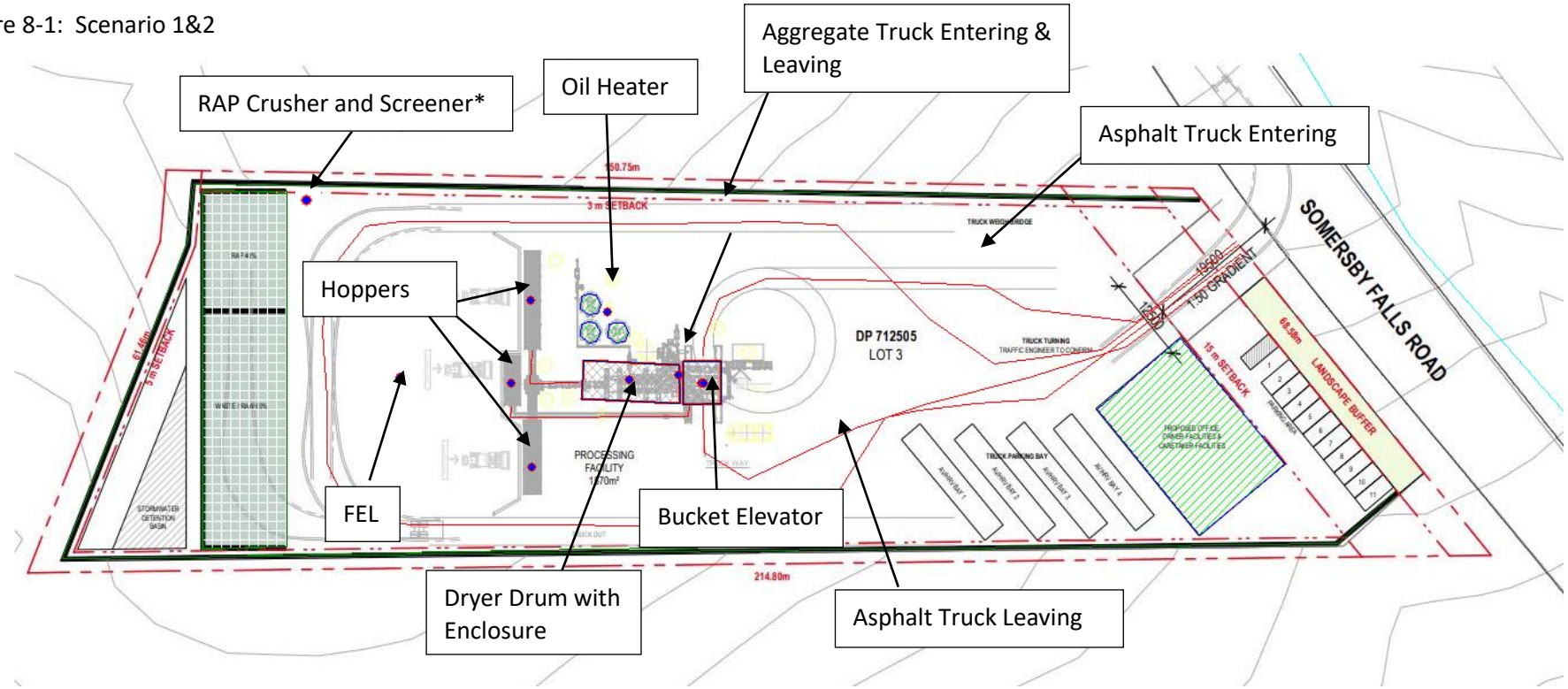
The noise impact assessment was undertaken in accordance with the following guidelines:

- NSW Environment Protection Authority Noise Policy for Industry 2017;
- NSW Interim Construction Guidelines (DECCW, 2009)
- NSW Road Noise Policy (DECCW, 2011).

The nearest receivers and noise criteria were identified. The site operations were modelled using the predictive noise software, SoundPlan.

Noise sources are shown in the following figure.

Figure 8-1: Scenario 1&2




*Scenario 1 Only

This noise impact assessment finds that predicted noise levels exceed the Noise Policy for Industry 2017 Project Noise Trigger Levels for a residential land use at R1 (126 Somersby Falls Road). Additionally sleep disturbance $L_{Amax}$ levels are exceeded from trucks entering and leaving the site. As asphalt batching plants require truck movements during night-time hours due to road works occurring at these times, compliance at this receiver is not considered achievable.

Based on consultation with the neighbour, R1 is looking to be re-zoned to industrial, and considering the surrounding land zoning, it would be an appropriate planning decision. Therefore, exceedances of the residential criteria will not be of concern, and it is recommended the operational certificate not be issued until rezoning of this property is complete. Operational noise is predicted to comply with all other residential receptors with the recommended noise controls presented.

The predicted noise levels associated with construction exceed the noise management level at residential receiver R1, compliance is achieved at all other receivers. None of the predicted noise levels exceed the highly noise affected management level of 75 dB(A). Standard construction hours and universal work practices are recommended.

The site is predicted to comply with the Road Noise Policy.

Vibration impacts from the proposed asphalt batching plant are considered negligible.

### 8.2.2 Noise Control Measures

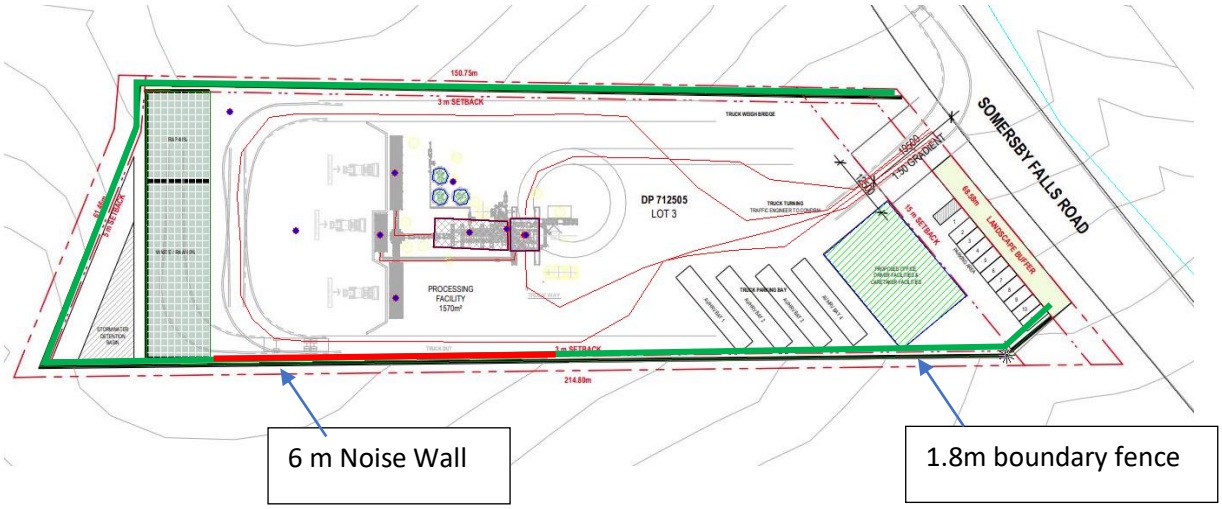
#### 8.2.2.1 R1 - 126 Somersby Falls Road, Somersby

Predicted noise levels exceed the Noise Policy for Industry 2017 Project Noise Trigger Levels for a residential land use at R1 by a significant amount. Notably sleep disturbance $L_{Amax}$ levels are exceeded from trucks entering and leaving the site. There are no feasible noise controls for this impact. Based on consultation with the neighbour, the site is looking to be re-zoned to industrial, and based on the surrounding land zoning would be an appropriate planning decision. Therefore, it is recommended the operational certificate not be issued until rezoning of this property is complete.

#### 8.2.2.2 Noise Walls/Adjoining Property Structures

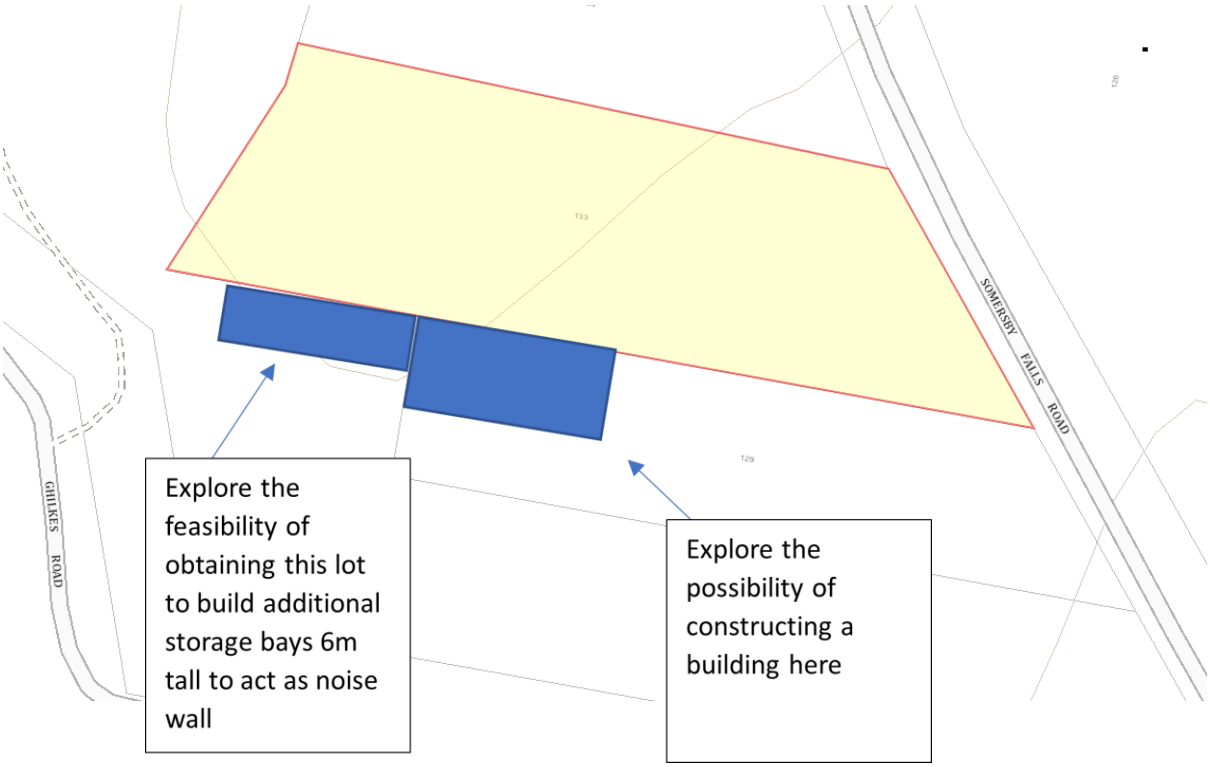
Implementation of the following walls are required to achieve compliance.

Figure 8-2: Noise wall required for compliance




If the construction of the illustrated 6m noise wall is not feasible, it may be worth obtaining or consulting with the vacant lots to the south of the site to construct structures equivalent to a noise wall. A 6m high building or an extension of storage bays 6m tall built along the boundary (illustrated below) in place of the noise wall, will help achieve compliance while servicing the site.

Figure 8-3: Proposed building structures equivalent to 6m high noise wall



#### 8.2.2.3 Plant Enclosures

- Drum burner must be enclosed – Building Rw≥27 (0.8 BMT)

- The main stack processing plant must be enclosed – Building Rw≥27 (0.8 BMT)
  - The asphalt loading area underneath the batching plant must be enclosed to house the truck loading. Fast acting roller shutter doors are to be installed.
- The roller shutter doors to the south of the main plant are assumed to be open for only 3 minutes every hour and the roller shutter doors to the north are assumed to be open for 15 minutes every hour. Therefore, it's critical that the doors can be closed during loading as such space must be allowed for trucks to be housed fully within.

#### 8.2.2.4 Construction Noise Mitigation Measures

In the event R1 is not rezoned as per section 8.2.2.1 and the site is still occupied by a resident during construction, as per the guidance from the NSW Interim Construction Noise Guidelines, the proponent should consider notifying the nearby receivers where applicable via letter box drops of the proposed construction works:

> *Where the predicted or measured $L_{Aeq(15\ minute)}$ is greater than the noise affected level, the proponent should apply all feasible and reasonable work practises to meet the noise affected level. The proponent should also inform all potentially affected residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.*

Construction activities are therefore proposed to take place during standard construction hours as follows:

| | |
|---|---|
| Monday to Friday: | 7am to 6pm |
| Saturday: | 8am to 1pm |
| Sunday and Public Holidays: | No works permitted |

Using Chapter 6 of the Interim Construction Noise Guideline, some reasonable and feasible work practises and mitigation measures that could be considered for adoption are as follows:

- Construct the boundary walls before commencing other construction operations;
- Where possible stagger the use of noisy equipment (front end loader, grinder, welder etc.) such that they do not operate simultaneously;
- Regular reinforcement (such as at toolbox talks) of the need to minimise noise and vibration;
- Regular identification of noisy activities and adoption of improvement techniques;
- Avoiding the use of portable radios, public address systems or other methods of site Communication that may unnecessarily impact upon nearby residents;
- Where possible, avoiding the use of equipment that generates impulsive noise;
- Minimising the need for vehicle reversing for example, by arranging for one-way site traffic routes;
- Use of broadband audible reverse alarms on vehicles and elevating work platforms used on site;
- Minimising the movement of materials and plant and unnecessary metal-on-metal contact;
- Choosing quieter plant and equipment based on the optimal power and size to perform the required tasks most efficiently;

- Regularly inspecting and maintaining plant and equipment to minimise noise and vibration level increases, to ensure that all noise and vibration reduction devices are operating effectively;
- Locating noisy equipment behind structures that act as barriers, or at the greatest distance from the noise-sensitive area; or
- Orientating the equipment so that noise emissions are directed away from any sensitive areas, to achieve the maximum attenuation of noise;
- Minimising truck movements; and
- Scheduling respite periods for intensive works.

Adopting these work practices will significantly reduce the impact of the construction works at the nearest sensitive receivers.

### 8.2.3 Statement of Potential Noise Impacts

A noise impact assessment was undertaken to assess the potential noise emissions from the proposed asphalt batching plant at 133 Somersby Falls Road, Somersby. The site is proposed to generate up to 200,000 tonnes of new asphalt material per annum.

The noise impact assessment was undertaken in accordance with the following guidelines:

- NSW Environment Protection Authority Noise Policy for Industry 2017;
- NSW Interim Construction Guidelines (DECCW, 2009)
- NSW Road Noise Policy (DECCW, 2011).

The nearest receivers and noise criteria were identified. The site operations were modelled using the predictive noise software, SoundPlan.

This noise impact assessment finds that predicted noise levels exceed the Noise Policy for Industry 2017 Project Noise Trigger Levels for a residential land use at R1 (126 Somersby Falls Road). Additionally sleep disturbance $L_{Amax}$ levels are exceeded from trucks entering and leaving the site. As asphalt batching plants require truck movements during night-time hours due to road works occurring at these times, compliance at this receiver is not considered achievable.

Based on consultation with the neighbour, R1 is looking to be re-zoned to industrial, and considering the surrounding land zoning, it would be an appropriate planning decision. Therefore, exceedances of the residential criteria will not be of concern, and it is recommended the operational certificate not be issued until rezoning of this property is complete. Operational noise is predicted to comply with all other residential receptors with the recommended noise controls presented.

The predicted noise levels associated with construction exceed the noise management level at residential receiver R1, compliance is achieved at all other receivers. None of the predicted noise levels exceed the highly noise affected management level of 75 dB(A). Standard construction hours and universal work practices are recommended.

The site is predicted to comply with the Road Noise Policy.

Vibration impacts from the proposed asphalt batching plant are considered negligible.

## 8.3 SOIL AND WATER

A quantitative soil and water assessment report has been undertaken and is provided in Appendix 4.

### 8.3.1 Existing Site Conditions

The site is currently undeveloped and unoccupied and has been cleared of all large vegetation with only grass and weed species covering its surface. It contains no structures. The site is located towards the top of a ridge and slopes downwards from north to south, towards Ghikes Rd. Land immediately north and south of the lot is also cleared and unoccupied. Access to the Lot is from Somersby Falls Road. The adjacent receptors are industrial, rural and environmental.

The Site does not contain any water bodies. Three small human constructed ponds exist to the west, northwest and southwest of the site and appear to be independent from the local waterways. A number of creeks are within a kilometre of the site, the closest, as measured from the site's boundaries, is Leask Ck approx. 670 m due south followed by Piles Ck approx. 680 m due east. Both creeks are headwaters.

Overland flooding is not an issue, as it does not fall within a flood-risk area according to Central Coast Council mapping tools.

The CSIRO eSpade interactive web portal provides the following information for the regional area's geology and soil landscape. (Reference: Kovac and Lawrie 1991) The soil landscape is described as "Sydney Town" with the dominant lithology coarse quartz sandstone.

**Soil Landscape:** - *Undulating to rolling low hills and moderately inclined slopes on quartz sandstone (Hawkesbury Sandstone and Terrigal Formation: Narrabeen Group) along the edge of the Somersby Plateau and as ridges and crests in the Macdonald Ranges and Watagan Mountains. Local relief to 80 m. Slope gradients 5–25%. Ridges and crests are moderately broad, slopes moderately inclined and drainage lines narrow. Occasional rock benches are present. Extensively cleared low eucalypt open woodland.*

**Soils**: —*Shallow to deep (150 cm) Yellow Earths (Gn2.21, Gn2.24), Earthy Sands (Uc5.22) and some Siliceous Sands (Uc1.21) on crests and slopes; shallow to moderately deep (150 cm) Siliceous Sands (Uc1.21), Leached Sands (Uc2.23) and Grey Earths (Gn2.81) in poorly drained areas and drainage lines; moderately deep (100–150 cm) Yellow Podzolic Soils (Dy2.21, Dy5.21) and Gleyed Podzolic Soils (Dg4.53) associated with shale lenses*

**Limitations to Development**— *very high erosion hazard, permanent waterlogging (localised), highly permeable, strongly acid soils with very low fertility, high potential aluminium toxicity and strong sodicity .*

### 8.3.2 Proposed Stormwater System Upgrade

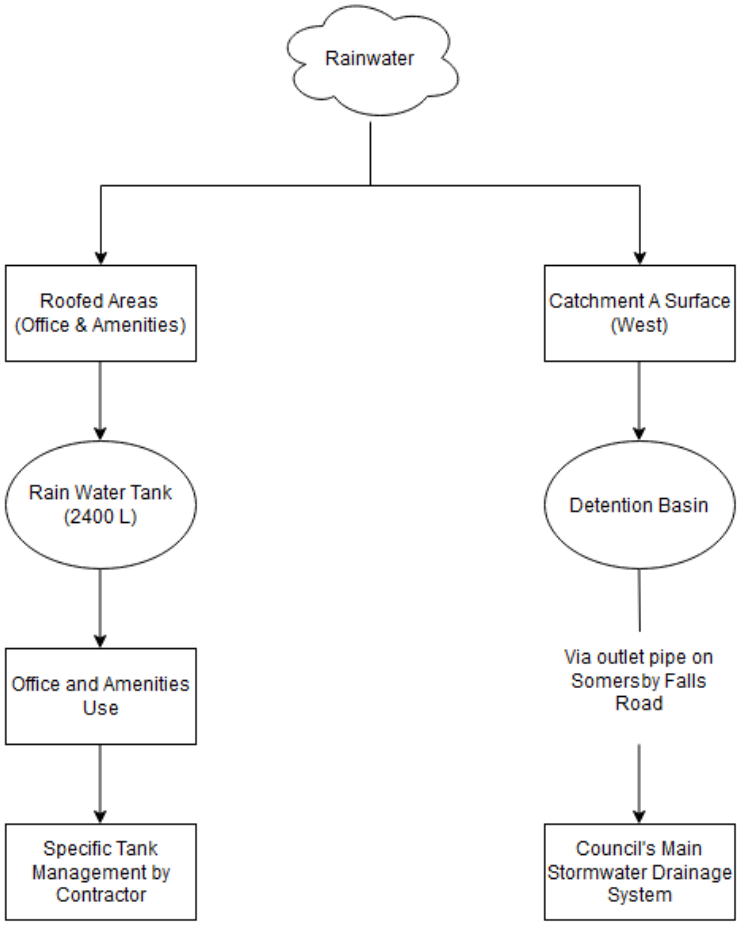
The proposed stormwater system upgrade involves construction of a stormwater detention tank to the east of the site, underneath parking area with gross pollutant traps. This system will capture all stormwater flowing across the site into the tank and remove pollutants.

### 8.3.3 Proposed Water Requirements

The proposed development would not use or require mains water. All water for use in the office, amenities and dust suppression systems would be recycled water sourced from stormwater detention tank and rainwater tank .

The site water balance following proposed developments provided as Figure 8-4.

Figure 8-4: Site Water Balance




### 8.3.4 Flooding

The site *does not* fall within a flood-risk area, being largely attributed to the site's high elevation (~233 m). The closest area at risk to the site is the naturally flowing Piles Creek, located approximately 670 m east of the site. The area around the creek represents a *Precinct 2: Flood Planning Area* risk as the Central Coast Council's Online Mapping tool shows (Figure 8-5).

The definitions of Flood Mapping Precincts according to Central Coast Council are as follows:

> ***Precinct 1: Probable Maximum Flood*** *– the PMF is the area of land that is likely to be flooded during the largest flood that could conceivably occur at that particular location. It is also sometimes referred to as the extent of the Flood Prone Land.*

***Precinct 2: Flood Planning Level*** *– flood related development controls apply for residential development at or below the FPL. This is the area affected by a large flood that has a 1% chance of being reached or exceeded in any one year; it also includes an additional freeboard (normally 0.5 m), which is a factor of safety used is set minimum floor levels. The former Wyong Shire Council's planning allowance for sea level rise is included within the 0.5 m freeboard.*

***Precinct 3: Flood Storage*** *– those areas that are important for the temporary storage of floodwaters during the passage of a flood, but generally less than 1 m deep in a 1% AEP flood. Flood storage areas deeper than 1 m are included in the High Hazard Area.*

***Precinct 4: High Hazard*** *– areas where there is significant danger to personal safety in a 1% AEP flood; evacuation by trucks is difficult; able-bodied adults would have difficulty in wading to safety; potential for significant structural damage to buildings. This area includes floodways (areas where a significant discharge of water occurs) and deep flood storage areas.*

Figure 8-5: Flood Hazard Map

**Source:** Central Coast Council Online Mapping - https://maps.centralcoast.nsw.gov.au/public/

↑N
Not to scale

LEGEND:
Site boundary
Precinct 4 : High Hazard
Precinct 3 : Flood Storage
Precinct 2 : Flood Planning Areas
Precinct 1 : Probable Maximum Flood

Benbow Environmental
25-27 Sherwood St
Northmead NSW 2152

### 8.3.5 Potential Impacts to Water

Potential impacts to water are from pollutants entering the stormwater system and being discharged from the site. These primary pollutants of concern are total suspended solids (TSS), nitrogen, and phosphorus. A conceptual model of potential contaminants and their source is provided in detail in the soil and water report. With the controls in place the risk potential for impacts to water are low.

### 8.3.6 Potential Impacts to Soil

The potential sources of contamination from the proposed facility includes spills and leaks from fuels and oils from the operation of machinery and sediment created from product loss or spillages during production. These wastes have potential to contaminant stormwater falling on the site which could potentially migrate into the subsurface soils. However, as stormwater is intended to be collected by stormwater detention tank with filter, contaminates in surface waters will also be captured and removed.

- Potential spillages of diesel and bitumen could occur during refuelling and equipment maintenance; the risk would be minimised through procedures and training in appropriate methods and signage showing how to avoid spills and the use of appropriately trained contractors.

- Good housekeeping practices are important to prevent contamination. These include regular inspection of the integrity of equipment and inspection, cleaning and maintenance of stormwater/surface water systems (detention tanks, pipes, filters).

### 8.3.7 Mitigation Measures

***During Construction***

During construction, proper erosion controls are essential to prevent soil loss from rain events. An erosion and sediment control plan will be prepared prior to construction works commencing.

***During Operation***

- Stormwater detention tank;
- Rainwater tank
- Reuse of collected stormwater;
- Spill kits;
- Environmental Management Plan;
- Water monitoring program (detailed in S&W report);
- Self-bunded diesel tank with concrete barriers; and
- General housekeeping.

## 8.4 FLORA AND FAUNA

A targeted search was conducted for threatened and endangered species at the subject site and the surrounding area to assess any possible impacts of the development on these species. The search was undertaken using data from the BioNet Atlas of NSW Wildlife website. The search criterion was an area approximately 10 km x 10 km with the proposed site in the centre of the area. The selected area was: North: -33.32 West: 151.13 East: 151.39 South: -33.53 and included

public report of all valid records of plants and animals within this selected area from 8th May 2018 until 23rd May 2023 (a period of 5 years).

There are no threatened or endangered flora or fauna populations or sightings listed or recorded on the NPWS Atlas for threatened or endangered species on the subject site. There have been no reported sightings within the extent chosen for the last five years.

There are no threatened or endangered flora or fauna for the site to impact.

### 8.4.1 Statement of Potential Flora and Fauna Impact

Given the outcomes from the analyses provided, it can be concluded that no flora and fauna impacts are anticipated to occur.

## 8.5 WASTE MANAGEMENT

A Waste Management Report is provided in Appendix 5 which addresses the SEARS (1655) requirements.

The scope of this section is limited to the following objectives:

- Provide information required for the assessment, including details of the quantity and type of waste generated, handled, processed or disposed of at the premises;
- Describe waste management processes and outline mitigation measures; and
- Enable the assessment of proposed management and mitigation measures, in accordance with relevant guidelines and regulatory requirements.

### 8.5.1 Relevant Legislation and Guidelines

The main legislation and guidelines that have been addressed in the writing of this report are:

- *Waste Classification Guidelines – Part 1: Classification of waste* (NSW EPA, 2014)*;*
- *Protection of the Environment Operations Act 1997;*
- *Protection of the Environment Operations (Waste) Regulation 2014;*
- *Waste Avoidance and Resource Recovery Act 2001;*
- *NSW Waste Avoidance and Resource Recovery Strategy 2041 – Stage 1: 2021-2027;* and
- *Clarence Valley Development Control Plan 2022.*

The relevance of each piece of legislation and guideline is described in the following sections. Legislation and guidelines are then addressed in regards to planning issues and regulatory compliance in Section 8.5.1.

#### 8.5.1.1 Waste Classification Guidelines

In the NSW EPA *Waste Classification Guidelines* (2014), "waste" is described as:

> *a) any substance whether solid, liquid or gaseous that is discharged, emitted or deposited in the environment in such volume, constituency or manner as to cause an alteration in the environment; or*
> *b) any discarded, rejected, unwanted, surplus or abandoned substance; or*

*c) any otherwise discarded, rejected, unwanted, surplus or abandoned substance intended for sale or for recycling, reprocessing, recovery or purification.*

All waste materials generated during operation must be classified into one of six different categories described in the *Waste Classification Guidelines* (see Table 8-1). Classification of waste enables the owner/generator to determine the appropriate handling, transport and, if necessary, disposal requirements.

Table 8-1: *Waste Classification Guidelines* Waste Classes

| Class | Definitions/Examples |
|---|---|
| **Special waste** | • Clinical and related wastes;<br>• Asbestos waste;<br>• Waste tyres. |
| **Liquid waste** | • Waste that has an angle of repose <5 degrees;<br>• Waste that becomes free flowing at or below 60°C.<br>• Is not generally capable of being picked up by a spade or shovel. |
| **Hazardous waste** | • Waste with a pH ≤2 or ≥12.5;<br>• Containers that have not been cleaned and contained dangerous goods within the meaning of the Transport of Dangerous Goods Code;<br>• Lead-acid or nickel-cadmium batteries. |
| **Restricted solid waste** | • This type of waste is determined by chemical tests. |
| **General solid waste (putrescible)** | • Waste from litter bins collected by local councils;<br>• Manure and night soil;<br>• Food waste;<br>• Animal waste;<br>• Grit or screenings from sewage treatment systems that have been dewatered so that the grit of screenings do not contain free liquids. |
| **General solid waste (non-putrescible)** | • Glass, plastic, rubber, plasterboard, ceramic, bricks, concrete or metal;<br>• Paper or cardboard;<br>• Garden waste<br>• Grit, sediment, litter and gross pollutants collected in, and removed from, stormwater treatment devices and/or stormwater management systems, that has been dewatered so that they do not contain free liquids;<br>• Garden waste;<br>• Wood waste;<br>• Virgin excavated natural material. |

Most of the waste expected to be received are classified under non-putrescible general waste.

#### 8.5.1.2 Protection of the Environment Operations Act 1997

The *Protection of the Environment Operations Act 1997* (POEO Act) is the principal environmental protection legislation for NSW. It defines 'waste' for regulatory purposes and establishes management and licensing requirements for waste. It defines offences relating to waste and sets penalties. The POEO Act also establishes the ability to set various waste management requirements via the *Protection of the Environment Operations (Waste) Regulation 2014*.

#### 8.5.1.3 Protection of the Environment Operations (Waste) Regulation 2014

The *Protection of the Environment Operations (Waste) Regulation 2014*, referred to as the 'Waste Regulation', identifies provisions relating to waste management and disposal. The Waste Regulation also sets out provisions covering:

- The proximity principle;
- Record-keeping requirements, measurement of waste and monitoring for waste facilities;
- Tracking of certain wastes (listed in Schedule 1 of this legislation);
- Reporting;
- Transportation of waste;
- Transportation and management of asbestos waste;
- Recycling of consumer packaging; and
- The classification of waste containing immobilised contaminants.

Part 4 of the *Protection of the Environment Operations (Waste) Regulation 2014*, referred to as the 'Waste Regulation', details the requirements associated with tracking waste. Certain types of waste listed in Schedule 1 of the Waste Regulation have the potential to be harmful to the environment and are required to be tracked from the source to the waste disposal facility. The proposed development is not expected to generate, receive, handle or process waste types that require tracking under the Waste Regulation.

Resource recovery orders (RRO) and resource recovery exemptions (RRE) issued under the Regulation may apply in cases where the recovered material needs to meet certain requirements to be supplied for application to land.

**Generators and processors** must meet all the conditions of an **order** to **supply** a resource recovery waste to a consumer. **Exemptions** contain conditions such as reporting and record keeping requirements which consumers must meet to **re-use a resource recovery waste**. Exemptions list the regulatory requirements each consumer is exempt from.

Acting as a resource recovery facility, the asphalt batching plant is both receiving the waste products and reusing them for new products. Therefore, both the order and exemption must be addressed.

The relevant RRO and RREs include:

- NSW EPA *The reclaimed asphalt pavement order* (2014);
- NSW EPA *The reclaimed asphalt pavement exemption* (2014);
- NSW EPA *The recovered aggregates order* (2014); and
- NSW EPA *The recovered aggregates exemption* (2014).

The proposed development will have a verified weighbridge on site, for trucks entering the facility.

### 8.5.2 Resource Recovery Orders

#### 8.5.2.1 Reclaimed Asphalt Pavement

A Resource Recovery Order under Part 9, Clause 93 of the *Protection of the Environment Operations (Waste) Regulation 2014* applies to reclaimed asphalt pavement (RAP). This exemption is called 'The reclaimed asphalt pavement order 2014'.Under Section 2.1 of the order, the following applies:

> *2.1. The requirements in this order apply, as relevant, to any person who supplies reclaimed asphalt pavement that has been generated, processed or recovered by the person.*

The site would supply the RAP after processing into asphalt. Processor requirements under Section 4 as follows:

> ***General requirements***
> *4.1. The processor must implement procedures to minimise the potential to receive or process reclaimed asphalt pavement containing asbestos. These procedures must be formally documented and the records of compliance must be kept for a period of six years.*
> *4.2. The processor must implement procedures to minimise the potential to receive or process reclaimed asphalt pavement in which the asphalt matrix contains detectable quantities of coal tar. These procedures must be formally documented and the records of compliance must be kept for a period of six years.*
> ***Notification***
> *4.3. On or before each transaction, the processor must provide the following to each person to whom the processor supplies the reclaimed asphalt pavement:*
> *• a written statement of compliance certifying that all the requirements set out in this order have been met;*
> *• a copy of the reclaimed asphalt pavement exemption, or a link to the EPA website where the reclaimed asphalt pavement exemption can be found; and*
> *• a copy of the reclaimed asphalt pavement order, or a link to the EPA website where the reclaimed asphalt pavement order can be found.*
> ***Record keeping and reporting***
> *4.4. The processor must keep a written record of the following for a period of six years:*
> *• the quantity of any reclaimed asphalt pavement supplied; and*
> *• the name and address of each person to whom the processor supplied the reclaimed asphalt pavement, or the registration details of the vehicle used to transport the reclaimed asphalt pavement.*

The site would have to comply with this order.

A Resource Recovery Exemption under Part 9, Clauses 91 and 92 of the *Protection of the Environment Operations (Waste) Regulation 2014* applies to reclaimed asphalt pavement (RAP). This exemption is called 'The reclaimed asphalt pavement exemption 2014'. Under Section 6.1 of the exemption, the following applies:

> *Subject to the conditions of this exemption, the EPA exempts each consumer from the following provisions of the POEO Act and the Waste Regulation in relation to the consumer's actual or intended application of reclaimed asphalt pavement to land or use in connection with a process of thermal treatment at the premises:*
>
> - *Section 48 of the POEO Act in respect of the scheduled activities described in clauses 39, 40 and 42 of Schedule 1 of the POEO Act;*
> - *Part 4 of the Waste Regulation;*
> - *Section 88 of the POEO Act; and*
> - *Clause 109 and 110 of the Waste Regulation.*

However, the exemption does not apply to the processing (crushing and grinding) of RAP, nor does it apply to the non-thermal treatment of RAP. Since the RAP would be introduced to the asphalt manufacturing process after the heated drum, the process is not thermal treatment. Therefore, the exemption in this case does not apply.

#### 8.5.2.2 Aggregates

A Resource Recovery Exemption under Part 9, Clause 93 of the *Protection of the Environment Operations (Waste) Regulation 2014* applies to aggregate. This exemption is called 'The recovered aggregate order 2014'. Under Section 2.1 of the exemption, the following applies:

> *2.1. The requirements in this order apply, as relevant, to any person who supplies recovered aggregate that has been generated, processed or recovered by the person.*

As the processor of recovered aggregates,

A Resource Recovery Exemption under Part 9, Clauses 91 and 92 of the *Protection of the Environment Operations (Waste) Regulation 2014* applies to aggregate. This exemption is called 'The recovered aggregate exemption 2014'. Under Section 6.1 of the exemption, the following applies:

> *6.1. Subject to the conditions of this exemption, the EPA exempts each consumer from the following provisions of the POEO Act and the Waste Regulation in relation to the consumer's actual or intended application of recovered aggregate to land when used for road making activities, building, landscaping and construction works at the premises:*
> *• section 48 of the POEO Act in respect of the scheduled activities described in clauses 39 and 42 of Schedule 1 of the POEO Act;*
> *• Part 4 of the Waste Regulation;*
> *• section 88 of the POEO Act; and*
> *• clause 109 and 110 of the Waste Regulation.*

The following definitions apply to the exemption:

> ***consumer*** *means a person who applies, or intends to apply, recovered aggregate to land.*
> ***processor*** *means a person who processes, mixes, blends, or otherwise incorporates recovered aggregate into a material in its final form for supply to a consumer.*

As defined by the exemption, the asphalt batching plant is a processor of these aggregates. Stateline Asphalt is not the one who will be using the material for roadworks, so the exemption does not apply in this case.

In the event the incoming materials do not comply with the relevant order, alternative uses for the material would be investigated.

#### 8.5.2.3 Waste Avoidance and Resource Recovery Act 2001

The *Waste Avoidance and Resource Recovery Act 2001* (WARR Act) promotes waste avoidance and resource recovery to achieve a continual reduction in waste generation. Among other miscellaneous provisions, the WARR Act sets out provisions for waste strategies and programs, and industry actions for waste reduction.

Waste minimisation and resource recovery would be practised as part of Stateline Asphalt's commitment to the principles of Ecologically Sustainable Development and the *Waste Avoidance and Resource Recovery Act 2001* (WARR Act). With the proposed development being a resource recovery facility, resource recovery practices implemented at the site would also be in accordance with the primary goal of the *NSW Waste Avoidance and Resource Recovery Strategy 2041 – Stage 1: 2021-2027*, which is to "*create a circular economy by designing out materials that end up in landfill or as litter, reusing or repairing products before they are thrown out, and recycling material so it can be used multiple times in manufacturing or building.*" Overall, the type of development that is proposed has an important positive impact on the waste management practices in the subject region since it enables the recovery and recycling of various C&D waste streams, which could otherwise be sent to landfill.

The company would also follow the NSW EPA's hierarchy of waste management for the management of wastes generated as a result of its ongoing operations. For example, a significant reduction of freshwater usage in the wash down area will be achieved by installing a wash bay able to continually re-use the water within the system. The EPA's hierarchy of waste management will also be followed during the construction phase, as most of the wastes generated are either reused on site or recycled offsite.

##### *8.5.2.3.1 NSW Waste Avoidance and Resource Recovery Strategy 2041 – Stage 1: 2021-2027*

The proposed development will continue to support and remain consistent with several statutory policies including the "Waste Avoidance and Resource Recovery Act, 2001" (WARR Act) and the "NSW Waste Avoidance and Resource Recovery Strategy 2041 – Stage 1: 2021-2027". The NSW Waste Avoidance and Waste Avoidance and Resource Recovery Strategy 2041 – Stage 1: 2021-2027 is a key policy tool under the WARR Act.

The proposed development will allow for resourceful reuse of materials offsite with the primary materials obtained. In line with the Strategy's most relevant targets, the site will:

- reduce total waste generated by 10% per person by 2030

Comment: The RAP and aggregates will be recycled, which will contribute to the reduction of total waste.

- have an 80% average recovery rate from all waste streams by 2030

Comment: The proposed development would contribute to the recovery of waste from the construction and demolition waste stream.

- significantly increase the use of recycled content by governments and industry

Comment: Asphalt is a commonly-used and necessary material. The manufacture of this product allows for use of recycled material for various levels of government and industry.

Waste minimisation and resource recovery would be practised as part of the company's commitment to the principles of Ecologically Sustainable Development (ESD) and the Waste Avoidance and Resource Recovery Act. Waste minimisation can benefit the operation of the facility by the following:

- Reducing the cost of the material inputs into the production processes;
- Recycling and reuse of waste materials generated on site;
- Reducing the quantities of waste removed off site; and
- Encouraging material suppliers to take back packaging materials.

Stateline Asphalt is committed to the reuse of materials in order to improve the economic efficiency of the process and the principles of the ESD.

### 8.5.3 Waste Generation and Management

This section provides information on the expected quantity and types of waste likely to be generated during operation of the site.

The following sections lists the expected wastes and describes the management and storage of each waste type.

### 8.5.4 Operational Waste

Upon arrival at the site, the incoming waste will be weighed and visually screened for any non-conforming waste at the site. If none are found, the trucks enter the site and deposit the material in the designated areas, depending on the material type. If non-conforming wastes are found, they will follow the procedure listed in the unexpected finds protocol.

#### 8.5.4.1 Waste Generation Rates

Proposed waste types and quantities expected to be produced or received at the facility are detailed in Table 8-2 and Table 8-3.

Table 8-2: Waste Management – Operational Waste Processing

| Waste Type | Estimated Maximum Incoming Quantity | Estimated Maximum Outgoing Quantity | EPA Waste Classification[1] | Relevant Resource Recovery Order | Management |
|---|---|---|---|---|---|
| RAP | 50,000 tpa | - | General soil waste (non-putrescible) | The reclaimed asphalt pavement order 2014 | Stored in stockpiles then transferred to the mobile crusher, which prepares it before entering the manufacturing process. |
| Aggregates (road base and sandstone)– 20 mm or 10 mm | 75,000 tpa | - | General soil waste (non-putrescible) | The recovered aggregate order 2014 | Stored in stockpiles then transferred to the mobile crusher, which prepares it before entering the manufacturing process. |

Table 8-3: Waste Management - Operational Waste Generation

| Waste Type | Estimated Maximum Incoming Quantity | Estimated Maximum Outgoing Quantity | EPA Waste Classification[1] | Management |
|---|---|---|---|---|
| Oils from maintenance activities | - | 250 L | Liquid waste (100% recyclable) | Stored in 25 L sealed containers and sent to an oil recycling facility. |
| Packaging Waste | - | 5-10 tpa | General solid waste (non-putrescible) | Temporarily stored on site prior to being recycled (where possible) at a recycling facility or placed in general waste bins. |
| Office & Amenities Waste | 5 tpa | - | General solid waste (Putrescible) | Designated receptacles for rubbish and recycling. Serviced on an 'as needs' basis by a licensed Waste Contractor. |
| Office Recyclables | 5 tpa | - | General solid waste (non-putrescible) | Designated receptacles for rubbish and recycling. Serviced on an 'as needs' basis by a licensed Waste Contractor. |

Note:

1. Waste classification according to *Waste Classification Guidelines* provided.

### 8.5.5 Demolition Waste

No demolition works are required for the proposed development.

### 8.5.6 Construction Waste

Construction works would involve excavations for cut and fill works to level the site. Construction waste will occur from the establishment of driveways, internal access areas, hardstand, office and facilities, asphalt batching plant and processing facility, material storage bunkers, a weighbridge and stormwater detention basin. Estimations of construction waste and how this will be managed is detailed in the table below.

Table 8-4: Expected Construction Waste

| Waste Type | Estimated Maximum Quantity (tonnes) | EPA Waste Classification[1] | Management |
|---|---|---|---|
| Concrete | 10 | General solid waste (non-putrescible) | Placed in designated skip bin to be removed from site by a recycling contractor. |
| Excavation materials | 5 | General solid waste (non-putrescible) | These are cut and fill works. They will be deposited as necessary to level the site. |
| Metals | 10 | General solid waste (non-putrescible) | Placed in designated skip bin to be removed from site by a recycling contractor. |
| Timber | 1 | General solid waste (non-putrescible) | Placed in designated skip bin to be removed from site by a recycling contractor. |

Note:

1) Waste classification according to *Waste Classification Guidelines* provided.

#### 8.5.6.1 Waste Management Discussion

The main waste type generated as a result of the proposed development during construction and ongoing operations would be that of General solid waste (non-putrescible). The main waste type accepted on site as part of the ongoing business operations of the proposed development would also be that of General solid waste (non-putrescible).

All expected wastes generated during construction works to be undertaken at the subject site will be either re-used on site or recycled/re-used offsite at licensed waste management facilities. Waste would be segregated on site into stockpiles in concrete bunkers for concrete and masonry waste, glass excavated material and green waste.

An *unexpected finds protocol* would provide instruction on what to do in the event that suspect materials identified by unusual staining, odour, discolouration or inclusions such as building rubble, asbestos, ash material etc. are encountered during any stage of earthworks, site preparation and construction. Works would cease immediately, and temporary barricades set up to prevent access to area. Erosion and sediment controls would need to be installed around the area. Inspection of the suspect material by a suitably qualified person followed by laboratory testing and analysis (if deemed required) would identify the nature of the material and the extent (if any) of remediation that is required.

Ongoing general office and amenities waste, as well as recyclable kitchen waste and office paper will be stored, until collection by waste contractors, in standard bins for general waste and recycling waste.

Recovered wastes will be stored in the designated storage bays at the west of the site prior to being processed to make the asphalt. The bitumen and cement and lime powders would be stored in designated silos prior to addition to the asphalt mix.

Overall, waste management practices to be implemented at the subject site are considered adequate and, if undertaken correctly, would ensure that the proposed development is compliant with the *Protection of the Environment Operations Act 1997*, in particular, the proposed facility will have an environmental protection licence for the proposed activities (as per Section 48 of the POEO Act); it will not wilfully or negligently dispose of waste in a manner that harms or is likely to harm the environment (Section 115); and will not transport waste to a place that cannot lawfully be used as a waste facility for that waste, or cause or permit waste to be so transported (Section 143).

Management of waste on site will also follow the *Better Practice Guidelines for Waste Management and Recycling in Commercial and Industrial Facilities* (EPA December 2012) as it will include the following best practices:

- Visually screening designated waste areas and receptacles from public places (in building);
- Ensuring waste is stored adequately and cannot escape receptacles/storage areas; and
- Ensuring easy access to each waste storage area for collection services.

Finally, a Waste Management Plan was required as part of SEARs 1655 and is provided as Appendix 5. The plan identifies the waste generated during demolition, construction and operational stages and the associated management of these wastes. include an *incoming waste procedure*, developed to confirm the type of C&D wastes arriving on site and to deal with any

unexpected or non-conforming wastes (e.g. hazardous wastes like asbestos) mixed with accepted waste types. The *incoming waste procedure* would be included in the site's WMP and be prepared in accordance with the EPA's guidelines:

- "Draft Protocol for managing asbestos during resource recovery of construction and demolition waste" (NSW EPA, 2014); and
- "Consultation Paper: New minimum standards for manging construction and demolition waste in NSW" (NSW EPA, 2016).

The *incoming waste procedure* would need to be implemented from the first load accepted at the facility. All staff involved in the acceptance of waste at the site would need to be trained in this and all other environmental procedures detailed in the WMP.

Additional recommendations for best practice waste management include the option of undertaking regular waste audits via workplace inspections. Voluntary audits would assist in ensuring that wastes are appropriately segregated, housekeeping and storage is adequate, and that records of waste management, transport and disposal are up to date and accurate.

## 8.6 HAZARDS AND RISKS

This section provides an assessment of hazards and risks associated with the proposed development. As discussed in this section, a Preliminary Hazard Analysis (PHA) has been prepared to support this EIS.

### 8.6.1 Chemicals and Dangerous Goods

The materials of a chemical nature which will be stored on site include heated bitumen, diesel fuel and minor storage of solvents. Natural gas would also be made available to provide heat for the drum.

Hazardous substances under the *Work Health and Safety Regulation 2011* are classified using the Globally Harmonised System of Classification and Labelling of Chemicals (GHS). GHS is replacing the use of dangerous goods Classes as defined by the Australian Dangerous Goods Code for Transport. However as the guidelines used to assess the facility still uses the Australian Dangerous Goods Code, the original dangerous goods classes have been referred to in this assessment.

Asphalt is not classified as a dangerous goods by the criteria of the Australian Dangerous Goods Code.

Bitumen is classified as a Dangerous Goods Class 9, Miscellaneous, Packing Group III, elevated temperature liquid. Class 9 dangerous goods include ecotoxicological hazard classes and categories. Bitumen is classified in accordance with the GHS classification as Skin Irritation – Category 3, and Eye Irritation – Category 2B. The total maximum amount of bitumen stored on site will be 240,000 L.

Diesel fuel is not classified as a dangerous good but is designated as a C1 Combustible Liquid. The Multi-Level Risk Assessment Guideline states that combustible liquids should be treated as class 3PGIII if they are stored with other class 3 substances. Since diesel fuel will be stored within close

proximity to bitumen, a conservative approach is taken where diesel will be treated as a class 3PGIII substance in this assessment. The total amount stored will be 30,000 L.

There will also be minor quantities of solvents stored on site within a small bunded dangerous goods cabinet (2m x 1m). These chemicals are used to test the asphalt mix.

Information on the chemicals will be stored on-site is provided in the table below.

Table 8-5: Maximum Dangerous Goods Quantity on Site

| Chemicals | DG Class | Packing Group | Maximum Amount | Unit |
|---|---|---|---|---|
| Bitumen | 9 | III | 240,000 | L |
| Diesel | 3* | III* | 30,000 | L |

**Note:** *Diesel fuel is a C1 combustible liquid but is treated as Class 3 PGIII flammable liquid in this assessment

### 8.6.2 Preliminary Risk Screening

A preliminary risk screening of the chemicals stored at the site in accordance with State Environmental Planning Policy (Resilience and Hazards) 2021 – Chapter 3 Hazardous and Offensive Development (SEPP) and *Hazardous and Offensive Development Application Guidelines: Applying SEPP33*, NSW Government Department of Planning (2011) has been undertaken, with results provided in Table 3-2 below:

Table 3-2: SEPP Preliminary Risk Screening

| Class | Screening Threshold | Description | Site Specific Description | Quantity to be stored | Triggers SEPP |
|---|---|---|---|---|---|
| Class 1.1 | Assessed by reference to figure 5 of applying SEPP | Explosives | None | None | No |
| Class 1.2 | 5 tonne or are located within 100 m of a residential area | Explosives | None | None | No |
| Class 1.3 | 10 tonne or are located within 100 m of a residential area | Explosives | None | None | No |
| Class 2.1 | (LPG only — not including automotive retail outlets[1])<br><br>10 tonne or 16 $m^3$ if stored above ground<br><br>40 tonnes or 64 $m^3$ if stored underground or mounded | Flammable Gases | None | None | No |

| Class | Screening Threshold | Description | Site Specific Description | Quantity to be stored | Triggers SEPP |
|---|---|---|---|---|---|
| | (Excluding LPG) Assessed by reference to figure 6 of applying SEPP | Flammable Gases Pressurised | None | None | No |
| | (Excluding LPG) Assessed by reference to figure 7 of applying SEPP | Flammable Gases liquified under pressure | None | None | No |
| Class 2.2 | Not relevant | Non-flammable, non-toxic gases | None | None | No |
| Class 2.3 | 5 tonnes | Anhydrous ammonia, kept in the same manner as for liquefied flammable gases and not kept for sale | None | None | No |
| | 1 tonne | Chlorine and sulphur dioxide stored as liquefied gas in contains <100 kg | None | None | No |
| | 2.5 tonne | Chlorine and sulphur dioxide stored as liquefied gas in containers >100 kg | None | None | No |
| | 100 kg | Liquefied gas kept in or on premises | None | None | No |
| | 100 kg | Other toxic gases | None | None | No |
| Class 3 | Assessed by reference to figures 8 & 9 of applying SEPP | Flammable liquids PG I, II and III | Stored in Tanks | 30000 | No |
| Combustible Liquid C1 | Not relevant | Combustible liquid with flashpoint of 150°C or less | None | None | No |

| Class | Screening Threshold | Description | Site Specific Description | Quantity to be stored | Triggers SEPP |
|---|---|---|---|---|---|
| Combustible Liquid C2 | Not relevant | Combustible liquid with flashpoint exceeding 150°C | None | None | No |
| Class 4.1 | 5 tonnes | Flammable Solids | None | None | No |
| Class 4.2 | 1 tonne | Substances liable to spontaneous combustion | None | None | No |
| Class 4.3 | 1 tonne | Substances which, in contact with water, emit flammable gases | None | None | No |
| Class 5.1 | 25 tonnes | Ammonium nitrate – high density fertiliser grade, kept on land zoned rural where rural industry is carried out, if the depot is at least 50 metres from the site boundary | None | None | No |
| | 5 tonnes | Oxidising substances, and ammonium nitrate elsewhere | None | None | No |
| | 2.5 tonne | Dry pool chlorine — if at a dedicated pool supply shop, in containers | None | None | No |
| | 1 tonne | Dry pool chlorine — if at a dedicated pool supply shop, in containers >30 kg | None | None | No |

| Class | Screening Threshold | Description | Site Specific Description | Quantity to be stored | Triggers SEPP |
|---|---|---|---|---|---|
| | 5 tonnes | Any other Class 5.1 | None | None | No |
| Class 5.2 | 10 tonnes | Organic peroxides | None | None | No |
| Class 6.1 PGI | 0.5 tonne | Toxic substances | None | None | No |
| Class 6.1 PGII & III | 2.5 tonne | Toxic substances | None | None | No |
| Class 6.2 | 0.5 tonne | Infectious substances, includes clinical waste | None | None | No |
| Class 7 | All | Radioactive Material, should demonstrate compliance with Australian codes | None | None | No |
| Class 8 PGI | 5 tonnes | Corrosive substance | None | None | No |
| Class 8 PGII | 25 tonnes | Corrosive substance | None | None | No |
| Class 8 PGIII | 50 tonnes | Corrosive substance | None | None | No |

The proposed asphalt plant would have dangerous goods consisting of C1 and Class 9 elevated temperature liquids. The C1 would be diesel while the Class 9 is the heated bitumen.

As stated in the PHA, Diesel fuel is not classified as a dangerous good but is designated as a C1 Combustible Liquid. The Multi-Level Risk Assessment Guideline states that combustible liquids should be treated as class 3PGIII if they are stored with other class 3 substances. Since diesel fuel will be stored within close proximity to bitumen, a conservative approach is taken where diesel will be treated as a class 3PGIII substance in this assessment. The total amount stored will be 30,000 L.

As bitumen is a Class 9 Miscellaneous Dangerous Good, it cannot be assessed using the SEPP screening threshold as Class 9 is not included in the screening table.

The quantities of dangerous goods do not exceed the threshold quantities in applying *State Environment Planning Policy 33.* A hazard analysis based on the methodology of the Multi-Level Risk Assessment has been undertaken in the Preliminary Hazard Analysis (PHA) provided in Appendix 6 which is summarised in the following section.

### 8.6.3 Preliminary Hazard Analysis

A preliminary hazard analysis is provided in appendix 6. The assessment has found that the proposed development meets the criteria stipulated in the HIPAP No. 4 – Risk Criteria for Land Use Safety Planning (HIPAP No. 4) and the Multi-Level Risk Assessment guidelines.

The assessment has predicted outcomes that the proposed development would not cause any risk (significant or minor) to the community. Due diligence had been performed by undertaking hazard analysis in the form of software modelling to determine the extent of impacts from the identified worst-case scenarios and have found that the proposed development would not pose any hazardous or excessive risks to the nearest potentially affected receptors.

It is the conclusion of this PHA that the proposed development meets all the safety requirements stipulated within the Department of Planning and Infrastructure guidelines and is then considered to be non-offensive or a non-hazardous development.

### 8.6.4 Potential Fire Risk

A Fire Safety Study (FSS) has been prepared by Benbow Environmental to support this EIS and is provided as Appendix 4. The FSS assesses the potential fire risk associated with the proposed asphalt plant.

The FSS has been prepared to the guidelines of the Department of Planning and Environment, outlined in the *Hazardous Industry Planning and Advisory Paper No 2 – Fire Safety Study Guidelines* (DoP&E HIPAP No. 2; 2011).

The following is a summary of the main findings of the fire safety study:

The site's main activity is the manufacture of asphalt, which involves the drying and heating of aggregate to remove moisture, followed by the mixing with binding materials and bitumen. Bitumen is a unique product due to its chemical characteristics. At ambient temperature it is a semi solid and if spilt forms a pool.

To enable bitumen to be added to aggregates and fines to form asphalt, the bitumen is heated to varying temperatures depending upon the viscosity of the bitumen. The temperature is still below the fire point and the ignition point hence bitumen is relatively easy to use without increasing the risk of fire to a moderate level.

The main potential hazards are the following:

- Spillage during tank filling;
- Fume release during tank filling;
- Failure of tank due to excessive pressure generated by hot bitumen being added to a tank that contains an emulsion;
- Fire at the heated storage tanks;
- Fire within the drying drum;
- Fire within the pugmill at the asphalt plant;
- Fire within a storage silo.

In order to identify and characterise the nature of potential fire events, a series of Hazard Identification Charts were compiled in the FSS. Detailed in these charts are the potential hazardous event, the possible initiating event and consequences, and the prevention/protection measures that would be available on site.

The following measures were proposed as recommendations from the PHA, which are relevant to fire safety:

- Tight security of the site at all times must be established, preventing any incidents that could lead to a possibility of an accidental fire event. Management and staff must establish a protocol for the subject site to minimise these events, and special attention must be placed on the storage areas of the large quantities of dangerous goods on site;

- Fire extinguishers and spill control kits are to be provided near the high spill risk areas such as areas where handling of diesel would be conducted;

- Strict control of ignition sources to be enforced on site, especially near the diesel storage tank;

- Hot Work Permit;

- Register of Fire Extinguishers Available on site;

- Fire protection equipment are to be installed in accordance with the following standards:
  - AS 2441–2005 – "*Installation of Fire Hose Reels*"; and
  - AS 2444–2001 – *"Portable Fire Extinguishers and Fire Blankets - Selection and Location."*

- Fire services at the site are to be maintained in accordance with AS 1851–2005 - *"Maintenance of Fire Protection Systems and Equipment";*

- Specific on-site personnel are to be trained in specific site procedures, emergency procedures and the use of fire extinguishers and hose reels; and

- Vegetation clearance within the predicted heat contour areas.

The following is a summary of the safeguards that are included in the design and operation of the site:

- Bitumen storage tanks:
  - Tanks are made to satisfy a recognised international standard such as API 650 and API 653. Tanks are re-inspected every ten years. Tanks will also need to be inspected at least every 5 years to ensure there is no build-up of deposits as these can ignite if exposed to sudden changes in temperature;
  - Tanks are placarded in accordance with the ADGC Seventh Edition and satisfying requirements in the Work, Health and Safety Regulations, 2017;
  - Fill pipes and distribution pipes are labelled;
  - Tanks and the piping system are thermally insulated and completely covered in metal sheathing with no gaps remaining;

- Transfer pump(s) are located in a bunded, and weather protected area;
- Each tank has a level gauge;
- Each tank has an access ladder to the manhole which has a hinged cover;
- Each tank has high level alarms – one at the set level for filling and then a further alarm set at an overfill level which also interlocks with an audible sound and flashing light to warn the tanker driver that filling of this tank is to stop.

- A set of work procedures will need to be prepared that detail maintenance of the bitumen storage system;
- A detailed Emergency Plan in accordance with the Guidelines of Fire and Rescue NSW.

### 8.6.5 Bushfire Hazard

The land is bushfire prone as indicated on the S10.7 certificate (61329). A bushfire assessment has been undertaken by Clarke Dowdle & Associates, which is provided in appendix 9. A summary is provided below.

The site is designated as having Category 3 bushfire risk. In the Rural Fire Service's Guideline for Councils to Bushfire Prone Area Land Mapping version 5b, Category 3 is *considered to be medium bush fire risk vegetation. It is higher in bush fire risk than category 2 (and the excluded areas) but lower than Category 1. It is represented as dark orange on a Bush Fire Prone Land map and will be given a 30-metre buffer. This category consists of:*
*› Grasslands, freshwater wetlands, semi-arid woodlands, alpine complex and arid shrublands*

As per the Rural Fire Service's Planning for Bushfire Protection 2019 (PBP), the areas to the north, north-east and south-west of the site were assessed as forest. The areas to the south and west of the site were assessed as grasslands. The area to the east does not provide a bushfire threat to the proposal. The bushfire attach level assessment is repeated in the table below.

| | Aspect | | | | |
|---|---|---|---|---|---|
| | **Northern** | **Southern** | **South-Western** | **North-Eastern** | **Western** |
| **Vegetation[1] within 100 m of development** | Forest | Grasslands | Forest | Forest | Grasslands |
| **Effective Slope of Land** | 0-5° Down Slope | 0-5° Down Slope | 0-5° Down Slope | 0-5° Down Slope | 0-5° Down Slope |
| **APZ/Setback Provided[2]** | >100 m | 9 m | >100 m | ~90 m | 50 m |
| **Bushfire Attack Level[3]** | BAL Low | BAL 40 | BAL Low | BAL 12.5 | BAL Low |
| **Recommended Construction** | General fire safety construction provisions of the NCC | | | | |

Notes for Table 1:

(1) Refer to Keith (2004), AS 3959-2018 and Table A1.12.5 in PBP 2019

(2) Distance to vegetation

(3) Bushfire Attack Levels are in accordance with PBP 2019

The report concluded that if the proposed acceptable solutions and recommendations are implemented, the proposed development would comply with the performance criteria of the PBP.

These are as follows:

- Asset protection areas
  - Maintain landscaped areas regularly.
  - Hazardous/flammable material storage should be avoided on the southern and western portions of the property.
- Construction standards
  - Construct the proposed development to comply with the relevant provisions of the NCC.
- Property access and evacuation safety
  - Safe access will be provided via Somersby Falls Road.
  - Any new internal access road should provide compliance with Table 7.4a of the PBP.
- Emergency management
  - A Bushfire Emergency Management and Evacuation Plan is to be prepared in accordance with the NSW Rural Fire Service's guidelines.
- Water and utility Services supply
  - The site is connected to the reticulated supply of water (hydrant <70 m from the site). All new water services will comply with Table 7.4a of the PBP.

# 9. ENVIRONMENTAL IMPACTS AND SAFEGUARDS – SOCIAL IMPACTS ASPECTS

## 9.1 HEALTH

Health impacts of this development have been addressed with reference to the Health Impact Assessment Guidelines (enHealth, 2001). The Health Impact Assessment (HIA) process covers the following steps:

1. Screening – Determining the need for a Health Impact Statement;
2. Scoping – Identifying the potential impacts that need to be assessed, the boundaries of these impacts, and additional tasks and requirements to complete the assessment;
3. Profiling – Establishing a profile of communities likely to be impacted. Collecting data required to assess health impacts;
4. Risk Assessment – Assessing the significance of health impacts by qualitative and/or quantitative measures;
5. Risk Management – Investigation options to minimise potential risks;
6. Implementation and decision making – Justifying significant health impacts and providing recommendations to reduce potential impacts; and
7. Monitoring, environmental and health auditing, post-project evaluation – Evaluating health impacts and the success of the Health Impact Assessment and monitoring plans following development approval and implementation of recommendations.

Each of these seven aspects has been examined in relation to the proposed development.

### 9.1.1 Introduction

The proposed development involves establishment of a mot mix asphalt facility for the production of asphalt pavement.

Raw materials including high quality aggregate such as stone, gravel, sand and/or reclaimed asphalt pavement (RAP), powders and heated liquid bitumen are mixed to produce hot mix asphalt.

### 9.1.2 Screening

Screening is an integral part of the HIA and the overall screening process. All proposed developments that are required to undergo an Environmental Impact Assessment (EIA) should be screened for possible health impacts (enHealth, 2001).

Providing the nature of the health concerns are common for many industries, and the potential for impacts to be mitigated, a full-scale Health Impact Assessment is not considered to be warranted. This is the case for this proposal as there would be no hazardous materials being brought to the site or handled on site.

### 9.1.3 Scoping

Potential environmental, physical and social health impacts associated with the development are listed in the following table.

Table 9-1: Potential Health Impacts Associated with the Development

| Health Aspect | Positive Impacts | Negative Impacts |
|---|---|---|
| Environmental | • The proposed development would be located close to the end users, reducing health impacts associated with long-distance transport, e.g. greenhouse gas emissions, air pollution, potential vehicle accidents. | • Increased resource use (energy and water) on site.<br>• Noise impacts from heavy vehicle movements and the plant operations. These will have minimal off-site impacts with the mitigation measures as identified in the Noise Impact Assessment.<br>• Should environmental impacts not be controlled, there is the potential for contaminants (litter and sediment) to escape the site and enter the adjacent waterbody or groundwater. |
| Physical | • The development has been designed with an extensive set of environmental controls in place. | • Health impacts associated with dust, particulate matter, odour, sulfur dioxide, nitrogen oxides, carbon monoxide, polycyclic aromatic hydrocarbons and volatile organic compounds. All pollutants were found to below the relevant assessment criteria as stated in the air impact assessment. |
| Social | • The development would increase employment opportunities in the region.<br>• Economic "spin-off" effects in the local region. | • No significant negative social impacts. |

Potential identified issues of concern are air pollutants and noise.

The air impact assessment in Section 8.1 concluded that all pollutants were found to be below the relevant assessment criteria.

The noise impact assessment in Section 8.2 found that compliance with the project specific noise levels was predicted with mitigation measures for operational and road traffic impacts at all considered receptors.

Truck movements at night with noise controls in place and management procedures, would avoid sleep disturbance or annoyance.

With consideration to the above scoping, there are no real issues of concern in relation to health impacts due to the proposed development. Therefore no further examination is required.

### 9.1.4 Employee Health and Safety

The health and safety issues associated with the facility would relate to handling and processing of incoming raw materials and the resulting asphalt products and associated ancillary activities.

All employees would undergo appropriate training as part of site induction and be provided with appropriate Personal Protective Equipment (PPE) for their role. The employer would ensure the operations are conducted as approved and that appropriate resources are available for work safety. The development operation would be required to comply with the following Acts and Regulations relating to health and safety:

- Work Health & Safety Act 2011; and
- Work Health & Safety Regulations 2017.

### 9.1.5 Statement of Potential Health Impacts

The proposed development with the extensive set of safeguards and controls in place, would pose negligible health concerns to the surrounding area.

## 9.2 CRIME PREVENTION

A Crime Prevention through Environmental Design (CEPTED) Checklist has been undertaken and is provided as appendix 9. The aim is to ensure the safety of buildings and designs are optimal. The site will be designed, built and maintained accordingly.

## 9.3 VISUAL IMPACTS

This section addresses the visual aspects of the proposed development.

### 9.3.1 Existing Visual Amenity

The site is predominantly grass.

### 9.3.2 Visual Impacts of the Development

Photomontage diagrams have been created and have been provided as 6. While the proposed development changes the residents' line of sight for the area, it has been designed so that processing equipment is inside, with the building cladded. This is typical of the industrial sites within close proximity of the proposed development. The shorter building, walls and raw material silos would also be visible but would be enclosed by cladding, providing very even surfaces that are not considered to be visually intrusive.

### 9.3.3 Statement of Visual Impact

Overall, the proposed facility has been designed to match the current and emerging industrial buildings of the area.

## 9.4 HERITAGE

A search for heritage places and items was conducted via the OE&H State Heritage Inventory, an online heritage database which includes listings from Aboriginal Places, State Heritage Register, Interim Heritage Orders, State Agency Heritage Registers and Local Environmental Plans.

The subject land was found not to be affected by an Interim Heritage Order under the provisions of the NSW *Heritage Act 1997*. No European heritage locations have been identified or uncovered on the subject site or in its vicinity.

The site is also not listed as being a heritage item or containing items under the Central Coast LEP 2022.

From the S5 of Central Coast LEP 2022 the site is not a heritage item nor is it within a conservation zone.

A search of the NSW Heritage Register and the Central Coast LEP 2022 Schedule 5 show there are no heritage items located within 500 m of the site.

## 9.5 ECOLOGICALLY SUSTAINABLE DEVELOPMENT (ESD)

Ecologically sustainable development is defined as "development that meets the need of the present generation without compromising the ability of future generations to meet their own needs".

Ecological sustainability requires a combination of good planning and an effective and environmentally sound approach to design, operations and management. The principles of ESD throughout the project's life cycle are outlined in the following paragraphs.

Decision making should be based on sound environmental management principles which consider not only the present, but also the future, particularly in relation to:

- Precautionary principle – if threats of serious or irreversible environmental damage exist, lack of full scientific evidence should not be used as a reason for postponing measures to prevent environmental degradation;
- Inter-generational equity – the present generation should ensure that health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations;
- The conservation of biodiversity and ecological integrity – the conservation of biological diversity and ecological integrity should be a fundamental consideration; and
- The valuation of the environment and resources and the establishment for the efficient use of resources.

The above principles have been incorporated into the need for the project and overall design which is reflected in the studies prepared in this document. The nature of the proposed

development being a hot mix asphalt facility with the additional function of processing reclaimed asphalt pavement, is also in line with ESD principles.

Further, the EIS outlines safeguards that would be implemented on site so that the proposed operations would cause minimal harm to the environment and resources would be sustained to ensure availability to future generations, through reducing the community's need for virgin resources.

The main environmental safeguards to be implemented so that environmental harm is minimised as much as practicable are as follows:

- Hardstand area integrity management and maintenance;
- Bunding around the site
- Enclosing machine operations
- Waste management and stringent procedures to manage the incoming and outgoing waste; and
- Waste management plan.

The proponents would pro-actively manage those areas of their operations that have the potential to impact on the surrounding environment. Management Plans would be introduced to control these potential impacts.

Multiple indicators, including those indicated in the Environmental Management Plan would continue to monitor the sustainable performance of the development.

The multiple indicators used to measure sustainability cover a broad range. These indicators are outlined below.

Table 9-2: Indicators Used to Measure Sustainability

| Indicators | Comments and Description |
|---|---|
| Input rule | Renewables: The depletion rates of renewable resources would be within the regenerative capacity of the natural system that generates them.<br>Non-renewables: The depletion rates of non-renewable resources would be equal to the rate at which sustained income or renewable substitutes are developed by human intervention or investment. |
| Output rule | The waste emission rates, or other forms of degradation will be reduced from current levels, which is within the capacity of the environment to assimilate or regenerate, without unacceptable degradation of the ecological integrity, biodiversity or its future waste absorptive capacity. |
| Community | • Increase in employment opportunities;<br>• Level of social services available increased;<br>• Strengthening of local economy;<br>• Level of education/knowledge based/research investment increased;<br>• No net loss of heritage or other features, buildings, places of high community importance;<br>• No net loss of flora and fauna species or natural environments of high community importance;<br>• No loss of community integrity;<br>• Increase in resource recovery; and<br>• Increase in waste re-use and recycling. |
| Ecosystems | • No net reduction in richness or abundance of plant species in aquatic or terrestrial environments;<br>• No net reduction in richness or abundance of fauna species in aquatic or terrestrial environments;<br>• No net reduction in the existing landscaping of the site;<br>• Increased or improved knowledge of ecosystem resources and management of threats;<br>• No net increase of pests or disease threats to the health of the ecosystem; and<br>• Reduction of natural hazards which are threats to the health of the ecosystem (fire, pollution, etc.). |
| Soils | • No net topsoil erosion;<br>• No increase in area of land affected by salinisation; and<br>• No reduction in soil pH below certain levels. |
| Water | • Stormwater controls in place,<br>• No net increase in levels of acidification or toxic substances, heavy metals, nutrient and sediment levels; and<br>• No net reduction in quality of water bodies as aquatic habitats. |
| Air | • No net reduction in air quality; Air controls in place; and<br>• Comparable reduction in the use of “greenhouse” gas emissions through site location and management. |
| Energy | • Programs to reduce the use of fossil fuels for transportation and energy consumption in general; and<br>• Increase in efficiency of transport for inputs and outputs. |

The environmental management plan will be used to maintain the principles of ESD. The environmental management plan will be continually updated to ensure all new environmental measures are incorporated in line with the precautionary principle.

## 9.6 ROAD, TRAFFIC AND TRANSPORT

A traffic assessment is provided in appendix 8. The proposal will lead to a slight increase in traffic, with 10 truck movements every hour (5 entering and 5 leaving) continuously throughout the week. This will have a negligible effect on the junction of Somersby Falls Road and Wisemans Ferry Road. The site access meets AS2890 standards, ensuring safe entry and exit for vehicles. Observations during morning peak hours show that the main intersection of Somersby Falls Road and Wisemans Ferry Road functions efficiently with few delays. The site's parking meets the staffing needs.

# 10. ENVIRONMENTAL IMPACTS AND SAFEGUARDS – CUMULATIVE IMPACTS

Cumulative effects are changes to the environment that are caused by an action in combination with other past, present and future human actions (Hegmann *et al.* 1999). An assessment of cumulative effects considers the combined and incremental impacts of a proposed development with existing and future developments in mind.

There is no prescribed method to undertake a cumulative impact assessment as the approach is usually dependent on the nature and scale of the proposal. This cumulative impact assessment broadly follows the guiding principles of the "*Cumulative Effects Assessment Practitioners Guide*", prepared for the Canadian Environmental Assessment Agency (Hegmann et al. 1999).

The proposed development is for the construction and operation of an asphalt batching plant and associated recycling of road base material to be located within an industrial area of Somersby, NSW.

This cumulative assessment considers the local impacts on potential land use, water, noise, air quality, traffic, flora and fauna, heritage, and visual impacts associated with the proposed development.

## 10.1 METHODOLOGY

Valued Ecosystem Components (VEC) were determined based on issues raised by Regulatory Authorities during the planning process and outcomes of assessments undertaken as part of the EIS.

Table 10-1 presents the VEC's and the related regional issues of concern and indicators. It has been used as a guide in assisting assessment of cumulative impacts.

Table 10-1: Valued Ecosystem Components

| Environmental Component | Regional Issues of Concern | Indicators |
|---|---|---|
| Hazards and Risk | Potential hazards and risk are related to the storage of diesel and bitumen at the site, with the main issue being a pool fire or explosion resulting in off-site impacts. | Incident records |
| Waste management | Potential environmental and off-site impacts associated with the storage and handling of waste. | Waste data, waste classification, annual waste reports, waste savings from recycling |
| Traffic and transport | Increased traffic in existing road network and the ability to support this increase. Traffic impacts at night. | Traffic volumes and noise levels. |

Table 10-1: Valued Ecosystem Components

| Environmental Component | Regional Issues of Concern | Indicators |
|---|---|---|
| Soil and Water | Contamination of stormwater run-off and off-site impacts on nearby waterways and subsequently groundwater. | Changes in water quality of nearby waterway. |
| Air quality and odour | Dust, particulates, odour, greenhouse gas emissions and impact of these emissions on nearby private receptors. | Visual emissions, Dust and particulate concentrations at sensitive receptors. GHG emission estimations. |
| Noise and vibration | Annoyance due to noise generated by the use of equipment on site, and vehicles entering the site, particularly at night. | Noise levels at sensitive receptors. |
| Flora and Fauna (Biodiversity) | Potential impacts on any existing Flora and Fauna. | None – there are no Flora and Fauna (including Threatened Species and Native Vegetation) sightings on or close to site. |
| Visual | Visual impacts of the proposed site changes from key residential areas. | Predicted visual appearance of proposed development. |
| Heritage | Potential impacts on any existing heritage items. | None. There are no Heritage items on or close to site. |

According to the above table, the following needs to be discussed further in relation to cumulative impacts:

- Hazards and risks – cumulative impacts of a pool fire or explosion associated with the storage of diesel and bitumen at the site;
- Waste – Management and storage of waste;
- Air quality – dust, particulates, odour and greenhouse gas emissions;
- Noise – Noise levels at sensitive receptors;
- Soil and Water – Contamination of stormwater run-off and off-site impacts on nearby waterways and subsequently groundwater. Flooding issues.
- Traffic and transport – traffic levels and volumes.
- Visual Amenity

The above issues are discussed in Sections 10.4 and 10.5.

## 10.2 SURROUNDING LAND USES

The proposed site is within a developing industrial estate and is bordered by neighbouring industrial and commercial facilities or vacant land. A residence is located to the east, however via consultation is looking to rezone the site to industrial. The next nearest residence is to the south of the site approximately 60m from the site boundary.

Cumulative impacts associated with the proposed development and surrounding land uses listed above have been divided into biophysical and socio-economic impacts and presented in the following sections. Infrastructure requirements are also addressed.

## 10.3 INFRASTRUCTURE REQUIREMENTS

The site is located within a developing industrial estate and is currently vacant. Approval for an access driveway, weighbridge and demountable office and amenities will be sought.

The proposed development will involve erection of the asphalt plant comprising raw material storage bays and silos, hoppers, conveyors and pugmill (mixer) contained within cladding, as well as on-site hardstand areas and car parking. Bunding of specific areas would be required.

No transportation upgrades are required for the proposed development.

The site will access to all utilities required for the proposed use including water, sewerage, electricity.

Infrastructure required would impact on the visual amenity of the site and surrounding areas.

## 10.4 CUMULATIVE BIOPHYSICAL IMPACTS

### 10.4.1 Hazards and Risk

The valued ecosystem components identified the storage of diesel and bitumen to be the main issue in relation to hazards and risks of the proposed development on the surrounding environment. A preliminary hazard analysis (PHA) prepared and addressed cumulative issues and identified possible hazardous events and detailed the possible initiating events, consequences and prevention or protection measures that would be in place. From these, two main possible events were considered to have greatest potential for offsite impacts and were examined for further analyses. These included:

- Pool fires – seven different scenarios were examined; and
- Explosion – no credible explosion events were found.

The consequences of the identified pool fire scenarios were estimated in terms of thermal effects using TNO Effects (Version 7.6). Results found that there is no credible risk of injury or fatality to off-site premises including residential or industrial areas due to pool fires.

Likelihoods of the examined events were identified to be well below the likelihood criteria adopted from the DoP&E's HIPAP guidelines and the proposal satisfies the guidelines.

The recommendations summarised below ensure that the likelihood of potential hazardous events are mitigated and minimised as much as practicable until the end of the proposed development's lifespan:

- Tight security of the site at all times with special attention must be placed on the storage areas of dangerous goods on site;
- Implementation of procedures and management tools, to help reduce the level of potential threats and incidents on site;

- Dangerous good storage areas and fire protection equipment and services are to comply with appropriate Australian Standards;
- Minimise the operation of the forklifts near the bitumen and diesel storage areas;
- Personnel are to be trained in specific site procedures, emergency procedures and the use of fire extinguishers and hose reels;
- Fire extinguishers and spill control kits are to be provided near the high spill risk areas;
- Dangerous good packages are to comply with the Australian Dangerous Goods (ADG) Code and the relevant Australian Standards;
- Strict control of ignition sources to be enforced on site, especially near the diesel storage tank; and
- Vegetation clearance within the predicted heat contour areas.

A full list of safeguards and recommendations can be found in the PHA in Appendix 6.

### 10.4.2 Waste

The valued ecosystem components identified that in terms of waste management required for the proposed development, potential environmental and off-site impacts would be associated with off-site impacts of incorrect waste handling and storage. Inadequate storage of road profiling material could lead to release of particulates and dust to the air, entering stormwater drains and contaminating nearby waterways. Safeguards to be adopted at the site would significantly reduce the risk for waste to impact on the surrounding environment. These include:

- A daily site inspection checklist would be implemented as part of the Environmental Management Plan to ensure that waste storage areas are adequately managed.
- Safeguards would be established at the site to prevent release of the waste including bunded areas, filters on all stormwater drain and emergency spill kits.
- An Environmental Management Plan, Emergency Plan and Pollution Incident Response Management Plan would be implemented.
- Personnel would be trained in how to respond in the event of an incident.

It should be noted that substantial savings in waste to landfill would be achieved through the recycling of road profiling material.

With stringent procedures and safeguards in place, cumulative impacts of handling and management of waste would be negligible.

### 10.4.3 Air Quality

The air quality impact from the proposed development has been assessed in accordance with the NSW EPA *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales*. This allows cumulative air impacts to be determined, hence assessing the cumulative impact on the community.

Results of air modelling show compliance with the air quality guidelines at all receivers given that all recommended safeguards are in place.

The conclusions of the AQIA suggest that there would be negligible long term air impacts as a result of the proposed development.

### 10.4.4 Noise

Operational noise is a critical environmental impact in any industrial area with surrounding residential receivers. This, in itself, should not preclude development but rather result in the development and implementation of management plans for these employment generating areas. A noise impact assessment was undertaken in accordance with the NSW Industrial Noise Policy. The existing background noise levels were used in the modelling of potential environmental impacts associated with the operational phase of the proposed development, hence assessing the cumulative impact on the community.

The report concludes that:

- The predicted noise levels associated with operational activities showed compliance with project specific criteria at all sensitive receptors except R1.
- The predicted noise levels associated with construction exceeded the noise management level at residential receiver R1, compliance is achieved at all other receivers. None of the predicted noise levels exceed the highly noise affected management level of 75 dB(A).
- The predicted noise levels associated with road traffic exceeded the residential criteria at R1.

Based on consultation with the neighbour, R1 is looking to be re-zoned to industrial, and considering the surrounding land zoning, it would be an appropriate planning decision. Therefore, exceedances of the residential criteria for operational, construction and road traffic noise criteria will not be of concern, and it is recommended the operational certificate not be issued until rezoning of this property is complete.

### 10.4.5 Soil and Water

Potential for long term impacts to soil and water as a result of the proposed development are related to a spillage or release of waste, raw materials or finished products resulting in contamination of stormwater run-off and off-site impacts on nearby waterways and subsequently groundwater.
An assessment of the proposed development's potential to impact on soil and water has been undertaken and is provided in Appendix 4 and Attachment 5. With safeguards in place, the potential for release of waste or chemicals from the site would be unlikely and able to be contained on the site. Therefore, cumulative long-term impacts are considered to be negligible.

## 10.5 CUMULATIVE SOCIO-ECONOMIC IMPACTS

### 10.5.1 Traffic

The traffic impact assessment for the proposed development, provided in appendix 8, considered cumulative impacts on the existing road network by using existing traffic count data of the surrounding road networks. Key intersections were assessed for the additional traffic generated by the proposal during AM and PM peak hour traffic.

Results of this assessment are presented in Appendix 8. The report concludes that the traffic service levels on Somersby Falls Road and Wisemans Ferry Road will remain at a favourable level of LoS A performance standards. There will be no change in existing traffic service levels modelled for projected Year 2033 peak hour traffic flows. The proposal would have an

acceptable traffic impact and there is no requirement for provision of any new traffic capacity roadworks.

### 10.5.2 Visual Amenity

The proposed development has been designed so that processing equipment is inside, with the building cladded. This is typical of the industrial sites within close proximity of the proposed development. The shorter building, walls and raw material silos would also be visible but would be enclosed by cladding, providing very even surfaces that are not considered to be visually intrusive

# 11. SUMMARY OF MITIGATION MEASURES

This section provides a summary of the mitigation measures required to ensure the surrounding environment is safeguarded from potential impacts of the proposed development and an outline of the management plans required to be implemented.

## 11.1 SUMMARY OF IMPACTS, CONTROLS AND MITIGATION MEASURES

Table 11-1 presents a summary of potential impacts of the site activities and identifies the environmental safeguards and control measures recommended throughout the EIS that are considered to provide a sufficient level of protection to the surrounding built and natural environment.

Table 11-1: Summary of Potential Impacts, Environmental Safeguards and Control Measures

| Environmental Aspect | Process / Activity | Potential Impact | Recommended Safeguards and Control Measures |
|---|---|---|---|
| Air Quality | Construction | Dust, particulates, greenhouse gas emissions and impact of these emissions on nearby private receptors considered negligible.<br>Negligible potential for odour to be generated. | • Use of water tanker for dust suppression as required. |
| | Truck unloading, wind erosion from raw material stockpiles and transfer of materials. | Dust particulates, greenhouse gas emissions and impact of these emissions on nearby private receptors. | • Hardstand surface.<br>• Aggregate stockpiles enclosed on 2-3 sides and have a roof awning.<br>• The RAP stockpile area is enclosed on 2-3 sides and have a roof awning. |
| | RAP crushing and screening | Dust particulates, greenhouse gas emissions and impact of these emissions on nearby private receptors. | • Fixed plant structures act as dust barriers. |
| | Asphalt batching activities | Emissions of dust, odour, VOCs, PAH, SO2, NOx and CO from main stack. | • The aggregate conveyor, bucket elevator and screen are completely enclosed.<br>• Truck filling areas are fully enclosed, have fast opening doors and emissions are captured in a dust extractor and exhausted via the main stack.<br>• A 99.9% efficiency baghouse dust collector would filter exhaust from the burner drum and pugmill. |
| Noise | Construction | Annoyance due to noise generated by construction on site, and vehicles entering the site. | • The barriers would be constructed first to reduce noise from construction activities. |

Table 11-1: Summary of Potential Impacts, Environmental Safeguards and Control Measures

| Environmental Aspect | Process / Activity | Potential Impact | Recommended Safeguards and Control Measures |
|---|---|---|---|
| | Asphalt plant operations: On-site vehicle movements and truck loading, RAP crushing and screening, asphalt batching. | Annoyance due to noise generated by the use of equipment on site, and vehicles entering the site. | • Restriction of daytime operations (7am to 6pm) of RAP crushing plant and use of front-end loader.<br>• Fully enclosed asphalt plant and truck filling area and dryer drum. Building material would be Trimdek Zincalumine 0.8 BMT ($R_w$ 27 dB) or similar. Fast acting roller shutter doors to be installed for truck filling<br>• Noise walls or neighbouring structure to be installed. 1.8m perimeter wall and a section of wall that is 6m on a portion of the southern boundary. |
| | Road traffic noise | Annoyance due to noise from increased road traffic. | • A noise management plan has been in use and a more detailed plan would be prepared. This would have a simple-to-follow one page guide for truck drivers accessing the site. |

Table 11-1: Summary of Potential Impacts, Environmental Safeguards and Control Measures

| Environmental Aspect | Process / Activity | Potential Impact | Recommended Safeguards and Control Measures |
|---|---|---|---|
| Soil and Water | Construction | Minor surface soil disturbance and potential contamination of stormwater run-off and off-site impacts on nearby waterways and subsequently groundwater. | • Separation of clean and dirty areas before any site development with dirty water captured in a temporary sedimentation pond to be retained during the duration of the construction phase.<br>• Install temporary drains to capture runoff from disturbed areas to meet a 2-year ARI.<br>• Post construction, test any leachate released from stockpiles captured in bunded areas for potential pollutants especially BTEX and heavy metals.<br>• A temporary sediment trap prior to any clearing or excavation;<br>• A silt fence to be installed along the site boundary;<br>• Temporary construction exit pad to prevent carriage of soil from trucks to public roads;<br>• Truck wheel wash with cattle grid and wheel shaker or other appropriate device prior to be installed prior to commencement of construction works;<br>• Cleaning and replacement (if needed) of sediment traps after each storm;<br>• Geotextile filter fabric fitted to inlet sediment traps; and<br>• Kerb inlet control to include a sausage of coarse filter cloth filled with 25 mm blue metal. |

Table 11-1: Summary of Potential Impacts, Environmental Safeguards and Control Measures

| Environmental Aspect | Process / Activity | Potential Impact | Recommended Safeguards and Control Measures |
|---|---|---|---|
| | Stormwater runoff | Contamination of stormwater run-off and off-site impacts on nearby waterways and subsequently groundwater. | • Fully bunded working and storage areas achieving a 'nil discharge' off site during a major rainfall event.<br>• The bitumen and diesel tanks will have an impervious bund to capture 110% of maximum capacity of the largest tank within the bund.<br>• The stockpile areas will have a mix of earthen and constructed wall bunds to contain runoff within this area.<br>• Inflows to the site during heavy rain will be diverted around working area.<br>• Stormwater concept plans. |
| | Flooding | Site located on floodplain. Risk of contaminated floodwater leaving site. | • Provision of an on-site detention (OSD) tank which drains to an existing detention basin or box culvert. |
| | Groundwater | Groundwater would potentially be impacted by a pollution event if not properly protected, however groundwater bores in this area do not support any groundwater dependent ecosystems. | • The site will contain all runoff within bunded areas and infiltration to groundwater is unlikely |
| | Wastewater | No wastewater generated from processes on site. | None required. Spill kits would be maintained in high-risk areas in case of a spill. |
| Waste Management | Construction waste | Excessive waste generation. | • Designated waste bins serviced regularly by licensed contractors. |
| | Operational waste | Environmental and off-site impacts associated with storage and management of waste and potential release to surrounding environment. Minor waste is expected as any off-specification material can be reused in the process. | • Incoming waste to be thoroughly inspected.<br>• Waste segregated according to classification and managed accordingly.<br>• Designated waste bins serviced regularly by licensed contractors.<br>• Recyclable waste stored in recycling bins and serviced by a licensed recycling contractor. |
| Flora and Fauna | Construction and operation of asphalt plant. | No threatened species or native vegetation on or close to site. | None required. |

Table 11-1: Summary of Potential Impacts, Environmental Safeguards and Control Measures

| Environmental Aspect | Process / Activity | Potential Impact | Recommended Safeguards and Control Measures |
|---|---|---|---|
| Hazards and Risk | Storage and use of bitumen and diesel | Incident involving the potential for a fire involving bitumen or diesel and the related impacts of contaminated firefighting water and air emissions. | • Safeguards are presented in detail in the PHA. A summary is provided below:<br>• Dangerous good storage areas are to comply with AS/NZS 1940:2017, AS/NZS 1596:2014 and AS 2030.1–2009.<br>• Site management to maintain procedures and management tools, which have been determined to help reduce the level of potential threats and incidents on site.<br>• Fire protection equipment are to be installed in accordance with AS 2441–2005 and AS 2444–2001;<br>• Fire services at the site are to be maintained in accordance with AS 1851–2012*;*<br>• Minimise the operation of the forklifts near the area to eliminate the possibility of mechanical impact;<br>• Specific on-site personnel are to be trained in specific site procedures, emergency procedures and the use of fire extinguishers and hose reels;<br>• Fire extinguishers and spill control kits are to be provided near the high spill risk areas such as areas where handling of diesel would be conducted;<br>• Dangerous good packages are to comply with the Australian Dangerous Goods (ADG) Code and the relevant Australian Standards;<br>• Strict control of ignition sources to be enforced on site, especially near the diesel storage tank; and<br>• Vegetation clearance within the predicted heat contour areas. |

Table 11-1: Summary of Potential Impacts, Environmental Safeguards and Control Measures

| Environmental Aspect | Process / Activity | Potential Impact | Recommended Safeguards and Control Measures |
|---|---|---|---|
| Fire Safety | Storage and use of bitumen and diesel | Impacts resulting from a fire involving bitumen or diesel. | • Tight security of the site at all times must be established with special attention placed on the dangerous goods areas on site;<br>• Fire extinguishers and spill control kits are to be provided near the high spill risk areas;<br>• Strict control of ignition sources to be enforced on site, especially near the diesel storage tank;<br>• Hot Work Permit;<br>• Register of Fire Extinguishers available on site;<br>• Fire protection equipment are to be installed in accordance with AS 2441–2005 and AS 2444–2001.<br>• Fire services at the site are to be maintained in accordance with AS 1851.<br>• Specific on-site personnel trained in specific site procedures, emergency procedures and the use of fire extinguishers and hose reels.<br>• Vegetation clearance within the predicted heat contour areas.<br>• Bitumen storage tanks:<br>► Tanks to satisfy a recognised international standard and re-inspected every ten years. Tanks to be inspected at least 5 yearly to ensure there is no build-up of deposits;<br>► Tanks would be placarded;<br>► Fill pipes and distribution pipes are labelled;<br>► Tanks and piping system thermally insulated and completely covered in metal sheathing with no gaps remaining;<br>► Transfer pump(s) are located in a bunded, and weather protected area; |

Table 11-1: Summary of Potential Impacts, Environmental Safeguards and Control Measures

| Environmental Aspect | Process / Activity | Potential Impact | Recommended Safeguards and Control Measures |
|---|---|---|---|
| | | | ► Each tank would have a level gauge;<br>► Each tank would have an access ladder to the manhole which has a hinged cover;<br>► Each tank would have high level alarms – one at the set level for filling and then a further alarm set at an overfill level which also interlocks with an audible sound and flashing light to warn the tanker driver that filling of this tank is to stop.<br>• A set of work procedures to be prepared that detail maintenance of the bitumen storage system;<br>• A detailed Emergency Plan in accordance with the Guidelines of Fire and Rescue NSW.<br>• Provision for containment of at least 162,000 L of firefighting water on site. |
| Heritage | Construction and operation of asphalt plant. | No heritage items located on site and no heritage items are within proximity of the site to be impacted by the development. | None required. |
| Traffic and transport | Access and parking | Provisions for access to the site and on-site parking is adequate. | No additional controls required. |
| | On-site traffic manoeuvring | There is ample room for on-site manoeuvring for trucks. All vehicles will be able to enter and leave the site in a forward direction. | None required. |
| | Increased traffic movements | Existing road network would support the minor increased in traffic associated with the development. | None required. |
| Visual | Development of asphalt batching plant | Changes to visual amenity of the site and views from nearest residential areas. | TBA |

## 11.2 SITE MANAGEMENT PLANS

Site Management Plans including the following reports should be established by the proponent prior to operation commencing:

- Emergency and Pollution Incident Response Management Plan; and
- Environmental Management Plan (EMP)

An outline of these reports is provided in the following sections.

### 11.2.1 Emergency and Pollution Incident Response Management Plan

Holders of environment protection licences (EPL) under the *Protection of the Environment Operations Act, 1997* are required to prepare and implement pollution incident response management plans for each licensed activity.

A Pollution Incident Response Management Plan would be incorporated into the site's Emergency Plan for ease of use to make the document an "Emergency and Pollution Incident Response Management Plan".

The plan would be prepared in accordance with the following:

- NSW Rural Fire Service Guidelines for the Preparation of Emergency/Evacuation Plans;
- AS 3745–2010 *Planning for Emergencies in Facilities*; and
- NSW EPA Environmental Guidelines: Preparation of Pollution Incident Response Management Plans.

The aims of the plan are:

- Provide a clear understanding of how to handle and react to any emergency or pollution situation that may occur at the Site in the form of effective control structures, procedures and directives;
- Prevent or minimise the impact of an emergency and pollution incident on human life, the community and surrounding environment; and
- Facilitate a return to *normal* or *safe* operations as soon as possible.

The procedures contained in the plan would be designed to protect life and where possible prevent or minimise damage to the equipment, site and installations at the site and facilitate a return to normal operations by providing effective utilisation of the safety features, systems and equipment installed at the site to protect people from fire and other emergencies.

The plan would contain information and instructions that provide a basis for handling various types of emergency situations, such as:

- fire,
- explosion,
- pollution incident,
- medical emergency,
- spills,

- gas-leaks, and
- bomb threats.

These instructions would be provided as continually improving guidelines to be adapted to cope with unanticipated situations.

Included in the Emergency and Pollution Incident Response Management Plan would be the following:

- Dangerous Goods Register;
- MSDS and Hazardous Products Register;
- Confined Space Entry Procedures and Permit;
- Corrective Action Report;
- Critical Incident Response Procedure;
- Early Notification of Injury;
- Electrical Tools Register;
- Environmental Work Method Statement Register;
- Incident Register;
- Hot Work Permit;
- Medical Treatment Protocols;
- Job Safety Analysis Procedure and Associated JSA Sheets;
- Monthly Inspection Register for Lifting Devices;
- Non-Conformance Register and Report;
- OHS Representative Procedures;
- RTA Plant Minimum Requirements List;
- Plant Operator Skills Assessment;
- Public Complaints Register and Report;
- Register of Fire Extinguishers Available on Site;
- Risk Assessment Standard Form for Plant;
- Safety and Environmental Improvement Notice;
- Safe Work Method Statement and Associated Checklist;
- Toolbox Meetings, Standard Agenda Form and Attendance Record;
- Training Authorisation Report;
- Waste Records Register; and
- Weekly OHS&E Plant Inspection Report and Action Plan.

### 11.2.2 Environmental Management Plan

An Environmental Management Plan would be prepared after the issuing of an EPL to aid environmental management of the site operations.

The EMP would address the following major elements:

- Legal and regulatory requirements;
- Site description including environmental characteristics and general infrastructure;
- Operational conditions and controls;
- Environmental management activities in relation to particular aspects and impacts;
- Reporting, staffing and training requirements;
- Environmental monitoring and review; and
- Environmental procedures.

The EMP would adopt the framework from the ISO 14001 standard. This would maximise consistency and simplicity in the administration and overriding policies, implementation and training of the EMP procedures. The environmental aspects and impacts of the activities would be identified and procedures developed to manage these impacts.

The implementation and operation element of the EMP would address the critical function of training and competency of the EMP. This would be the basis of the Environmental Management for the site.

Specific procedures deemed required for successful environmental management of the site are outlined below.

#### 11.2.2.1 Daily Workplace Inspections

A Workplace Inspection is a procedure aimed at ensuring a high standard of housekeeping is maintained in all operational, storage and external areas. Good housekeeping practices are beneficial for providing both preventative maintenance and prompt corrective actions should an environmental incident occur. Particular attention would need to be placed on bunded areas.

The simplest method of implementing a workplace inspection would be by using a standard checklist. This would be provided in the EMP.

#### 11.2.2.2 Pollution Control Equipment Maintenance

A procedure to adequately maintain pollution control equipment would be implemented at the site. Pollution control equipment are devices used to prevent or minimise the discharge of contaminants, including noise, air emissions, and contaminants to surface water, groundwater and natural waterways that cause pollution.

This procedure would ensure correct and regular maintenance of the pollution control equipment installed at the site so as to try to identify and resolve potential problems before they occur, thereby minimising non-compliance for all environmental emissions from the site.

Devices that would be considered would include those that a failure of, would result in a pollution incident, e.g. Dust collector, stacks, bunding, OSD control equipment, alarms, pumps, valves and pipework.

#### 11.2.2.3 Monitoring Program

Regular water monitoring will be undertaken to check the detention tank in particular for total dissolved solids (TDS), Total phosphorus (TP) and Total nitrates(TN). Monitoring should be undertaken at least twice a year, but more frequently when the detention tank is becoming full and there is a need to discharge or to remove stormwater. When runoff occurs the outlet point must be sampled to assess water quality, and this should be done on an ‘as needs’ basis.

Leachate from the stockpiles should also be monitored if it is required and samples should be tested for heavy metals, pH, nitrates and TDS.

All water quality sampling and analysis undertaken will comply with *Approved Methods for Sampling and Analysis of Water Pollutants in NSW (DEC, 2004)* and the analyses undertaken in NATA (or equivalent) registered laboratories.

#### 11.2.2.4 Fire Management

Fire management would be addressed in a plan developed as part of the Environmental Management Plan or PIRMP. The appropriate storage of dangerous goods would be addressed as well as a range of management and mitigation measures considered essential for the adequate management of the site to prevent a fire. These would include:

- Installation and maintenance of adequate fire services for the site;
- Removal or minimisation of potential ignition sources such as residual combustible waste materials stored on site; and
- Regular inspection and upkeep of dangerous goods storage areas.

# 12. STATEMENT OF COMMITMENTS

Stateline Asphalt commits to the following course of action during the construction and operation of the asphalt manufacturing facility at 60 Argyle Street, South Windsor:

1. Stateline Asphalt will abide by all legal requirements, licence conditions and approvals pertaining to the site.

2. Stateline Asphalt will ensure the external areas are kept tidy and free of items to allow trucks to enter and leave in a forward direction.

3. Stateline Asphalt will implement and maintain safeguards and mitigation measures detailed in Section 8.1 of this EIS at the site. Safeguards to be included in the design of the site include:

    - Provide a hardstand surface to the site;
    - Provide 3-sided enclosed aggregate stockpiles and a roof awning over the stockpile area;
    - Enclose the RAP stockpile area on two (2) sides by 'L' shaped walls;
    - Completely enclose the aggregate conveyor, bucket elevator and screen;
    - Fully enclose the truck filling area and provide fast opening doors;

4. Stateline Asphalt will implement and maintain safeguards and mitigation measures in relation to air quality including:

    - Use of water tanker for dust suppression as required during the construction phase;
    - Direct emissions from the truck filling area to a dust extractor;
    - Provide a 99.9% efficiency baghouse dust collector to filter exhaust from the burner drum and pugmill;

5. Stateline Asphalt will implement and maintain safeguards and mitigation measures in relation to noise including:

    - Construct barriers or ensure the equivalent neighbouring construction as detailed in the Noise Impact Assessment.
    - Restrict operations of RAP crushing plant and use of front-end loader to between the hours of 7am to 6pm.
    - Enclose the main stack processing plant and during drum building Rw≥27 (0.8 BMT) The asphalt loading area underneath the batching plant must be enclosed to house the truck loading. Fast acting roller shutter doors are to be installed.

6. Stateline Asphalt will provide the following safeguards and mitigation measures in relation to Soil and Water during construction including:

    - Separation of clean and dirty areas before any site development with dirty water captured in a temporary sedimentation pond to be retained during the duration of the construction phase.

- Install temporary drains to capture runoff from disturbed areas to meet a 2-year ARI.

- Post construction, test any leachate released from stockpiles captured in bunded areas for potential pollutants especially BTEX and heavy metals.
- A temporary sediment trap prior to any clearing or excavation;
- A silt fence to be installed along the site boundary;
- Temporary construction exit pad to prevent carriage of soil from trucks to public roads;
- Cleaning and replacement (if needed) of sediment traps after each storm;
- Geotextile filter fabric fitted to inlet sediment traps; and
- Kerb inlet control to include a sausage of coarse filter cloth filled with 25 mm blue metal.

7. Stateline Asphalt will implement and maintain safeguards and mitigation measures in relation to Soil and Water during operation including:

    - Provide a self-bunded diesel tank.
    - Install and use a cold aggregate feeder.
    - Implement and abide by a water monitoring program.
    - Design in accordance with Stormwater concept plans.
    - Provide a detention basin.
    - Provide spill kits in high-risk areas.

8. Stateline Asphalt will implement and maintain safeguards and mitigation measures in relation to Waste Management including:

    - Thoroughly inspect incoming waste prior to storage and processing.
    - Segregate waste according to classification and managed accordingly.
    - Provide designated waste bins that are serviced regularly by licensed contractors.
    - Store recyclable waste in recycling bins serviced by a licensed recycling contractor.

9. Stateline Asphalt will implement and maintain safeguards and mitigation measures as detailed in the preliminary hazard analysis and fire safety study.

10. Stateline Asphalt will implement a site-specific Environmental Management Plan and ensure it is updated to incorporate these commitments, safeguard measures and recommendations documented in this EIS.

11. Stateline Asphalt will implement an Emergency & Pollution Incident Response Management Plan at the site and include all procedures and checklists as documented in this EIS.

# 13. CONCLUDING REMARKS

An asphalt plant design suited to this site has been selected and the set of environmental controls and safeguards are world's best practice. A specific design has been developed for this site and uses controls that are already in use in other industries and are successful.

Approval is requested.

This concludes the report.

Prepared by:

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# ATTACHMENTS

# Development of the Stateline Asphalt Batching Plant at 133 Somersby Falls Road, Somersby NSW 2250

# Community Information Sheet

**Works are proposed to establish an asphalt batching plant located at 133 Somersby Falls Road, Somersby. An Environmental Impact Statement (EIS) will be prepared for submission to the Department of Planning Industry and Environment. The EIS will be exhibited for a minimum of 28 days, at which time the community are invited to make submissions.**

## About Stateline

Stateline Asphalt is proposing to construct and operate an asphalt batching plant. The facility to be installed would be a modern 'state of the art' production facility which features several technical innovations that substantially reduce emissions, offering an opportunity to demonstrate 'world's best practice' in asphalt manufacturing. The plant is being designed to be suitable for the site at Somersby and the requirements of Central Coast Council. The site is located at 133 Somersby Falls Road, Somersby NSW in an industrial area.

## Project Benefits

This project aligns with several state and federal government strategies in reducing waste, and increasing recycling:

- The NSW Waste and Sustainable Materials Strategy 2041 Stage 1 plan: 2021–2027 is a key policy that aims to divert waste from landfill, increase the amount of recycling of construction materials and reduce illegal dumping; and
- The Australian Government Waste Policy 2018 aims to return productive use to waste materials.

The project will also generate local employment opportunities.

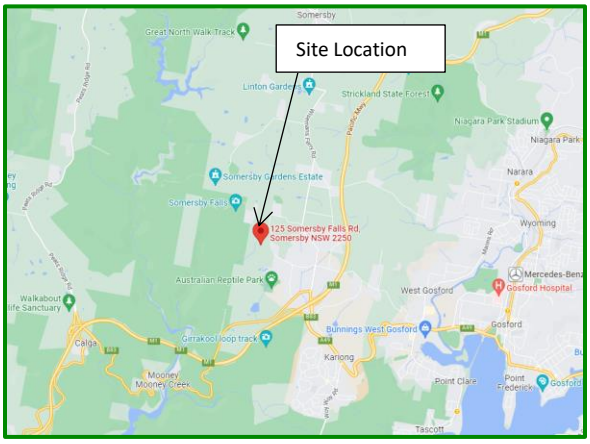


**Figure 1: Proposed site for the Stateline Asphalt Developments**

## The Proposed Development

The development will take place at 133 Somersby Falls Road, which is currently undeveloped. Installation of an asphalt mixing plant with a capacity to produce approximately 200 tonnes of asphalt per hour would generate up to 200,000 tonnes of new asphalt material per annum.

The asphalt plant would consist of several components including a control system, vibrating screens, dryers, burners, mixers, weighing equipment, aggregate storage and hot storage silos for bitumen with circulation and supply equipment. The plant would also be equipped with a dust collection system to capture any dust generated by the process. The plant would be designed so that the individual components are concealed from public view to maintain visual amenity of the area. The company is currently in discussions with suppliers to determine the most effective

options for plant design. The facility will aim to operate 24 hours per day, 7 days per week.

## The Process

Aggregates are transferred from storage bays via a conveyor belt and dried in a rotating dryer. Once dry, the heated aggregates are screened and separated into bins according to size to enable size distribution of the mix to be controlled by a weigh hopper. The desired mix of aggregates is released into a mixing chamber and coated with bitumen at temperatures typically 120°C. The mixed asphalt is then discharged into trucks for transport to the road project.

## Environmental Considerations

The environment, as well as any potential effects on nearby stakeholders, will be fully considered at every stage of the planning process. This will include:

- Waste Management – Waste including used asphalt, pavement, concrete and bricks would be brought on site for recycling. Waste would also be generated by the proposed asphalt operations. The plant is being designed to enable any waste material such as reject product to be reused on-site, therefore minimising any waste generated from the process. Measures would be implemented in line with the *NSW Waste and Sustainable Materials Strategy 2041 Stage 1 plan: 2021–2027.*
- Air Quality - An air quality impact assessment is being conducted to NSW EPA Guidelines and mitigation measures would be implemented to minimise impacts.
- Soil and Water - Minor excavations for footings are required. Stringent environmental safeguards will be put in place to minimise the potential for pollution to waters during operation.
- Noise and vibration - a noise impact assessment would be conducted to NSW EPA Guidelines and controls recommended to ensure noise limits are adhered to.
- Traffic and Transport - increased traffic would be associated with the operations. This increase and mitigation measures would be assessed in a traffic assessment in the EIS.
- Hazards and Risks - additional environmental protection equipment will be installed at the premises to minimise any potential risks.
- Visual Amenity – Impacts to the appearance of the neighbourhood will be assessed in the EIS.

To discuss the project, please call Richard Benbow on 0418 689 074.

**Figure 2: View of a standard asphalt batching facility**

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**Department of Planning and Environment**

30 March 2022

Mr Paul Anderson
PM. Anderson Consulting Pty Ltd
Director
17 Currawong Road
Wamberal NSW 2260

EF22/3837
SEAR 1655

Dear Mr Anderson

**Bitumen Pre-Mix and Hot-Mix**
**125 Somersby Falls Road, Somersby (Lot 2 DP 712505)**
**Planning Secretary's Environmental Assessment Requirements (SEAR) 1655**

Thank you for your request for the Planning Secretary's Environmental Assessment Requirements (SEARs) for the preparation of an Environmental Impact Statement (EIS) for the above development proposal. I have attached a copy of these requirements.

In support of your application, you indicated that your proposal is both designated and integrated development under Part 4 of the *Environmental Planning and Assessment Act 1979* and requires an approval under the *Protection of the Environment Operations Act 1997* and the *Roads Act 1993*. In preparing the SEARs, the Department of Planning and Environment (the Department) has consulted with the Environment Protection Authority and Transport for NSW. A copy of their requirements is attached.

If other integrated approvals are identified before the Development Application (DA) is lodged, you must undertake direct consultation with the relevant agencies, and address their requirements in the EIS.

If your proposal contains any actions that could have a significant impact on matters of National Environmental Significance, then it will require an additional approval under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). This approval is in addition to any approvals required under NSW legislation. If you have any questions about the application of the EPBC Act to your proposal, you should contact the Commonwealth Department of Agriculture, Water and the Environment on (02) 6274 1111.

Should you have any further enquiries, please contact Kathryn Moreira, Planning and Assessment, at the Department on (02) 9274 6086 or via kathryn.moreira@dpie.nsw.gov.au.

Yours sincerely

Chris Ritchie
**Director**
**Industry Assessments**
*as delegate of the Planning Secretary*

# Planning Secretary's Environmental Assessment Requirements

**Section 4.12(8) of the *Environmental Planning and Assessment Act 1979*. Schedule 3 of the Environmental Planning and Assessment Regulation 2021.**

**Designated Development**

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| **SEAR Number** | 1655 |
| **Proposal** | Construction and operation of an asphalt batching plant that will produce up to 200,000 tonnes per annum (tpa), a RAP yard, office and depot. |
| **Location** | 125 Somersby Falls Road, Somersby (Lot 2 DP 712505) |
| **Applicant** | Stateline Asphalt |
| **Date of Issue** | 30 March 2022 |
| **General Requirements** | The Environmental Impact Statement (EIS) must comply with the assessment requirements and meet the minimum form and content requirements in sections 190 and 192 of the Environmental Planning and Assessment Regulation 2021. |
| **Key Issues** | The EIS must include an assessment of all potential impacts of the proposed development on the existing environment (including cumulative impacts if necessary) and develop appropriate measures to avoid, minimise, mitigate and/or manage these potential impacts. As part of the EIS assessment, the following matters must also be addressed:<br>• **strategic and statutory context** – including:<br>– detailed justification for the proposal and suitability of the proposed land use in that location, taking into consideration the potentially offensive nature of the development<br>– a demonstration that the proposal is consistent with all relevant planning strategies, environmental planning instruments, development control plans (DCPs), or justification for any inconsistencies<br>– a list of any approvals that must be obtained under any other Act or law before the development may lawfully be carried out.<br><br>• **suitability of the site** – including:<br>– a detailed justification that the site can accommodate the proposed processing capacity, having regard to the scope of the operations and its environmental impacts and relevant mitigation measures<br>– site plans depicting the proposed layout, including the location of stockpiles, machinery and equipment.<br><br>• **waste management** – including:<br>– details of the type, quantity and classification of waste to be received at the site<br>– details of the resource outputs and any additional processes for residual waste<br>– details of waste handling including, transport, identification, receipt, stockpiling and quality control |

- the measures that would be implemented to ensure that the proposed development is consistent with the aims, objectives and guidelines in the *NSW Waste Avoidance and Sustainable Materials Strategy 2041*.

- **air quality** – including:
  - a description of all potential sources of air and odour emissions during construction and operation
  - a quantitative air quality impact assessment in accordance with relevant Environment Protection Authority guidelines with consideration of nearby residences
  - a description and appraisal of air quality impact mitigation and monitoring measures.

- **noise and vibration** – including:
  - a description of all potential noise and vibration sources during construction and operation, including road traffic noise and the potential for sleep disturbance
  - a quantitative noise and vibration assessment in accordance with the relevant Environment Protection Authority guidelines with consideration of nearby residences
  - a description and appraisal of noise and vibration mitigation and monitoring measures.

- **hazards and risk** – including:
  - a preliminary risk screening completed in accordance with State Environmental Planning Policy (Resilience and Hazards) 2021, Chapter 3 and Applying SEPP 33 (DoP, 2011), with a clear indication of class, quantity and location of all dangerous goods and hazardous materials associated with the development. Should preliminary screening indicate that the project is "potentially hazardous" a Preliminary Hazard Analysis (PHA) must be prepared in accordance with Hazardous Industry Planning Advisory Paper No. 6 - Guidelines for Hazard Analysis (DoP, 2011) and Multi-Level Risk Assessment (DoP, 2011)
  - an assessment of the risk of bushfire, including addressing the requirements of *Planning for Bush Fire Protection 2019* (RFS). Any proposed Asset Protection Zones must not adversely affect environmental objectives (e.g. buffers).

- **soil and water** – including:
  - a description of local soils, topography, drainage and landscapes
  - details of water usage for the proposal including existing and proposed water licencing requirements in accordance with the *Water Act 1912* and/or the *Water Management Act 2000*
  - an assessment of potential impacts on floodplain and stormwater management and any impact to flooding in the catchment
  - details of sediment and erosion controls
  - a detailed site water balance
  - an assessment in accordance with ASSMAC Guidelines for the presence and extent of acid sulfate soils (ASS) and potential acid sulfate soils (PASS) on the site and, where relevant, appropriate mitigation measures
  - an assessment of potential impacts on the quality and quantity of surface and groundwater resources
  - details of the proposed stormwater and wastewater management systems (including sewage), water monitoring program and other measures to mitigate surface and groundwater impacts
  - characterisation of the nature and extent of any contamination on the site

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| | and surrounding area including an assessment against the provisions of State Environmental Planning Policy (Resilience and Hazards) 2021 (Chapter 4)<br>– a description and appraisal of impact mitigation and monitoring measures.<br><br>• **traffic and transport** – including:<br>– details of road transport routes and access to the site<br>– road traffic predictions for the development during construction and operation with consideration of cumulative impacts from Somersby Industrial Park<br>– swept path diagrams depicting vehicles entering, exiting and manoeuvring throughout the site<br>– an assessment of impacts to the safety and function of the road network and the details of any road upgrades required for the development.<br><br>• **community and stakeholder engagement** – including:<br>– a detailed community and stakeholder participation strategy which identifies who in the community has been consulted and a justification for their selection, other stakeholders consulted and the form(s) of the consultation, including a justification for this approach<br>– a report on the results of the implementation of the strategy including issues raised by the community and surrounding occupiers and landowners that may be impacted by the proposal<br>– details of how issues raised during community and stakeholder consultation have been addressed and whether they have resulted in changes to the proposal<br>– details of the proposed approach to future community and stakeholder engagement based on the results of the consultation.<br><br>• **biodiversity** – including a description of any potential vegetation clearing needed to undertake the proposal and any impacts on flora and fauna.<br><br>• **visual** – including an impact assessment at private receptors and public vantage points.<br><br>• **heritage** – including an assessment of Aboriginal and non-Aboriginal cultural heritage. |
| **Environmental Planning Instruments and other policies** | The EIS must assess the proposal against the relevant environmental planning instruments, including but not limited to:<br>• State Environmental Planning Policy (Infrastructure) 2007<br>• State Environmental Planning Policy (Resilience and Hazards) 2021 (Chapters 3 and 4)<br>• State Environmental Planning Policy (Transport and Infrastructure) 2021 (Chapter 2)<br>• State Environmental Planning Policy (Biodiversity and Conservation) 2021 (Chapter 2)<br>• Gosford Local Environmental Plan 2014<br>• relevant development control plans and section 7.11 plans. |
| **Guidelines** | During the preparation of the EIS you should consult the Department's Register of Development Assessment Guidelines which is available on the Department's website at https://www.planning.nsw.gov.au/Assess-and-Regulate/Development-Assessment/Industries. Whilst not exhaustive, this Register contains some of the guidelines, policies, and plans that must be taken into account in the environmental assessment of the proposed development. |

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| **Consultation** | During the preparation of the EIS, you must consult the relevant local, State and Commonwealth government authorities, service providers and community groups, and address any issues they may raise in the EIS. In particular, you should consult with the:<br>• Department of Planning and Environment, specifically the:<br>  ○ Environment Protection Authority<br>• Transport for NSW<br>• Darkinjung Local Aboriginal Land Council<br>• Central Coast Council<br>• the surrounding landowners and occupiers that are likely to be impacted by the proposal.<br>Details of the consultation carried out and issues raised must be included in the EIS. |
| **Further consultation after 2 years** | If you do not lodge an application under Section 4.12(8) of the *Environmental Planning and Assessment Act 1979* within 2 years of the issue date of these SEARs, you must consult with the Planning Secretary in relation to any further requirements for lodgement. |

Ms Kathryn Moreira
Planning Officer
Industry Assessments
Department of Planning and Environment
Locked Bag 5022
Parramatta NSW 2150

| | |
|---|---|
| Notice Number | 1617700 |
| Date | 25-Mar-2022 |

**RE: Asphalt Batching Plant – SEAR 1655 – 125 Somersby Falls Road Somersby**

I refer to your request received on 7 March 2022 for the Environment Protection Authority's (**EPA**) key issues and assessment requirements to incorporate into the Secretary's Environmental Assessment Requirements (**SEARs**) for a proposed asphalt batching plant at 125 Somersby Falls Road, Somersby, NSW, 2250, also known as Lot 2 DP 712505 (**the Premises**).

The EPA understands the proposal is seeking approval for the construction and operation of an asphalt batching plant with a processing capacity of up to 200,000 tonnes in a 12 month period and a waste facility which will receive up to 30,000 tonnes of reclaimed asphalt pavement (**RAP**) waste in a 12 month period at the Premises.

While the EPA has identified the information it believes will be required to issue its general terms of approval in Attachments A & B, the EPA notes the applicant did not submit a scoping report with the application and the information which has been provided is minimal. As such, the EPA is limited to that information with the site specific assessment requirements it is able to provide for the proposal (in Attachment A) and some matters may be required to be addressed following the submission of the environmental impact statement (**EIS**).

In summary, the EPA's key issues and assessment requirements for the proposal are:

1. Waste management;
2. Water management;
3. Air quality; and
4. Noise.

In carrying out the assessment, the proponent should refer to the relevant guidelines as listed in Attachment C and any relevant industry codes of practice and best practice management guidelines.

The proponent should be made aware any commitments made in the environmental assessment may be formalised as approval conditions and may also be placed as formal licence conditions.

The proponent should also be made aware that, consistent with provisions under Part 9.4 of the *Protection of the Environment Operations Act 1997* (**the POEO Act**), the EPA may require the provision of a financial assurance and/or assurances. The amount and form of the assurance(s) would be determined by the EPA and required as a condition of an Environment Protection Licence (**EPL**).

In addition, as a requirement of an EPL, the EPA will require the proponent to prepare, test and implement a Pollution Incident Response Management Plan and/or Plans in accordance with Section 153A of the POEO Act.

Please note the EPA has not considered Aboriginal cultural heritage, biodiversity or built form/urban design requirements as these are the purview of the Environment, Energy and Science Group within the Department of Planning and Environment.

Yours sincerely

Unit Head

Regulatory Operations

**Celeste Forestal**

**Unit Head**

**Environment Protection Authority**

(by Delegation)

# Attachment A – Site specific requirements

1. **The facilities must be enclosed –** The EPA requires that all waste and materials are stored and processed inside an enclosed building. All waste and material handling activities, including receival, sorting, processing, sampling, quarantine, storage and loading must be conducted within a fully enclosed building.

   Waste and materials, including finished products, must not be stored outside. All used external surfaces, including any external haulage areas or roads, must be sealed hardstand. Any unused external surfaces must be sealed hardstand or vegetated.

2. **Site plan –** A detailed site plan of the Premises must be included in the EIS. The site plan must identify at minimum, but is not limited to:

   - locations of the facilities;
   - traffic flows and directions;
   - haulage;
   - waste and material receival, processing, storage, and loading (for each waste and material type);
   - quarantine;
   - infrastructure for environmental controls including dust, noise, water, odour, and wheel wash;
   - infrastructure for waste and material receival, processing, storage, and loading;
   - weighbridges;
   - site boundaries;
   - stormwater drainage areas;
   - unused stabilised areas;
   - machinery storage areas;
   - areas under the *Standards for managing construction waste in NSW* (**the Standards**) (if applicable);
   - any dangerous goods, hazardous goods and/or chemical storage areas (including any fuel storage areas); and
   - bunding.

3. **Interrelationship between facilities –** The EIS must detail and explain the interrelationship between the asphalt batching plant and the RAP waste facility including how these facilities will interact with and be managed in concert with one another.

4. **Waste and material management –** The EIS must include a detailed assessment of the waste and material management processes to be undertaken at the Premises. This includes but is not limited to:
   - details of the sources of each waste and material type to be received at the Premises;
   - details of the types and quantities of each type of waste and material to be received at the Premises;
   - details of the maximum volume of each waste and material type and the total maximum volume of waste and material to be stored on the Premises at any one time;
   - details of the maximum annual throughput of each waste type and the total maximum throughput to be processed at the Premises;
   - a detailed description of receival, processing, and storage, and loading procedures for each waste and material type;
   - a description of how the proponent will meet the EPA's record keeping and reporting requirements, including weighing material in and out of the Premises (refer to the EPA's Waste Levy Guidelines for more information – available at:

     https://www.epa.nsw.gov.au/your-environment/waste/waste-levy);
   - details of the type and quantities of materials to be produced and their intended fate;
   - the intended fates of all other waste and materials received/produced on site which are not suitable for re-use;
   - details of any materials produced under a Resource Recovery Order, and the controls/procedures in place for meeting the conditions of that order;
   - details of any materials produced which will require a specific Resource Recovery Order;
   - a description of procedures for dealing with non-conforming waste and materials (i.e. waste not permitted to be received at the Premises);
   - details of any testing/monitoring procedures; and
   - details of storage for unprocessed and processed wastes including the maximum storage capacity for each type of stored waste (the EPA notes each type of waste stored on site for recovery/recycling must be stockpiled separately).

5. **Waste and material types –** The EPA requires detailed information on the waste and material types proposed to be received at the Premises. For each waste and material type, the EIS must detail the physical and chemical content of the waste/material, the types of pollution which may result from the storage and processing of that waste/material, and mitigation measures for managing any such impacts.

The EIS must explicitly identify each individual type of waste which will be received at the facility, with reference to the *EPA's Waste Classification Guidelines* (**the Guidelines**) and also the definitions in Schedule 1 of the POEO Act.

6. **Water management –** It is considered best practice by the EPA for facilities to retain all water on site and not discharge any water in order to limit pollution and contamination. The EPA requires a proponent first demonstrate that all practical and reasonable alternatives to discharge have been considered and implemented before other options are reviewed. Where discharge of polluted water is unavoidable, the proponent must:

   - identify all pollutants that pose a risk of non-trivial harm and the potential impact of those pollutants on the environment;
   - implement all practical measures that can be taken to prevent, control, abate or mitigate the pollution and protect the environment from harm; and
   - consider the environmental values of water affected by the proposed discharge; and implement all practical measures that can be taken to restore or maintain those values.

   An assessment of impacts to water, during both construction and operation, must be included in the EIS. This must include at a minimum:

   - characterisation of any proposed discharges from the Premises (both volume and quantity);
   - assessment of the potential impacts from these discharges; and
   - proposed mitigation measures to manage any impacts (discharges includes, but is not limited to, stormwater (contaminated and uncontaminated), and wastewater (such as from dewatering)).

   Details must be provided of any trade waste agreements which are (or are proposed to be) in place with Sydney Water. Detailed information regarding the management of stormwater during both construction and operation must be included in the EIS.

   The EPA expects waste and/or material management buildings be constructed to exclude all stormwater and internal surfaces be graded inwards to contain any contaminated water (being any water that has come into contact with waste or other materials which have the potential to cause contamination). The EPA notes even where all waste and material activities are conducted within a fully enclosed building, materials may be tracked on to external surfaces leading to the generation of contaminated water. Any external areas where vehicles travel or wait for loading/unloading must drain to a stormwater quality treatment device sufficient to remove any contaminants, both solid and dissolved, prior to discharge offsite.

7. **Air Quality –** Bitumen and asphalt production processes result in the emissions of principal air toxics. In accordance with the *Approved Methods for Modelling and Assessment of Air Pollutants in NSW*, principal toxic air pollutants must be minimised to the maximum extent achievable through the application of best practice process design and/or emission control. The EIS must include detailed information as to how this standard will be met and sufficient evidence that it can be achieved.

The EIS must include a detailed assessment of air quality which identifies all potential air emissions from the Premises during construction and operation, including, but not limited to, coarse particulates, PM10, PM2.5 and odour. The proponent must assess the impact of these discharges and demonstrate effective control of all identified air emissions from the Premises.

The EIS must consider the *Protection of the Environment Operations (Clear Air) Regulation 2021* (**the Clean Air Regulation**) and detailed information must be provided as to how compliance with the Clean Air Regulation will be achieved.

Note: In relation to air impacts, all sensitive receivers need to be considered when conducting air quality and odour impact assessments. A sensitive receiver includes a place where someone works. Therefore, any industrial neighbours to the Premises must be included as sensitive receivers.

8. **Noise –** The EIS must include an assessment of noise impacts during construction and operation and demonstrate effective controls to manage noise impacts, including from increased traffic, at all receptors.

   Note: In relation to noise impacts, all sensitive receivers need to be considered when conducting air quality and odour impact assessments. A sensitive receiver includes a place where someone works. Therefore, any industrial neighbours to the Premises must be included as sensitive receivers.

9. **Dangerous goods and chemical transport, storage and handling –** The EIS must outline all details regarding the transport, handling, storage and use of dangerous goods, chemicals, and products, including fuel, both on site and with ancillary activities and describe the measures proposed to minimise the potential for leakage or the migration of pollutants into the air, land or waters from the Premises. If fuel is intended on being stored at the Premises, any fuel storage areas must be undercover and bunded. The EIS must include details of emergency management procedures, including but not limited to spills of chemicals or restricted, hazardous, and/or liquid waste stored on the Premises.

   The EIS must detail how the proposal will meet the specifications and requirements outlined in AS 1940 *The storage and handling of flammable and combustible liquids*.

10. **Wheel wash –** Best practice waste and material facilities install and utilise and wheel wash to reduce the risk of contaminants being tracked onto public roads. The EPA requires a wheel wash to be included as part of the proposal to reduce the risk of tracking of material and contaminants onto public roads.

11. **Weighbridge –** Scheduled (licensed) waste facilities are levy liable in accordance with section 88 of the POEO Act. As such, the proposal must include a weighbridge in order to comply with the requirements of the waste levy.

12. **Occupier/owner of the premises –** Sufficient evidence must be provided that the proponent is the lawful occupier and/or owner of the Premises as the EPA cannot issue to an EPL if this has not been provided.

13. **Scheduled/ancillary activities –** The EIS must identify all scheduled activities under Schedule 1 of the POEO Act for which an EPL will be required. Activities which will be conducted at the Premises which are ancillary to the scheduled activities must also be identified.

14. **Standards for managing construction waste –** The proponent should be aware that changes to the *Protection of the Environment Operations (Waste) Regulation* commenced on 16 November 2018, which legislates the Standards. The Standards became enforceable on 16 May 2019 and apply to all facilities receiving construction and demolition waste regardless of when approval was/is given for the facility. If the proponent intends on receiving construction and demolition waste, the EIS must provide detailed information as to how compliance with the Standards will be achieved. The proponent should be aware of all the legislative requirements relating to the Standards. The Standards are available at:

    https://www.epa.nsw.gov.au/your-environment/waste/industrial-waste/construction-demolition/construction-and-demolition-waste

15. **Fire Safety Guidelines –** Fire and Rescue NSW have developed guidelines regarding fire safety within waste facilities titled '*Fire safety guideline – Fire safety in waste facilities*' (**the Fire Safety Guidelines**). The Fire Safety Guidelines are applicable to any waste facility within NSW involved in the storage, processing or resource recovery of combustible waste material. The EIS must demonstrate how the proposal will ensure compliance with the Fire Safety Guidelines if applicable. The Fire Safety Guidelines are available at:

    https://www.fire.nsw.gov.au/gallery/files/pdf/guidelines/guidelines_fire_safety_in_waste_facilities.pdf

Note: Refer to Attachment B for further detail regarding what is to be included in the environmental assessments.

## Attachment B - General requirements for the proposal

## How to use these requirements

The EPA requirements have been structured in accordance with the DIPNR EIS Guidelines, as follows. It is suggested that the EIS follow the same structure:

A. Executive summary

B. The proposal

C. The location

D. Identification and prioritisation of issues

E. The environmental issues

F. List of approvals and licences

G. Compilation of mitigation measures

H. Justification for the proposal

# A Executive summary

The executive summary should include a brief discussion of the extent to which the proposal achieves identified environmental outcomes.

# B The proposal

## 1. Objectives of the proposal

- The objectives of the proposal should be clearly stated and refer to:
  a) the size and type of the operation, the nature of the processes and the products, by-products and wastes produced
  b) a life cycle approach to the production, use or disposal of products
  c) the anticipated level of performance in meeting required environmental standards and cleaner production principles
  d) the staging and timing of the proposal and any plans for future expansion
  e) the proposal's relationship to any other industry or facility.

## 2. Description of the proposal

### *General*

- Outline the production process including:
  a) the environmental "mass balance" for the process – quantify in-flow and out-flow of materials, any points of discharge to the environment and their respective destinations (sewer, stormwater, atmosphere, recycling, landfill etc)
  b) any life-cycle strategies for the products.
- Outline cleaner production actions, including:
  a) measures to minimise waste (typically through addressing source reduction)
  b) proposals for use or recycling of by-products
  c) proposed disposal methods for solid and liquid waste
  d) air management systems including all potential sources of air emissions, proposals to re-use or treat emissions, emission levels relative to relevant standards in regulations, discharge points
  e) water management system including all potential sources of water pollution, proposals for re-use, treatment etc, emission levels of any wastewater discharged, discharge points, summary of options explored to avoid a discharge, reduce its frequency or reduce its impacts, and rationale for selection of option to discharge.
  f) soil contamination treatment and prevention systems.
- Outline construction works including:
  a) actions to address any existing soil contamination
  b) any earthworks or site clearing; re-use and disposal of cleared material (including use of spoil on-site)
  c) construction timetable and staging; hours of construction; proposed construction methods

d) environment protection measures, including noise mitigation measures, dust control measures and erosion and sediment control measures.

- Include a site diagram showing the site layout and location of environmental controls.

### *Air*

- Identify all sources or potential sources of air emissions from the development.
  *Note: emissions can be classed as either:*
  - *point (e.g. emissions from stack or vent) or*
  - *fugitive (from wind erosion, leakages or spillages, associated with loading or unloading, conveyors, storage facilities, plant and yard operation, vehicle movements (dust from road, exhausts, loss from load), land clearing and construction works).*
- Provide details of the project that are essential for predicting and assessing air impacts including:
  a) the quantities and physio-chemical parameters (e.g. concentration, moisture content, bulk density, particle sizes etc) of materials to be used, transported, produced or stored
  b) an outline of procedures for handling, transport, production and storage
  c) the management of solid, liquid and gaseous waste streams with potential to generate emissions to air.

### *Noise and vibration*

- Identify all noise sources or potential sources from the development (including both construction and operation phases). Detail all potentially noisy activities including ancillary activities such as transport of goods and raw materials.
- Specify the times of operation for all phases of the development and for all noise producing activities.
- For projects with a significant potential traffic noise impact provide details of road alignment (include gradients, road surface, topography, bridges, culverts etc), and land use along the proposed road and measurement locations – diagrams should be to a scale sufficient to delineate individual residential blocks.

### *Water*

- Provide details of the project that are essential for predicting and assessing impacts to waters including:
  a) the quantity and physio-chemical properties of all potential water pollutants and the risks they pose to the environment and human health, including the risks they pose to Water Quality Objectives in the ambient waters (as defined on http://www.environment.nsw.gov.au/ieo/index.htm, using technical criteria derived from *the Australian and New Zealand Guidelines for Fresh and Marine Water Quality*, ANZECC 2000)
  b) the management of discharges with potential for water impacts
  c) drainage works and associated infrastructure; land-forming and excavations; working capacity of structures; and water resource requirements of the proposal.

- Outline site layout, demonstrating efforts to avoid proximity to water resources (especially for activities with significant potential impacts e.g. effluent ponds) and showing potential areas of modification of contours, drainage etc.
- Outline how total water cycle considerations are to be addressed showing total water balances for the development (with the objective of minimising demands and impacts on water resources). Include water requirements (quantity, quality and source(s)) and proposed storm and wastewater disposal, including type, volumes, proposed treatment and management methods and re-use options.

### *Waste and chemicals*

Provide details of the quantity and type of both liquid waste and non-liquid waste generated, handled, processed or disposed of at the premises. Waste must be classified according to the EPA's *Waste Classification Guidelines 2014 (as amended from time to time)*

- Provide details of liquid waste and non-liquid waste management at the facility, including:
  a) the transportation, assessment and handling of waste arriving at or generated at the site
  b) any stockpiling of wastes or recovered materials at the site
  c) any waste processing related to the facility, including reuse, recycling, reprocessing (including composting) or treatment both on- and off-site
  d) the method for disposing of all wastes or recovered materials at the facility
  e) the emissions arising from the handling, storage, processing and reprocessing of waste at the facility
  f) the proposed controls for managing the environmental impacts of these activities.
- Provide details of spoil disposal with particular attention to:
  a) the quantity of spoil material likely to be generated
  b) proposed strategies for the handling, stockpiling, reuse/recycling and disposal of spoil
  c) the need to maximise reuse of spoil material in the construction industry
  d) identification of the history of spoil material and whether there is any likelihood of contaminated material, and if so, measures for the management of any contaminated material
  e) designation of transportation routes for transport of spoil.
- Provide details of procedures for the assessment, handling, storage, transport and disposal of all hazardous and dangerous materials used, stored, processed or disposed of at the site, in addition to the requirements for liquid and non-liquid wastes.
- Provide details of the type and quantity of any chemical substances to be used or stored and describe arrangements for their safe use and storage.

- Reference should be made to the guidelines: EPA's *Waste Classification Guidelines 2014 (as amended from time to time)*

### *ESD*

- Demonstrate that the planning process and any subsequent development incorporates objectives and mechanisms for achieving ESD, including:
  a) an assessment of a range of options available for use of the resource, including the benefits of each option to future generations

  proper valuation and pricing of environmental resources

  b) identification of who will bear the environmental costs of the proposal.

## 3. Rehabilitation

- Outline considerations of site maintenance, and proposed plans for the final condition of the site (ensuring its suitability for future uses).

## 4. Consideration of alternatives and justification for the proposal

- Consider the environmental consequences of adopting alternatives, including alternative:
  a) sites and site layouts
  b) access modes and routes
  c) materials handling and production processes
  d) waste and water management
  e) impact mitigation measures
  f) energy sources
- Selection of the preferred option should be justified in terms of:
  a) ability to satisfy the objectives of the proposal
  b) relative environmental and other costs of each alternative
  c) acceptability of environmental impacts and contribution to identified environmental objectives
  d) acceptability of any environmental risks or uncertainties
  e) reliability of proposed environmental impact mitigation measures
  f) efficient use (including maximising re-use) of land, raw materials, energy and other resources.

# C The location

## 1. General

- Provide an overview of the affected environment to place the proposal in its local and regional environmental context including:

meteorological data (e.g. rainfall, temperature and evaporation, wind speed and direction)

g) topography (landform element, slope type, gradient and length)

h) surrounding land uses (potential synergies and conflicts)

i) geomorphology (rates of landform change and current erosion and deposition processes)

j) soil types and properties (including erodibility; engineering and structural properties; dispersibility; permeability; presence of acid sulfate soils and potential acid sulfate soils)

k) ecological information (water system habitat, vegetation, fauna)

l) availability of services and the accessibility of the site for passenger and freight transport.

## 2. Air

- Describe the topography and surrounding land uses. Provide details of the exact locations of dwellings, schools and hospitals. Where appropriate provide a perspective view of the study area such as the terrain file used in dispersion models.
- Describe surrounding buildings that may effect plume dispersion.
- Provide and analyse site representative data on following meteorological parameters:

a) temperature and humidity

b) rainfall, evaporation and cloud cover

c) wind speed and direction

d) atmospheric stability class

e) mixing height (the height that emissions will be ultimately mixed in the atmosphere)

f) katabatic air drainage

g) air re-circulation.

## 3. Noise and vibration

- Identify any noise sensitive locations likely to be affected by activities at the site, such as residential properties, schools, churches, and hospitals. Typically the location of any noise sensitive locations in relation to the site should be included on a map of the locality.
- Identify the land use zoning of the site and the immediate vicinity and the potentially affected areas.

## 4. Water

- Describe the catchment including proximity of the development to any waterways and provide an assessment of their sensitivity/significance from a public health, ecological and/or economic perspective. The Water Quality and River Flow Objectives on the website: http://www.environment.nsw.gov.au/ieo/index.htm should be used to identify the agreed environmental values and human uses for any affected waterways. This will help with the description of the local and regional area.

## 5. Soil Contamination Issues

- Provide details of site history – if earthworks are proposed, this needs to be considered with regard to possible soil contamination, for example if the site was previously a landfill site or if irrigation of effluent has occurred.

# D Identification and prioritisation of issues / scoping of impact assessment

- Provide an overview of the methodology used to identify and prioritise issues. The methodology should take into account:
  a) relevant NSW government guidelines
  b) industry guidelines
  c) EISs for similar projects
  d) relevant research and reference material
  e) relevant preliminary studies or reports for the proposal
  f) consultation with stakeholders.
- Provide a summary of the outcomes of the process including:
  a) all issues identified including local, regional and global impacts (e.g. increased/ decreased greenhouse emissions)
  b) key issues which will require a full analysis (including comprehensive baseline assessment)
  c) issues not needing full analysis though they may be addressed in the mitigation strategy
  d) justification for the level of analysis proposed (the capacity of the proposal to give rise to high concentrations of pollution compared with the ambient environment or environmental outcomes is an important factor in setting the level of assessment).

# E The environmental issues

## 1. General

- The potential impacts identified in the scoping study need to be assessed to determine their significance, particularly in terms of achieving environmental outcomes, and minimising environmental pollution.
- Identify gaps in information and data relevant to significant impacts of the proposal and any actions proposed to fill those information gaps so as to enable development of appropriate management and mitigation measures. This is in accordance with ESD requirements.

*Note: The level of detail should match the level of importance of the issue in decision making which is dependent on the environmental risk.*

### *Describe baseline conditions*

- Provide a description of existing environmental conditions for any potential impacts.

### *Assess impacts*

- For any potential impacts relevant for the assessment of the proposal provide a detailed analysis of the impacts of the proposal on the environment including the cumulative impact of the proposal on the receiving environment especially where there are sensitive receivers.
- Describe the methodology used and assumptions made in undertaking this analysis (including any modelling or monitoring undertaken) and indicate the level of confidence in the predicted outcomes and the resilience of the environment to cope with the predicted impacts.
- The analysis should also make linkages between different areas of assessment where necessary to enable a full assessment of environmental impacts e.g. assessment of impacts on air quality will often need to draw on the analysis of traffic, health, social, soil and/or ecological systems impacts; etc.
- The assessment needs to consider impacts at all phases of the project cycle including: exploration (if relevant or significant), construction, routine operation, start-up operations, upset operations and decommissioning if relevant.
- The level of assessment should be commensurate with the risk to the environment.

### *Describe management and mitigation measures*

- Describe any mitigation measures and management options proposed to prevent, control, abate or mitigate identified environmental impacts associated with the proposal and to reduce risks to human health and prevent the degradation of the environment. This should include an assessment of the effectiveness and reliability of the measures and any residual impacts after these measures are implemented.
- Proponents are expected to implement a 'reasonable level of performance' to minimise environmental impacts. The proponent must indicate how the proposal meets reasonable levels of performance. For example, reference technology based criteria if available, or identify good practice for this type of activity or development. A 'reasonable level of performance' involves adopting and implementing technology and

management practices to achieve certain pollutant emissions levels in economically viable operations. Technology-based criteria evolve gradually over time as technologies and practices change.

- Use environmental impacts as key criteria in selecting between alternative sites, designs and technologies, and to avoid options having the highest environmental impacts.
- Outline any proposed approach (such as an Environmental Management Plan) that will demonstrate how commitments made in the EIS will be implemented. Areas that should be described include:

  a) operational procedures to manage environmental impacts

  b) monitoring procedures

  c) training programs

  d) community consultation

  e) complaint mechanisms including site contacts

  f) strategies to use monitoring information to improve performance

  g) strategies to achieve acceptable environmental impacts and to respond in event of exceedences.

## 2. Air

### *Describe baseline conditions*

- Provide a description of existing air quality and meteorology, using existing information and site representative ambient monitoring data.

### *Assess impacts*

- Identify all pollutants of concern and estimate emissions by quantity (and size for particles), source and discharge point.
- Estimate the resulting ground level concentrations of all pollutants. Where necessary (e.g. potentially significant impacts and complex terrain effects), use an appropriate dispersion model to estimate ambient pollutant concentrations. Discuss choice of model and parameters with the EPA.
- Describe the effects and significance of pollutant concentration on the environment, human health, amenity and regional ambient air quality standards or goals.
- Describe the contribution that the development will make to regional and global pollution, particularly in sensitive locations.
- For potentially odorous emissions provide the emission rates in terms of odour units (determined by techniques compatible with EPA procedures). Use sampling and analysis techniques for individual or complex odours and for point or diffuse sources, as appropriate.

  *Note: With dust and odour, it may be possible to use data from existing similar activities to generate emission rates.*

- Reference should be made to relevant guidelines, including *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* (DEC, 2016)*; Approved Methods for the Sampling and Analysis of Air Pollutants in NSW* (DEC, 2007)*; Assessment and Management of Odour from Stationary Sources in*

*NSW* (DEC, 2006)*; Technical Notes: Assessment and Management of Odour from Stationary Sources in NSW (DEC, 2006); Load Calculation Protocol for use by holders of NSW Environment Protection Licences when calculating Assessable Pollutant Loads* (DECC, 2009).

### *Describe management and mitigation measures*

- Outline specifications of pollution control equipment (including manufacturer's performance guarantees where available) and management protocols for both point and fugitive emissions. Where possible, this should include cleaner production processes.

## 3. Noise and vibration

### *Describe baseline conditions*

- Determine the existing background (LA90) and ambient (LAeq) noise levels, as relevant, in accordance with the *NSW Noise Policy for Industry*.
- Determine the existing road traffic noise levels in accordance with the *NSW Road Noise Policy*, where road traffic noise impacts may occur.
- The noise impact assessment report should provide details of all monitoring of existing ambient noise levels including:
  a) details of equipment used for the measurements
  b) a brief description of where the equipment was positioned
  c) a statement justifying the choice of monitoring site(s), including the procedure used to choose the site(s), having regards to Fact Sheets A and B of the *NSW Noise Policy for Industry.*
  d) details of the exact location of the monitoring site and a description of land uses in surrounding areas
  e) a description of the dominant and background noise sources at the site
  f) day, evening and night assessment background levels for each day of the monitoring period
  g) the final Rating Background Level (RBL) value
  h) graphs of the measured noise levels for each day should be provided
  i) a record of periods of affected data (due to adverse weather and extraneous noise), methods used to exclude invalid data and a statement indicating the need for any re-monitoring.

### *Assess impacts*

- Determine the project noise trigger levels for the site. For each identified potentially affected receiver, this should include:
  a) determination of the project intrusive noise level for each identified potentially affected receiver
  b) selection and justification of the appropriate amenity category for each identified potentially affected receiver

c) determination of the project amenity noise level for each receiver

d) determination of the appropriate maximum noise level event assessment (sleep disturbance) trigger level.

- Maximum noise levels during night-time period (10pm-7am) should be assessed to analyse possible affects on sleep. Determine expected noise level and noise character likely to be generated from noise sources during:

  a) site establishment

  b) construction

  c) operational phases

  d) transport including traffic noise generated by the proposal

  e) other services.

  *Note: The noise impact assessment report should include noise source data for each source in 1/1 or 1/3 octave band frequencies including methods for references used to determine noise source levels. Noise source levels and characteristics can be sourced from direct measurement of similar activities or from literature (if full references are provided).*

- Determine the noise levels likely to be received at the reasonably most affected location(s) (these may vary for different activities at each phase of the development).
- The noise impact assessment report should include:

  a) a plan showing the assumed location of each noise source for each prediction scenario

  b) a list of the number and type of noise sources used in each prediction scenario to simulate all potential significant operating conditions on the site

  c) any assumptions made in the predictions in terms of source heights, directivity effects, shielding from topography, buildings or barriers, etc

  d) methods used to predict noise impacts including identification of any noise models used.

  e) the weather conditions considered for the noise predictions

  f) the predicted noise impacts from each noise source as well as the combined noise level for each prediction scenario

  g) for developments where a significant level of noise impact is likely to occur, noise contours for the key prediction scenarios should be derived

  h) an assessment of the need to include modification factors as detailed in Fact Sheet C of the *NSW Noise Policy for Industry*.

- Discuss the findings from the predictive modelling and, where relevant noise criteria have not been met, recommend additional feasible and reasonable mitigation measures.
- The noise impact assessment report should include details of any mitigation proposed including the attenuation that will be achieved and the revised noise impact predictions following mitigation.

  a) Where relevant noise/vibration levels cannot be met after application of all feasible and reasonable mitigation measures the residual level of noise impact needs to be quantified

- For the assessment of existing and future traffic noise, details of data for the road should be included such as assumed traffic volume; percentage heavy vehicles by time of day; and details of the calculation process. These details should be consistent with any traffic study carried out in the EIS.
- Where blasting is intended an assessment in accordance with the *Technical Basis for Guidelines to Minimise Annoyance due to Blasting Overpressure and Ground Vibration* (ANZECC, 1990) should be undertaken. The following details of the blast design should be included in the noise assessment:
  a) bench height, burden spacing, spacing burden ratio
  b) blast hole diameter, inclination and spacing
  c) type of explosive, maximum instantaneous charge, initiation, blast block size, blast frequency.

### *Describe management and mitigation measures*

- Determine the most appropriate noise mitigation measures and expected noise reduction including both noise controls and management of impacts for both construction and operational noise. This will include selecting quiet equipment and construction methods, noise barriers or acoustic screens, location of stockpiles, temporary offices, compounds and vehicle routes, scheduling of activities, etc.
- For traffic noise impacts, provide a description of the ameliorative measures considered (if required), reasons for inclusion or exclusion, and procedures for calculation of noise levels including ameliorative measures. Also include, where necessary, a discussion of any potential problems associated with the proposed ameliorative measures, such as overshadowing effects from barriers. Appropriate ameliorative measures may include:
  a) use of alternative transportation modes, alternative routes, or other methods of avoiding the new road usage
  b) control of traffic (eg: limiting times of access or speed limitations)
  c) resurfacing of the road using a quiet surface
  d) use of (additional) noise barriers or bunds
  e) treatment of the façade to reduce internal noise levels buildings where the night-time criteria is a major concern
  f) more stringent limits for noise emission from vehicles (i.e. using specially designed ‘quite’ trucks and/or trucks to use air bag suspension
  g) driver education
  h) appropriate truck routes
  i) limit usage of exhaust brakes
  j) use of premium muffles on trucks
  k) reducing speed limits for trucks
  l) ongoing community liaison and monitoring of complaints
  m) phasing in the increased road use.

## 4. Water

### *Describe baseline conditions*

- Describe existing surface and groundwater quality – an assessment needs to be undertaken for any water resource likely to be affected by the proposal and for all conditions (e.g. a wet weather sampling program is needed if runoff events may cause impacts).

  *Note: Methods of sampling and analysis need to conform with an accepted standard (e.g. Approved Methods for the Sampling and Analysis of Water Pollutants in NSW* (DEC 2004) *or be approved and analyses undertaken by accredited laboratories).*

- Provide site drainage details and surface runoff yield.
- State the ambient Water Quality and River Flow Objectives for the receiving waters. These refer to the community's agreed environmental values and human uses endorsed by the Government as goals for the ambient waters. These environmental values are published on the website: http://www.environment.nsw.gov.au/ieo/index.htm. The EIS should state the environmental values listed for the catchment and waterway type relevant to your proposal. NB: A consolidated and approved list of environmental values are not available for groundwater resources. Where groundwater may be affected the EIS should identify appropriate groundwater environmental values and justify the choice.
- State the indicators and associated trigger values or criteria for the identified environmental values. This information should be sourced from the ANZECC 2000 *Guidelines for Fresh and Marine Water Quality* (http://www.environment.gov.au/water/publications/quality/nwqms-guidelines-4-vol1.html) (Note that, as at 2004, the NSW Water Quality Objectives booklets and website contain technical criteria derived from the 1992 version of the ANZECC Guidelines. The Water Quality Objectives remain as Government Policy, reflecting the community's environmental values and long-term goals, but the technical criteria are replaced by the more recent ANZECC 2000 Guidelines). NB: While specific guidelines for groundwater are not available, the ANCECC 2000 Guidelines endorse the application of the trigger values and decision trees as a tool to assess risk to environmental values in groundwater.
- State any locally specific objectives, criteria or targets, which have been endorsed by the government e.g. the Healthy Rivers Commission Inquiries or the NSW Salinity Strategy (DLWC, 2000) (http://www.environment.nsw.gov.au/salinity/government/nswstrategy.htm).
- Where site specific studies are proposed to revise the trigger values supporting the ambient Water Quality and River Flow Objectives, and the results are to be used for regulatory purposes (e.g. to assess whether a licensed discharge impacts on water quality objectives), then prior agreement from the EPA on the approach and study design must be obtained.
- Describe the state of the receiving waters and relate this to the relevant Water Quality and River Flow Objectives (i.e. are Water Quality and River Flow Objectives being achieved?). Proponents are generally only expected to source available data and information. However, proponents of large or high risk developments may be required to collect some ambient water quality / river flow / groundwater data to enable a suitable level of impact assessment. Issues to include in the description of the receiving waters could include:

lake or estuary flushing characteristics

n) specific human uses (e.g. exact location of drinking water offtake)

o) sensitive ecosystems or species conservation values

p) a description of the condition of the local catchment e.g. erosion levels, soils, vegetation cover, etc

q) an outline of baseline groundwater information, including, but not restricted to, depth to watertable, flow direction and gradient, groundwater quality, reliance on groundwater by surrounding users and by the environment

r) historic river flow data where available for the catchment.

### *Assess impacts*

- No proposal should breach clause 120 of the *Protection of the Environment Operations Act* 1997 (i.e. pollution of waters is prohibited unless undertaken in accordance with relevant regulations).
- Identify and estimate the quantity of all pollutants that may be introduced into the water cycle by source and discharge point including residual discharges after mitigation measures are implemented.
- Include a rationale, along with relevant calculations, supporting the prediction of the discharges.
- Describe the effects and significance of any pollutant loads on the receiving environment. This should include impacts of residual discharges through modelling, monitoring or both, depending on the scale of the proposal. Determine changes to hydrology (including drainage patterns, surface runoff yield, flow regimes, wetland hydrologic regimes and groundwater).
- Describe water quality impacts resulting from changes to hydrologic flow regimes (such as nutrient enrichment or turbidity resulting from changes in frequency and magnitude of stream flow).
- Identify any potential impacts on quality or quantity of groundwater describing their source.
- Identify potential impacts associated with geomorphological activities with potential to increase surface water and sediment runoff or to reduce surface runoff and sediment transport. Also consider possible impacts such as bed lowering, bank lowering, instream siltation, floodplain erosion and floodplain siltation.
- Identify impacts associated with the disturbance of acid sulfate soils and potential acid sulfate soils.
- Containment of spills and leaks shall be in accordance with EPA's guidelines section 'Bunding and Spill Management' at http://www.epa.nsw.gov.au/mao/bundingspill.htm and the most recent versions of the Australian Standards referred to in the Guidelines. Containment should be designed for no-discharge.
- The significance of the impacts listed above should be predicted. When doing this it is important to predict the ambient water quality and river flow outcomes associated with the proposal and to demonstrate whether these are acceptable in terms of achieving protection of the Water Quality and River Flow Objectives. In particular the following questions should be answered:

  a) will the proposal protect Water Quality and River Flow Objectives where they are currently achieved in the ambient waters; and

  b) will the proposal contribute towards the achievement of Water Quality and River Flow Objectives over time, where they are not currently achieved in the ambient waters.

- Consult with the EPA as soon as possible if a mixing zone is proposed (a mixing zone could exist where effluent is discharged into a receiving water body, where the quality of the water being discharged does not immediately meet water quality objectives. The mixing zone could result in dilution, assimilation and decay of the effluent to allow water quality objectives to be met further downstream, at the edge of the mixing zone). The EPA will advise the proponent under what conditions a mixing zone will and will not be acceptable, as well as the information and modelling requirements for assessment.

*Note: The assessment of water quality impacts needs to be undertaken in a total catchment management context to provide a wide perspective on development impacts, in particular cumulative impacts.*

- Where a licensed discharge is proposed, provide the rationale as to why it cannot be avoided through application of a reasonable level of performance, using available technology, management practice and industry guidelines.
- Where a licensed discharge is proposed, provide the rationale as to why it represents the best environmental outcome and what measures can be taken to reduce its environmental impact.
- Reference should be made to relevant guidleines, including *Managing Urban Stormwater: Soils and Construction* (Landcom, 2004), *Guidelines for Fresh and Marine Water Quality* ANZECC 2000), *Environmental Guidelines: Use of effluent by Irrigation* (DEC, 2004).

### *Describe management and mitigation measures*

- Outline stormwater management to control pollutants at the source and contain them within the site. Also describe measures for maintaining and monitoring any stormwater controls.
- Outline erosion and sediment control measures directed at minimising disturbance of land, minimising water flow through the site and filtering, trapping or detaining sediment. Also include measures to maintain and monitor controls as well as rehabilitation strategies.
- Describe waste water treatment measures that are appropriate to the type and volume of waste water and are based on a hierarchy of avoiding generation of waste water; capturing all contaminated water (including stormwater) on the site; reusing/recycling waste water; and treating any unavoidable discharge from the site to meet specified water quality requirements.
- Outline pollution control measures relating to storage of materials, possibility of accidental spills (e.g. preparation of contingency plans), appropriate disposal methods, and generation of leachate.
- Describe hydrological impact mitigation measures including:
  a) site selection (avoiding sites prone to flooding and waterlogging, actively eroding or affected by deposition)
  b) minimising runoff
  c) minimising reductions or modifications to flow regimes
  d) avoiding modifications to groundwater.
- Describe groundwater impact mitigation measures including:
  a) site selection
  b) retention of native vegetation and revegetation
  c) artificial recharge
  d) providing surface storages with impervious linings
  e) monitoring program.
- Describe geomorphological impact mitigation measures including:
  a) site selection

b) erosion and sediment controls

c) minimising instream works

d) treating existing accelerated erosion and deposition

e) monitoring program.

- Any proposed monitoring should be undertaken in accordance with the *Approved Methods for the Sampling and Analysis of Water Pollutants in NSW* (DEC 2004).

## 5. Soils and contamination

### *Describe baseline conditions*

- Provide any details (in addition to those provided in the location description - Section C) that are needed to describe the existing situation in terms of soil types and properties and soil contamination.

### *Assess impacts*

- Identify any likely impacts resulting from the construction or operation of the proposal, including the likelihood of:

  a) disturbing any existing contaminated soil

  b) contamination of soil by operation of the activity

  c) subsidence or instability

  d) soil erosion

  e) disturbing acid sulfate or potential acid sulfate soils.

- Reference should be made to relevant guidelines, including *Contaminated Sites – Guidelines for Consultants Reporting on Contaminated Sites* (OEH, 2011)*; Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997* (EPA, 2015).

### *Describe management and mitigation measures*

- Describe and assess the effectiveness or adequacy of any soil management and mitigation measures during construction and operation of the proposal including:

  a) erosion and sediment control measures

  b) proposals for site remediation – see *Managing Land Contamination, Planning Guidelines SEPP 55 – Remediation of Land* (Department of Urban Affairs and Planning and Environment Protection Authority, 1998)

  c) proposals for the management of these soils – see *Acid Sulfate Soil Manual* (Acid Sulfate Soil Advisory Committee 1998) and *Acid Sulfate Soils Assessment Guidelines* (Acid Sulfate Soil Advisory Committee 1998).

## 6. Waste and chemicals

### *Describe baseline conditions*

- Describe any existing waste or chemicals operations related to the proposal.

### *Assess impacts*

- Assess the adequacy of proposed measures to minimise natural resource consumption and minimise impacts from the handling, transporting, storage, processing and reprocessing of waste and/or chemicals.
- Reference should be made to: the EPA's *Waste Classification Guidelines 2014 (as in force from time to time)*
- If the proposal is an energy from waste facility it must:

    1. demonstrate that the proposed operation will comply with the NSW EPA's Energy from Waste Policy Statement;
    2. describe of the classes and quantities of waste that would be thermally treated at the facility;
    3. demonstrate that waste used as a feedstock in the waste to energy plant would be the residual from a resource recovery process that maximises the recovery of material;
    4. detail procedures that would be implemented to control the inputs to the waste to energy plant, including contingency measures that would be implemented if inappropriate materials are identified;
    5. detail the location and size of stockpiles of unprocessed and processed recycled waste at the site;
    6. demonstrate any waste material (e.g. biochar, ash) produced from the waste to energy facility for land application is fit-for-purpose and poses minimal risk of harm to the environment in order to meet the requirements for consideration of a resource recovery order and /or exemption by the EPA;
    7. detail procedures for the management of other solid, liquid and gaseous waste streams;
    8. describe how waste would be treated, stored, used, disposed and handled on site, and transported to and from the site, and the potential impacts associated with these issues, including current and future offsite waste disposal methods; and
    9. identify the measures that would be implemented to ensure that the development is consistent with the aims, objectives and guidance in the *NSW Waste Avoidance and Resource Recovery Strategy 2014-21*.

### *Describe management and mitigation measures*

- Outline measures to minimise the consumption of natural resources.
- Outline measures to avoid the generation of waste and promote the re-use and recycling and reprocessing of any waste.
- Outline measures to support any approved regional or industry waste plans.

## 7. Cumulative impacts

- Identify the extent that the receiving environment is already stressed by existing development and background levels of emissions to which this proposal will contribute.
- Assess the impact of the proposal against the long term air, noise and water quality objectives for the area or region.
- Identify infrastructure requirements flowing from the proposal (e.g. water and sewerage services, transport infrastructure upgrades).
- Assess likely impacts from such additional infrastructure and measures reasonably available to the proponent to contain such requirements or mitigate their impacts (e.g. travel demand management strategies).

## F. List of approvals and licences

- Identify all approvals and licences required under environment protection legislation including details of all scheduled activities, types of ancillary activities and types of discharges (to air, land, water).

## G. Compilation of mitigation measures

- Outline how the proposal and its environmental protection measures would be implemented and managed in an integrated manner so as to demonstrate that the proposal is capable of complying with statutory obligations under EPA licences or approvals (e.g. outline of an environmental management plan).
- The mitigation strategy should include the environmental management and cleaner production principles which would be followed when planning, designing, establishing and operating the proposal. It should include two sections, one setting out the program for managing the proposal and the other outlining the monitoring program with a feedback loop to the management program.

## H. Justification for the Proposal

- Reasons should be included which justify undertaking the proposal in the manner proposed, having regard to the potential environmental impacts.

# ATTACHMENT C: GUIDANCE MATERIAL

| Title | Web address |
|---|---|
| **Relevant Legislation** | |
| *Contaminated Land Management Act 1997* | http://www.legislation.nsw.gov.au/#/view/act/1997/140 |
| *Environmentally Hazardous Chemicals Act 1985* | http://www.legislation.nsw.gov.au/#/view/act/1985/14 |
| *Environmental Planning and Assessment Act 1979* | http://www.legislation.nsw.gov.au/#/view/act/1979/203 |
| *Protection of the Environment Operations Act 1997* | http://www.legislation.nsw.gov.au/#/view/act/1997/156 |
| *Water Management Act 2000* | http://www.legislation.nsw.gov.au/#/view/act/2000/92 |
| **Licensing** | |
| Guide to Licensing | www.epa.nsw.gov.au/licensing/licenceguide.htm |
| **Air Issues** | |
| **Air Quality** | |
| Approved methods for modelling and assessment of air pollutants in NSW (2016) | http://www.epa.nsw.gov.au/air/appmethods.htm<br>http://www.epa.nsw.gov.au/resources/air/ammodelling05361.pdf |
| POEO (Clean Air) Regulation 2010 | http://www.legislation.nsw.gov.au/#/view/regulation/2010/428 |
| **Noise and Vibration** | |
| NSW Noise Policy for Industry | http://www.epa.nsw.gov.au/your-environment/noise/industrial-noise/noise-policy-for-industry-(2017) |
| Interim Construction Noise Guideline (DECC, 2009) | http://www.epa.nsw.gov.au/noise/constructnoise.htm |
| Assessing Vibration: a technical guideline (DEC, 2006) | http://www.epa.nsw.gov.au/noise/vibrationguide.htm |
| NSW Road Noise Policy (DECCW, 2011) | http://www.epa.nsw.gov.au/your-environment/noise/transport-noise |
| NSW Rail Infrastructure Noise Guideline (EPA, 2013) | http://www.epa.nsw.gov.au/your-environment/noise/transport-noise |
| **Human Health Risk Assessment** | |

| | |
|---|---|
| Environmental Health Risk Assessment: Guidelines for assessing human health risks from environmental hazards (enHealth, 2012) | http://www.eh.org.au/documents/item/916 |
| **Waste, Chemicals and Hazardous Materials and Radiation** | |
| **Waste** | http://www.epa.nsw.gov.au/wastestrategy/warr.htm |
| Environmental Guidelines: Solid Waste Landfills (EPA, 2016) | http://www.epa.nsw.gov.au/waste/landfill-sites.htm |
| Draft Environmental Guidelines - Industrial Waste Landfilling (April 1998) | http://www.epa.nsw.gov.au/resources/waste/envguidlns/industrialfill.pdf |
| EPA's Waste Classification Guidelines 2014 | http://www.epa.nsw.gov.au/wasteregulation/classify-guidelines.htm |
| Resource recovery orders and exemptions | http://www.epa.nsw.gov.au/wasteregulation/orders-exemptions.htm |
| European Unions Waste Incineration Directive 2000 | http://ec.europa.eu/environment/archives/air/stationary/wid/legislation.htm |
| EPA's Energy from Waste Policy Statement | http://www.epa.nsw.gov.au/wastestrategy/energy-from-waste.htm |
| NSW Waste Avoidance and Resource Recovery Strategy 2014-2021 | http://www.epa.nsw.gov.au/wastestrategy/warr.htm |
| **Chemicals subject to Chemical Control Orders** | |
| Chemical Control Orders (regulated through the EHC Act ) | http://www.epa.nsw.gov.au/pesticides/CCOs.htm |
| National Protocol - Approval/Licensing of Trials of Technologies for the Treatment/Disposal of Schedule X Wastes - July 1994 | Available in libraries |
| National Protocol for Approval/Licensing of Commercial Scale Facilities for the Treatment/Disposal of Schedule X Wastes - July 1994 | Available in libraries |
| **Water and Soils** | |
| **Acid sulphate soils** | |
| Coastal acid sulfate soils guidance material | http://www.environment.nsw.gov.au/acidsulfatesoil/ and http://www.epa.nsw.gov.au/mao/acidsulfatesoils.htm |
| Acid Sulfate Soils Planning Maps | http://www.environment.nsw.gov.au/acidsulfatesoil/riskmaps.htm |
| **Contaminated Sites Assessment and Remediation** | |
| Managing land contamination: Planning Guidelines – SEPP 55 Remediation of Land | http://www.epa.nsw.gov.au/clm/planning.htm |

| | |
|---|---|
| Guidelines for Consultants Reporting on Contaminated Sites (EPA, 2000) | http://www.epa.nsw.gov.au/resources/clm/20110650consultantsglines.pdf |
| Guidelines for the NSW Site Auditor Scheme - 2nd edition (DEC, 2006) | http://www.epa.nsw.gov.au/resources/clm/auditorglines06121.pdf |
| Sampling Design Guidelines (EPA, 1995) | http://www.epa.nsw.gov.au/resources/clm/95059sampgdlne.pdf |
| National Environment Protection (Assessment of Site Contamination) Measure 1999 (or update) | http://www.scew.gov.au/nepms/assessment-site-contamination |
| **Soils – general** | |
| Managing land and soil | http://www.environment.nsw.gov.au/soils/landandsoil.htm |
| Managing urban stormwater for the protection of soils | http://www.environment.nsw.gov.au/stormwater/publications.htm |
| Landslide risk management guidelines | http://australiangeomechanics.org/admin/wp-content/uploads/2010/11/LRM2000-Concepts.pdf http://www.australiangeomechanics.org/resources/downloads/ |
| Site Investigations for Urban Salinity (DLWC, 2002) | http://www.environment.nsw.gov.au/resources/salinity/booklet3siteinvestigationsforurbansalinity.pdf |
| Local Government Salinity Initiative Booklets | http://www.environment.nsw.gov.au/salinity/solutions/urban.htm |
| **Water** | |
| Water Quality Objectives | http://www.environment.nsw.gov.au/ieo/index.htm |
| ANZECC (2000) Guidelines for Fresh and Marine Water Quality | http://www.environment.gov.au/water/publications/quality/nwqms-guidelines-4-vol1.html |
| Applying Goals for Ambient Water Quality Guidance for Operations Officers - Mixing Zones | Contact the EPA on 131555 |
| Approved Methods for the Sampling and Analysis of Water Pollutant in NSW (2004) | http://www.environment.nsw.gov.au/resources/legislation/approvedmethods-water.pdf |

Transport for NSW

CR2022/000848
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CH

10 March 2022

Department of Planning, Industry & Environment
Industry Assessments
GPO Box 39
SYDNEY NSW 2001

**Attention: Kathryn Moreira**

**SEAR 1655**
**SEARS REQUEST: ASPHALT BATCHING PLANT, LOT: 2 DP: 712505, 125 SOMERSBY FALLS ROAD SOMERSBY**

I refer to the request by the Department of Planning, Industry and Environment (DPIE) dated 7 March 2022 seeking input from Transport for NSW (TfNSW) to the Secretary's Environmental Assessment Requirements (SEARs) for the abovementioned development proposal.

TfNSW key interests are the safety and efficiency of the transport network, the needs of our customers and the integration of land use and transport in accordance with Future Transport Strategy 2056.

TfNSW requests that a Traffic Impact Assessment (TIA) be prepared by a suitably qualified person/s in accordance with the Austroads *Guide to Traffic Management Part 12*, the complementary TfNSW Supplement and *Roads and Maritime Guide to Traffic Generating Developments*.

The TIA should be tailored to the scope of the proposed development and include, but not be limited to, the following:

- A map of the surrounding road network identifying the site access, nearby accesses, intersections, relevant transport route/s, transport related facilities and connections to the classified (State) road network.
- Detailed assessment of all relevant vehicular transport routes, relevant intersections and connections to the classified (State) road network for access to / from the proposed development site/s (including ancillary sites). Vehicle types to be considered:
  - Commuter (employee and contractor) light vehicles and pool vehicles,
  - Heavy (haulage) vehicles,

**Transport for NSW**
6 Stewart Avenue, Newcastle West NSW 2302
Locked Bag 2030, Newcastle West NSW 2302
T – 1300 207 783

Level 1, 76 Victoria Street, Grafton NSW 2460
PO Box 576, Grafton NSW 2460
T – 1300 207 783

  - Over size and over mass (OSOM) vehicles.

- The total impact of existing and proposed development on the road network with consideration for a 10-year horizon. This should include:
  - Identify Annual Average Daily Traffic (AADT) volumes with percentage heavy vehicles along the transport route/s and diagrammatically demonstrate AM and PM peak hour movements at key intersections.
  - Background traffic data from published sources and/or recent survey data. The source of data and any assumptions are to be clearly explained and justified, including the growth rate applied to the future horizon. Due to the impact of COVID-19 on travel patterns, traffic counts undertaken at this time may not be representative of normal volumes. Alternative approaches to understanding the impact of COVID-19 on traffic patterns should be discussed with TfNSW.
  - The volume and distribution of any existing and proposed trips to be generated by the construction, operational and decommission phases of the development. This should identify the maximum daily and hourly demands generated by the development, particularly where they coincide with the network peak hour.
  - The type and frequency of design vehicles accessing the development site.
- Assessment of any ancillary infrastructure works of the development. Including but not limited to impacts of construction, haulage/transportation routes, traffic generation (individual and cumulative with all the project's components) and distribution for the transportation of staff/personnel and materials during construction, operation and decommissioning stages.
- Traffic analysis of any major / relevant intersections impacted, using SIDRA or similar traffic model, including:
  - Current traffic counts and 10-year traffic growth projections
  - With and without development scenarios
  - 95th percentile back of queue lengths
  - Delays and level of service on all legs for the relevant intersections
  - Electronic data for TfNSW review.
- Details of the road geometry and alignment along the identified transport route/s, including existing formations, crossings, intersection treatments and any identified hazards. This should include:
  - Available sight distances at intersections along the proposed transport routes, the site access and any constraint to achieving the required sight distance for the posted speed limit.
  - An assessment of turn treatment warrants in accordance with the Austroads Guide to Traffic Management Part 6 and Austroads Guide to Road Design Part 4A for intersections along the identified transport route/s, including connections to the

classified (State) road network, identifying the existence of the minimum basic turn treatments and addressing the need for any warranted higher order treatments.

  - Swept path analysis demonstrating the largest design vehicle entering and leaving the development, and moving in each direction through intersections along the proposed transport route/s.

- Identify any necessary road network infrastructure upgrades that are required to maintain existing levels of service on both the local and classified road network for the development.

  Strategic (2D) design drawings for any proposed road upgrades and the site access should demonstrate the scope, estimated cost and constructability of works required to mitigate the impacts of the development on road safety, traffic efficiency and the integrity of transport infrastructure. All proposed works must be:

  - Designed in accordance with Austroads Guidelines, Australian Standards and TfNSW Supplements
  - Appropriately designed for the existing posted speed limit.
  - To the satisfaction of TfNSW and/or Council in accordance with relevant Roads Act functions.
  - Submitted with the EIS and TIA.

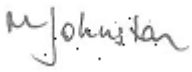
- Details of measures to ameliorate the impacts of road traffic noise, dust, and/or glare generated along the proposed transport route/s.
- Site plan demonstrating site access, internal manoeuvring, servicing and parking areas consistent with the relevant parts of AS2890 and Council requirements.
- Consideration of cumulative impacts:
  - Identify and assess the implications of any road and / or rail projects that will potentially be occurring simultaneously with the scheduling of the OSOM movements along the proposed OSOM routes.
  - An assessment should be undertaken as a part of the EIS and TIA, to identify where projects will have overlapping construction periods within the vicinity of the project site. The assessment should consider the following:
    - The cumulative impacts from traffic generated from the construction workforces in terms of the routes, access, AM/PM peaks where there is overlap with other projects.
    - The cumulative impacts of heavy vehicle movements in terms of AM/PM peaks and routes where there is an overlap with other projects.
    - Cumulative impacts and consideration in relation to the timing of movements of OSOMs where other projects will be utilising the same routes as proposed for this development.

    - Any potential for future expansion of the subject development and the potential impacts any such expansion would have on the development, the broader road network and the AM/PM peaks. It should be noted, any future expansion beyond the scope of the subject application, will require additional applications and approvals.

- Details of measures to address impacts and/or provide connections for public transport services and active transport modes, such as, public and school bus services, walking and cycling.
- A review of crash data along the identified transport route/s for the most recent 5 year reporting period and an assessment of road safety along the proposed transport route/s considering the safe systems principles adopted under Future Transport 2056.
- Details of any Traffic Management Plan (TMP) proposed to address the construction and operation phases of the proposed development. The TMP should be prepared and implemented in accordance with *Australian Standard 1742.3* and the *Work Health and Safety Regulation 2017.* It is recommended that any TMP include, but not necessarily limited to, the following;
    - A map of the primary transport route/s highlighting critical locations.
    - An induction process for vehicle operators and regular toolbox meetings.
    - Procedures for travel through residential areas, school zones and/or bus route/s.
    - any proposed temporary measures such a Traffic Guidance Scheme (TGS)
    - A Driver Code of Conduct for heavy vehicle operators.
    - A complaint resolution and disciplinary procedure.
    - Community consultation measures proposed for peak periods.

Should you require further information please contact Callista Harris, Development Services Case Officer, on 1300 207 783 or (02) 8650 1789 or by emailing development.north@transport.nsw.gov.au

Yours sincerely



**Marg Johnston**
Team Leader Development Services
North Region | Community & Place
Regional & Outer Metropolitan

# ASPHALT PROCESSING FACILITY

125 SOMERSBY FALLS ROAD, SOMERSBY

**ARCHITECTURAL DRAWINGS**

| | |
|---|---|
| A001 | COVER PAGE |
| A002 | CONCEPT DATA |
| A003 | SITE ANALYSIS |
| A004 | SITE PLAN |
| A100 | OFFICE GROUND FLOOR PLAN |
| A101 | OFFICE ROOF PLAN |
| A200 | ELEVATIONS |
| A201 | ELEVATIONS |
| A202 | SECTIONS |
| A400 | CUT AND FILL DIAGRAMS |

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Member Australian Institute of Architects

Client

Project
ASPHALT PROCESSING FACILITY

Location
125 SOMERSBY ROAD, SOMERSBY

Drawing
COVER PAGE

| Issue | Description | Date | Chk | Auth |
|---|---|---|---|---|
| A | DA Submission | 26.10.2023 | | |

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Project Number
22_012

Drawing Number
A001

Issue
A

Scale
1 : 100 @ A3

Date Printed
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File Name
Autodesk Docs://22_012 - 125 Somersby Falls Road Somersby/22_012 - 125 Somersby Falls Road Somersby - DA.rvt

# 125 SOMERSBY FALLS ROAD, SOMERSBY

***SITE CONSTRAINTS:***

| | |
|---|---|
| ADDRESS: | 125 SOMERSBY FALLS ROAD, SOMERSBY LOT 3 |
| LOT/SECTION /PLAN NO: | 3/-/DP712505 |
| LAND ZONING: | IN1 - GENERAL INDUSTRIAL |

Permitted with consent:
Depots; Freight transport facilities; Garden centers; General industries; Hardware and building supplies; Industrial training facilities; Landscaping material supplies; Light industries; Neighbourhood shops; Oyster aquaculture; Places of public worship; Restaurants or cafes; Roads; Rural supplies; Tank-based aquaculture; Timber yards; Vehicle sales or hire premises; Warehouse or distribution centers; Any other development not specified in item 2 or 4

| | |
|---|---|
| SITE AREA: | 1.01ha |
| ACID SULFATE SOILS: | CLASS 5 |
| SETBACKS: | FRONT SETBACK: 15M<br>REAR SETBACK: 5M<br>SIDE SETBACKS: 3M |
| FSR: | 0.8:1 |

***INDUSTRIAL PROPOSAL:***

| | |
|---|---|
| ASPHALT PROCESSING FACILITY SITE COVERAGE: | 7690m² |
| OFFICE FACILITIES/ CARETAKER UNIT/ DRIVER FACILITIES TOTAL PROPOSED AREA/GFA: | 280m² |
| **TOTAL FSR:** | **0.02:1** |
| **TOTAL SITE COVERAGE:** | **7970m²** |

***PARKING - REQUIREMENTS:***

1 SPACE PER 100 m2 OF INDUSTRIAL FLOOR SPACE
1 SPACE PER 300 m2 FOR WAREHOUSE/BULK STORES/SELF STORAGE UNITS
1 SPACE PER 40 m2 FOR ANCILLARY OFFICE SPACE
1 SPACE PER 30 m2 FOR ANCILLARY RETAIL SPACE

**= 7 CAR SPACES**

ACCESSIBLE PARKING GUIDELINES: 1 SPACE PER 100 CARPARKING SPACES

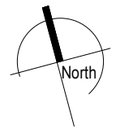
**TOTAL REQUIRED = 8 SPACES**

***PARKING - PROPOSED:***

**TOTAL PROPOSED = 11 CAR SPACES**

**(1 X ACCESSIBLE PARKING INCLUDED)**

1 / A200 LOCATION PLAN
1 : 5000

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Client

Project
ASPHALT PROCESSING FACILITY

Location
125 SOMERSBY ROAD, SOMERSBY

Drawing
CONCEPT DATA

| Issue | Description | Date | Chk | Auth |
|---|---|---|---|---|
| A | DA Submission | 26.10.2023 | | |

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Project Number 22_012
Drawing Number A002
Issue A
Scale As indicated @ A3
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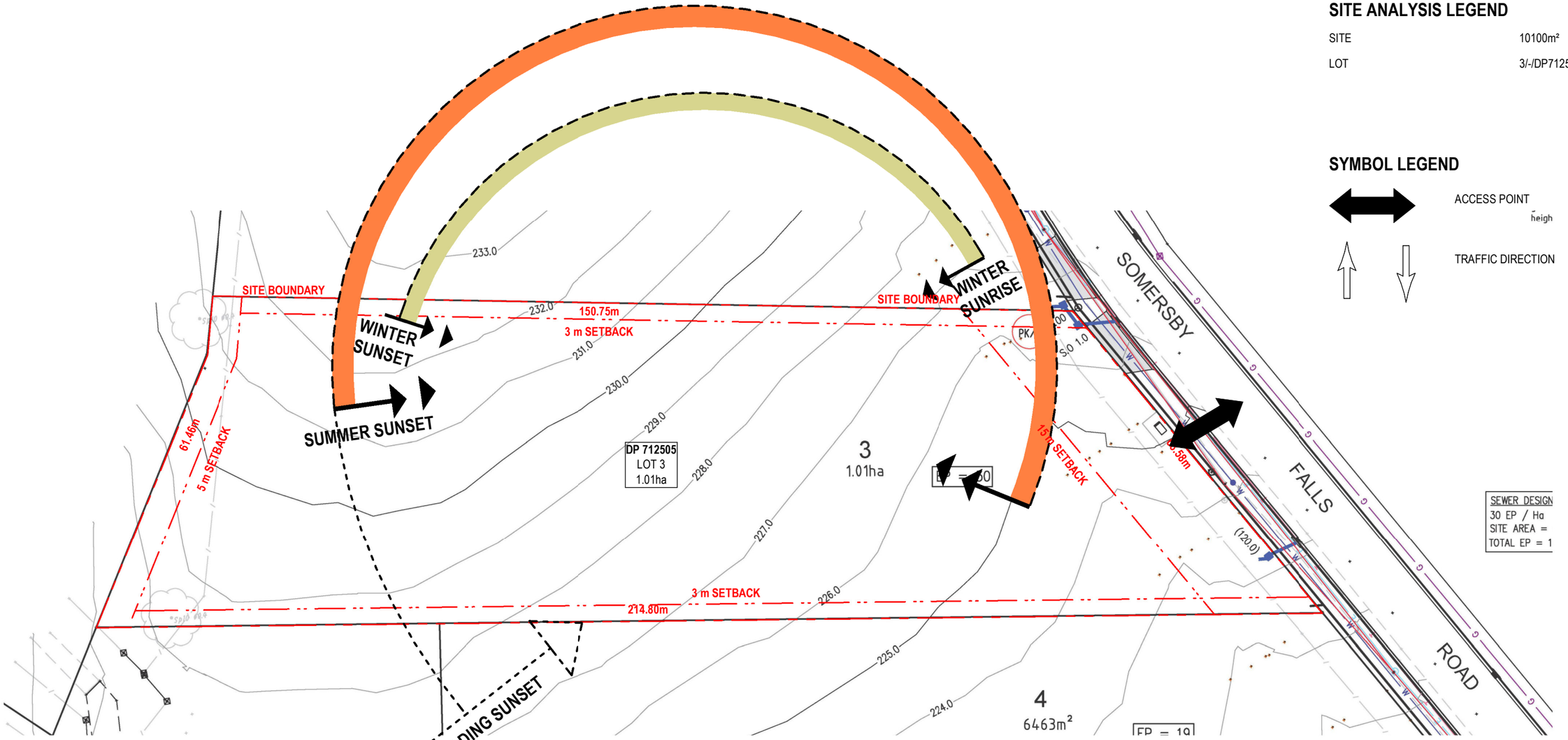
## SITE ANALYSIS LEGEND

| | |
|---|---|
| SITE | 10100m² |
| LOT | 3/-/DP712505 |

## SYMBOL LEGEND

ACCESS POINT

TRAFFIC DIRECTION




1 SITE ANALYSIS
A200 1 : 750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Client

Project
ASPHALT PROCESSING FACILITY

Location
125 SOMERSBY ROAD, SOMERSBY

Drawing
SITE ANALYSIS

North

| Issue | Description | Date | Chk | Auth |
|---|---|---|---|---|
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Project Number
22_012

Drawing Number
A003

Issue
A

Scale
As indicated @ A3

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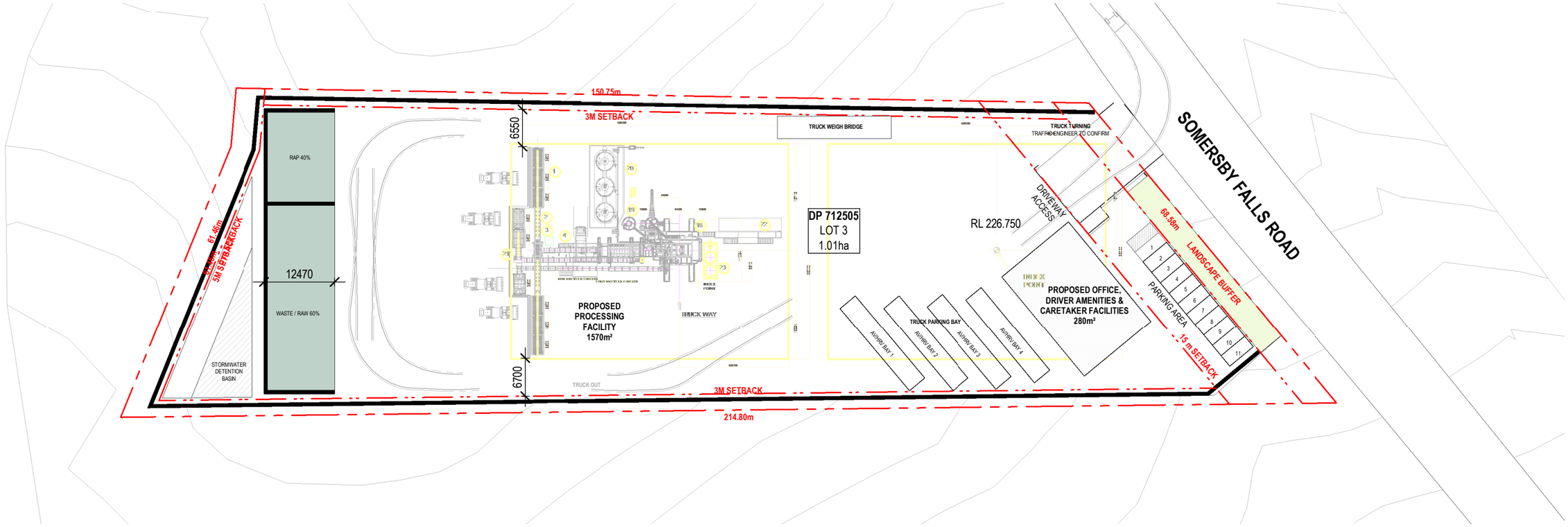


1 / A200 SITE PLAN
1 : 750

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Client

Project
ASPHALT PROCESSING FACILITY

Location
125 SOMERSBY ROAD, SOMERSBY

Drawing
SITE PLAN

North

| Issue | Description | Date | Chk | Auth |
|---|---|---|---|---|
| A | DA Submission | 26.10.2023 | | |

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Project Number
22_012

Drawing Number
A004

Issue
A

Scale
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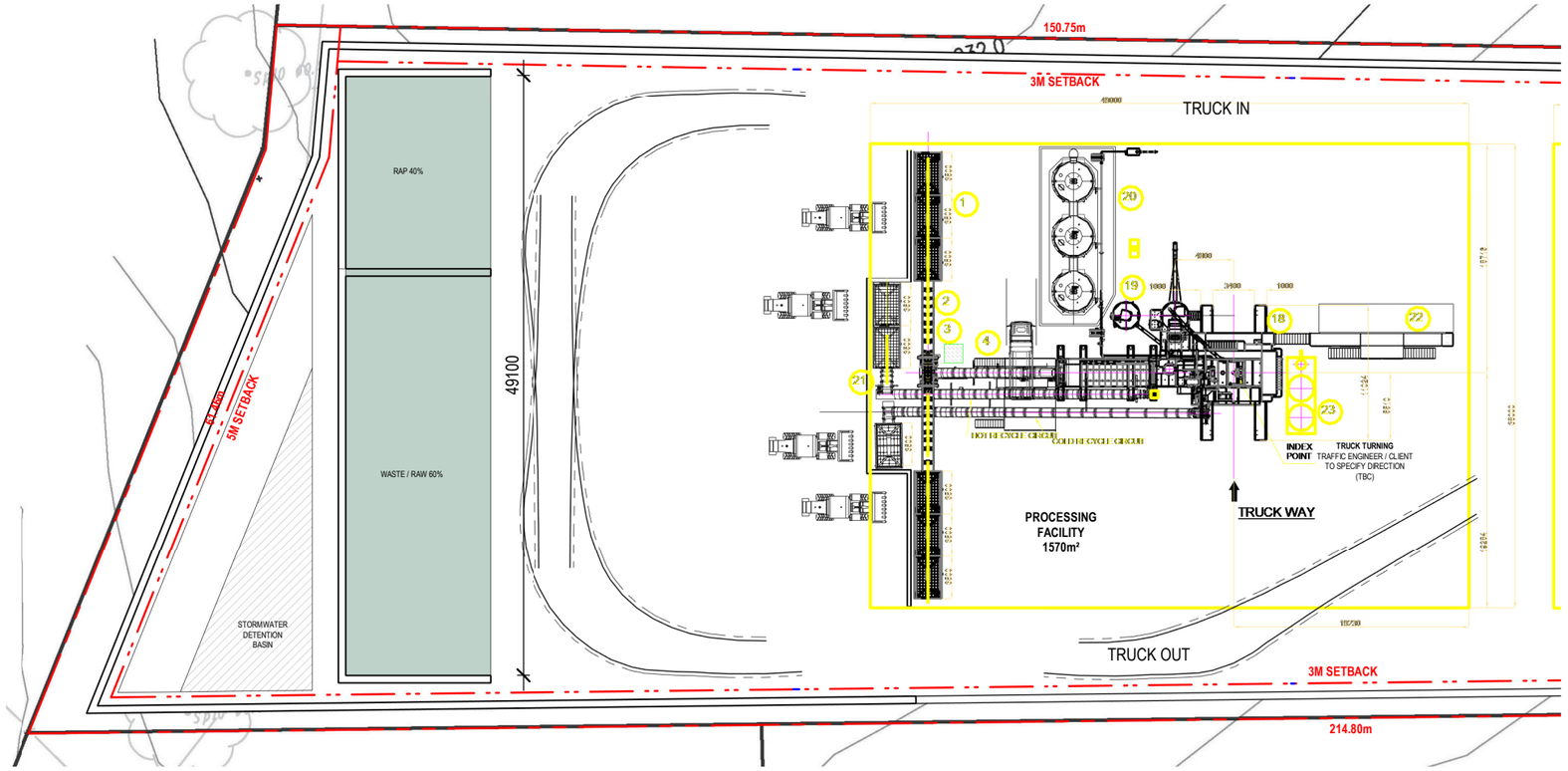


1 A200 PROCESSING PLANT
1 : 500

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Project
ASPHALT PROCESSING FACILITY

Location
125 SOMERSBY ROAD, SOMERSBY

Drawing
PROCCESSING PLANT

North

| Issue | Description | Date | Chk | Auth |
|---|---|---|---|---|
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Project Number
22_012

Drawing Number
A005

Issue
A

Scale
As indicated @ A3

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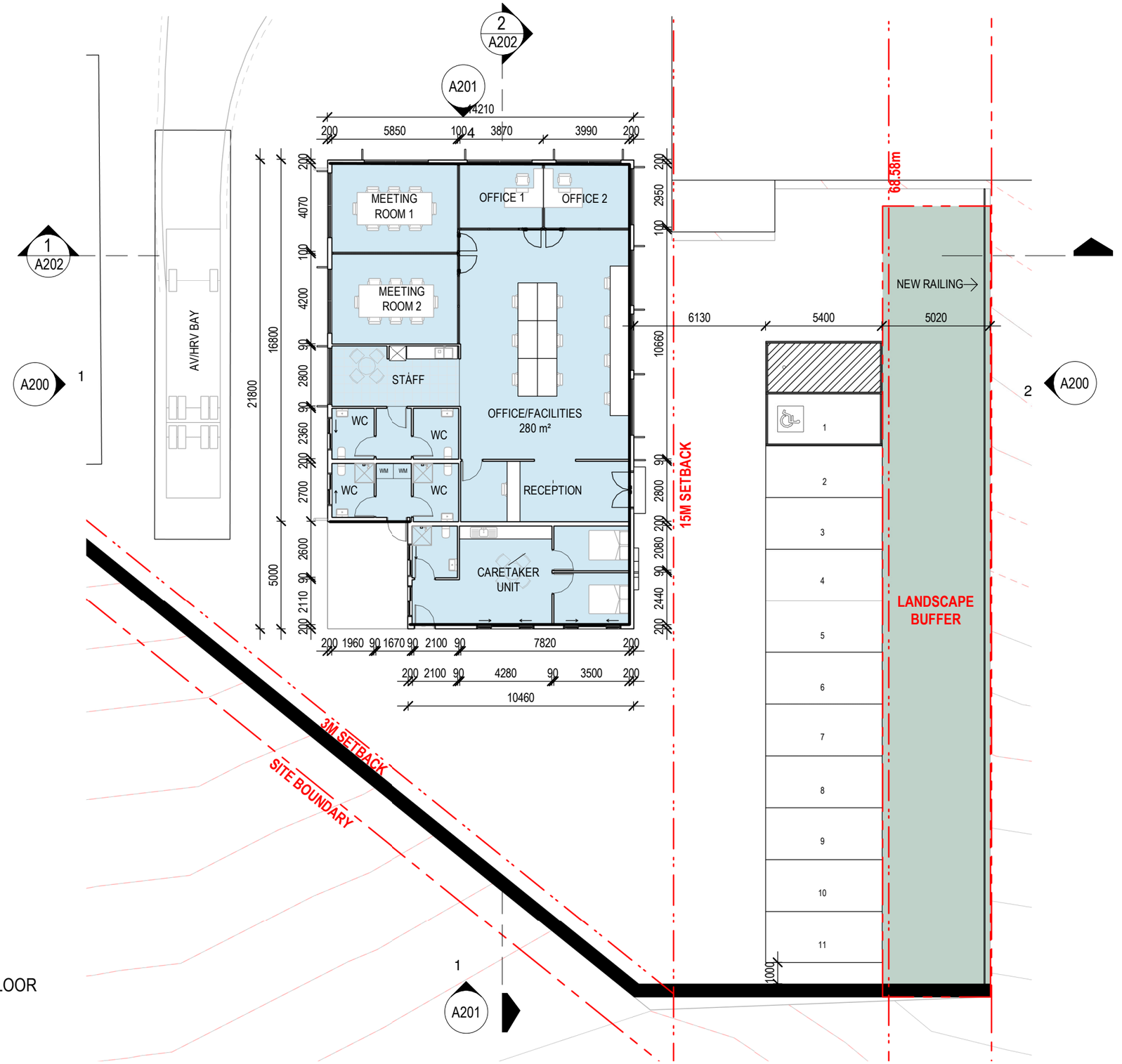


1 / A200 OFFICE GROUND FLOOR
1 : 200

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Client

Project
ASPHALT PROCESSING FACILITY

Location
125 SOMERSBY ROAD, SOMERSBY

Drawing
OFFICE GROUND FLOOR PLAN

North

| Issue | Description | Date | Chk | Auth |
|---|---|---|---|---|
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Project Number
22_012

Drawing Number
A100

Issue
A

Scale
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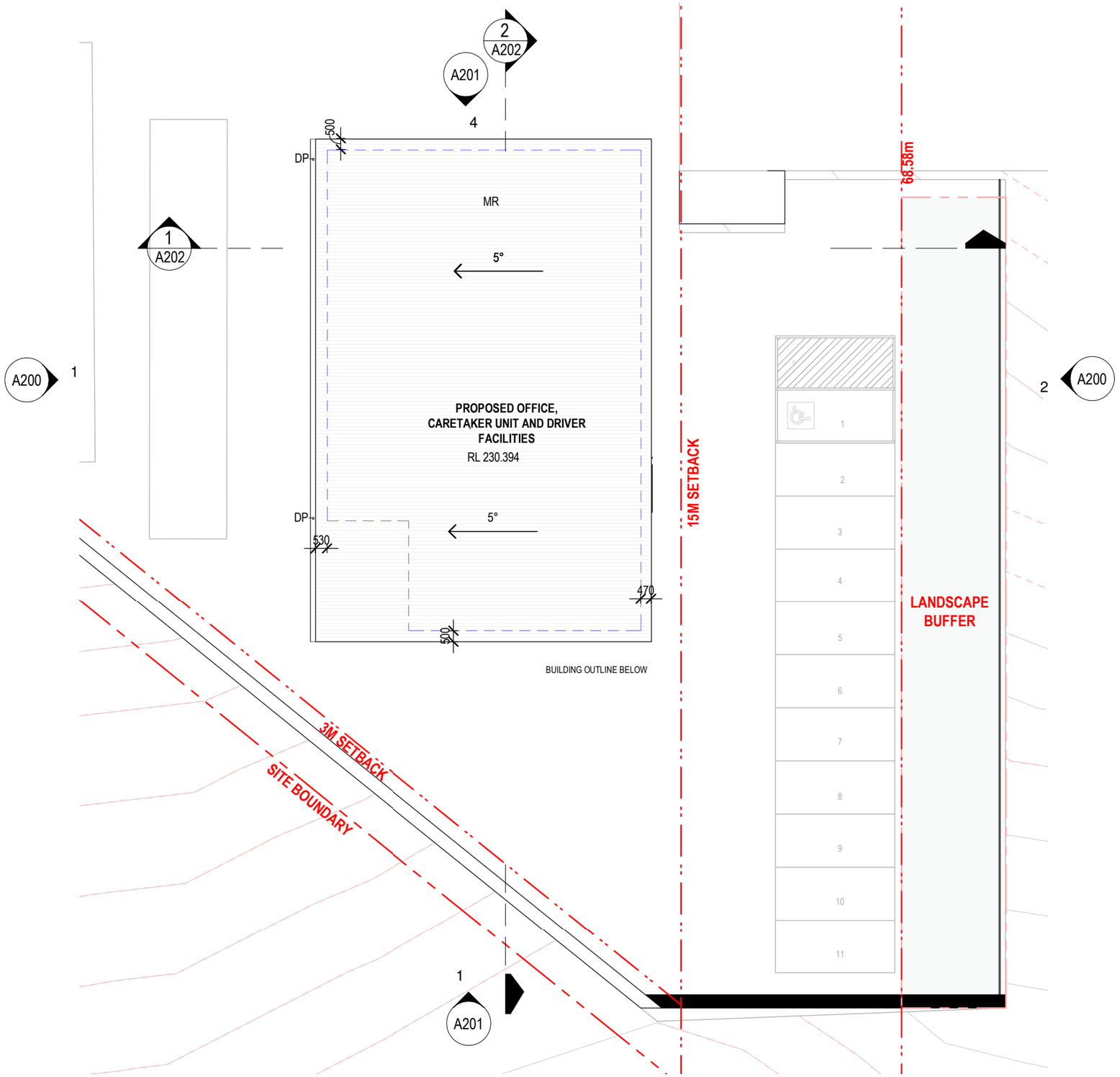


1 / A200 OFFICE ROOF PLAN
1 : 200

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Client

Project
ASPHALT PROCESSING FACILITY

Location
125 SOMERSBY ROAD, SOMERSBY

Drawing
OFFICE ROOF PLAN

North

| Issue | Description | Date | Chk | Auth |
|---|---|---|---|---|
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Project Number
22_012

Drawing Number
A101

Issue
A

Scale
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File Name
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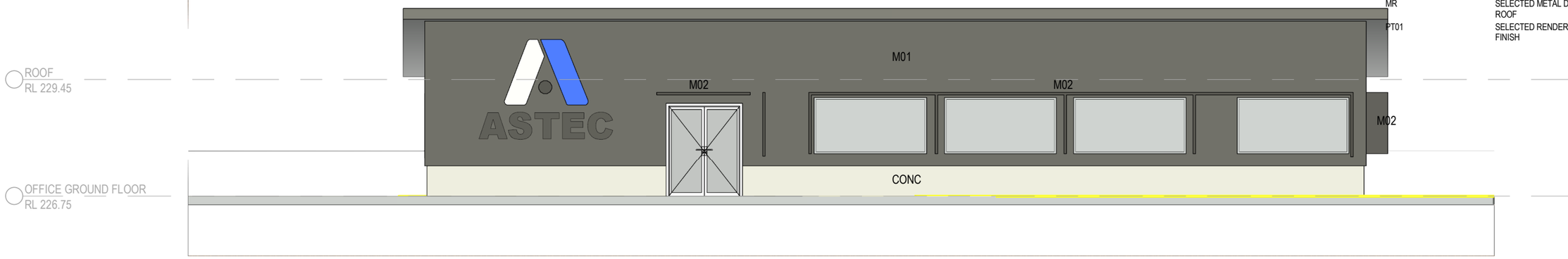
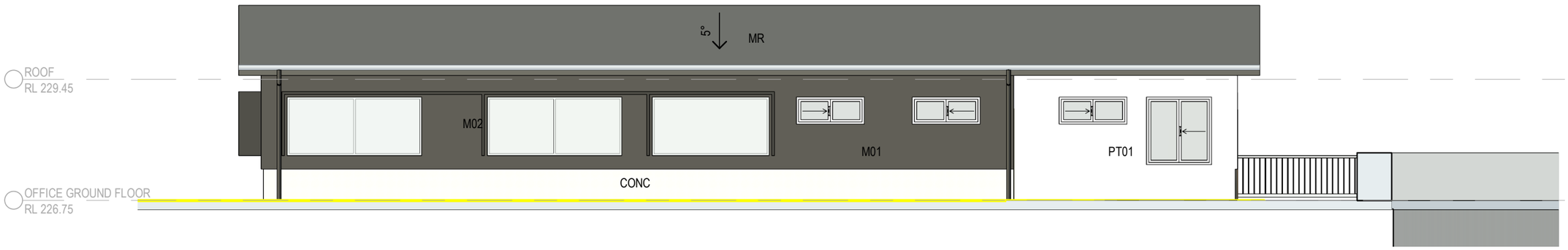
LEGEND

| | |
|---|---|
| CONC | SELECTED CONC. REFER TO FINISHES SCHEDULE |
| M01 | SELECTED METAL CLADDING - BLACK OR SIMILAR |
| M02 | SELECTED METAL SHADING DEVICES |
| MR | SELECTED METAL DECK ROOF |
| PT01 | SELECTED RENDER/PAINT FINISH |

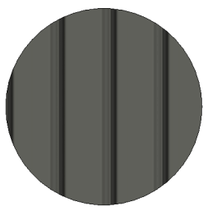



2 A100 EAST ELEVATION
1 : 100




1 A100 WEST ELEVATION
1 : 100

# EXTERNAL MATERIAL FINISHES

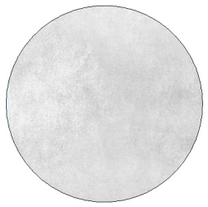


**MO1**

SELECTED METAL CLADDING - BLACK COLOUR OR SIMILAR

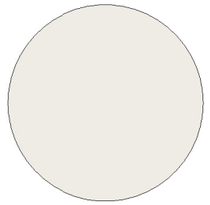
**M02**

SELECTED METAL SHADING DEVICES



**CONC**

CONCRETE RENDER FINISH



**PT01**

SELECTED WHITE RENDER/PAINT FINISH

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Client

Project
ASPHALT PROCESSING FACILITY

Location
125 SOMERSBY ROAD, SOMERSBY

Drawing
ELEVATIONS

| Issue | Description | Date | Chk | Auth |
|---|---|---|---|---|
| A | DA Submission | 26.10.2023 | | |

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Project Number
22_012

Drawing Number
A200

Issue
A

Scale
As indicated @ A3

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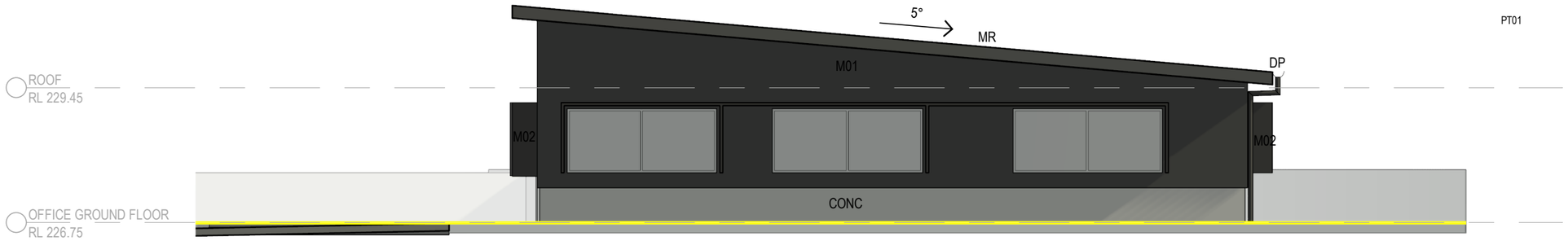
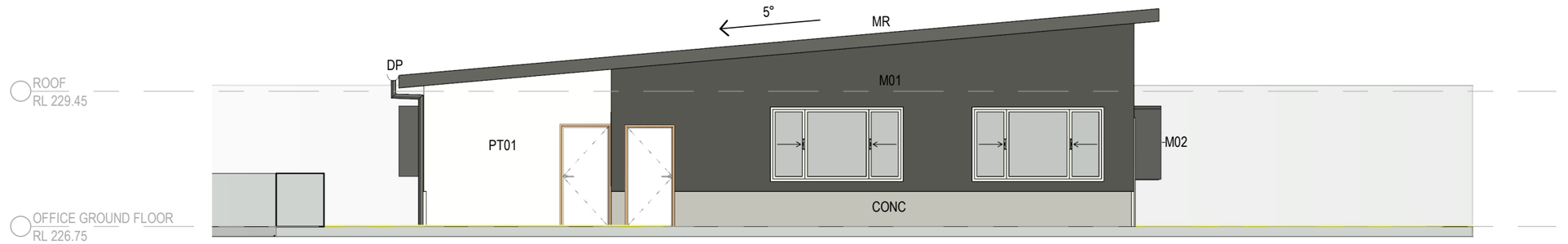
## LEGEND

| | |
|---|---|
| CONC | SELECTED CONC. REFER TO FINISHES SCHEDULE |
| DP | DOWNPIPE |
| M01 | SELECTED METAL CLADDING - BLACK OR SIMILAR |
| M02 | SELECTED METAL SHADING DEVICES |
| MR | SELECTED METAL DECK ROOF |
| PT01 | SELECTED RENDER/PAINT FINISH |




4 A100 NORTH ELEVATION
1 : 100




1 A100 SOUTH ELEVATION
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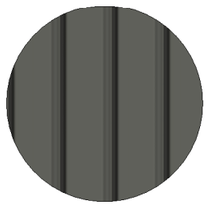
# EXTERNAL MATERIAL FINISHES

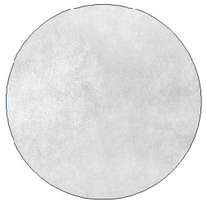


**MO1**

SELECTED METAL CLADDING - BLACK COLOUR OR SIMILAR

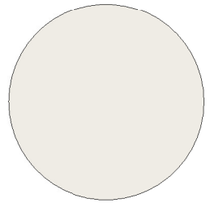
**M02**

SELECTED METAL SHADING DEVICES



**CONC**

CONCRETE RENDER FINISH



**PT01**

SELECTED WHITE RENDER/PAINT FINISH

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Riverside Park Office Tower Suite 1.4
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NSW 2250
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e:info@adgarchitects.com.au
Member Australian Institute of Architects

Client

Project
ASPHALT PROCESSING FACILITY

Location
125 SOMERSBY ROAD, SOMERSBY

Drawing
ELEVATIONS

| Issue | Description | Date | Chk | Auth |
|---|---|---|---|---|
| A | DA Submission | 26.10.2023 | | |

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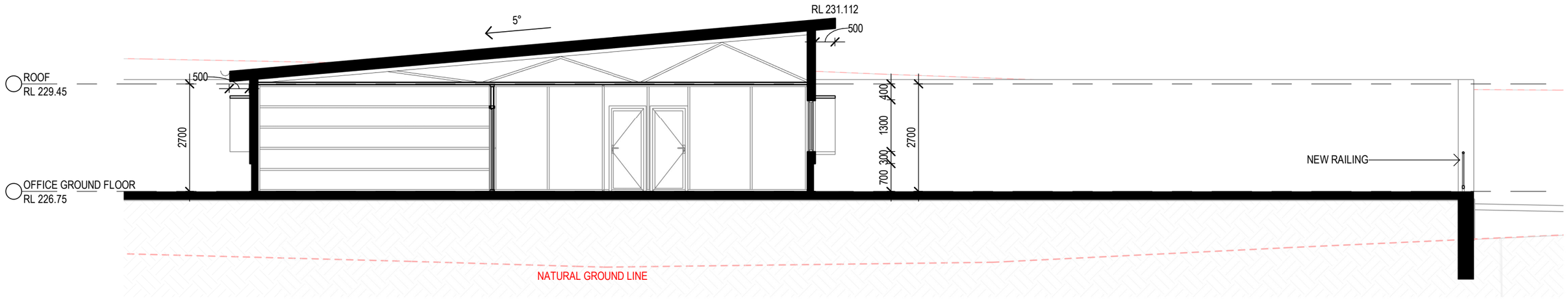
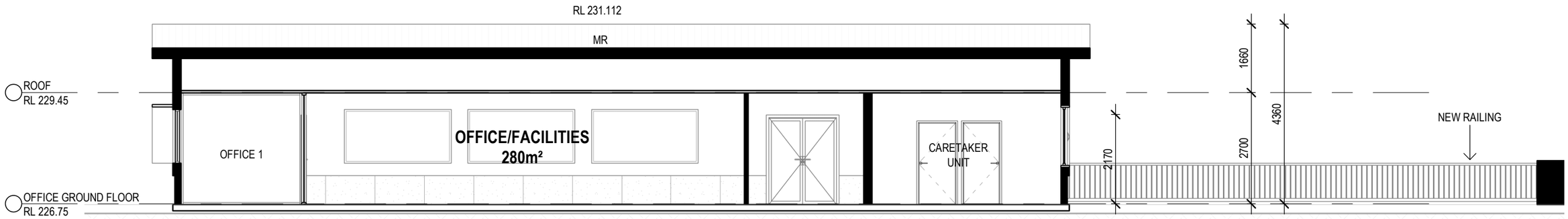
Project Number 22_012
Drawing Number A201
Issue A
Scale As indicated @ A3
Date Printed 26/10/2023 4:47:36 PM

File Name Autodesk Docs://22_012 - 125 Somersby Falls Road Somersby/22_012 - 125 Somersby Falls Road Somersby - DA.rvt




1 / A100 SECTION A
1 : 100




2 / A100 SECTION B
1 : 100

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Client

Project
ASPHALT PROCESSING FACILITY

Location
125 SOMERSBY ROAD, SOMERSBY

Drawing
SECTIONS

| Issue | Description | Date | Chk | Auth |
|---|---|---|---|---|
| A | DA Submission | 26.10.2023 | | |

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Project Number
22_012

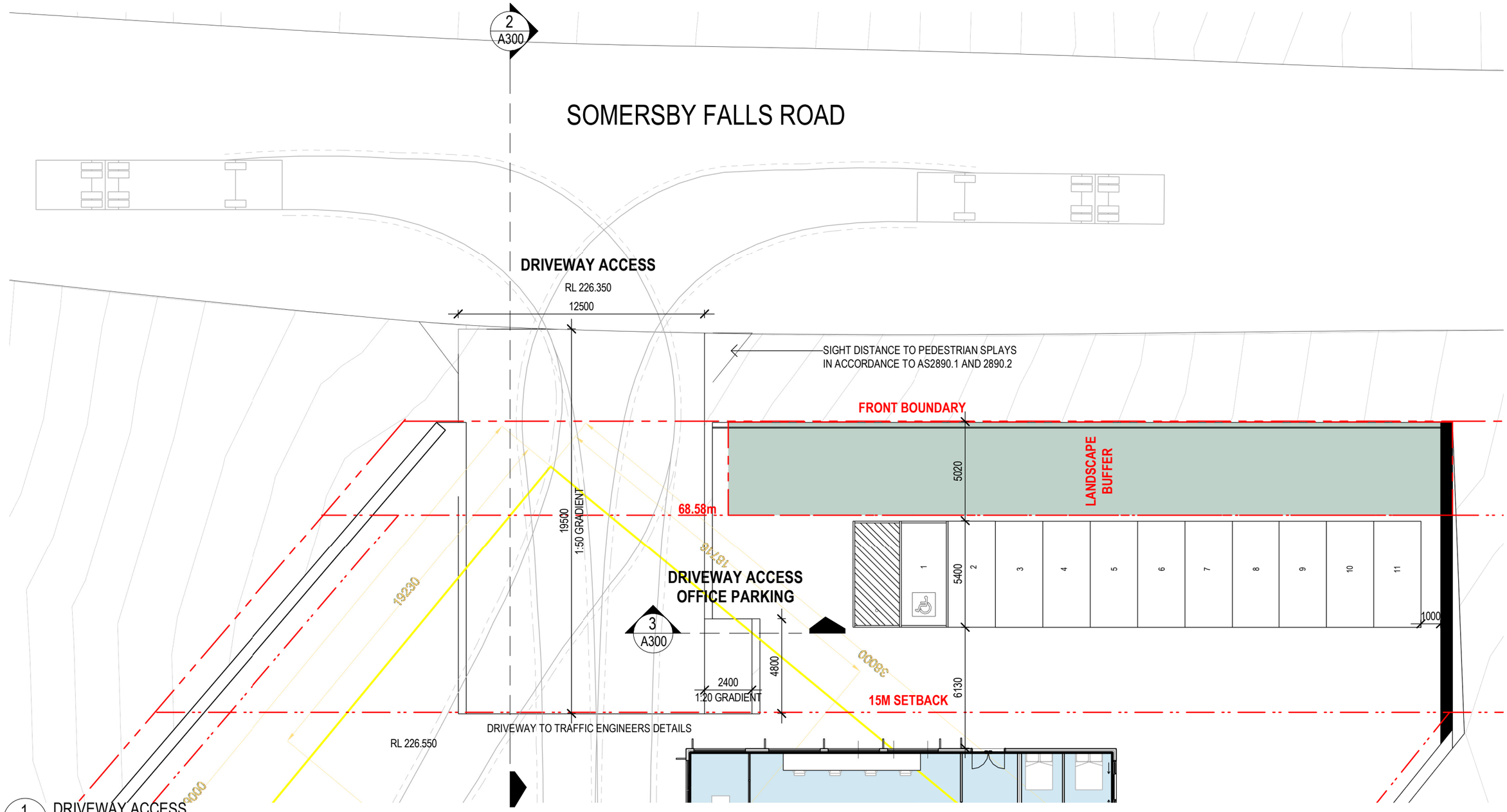
Drawing Number
A202

Issue
A

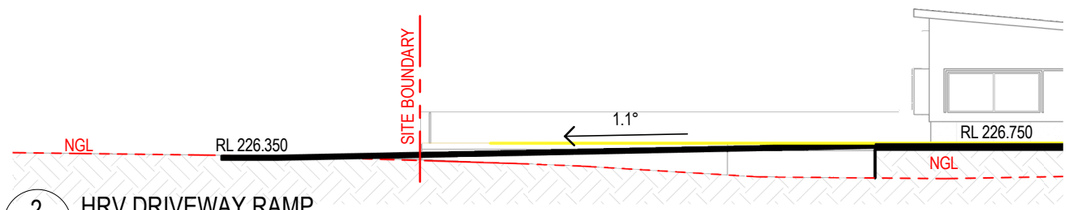
Scale
1 : 100 @ A3

Date Printed
26/10/2023 4:47:37 PM

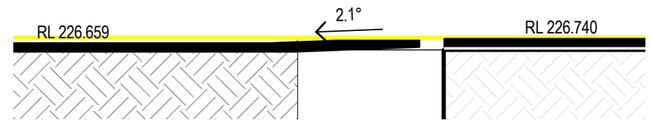
File Name
Autodesk Docs://22_012 - 125 Somersby Falls Road Somersby/22_012 - 125 Somersby Falls Road Somersby - DA.rvt




1 A200 DRIVEWAY ACCESS
1 : 200




2 A300 HRV DRIVEWAY RAMP
1 : 200




3 A300 CARPARK DRIVEWAY RAMP
1 : 100

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Member Australian Institute of Architects

Client

Project
ASPHALT PROCESSING FACILITY

Location
125 SOMERSBY ROAD, SOMERSBY

Drawing
DRIVEWAY DETAILS

| Issue | Description | Date | Chk | Auth |
|---|---|---|---|---|
| A | DA Submission | 26.10.2023 | | |

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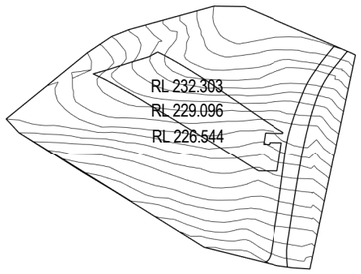
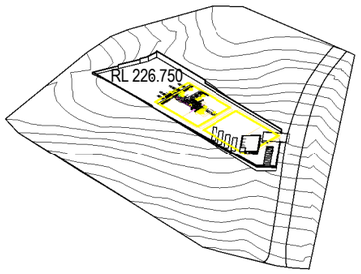
NOT TO BE USED DURING CONSTRUCTION

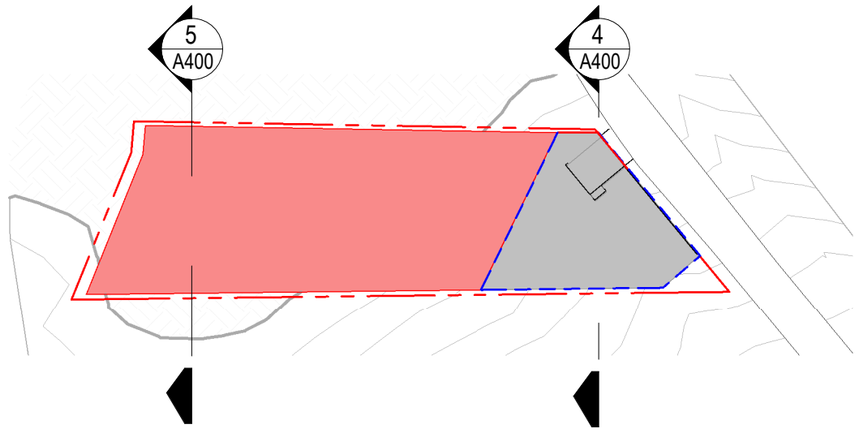
Project Number 22_012
Drawing Number A300
Issue A
Scale As indicated @ A3
Date Printed 26/10/2023 4:47:45 PM
File Name Autodesk Docs://22_012 - 125 Somersby Falls Road Somersby/22_012 - 125 Somersby Falls Road Somersby - DA.rvt



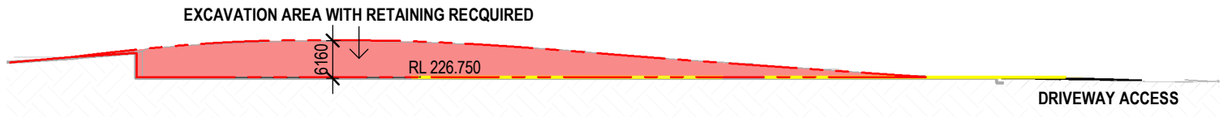

6 CUT AND FILL DIAGRAM - EXISTING




7 CUT AND FILL DIAGRAM - PROPOSED



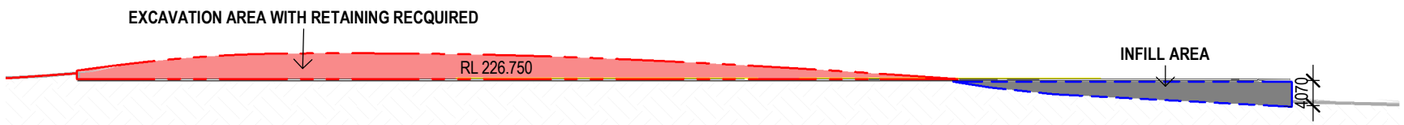

2 A200 CUT AND FILL DIAGRAM
1 : 2000



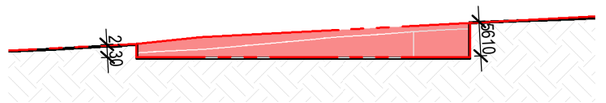

1 CUT AND FILL DIAGRAM 1
1 : 1000




4 A400 CUT AND FILL DIAGRAM 3
1 : 1000




3 CUT AND FILL DIAGRAM 2
1 : 1000




5 A400 CUT AND FILL DIAGRAM 4
1 : 1000

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Member Australian Institute of Architects

Client

Project
ASPHALT PROCESSING FACILITY

Location
125 SOMERSBY ROAD, SOMERSBY

Drawing
CUT AND FILL DIAGRAMS

| Issue | Description | Date | Chk | Auth |
|---|---|---|---|---|
| A | DA Submission | 26.10.2023 | | |

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Project Number
22_012

Drawing Number
A400

Issue
A

Scale
As indicated @ A3

Date Printed
26/10/2023 4:47:50 PM

File Name Autodesk Docs://22_012 - 125 Somersby Falls Road Somersby/22_012 - 125 Somersby Falls Road Somersby - DA.rvt

DEVICE NAME : _AUTOCAD PDF (GENERAL DOCUMENTATION).PC3

# PROPOSED ASPHALT PROCESSING PLANT
# For: STATELINE ASPHALT PTY LTD
# 133 SOMERSBY FALLS ROAD, SOMERSBY NSW

| DRAWING REGISTER - CIVIL WORKS | |
|---|---|
| 23053-CI-000 | COVER SHEET, DRAWING REGISTER & LOCALITY PLAN |
| 23053-CI-010 | CIVIL SITE PLAN |
| 23053-CI-050 | YARD CROSS SECTIONS |
| 23053-CI-051 | NORTH BOUNDARY CUT - LONG SECTION |
| 23053-CI-052 | SOUTH BOUNDARY CUT & FILL - LONG SECTION |
| 23053-CI-055 | STORMWATER DRAINAGE - LONG SECTIONS SHEET 1 |
| 23053-CI-056 | STORMWATER DRAINAGE - LONG SECTIONS SHEET 2 |
| 23053-CI-057 | ALTERNATIVE RETAINING WALL - OPTION |
| 23053-CI-150 | SWEPT PATHS - HEAVY RIGID DELIVERY VEHICLE |
| 23053-CI-152 | SWEPT PATHS - ARTICULATED DELIVERY VEHICLE |
| 23053-CI-154 | SWEPT PATHS - ASPHALT DELIVERY VEHICLE |
| 23053-CI-156 | SWEPT PATHS - TRUCK & DOG DELIVERY VEHICLE |
| 23053-CI-158 | SWEPT PATHS - PASSENGER VEHICLE ENTRY & EXIT |
| 23053-CI-200 | SEDIMENT AND EROSION CONTROL PLAN |
| 23053-CI-210 | SEDIMENT AND EROSION CONTROL DETAILS |
| 23053-CI-215 | BLUE BOOK CALCULATIONS |

LOCALITY PLAN
NTS

| REV | DATE | REVISIONS | DRN | CHK |
|---|---|---|---|---|
| 1 | 1/11/23 | PRELIMINARY | IB | DB |

DESIGNED: DB
DRAWN: IB
CHECKED: VC
RECOMMENDED: ..... PROJECT MANAGER DATE
DATUM: AHD A1
COORDINATE SYSTEM:
APPROVED: ..... PROJECT DIRECTOR DATE

CUBO CONSULTING PTY LTD
ABN: 46 610 277 462
Suite 6, 220 The Entrance Road, Erina NSW
Phone: (02) 4326 0990 Email: admin@cubo.net.au

STATELINE ASPHALT PTY LTD
PROPOSED ASPHALT PROCESSING FACILITY
133 SOMERSBY FALLS ROAD
SOMERSBY
COVER SHEET, LOCALITY PLAN AND DRAWING REGISTER

DRAWING STATUS: FOR APPROVAL
FOR CONSTRUCTION PURPOSES WHEN STAMPED

DRAWING NUMBER: 23053-CI-000 REV 1

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm A1 ON ORIGINAL

DEVICE NAME : AUTOCAD PDF (GENERAL DOCUMENTATION).PC3
DATE PLOTTED: 01 November, 2023 - 9:36pm

ALL STORMWATER PITS TO BE FITTED WITH ATLAN STORMSACK WITH OIL BOOMS(TYP)

OSD BASIN
* IL 224.5mAHD
* STORAGE VOLUME = 244 $m^3$
* 1.5m DEEP.
* MAX.1:4 BATTERS.
* OVERFLOWS ALONG SOUTH BOUNDARY DRIVEWAY.

VEHICLE ACCESS CROSSING MODIFIED TO ASSIST WITH VEHICLE SWEPT PATHS - SEE DRAWINGS 23053-CI-150,152,154,156,158.

CONNECT Ø300 OUTLET PIPE FROM SITE STORMWATER SYSTEM INTO EXISTING IAD PIT AND MAKE GOOD

DRAINAGE CONTROL PIT WITH Ø150 SHARP EDGED ORIFICE IL 222.65. PIT TO BE INSTALLED WITH ATLAN 'VORTCEPTOR' MODEL SVO.096 - REFER MANUFACTURER'S DETAILS.

EXISTING IAD PIPE

PROPOSED PROCESSING FACILITY

FFL= 226.75

SOMERSBY FALLS RD

1/050

2/050

PIT 1/10 SL226.50 IL224.964
PIT 1/11 SL226.50 IL225.03
PIT 1/12 SL226.50 IL225.10
PIT 1/13 SL226.50 IL225.43
PIT 1/14 SL226.50 IL 225.75
Ø300 AT 1% GRADE
150.75m

PIT 3/2 OSD IL224.50
Ø450 AT 1% GRADE
PIT 3/1 SL226.30 IL224.44
Ø375 AT 1% GRADE
PIT 1/9 SL226.50 IL224.26
PIT 1/8 SL226.50 IL224.06
PIT 1/7 SL226.50 IL223.86
PIT 1/6 SL226.50 IL223.66
PIT 1/5 SL226.50 IL223.46
PIT 1/4 SL226.50 IL223.26
PIT 1/3 SL226.30 IL223.06
PIT 1/2 SL226.30 IL222.63
3.m SETBACK 214.80m

PIT 2/2 SL226.50 IL 225.80
Ø225 AT 1% GRADE
PIT 2/1 SL226.60 IL 225.58
68.58m
LANDSCAPE BUFFER

Ø300 AT 4.6% GRADE
EXISTING IAD PIT LL 222.57 INLET IL 221.71 OUTLET IL221.29

SL226.75
SL226.74
SL226.65

TRUCK PARKING BAY
AISLE WAY 1
AISLE WAY 2
AISLE WAY 3
AISLE WAY 4
AISLE WAY 5

RAP 40%
WASTE / RAW 60%
STORMWATER DETENTION BASIN
4.m SETBACK

SURFACE WATER FLOW DIRECTION

## CIVIL SITE PLAN
SCALE 1:400

0 10 20 30 40m
SCALE 1:400 @A1

| REV | DATE | REVISIONS | DRN | CHK |
|---|---|---|---|---|
| 1 | 1/11/23 | PRELIMINARY | IB | DB |

DESIGNED: IB
DRAWN: DB
CHECKED: VC
RECOMMENDED: PROJECT MANAGER DATE
DATUM: AHD
A1
COORDINATE SYSTEM:
APPROVED: PROJECT DIRECTOR DATE

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STATELINE ASPHALTS PTY LTD
PROPOSED ASPHALT PROCESSING FACILITY
133 SOMERSBY FALLS ROAD
SOMERSBY
CIVIL SITE PLAN

DRAWING STATUS: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES
DRAWING NUMBER: 23053-CI-010
REV 1

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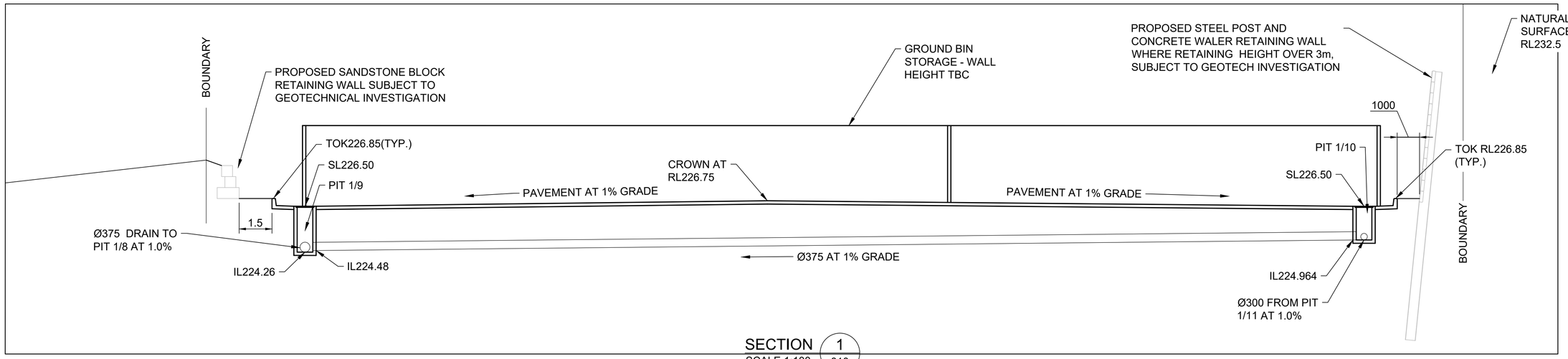
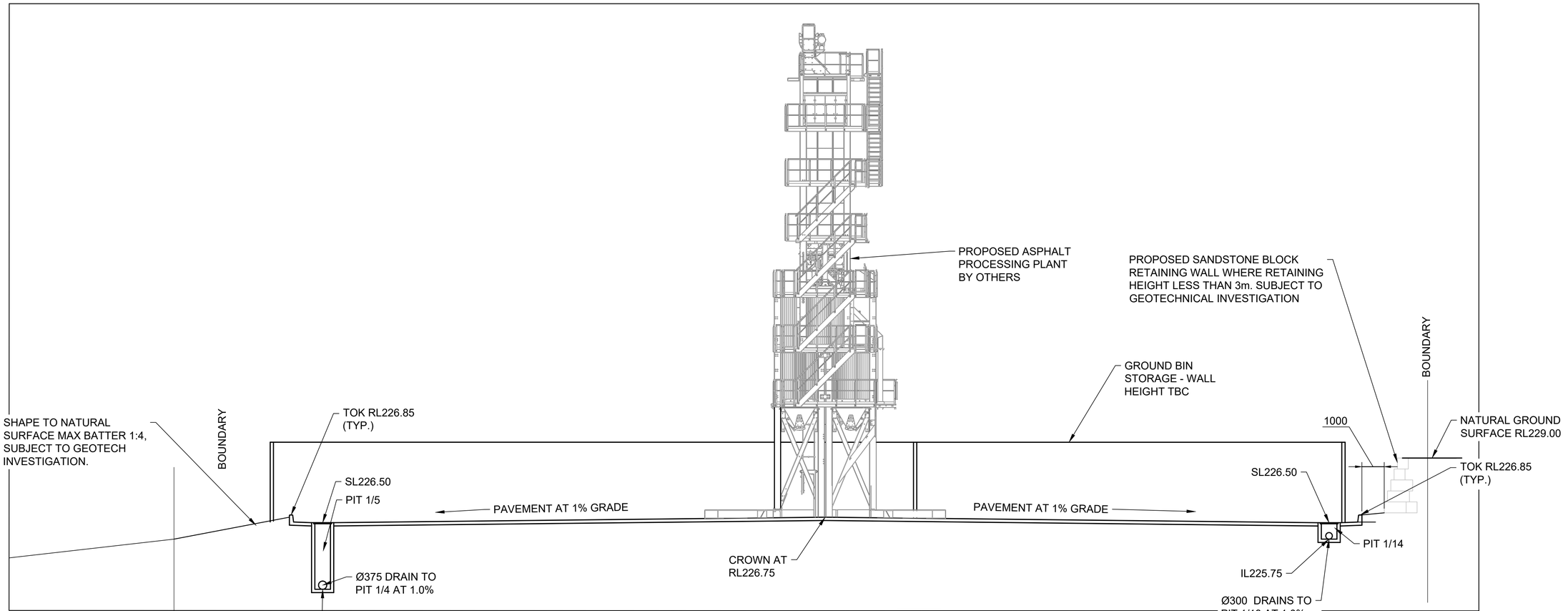



SECTION 1
SCALE 1:100
010




SECTION 2
SCALE 1:100
010

| REV | DATE | REVISIONS | DRN | CHK |
|---|---|---|---|---|
| 1 | 1/11/23 | PRELIMINARY | IB | DB |

0 1 2 4 6 8 10m
SCALE 1:100 @A1

| | | | |
|---|---|---|---|
| DESIGNED: IB | DATUM: AHD | A1 | |
| DRAWN: DB | | | |
| CHECKED: VC | COORDINATE SYSTEM: | | |
| RECOMMENDED: | APPROVED: | | |
| PROJECT MANAGER DATE | PROJECT DIRECTOR DATE | | |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STATELINE ASPHALTS PTY LTD
PROPOSED ASPHALT PROCESSING FACILITY
133 SOMERSBY FALLS ROAD
SOMERSBY
YARD CROSS SECTIONS

DRAWING STATUS: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

DRAWING NUMBER: 23053-CI-050 REV 1

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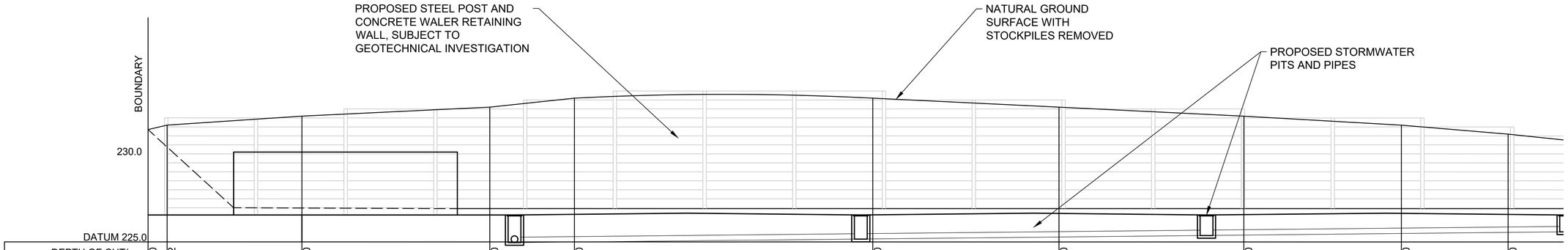
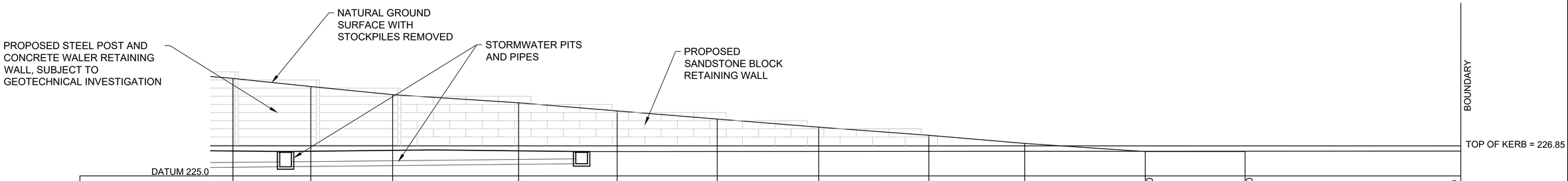
DEVICE NAME : _AUTOCAD PDF (GENERAL DOCUMENTATION).PC3




| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEPTH OF CUT/ RETAINING WALL HEIGHT | 0.000 | 1.062 | 5.100 | 5.600 | 6.100 | 6.100 | 5.600 | 5.100 | 4.600 | 4.100 | | |
| TOP OF WALL/ NATURAL SURFACE | 231.25 | 231.5 | 232.0 | 232.5 | 233.0 | 233.0 | 232.5 | 232.0 | 231.5 | 231.0 | | |
| DESIGN BASE OF WALL LEVEL | 231.25 | 226.90 | 226.90 | 226.90 | 226.90 | 226.90 | 226.90 | 226.90 | 226.90 | 226.90 | | |
| CHAINAGE ALONG NORTH BOUNDARY | 0.000 | 1.06 | 8.57 | 19.04 | 23.76 | 40.38 | 50.76 | 61.06 | 69.84 | 75.79 | | |

## NORTH BOUNDARY CUT - LONG SECTION

SCALE 1:125 AT A1




| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEPTH OF CUT/ RETAINING WALL HEIGHT | 4.100 | 3.600 | 3.100 | 2.600 | 2.100 | 1.600 | 1.100 | 0.600 | 0.100 | -0.400 | -0.400 | 0.000 |
| TOP OF WALL/ NATURAL SURFACE | 231.0 | 230.5 | 230.0 | 229.5 | 229.0 | 228.5 | 228.0 | 227.5 | 227.0 | 226.5 | 226.5 | 0.000 |
| DESIGN BASE OF WALL LEVEL | 226.90 | | 226.90 | 226.90 | 226.90 | 226.90 | 226.90 | 226.90 | 226.90 | 226.90 | 226.90 | 226.90 |
| CHAINAGE ALONG NORTH BOUNDARY | 75.79 | 80.57 | 85.60 | 93.35 | 99.40 | 105.56 | 111.80 | 118.57 | 124.46 | 131.87 | 138.01 | 151.27 |

## NORTH BOUNDARY CUT - LONG SECTION

SCALE 1:125 AT A1

PROPOSED RETAINING WALL SUMMARY - NORTHERN BOUNDARY:

1. CH 0.917 AND CH 86.107 - VARIABLE HEIGHT STEEL POST AND CONCRETE WALER WALL TO STRUCTURAL ENG DETAILS
2. CH 86.107 AND CH 119.107 - VARIABLE HEIGHT SANDSTONE BLOCK WALL TO STRUCTURAL ENG DETAILS
3. CH 119.107 AND CH 151.268 - MAX 1:4 BATTER TO NATURAL GROUND SURFACE

| REV | DATE | REVISIONS | DRN | CHK |
|---|---|---|---|---|
| 1 | 1/11/23 | PRELIMINARY | IB | DB |

0 2.5 5 7.5 10 12.5m
SCALE 1:125 @A1

DESIGNED: IB
DRAWN: DB
CHECKED: VC
RECOMMENDED: PROJECT MANAGER DATE

DATUM: AHD A1
COORDINATE SYSTEM:
APPROVED: PROJECT DIRECTOR DATE

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133 SOMERSBY FALLS ROAD
SOMERSBY
NORTH BOUNDARY CUT - LONG SECTION

DRAWING STATUS: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

DRAWING NUMBER: 23053-CI-051 REV 1

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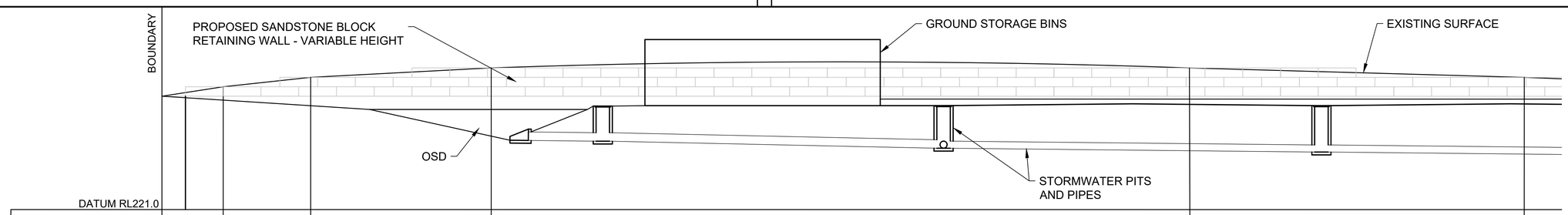
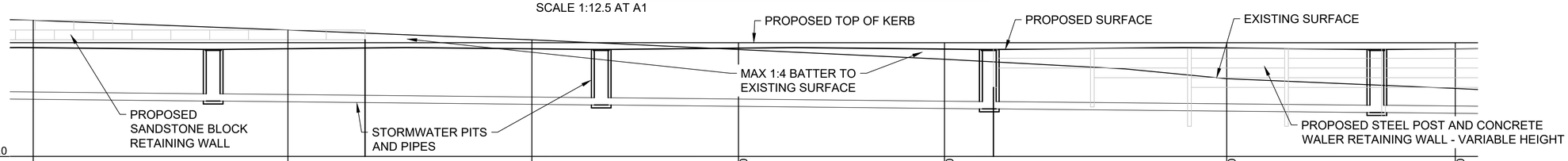



| DATUM RL221.0 | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEPTH OF CUT(+) HEIGHT OF FILL(-) | 0.000 | | 0.500 | | 1.000 | | 1.500 | | 1.600 | | 1.100 | | | |
| TOP OF WALL/ NATURAL SURFACE | 227.00 | | 227.50 | | 228.00 | | 228.50 | | 228.50 | | 228.00 | | | |
| DESIGN BASE OF WALL LEVEL | 227.00 | | 227.00 | | 227.00 | | 227.00 | | 226.90 | | 226.90 | | | |
| CHAINAGE ALONG SOUTH BOUNDARY | 0.000 | | 3.25 | | 7.88 | | 17.44 | | 54.47 | | 72.15 | | | |

## SOUTH BOUNDARY - LONG SECTION CH 0.00 TO 72.154

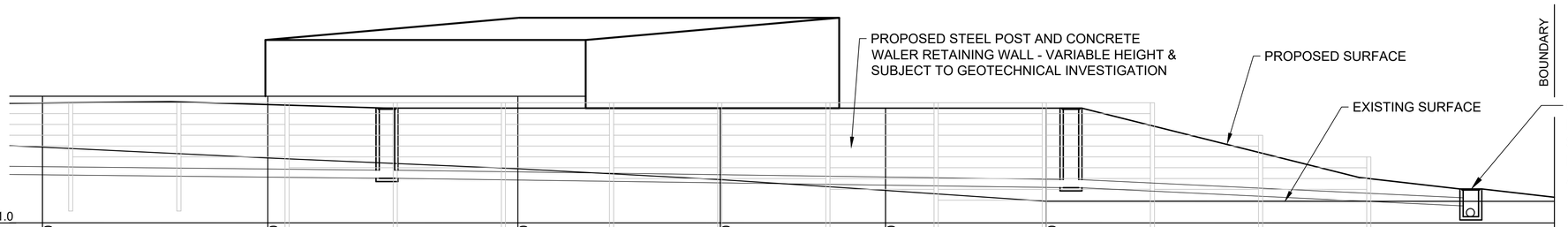
SCALE 1:12.5 AT A1




| DATUM RL221.0 | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEPTH OF CUT(+) HEIGHT OF FILL(-) | 1.100 | | 0.600 | | 0.100 | | -0.400 | | -0.900 | | -1.400 | | -1.900 | |
| TOP OF WALL/ NATURAL SURFACE | 228.00 | | 227.50 | | 227.00 | | 226.50 | | 226.00 | | 225.50 | | 225.00 | |
| DESIGN BASE OF WALL LEVEL | 226.90 | | 226.90 | | 226.90 | | 226.90 | | 226.90 | | 226.90 | | 226.90 | |
| CHAINAGE ALONG SOUTH BOUNDARY | 72.15 | | 85.28 | | 97.84 | | 108.48 | | 119.09 | | 133.63 | | 145.40 | |

## SOUTH BOUNDARY - LONG SECTION CH 72.154 TO 145.40

SCALE 1:125 AT A1




| DATUM RL221.0 | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEPTH OF CUT(+) HEIGHT OF FILL(-) | -1.900 | | -2.400 | | -2.900 | | -3.250 | | -3.750 | | -4.250 | | 0.000 | |
| TOP OF WALL/ NATURAL SURFACE | 225.00 | | 224.50 | | 224.00 | | 223.50 | | 223.00 | | 222.50 | | 222.40 | |
| DESIGN BASE OF WALL LEVEL | 226.90 | | 226.90 | | 226.90 | | 226.75 | | 226.75 | | 226.75 | | | |
| CHAINAGE ALONG SOUTH BOUNDARY | 145.40 | | 155.82 | | 167.38 | | 176.74 | | 184.37 | | 191.80 | | 215.38 | |

PROPOSED RETAINING WALL SUMMARY - SOUTHERN BOUNDARY:

1. CH1.246 AND CH89.246 - VARIABLE HEIGHT SANDSTONE BLOCK WALL
2. CH89.246 AND CH121.615 - MAX 1:4 BATTER TO NATURAL GROUND SURFACE
3. CH121.615 AND CH206.805 - VARIABLE HEIGHT STEEL POST AND CONCRETE WALER WALL TO STRUCTURAL ENG DETAILS

## SOUTH BOUNDARY - LONG SECTION CH 145.40 TO 349.03

SCALE 1:125 AT A1

ALL RETAINING WALLS SUBJECT TO GEOTECHNICAL ENGINEERS RECOMMENDATIONS

| REV | DATE | REVISIONS | DRN | CHK |
|---|---|---|---|---|
| 1 | 1/11/23 | PRELIMINARY | IB | DB |

0 2.5 5 7.5 10 12.5m
SCALE 1:125 @A1

DESIGNED: IB
DRAWN: DB
CHECKED: VC
RECOMMENDED: PROJECT MANAGER DATE

DATUM: AHD A1
COORDINATE SYSTEM:
APPROVED: PROJECT DIRECTOR DATE

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STATELINE ASPHALTS PTY LTD

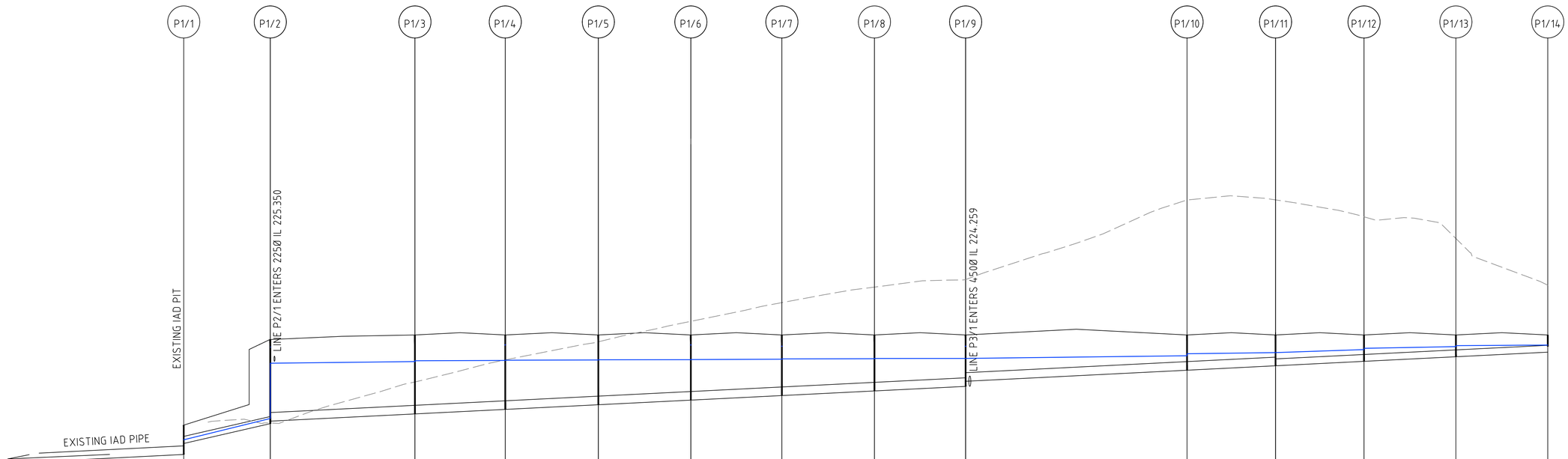
PROPOSED ASPHALT PROCESSING FACILITY
133 SOMERSBY FALLS ROAD
SOMERSBY
SOUTH BOUNDARY CUT & FILL - LONG SECTION

DRAWING STATUS: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

DRAWING NUMBER: 23053-CI-052 REV 1

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm A1 ON ORIGINAL

DEVICE NAME : _AUTOCAD PDF (GENERAL DOCUMENTATION).PC3




| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FLOW RATE 10%AEP (l/sec) VELOCITY (m/s) | 131 1.2 | 107 1.0 | 104 0.9 | 103 0.9 | 102 0.9 | 102 0.9 | 101 0.9 | 101 0.9 | 135 1.2 | 114 1.0 | 92 1.3 | 72 1.0 | 51 0.7 | |
| PIPE DETAILS SLOPE/GRADE | 300Ø PVC 4.6% | 375Ø PVC 1.0% | 375Ø PVC 1.0% | 375Ø PVC 1.0% | 375Ø PVC 1.0% | 375Ø PVC 1.0% | 375Ø PVC 1.0% | 375Ø PVC 1.0% | 375Ø PVC 1.0% | 375Ø PVC 1.0% | 300Ø PVC 1.0% | 300Ø PVC 1.0% | 300Ø PVC 1.0% | |
| DATUM RL 217.5 | | | | | | | | | | | | | | |
| HGL | 221.930 | 222.860<br>225.268 | 225.340<br>225.376 | 225.389<br>225.400 | 225.410<br>225.418 | 225.423<br>225.427 | 225.443<br>225.456 | 225.466<br>225.475 | 225.477<br>225.479 | 225.595<br>225.681 | 225.731<br>225.771 | 225.864<br>225.918 | 225.993<br>226.035 | 226.059 |
| DEPTH TO INVERT | 0.800 | 3.665<br>3.558 | 3.441 | 3.244 | 3.041 | 2.839 | 2.641 | 2.439 | 2.241<br>2.019 | 1.536 | 1.344 | 1.15 | 0.951 | 0.750 |
| INVERT LEVEL | 221.770 | 222.636<br>222.743 | 223.059 | 223.256 | 223.459 | 223.661 | 223.859 | 224.061 | 224.259<br>224.481 | 224.964 | 225.156 | 225.350 | 225.548 | 225.75 |
| FINISHED SURFACE | 222.57 | 226.301 | 226.500 | 226.500 | 226.500 | 226.500 | 226.500 | 226.500 | 226.500 | 226.500 | 226.500 | 226.500 | 226.500 | 226.500 |
| EXISTING SURFACE | 222.57 | 222.663 | 224.451 | 225.415 | 226.201 | 227.095 | 227.910 | 228.587 | 228.912 | 232.385 | 232.389 | 231.651 | 230.706 | 228.671 |
| CHAINAGE | 0.000 | 18.853<br>18.853 | 31.525<br>50.378 | 19.680<br>70.058 | 20.28<br>90.338 | 20.16<br>110.498 | 19.83<br>130.328 | 20.18<br>150.508 | 19.86<br>170.368 | 48.25<br>218.618 | 19.14<br>237.758 | 19.42<br>257.178 | 19.93<br>277.108 | 20.12<br>297.228 |

DRAINAGE LONGITUNDINAL SECTION FOR LINE 1
SCALES: HORIZONTAL 1:500 VERTICAL 1:100

| REV | DATE | REVISIONS | DRN | CHK |
|---|---|---|---|---|
| 1 | 1/11/23 | PRELIMINARY | IB | DB |

DESIGNED: IB
DRAWN: DB
CHECKED: VC
RECOMMENDED: PROJECT MANAGER DATE

DATUM: AHD
A1
COORDINATE SYSTEM:
APPROVED: PROJECT DIRECTOR DATE

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STATELINE ASPHALTS PTY LTD

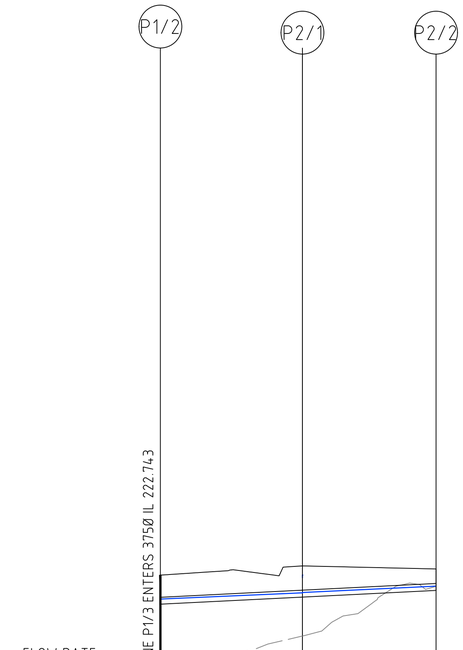
PROPOSED ASPHALT PROCESSING FACILITY
133 SOMERSBY FALLS ROAD
SOMERSBY
STORMWATER DRAINAGE - LONG SECTIONS SHEET 1

DRAWING STATUS: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

DRAWING NUMBER: 23053-CI-055
REV: 2

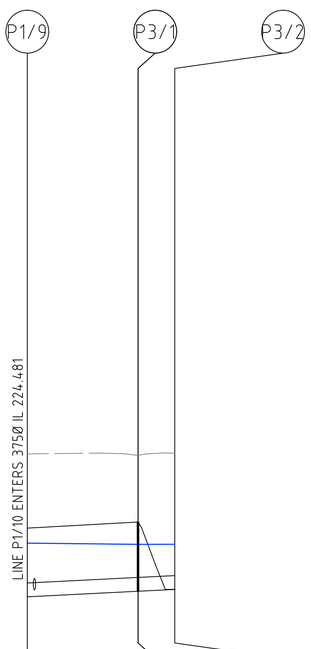
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm A1 ON ORIGINAL

DEVICE NAME : _AUTOCAD PDF (GENERAL DOCUMENTATION).PC3




| | | | |
|---|---|---|---|
| FLOW RATE 10%AEP (l/sec) | | 29 | 31 |
| VELOCITY (m/s) | | 0.72 | 0.78 |
| PIPE DETAILS | | 225Ø | 225Ø |
| SLOPE/GRADE | | 1.0% | 1.0% |
| DATUM RL 220.6 | | | |
| HGL | 225.518 | 225.720 | 225.731 / 225.938 |
| DEPTH TO INVERT | 0.951 | 1.018 | 0.700 |
| INVERT LEVEL | 225.350 | 225.582 | 225.800 |
| FINISHED SURFACE | 226.301 | 226.600 | 226.500 |
| EXISTING SURFACE | 222.663 | 224.310 | 225.933 |
| CHAINAGE | 0.000 | 23.189 | 45.000 |
| | | 23.189 | 21.811 |

DRAINAGE LONGITUNDINAL SECTION FOR LINE 2
SCALES: HORIZONTAL 1:500 VERTICAL 1:100




| | | | |
|---|---|---|---|
| FLOW RATE 10%AEP (l/sec) | | 90 | 90 |
| VELOCITY (m/s) | | 0.57 | 0.57 |
| PIPE DETAILS | | 450Ø | 450Ø |
| SLOPE/GRADE | | 1.0% | 1.0% |
| DATUM RL 219.3 | | | |
| HGL | 226.010 | 225.971 | 225.973 |
| DEPTH TO INVERT | 2.241 | 2.260 | 0.000 |
| INVERT LEVEL | 224.259 | 224.440 | 224.500 |
| FINISHED SURFACE | 226.500 | 226.700 | 224.500 |
| EXISTING SURFACE | 228.912 | 228.875 | 228.940 |
| CHAINAGE | 0.000 | 18.080 | 24.071 |
| | | 18.080 | 5.991 |

DRAINAGE LONGITUNDINAL SECTION FOR LINE 3
SCALES: HORIZONTAL 1:500 VERTICAL 1:100

| REV | DATE | REVISIONS | DRN | CHK |
|---|---|---|---|---|
| 1 | 1/11/23 | PRELIMINARY | IB | DB |

DESIGNED: IB
DRAWN: DB
CHECKED: VC
RECOMMENDED: PROJECT MANAGER DATE

DATUM: AHD
A1
COORDINATE SYSTEM:
APPROVED: PROJECT DIRECTOR DATE

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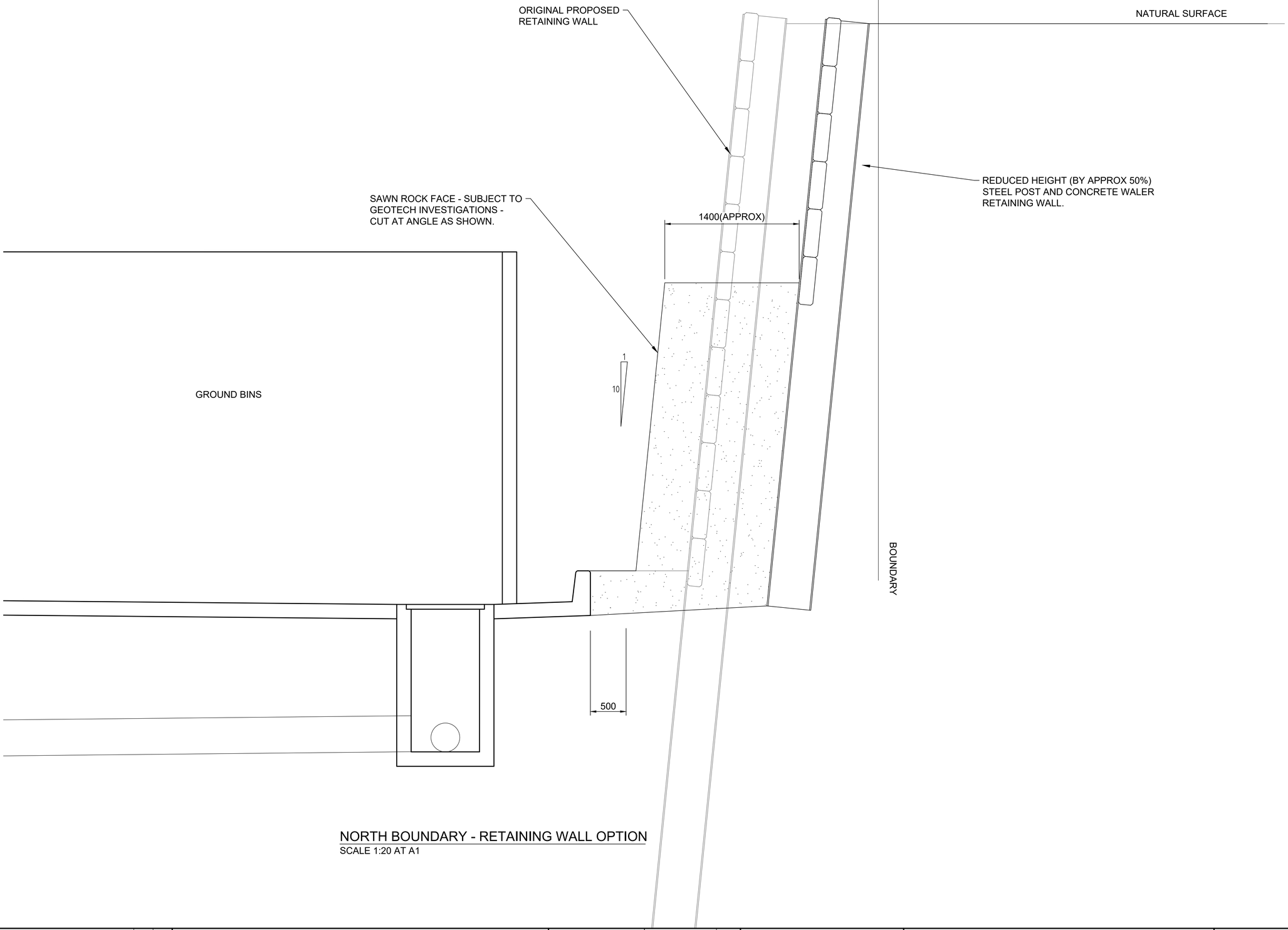
STATELINE ASPHALTS PTY LTD
PROPOSED ASPHALT PROCESSING FACILITY
133 SOMERSBY FALLS ROAD
SOMERSBY
STORMWATER DRAINAGE - LONG SECTIONS SHEET 2

DRAWING STATUS: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

DRAWING NUMBER: 23053-CI-056
REV: 1

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm A1 ON ORIGINAL

DEVICE NAME : _AUTOCAD PDF (GENERAL DOCUMENTATION).PC3




NORTH BOUNDARY - RETAINING WALL OPTION
SCALE 1:20 AT A1

| REV | DATE | REVISIONS | DRN | CHK |
|---|---|---|---|---|
| 1 | 1/11/23 | PRELIMINARY | IB | DB |

0 0.5 1 1.5 2m
SCALE 1:20 @A1

DESIGNED: IB
DRAWN: DB
CHECKED: VC
RECOMMENDED: PROJECT MANAGER DATE

DATUM: AHD A1
COORDINATE SYSTEM:
APPROVED: PROJECT DIRECTOR DATE

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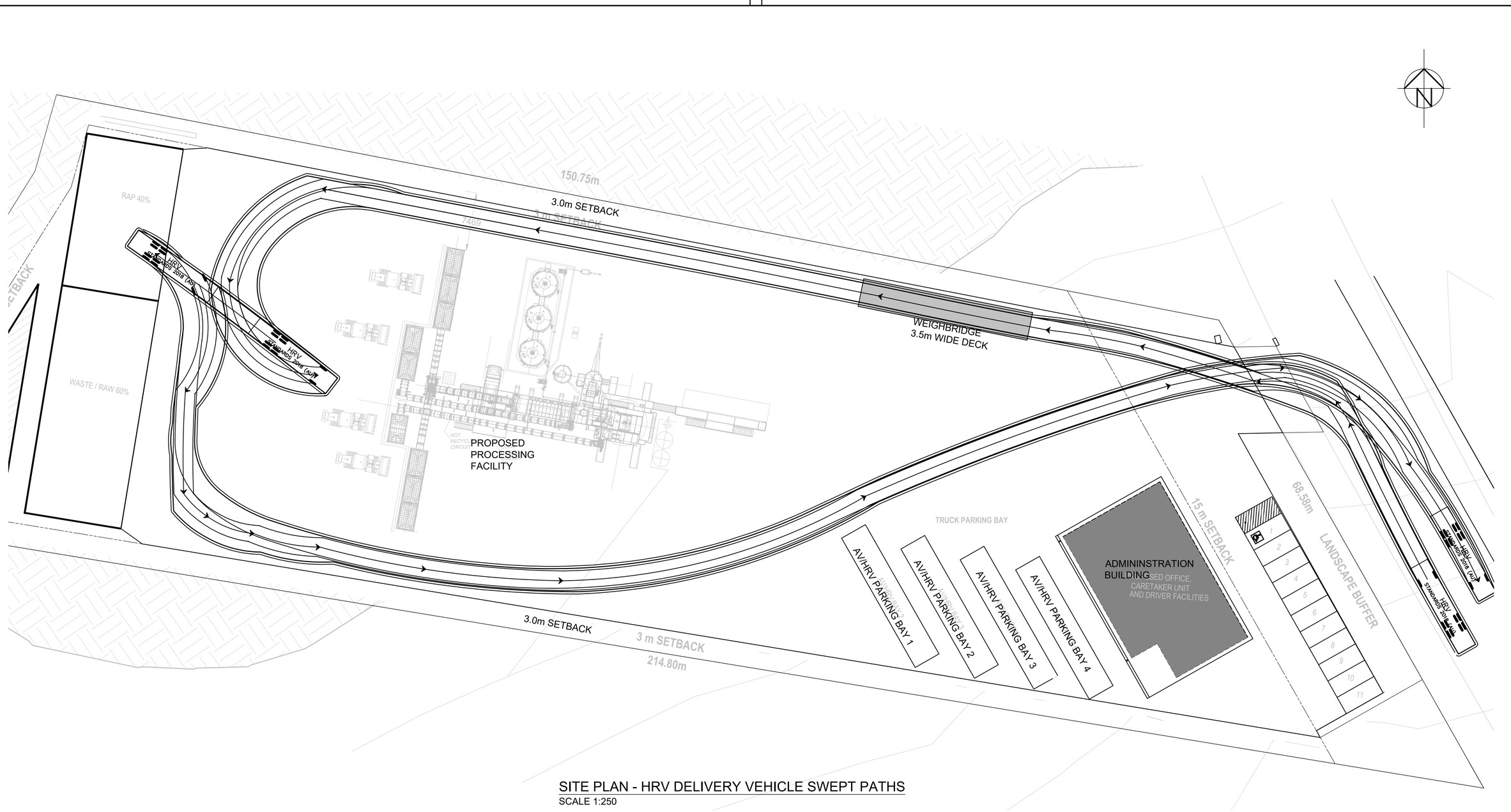
STATELINE ASPHALTS PTY LTD
PROPOSED ASPHALT PROCESSING FACILITY
133 SOMERSBY FALLS ROAD
SOMERSBY
ALTERNATIVE RETAINING WALL

DRAWING STATUS:
PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

DRAWING NUMBER: 23053-CI-057
REV: 1

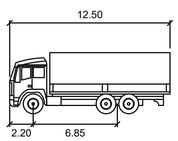
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm A1 ON ORIGINAL

DEVICE NAME : _AUTOCAD PDF (GENERAL DOCUMENTATION).PC3




## SITE PLAN - HRV DELIVERY VEHICLE SWEPT PATHS

SCALE 1:250




HRV

| | meters |
|---|---|
| Width | : 2.50 |
| Track | : 2.50 |
| Lock to Lock Time | : 6.0 |
| Steering Angle | : 36.7 |

| REV | DATE | REVISIONS | DRN | CHK |
|---|---|---|---|---|
| 1 | 1/11/23 | PRELIMINARY | IB | DB |

0 5 10 15 20 25m
SCALE 1:250 @A1

DESIGNED: IB
DRAWN: DB
CHECKED: VC
RECOMMENDED:
PROJECT MANAGER DATE

DATUM: AHD
A1
COORDINATE SYSTEM:
APPROVED:
PROJECT DIRECTOR DATE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STATELINE ASPHALTS PTY LTD

PROPOSED ASPHALT PROCESSING FACILITY
133 SOMERSBY FALLS ROAD
SOMERSBY
SWEPT PATHS - HEAVY RIGID DELIVERY VEHICLE

DRAWING STATUS:
PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

DRAWING NUMBER: 23053-CI-150
REV 1

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm A1 ON ORIGINAL

DEVICE NAME : _AUTOCAD PDF (GENERAL DOCUMENTATION).PC3

STORAGE BIN

STORAGE BIN

RAP 40%

WASTE / RAW 60%

3.0m SETBACK

150.75m

3.0m SETBACK

7469

WEIGHBRIDGE
3.5m WIDE DECK

PROPOSED PROCESSING FACILITY

HOT RECYCLE CIRCUIT

TRUCK PARKING BAY

AV/HRV PARKING BAY 1

AV/HRV PARKING BAY 2

AV/HRV PARKING BAY 3

AV/HRV PARKING BAY 4

ADMININSTRATION BUILDING
OFFICE, CARETAKER UNIT AND DRIVER FACILITIES

15 m SETBACK

68.58m

LANDSCAPE BUFFER

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.

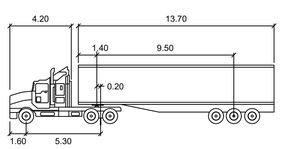
3 m SETBACK

214.80m

3.0m SETBACK

# SITE PLAN - ARTICULATED DELIVERY VEHICLE SWEPT PATHS

SCALE 1:250




S ARTICULATED 19M

meters

| | | | |
|---|---|---|---|
| Tractor Width | : 2.50 | Lock to Lock Time | : 6.0 |
| Trailer Width | : 2.50 | Steering Angle | : 27.7 |
| Tractor Track | : 2.50 | Articulating Angle | : 70.0 |
| Trailer Track | : 2.50 | | |

| REV | DATE | REVISIONS | DRN | CHK |
|---|---|---|---|---|
| 1 | 1/11/23 | PRELIMINARY | IB | DB |

0 5 10 15 20 25m

SCALE 1:250 @A1

DESIGNED: IB
DRAWN: DB
CHECKED: VC
RECOMMENDED:
PROJECT MANAGER DATE

DATUM: AHD
A1
COORDINATE SYSTEM:
APPROVED:
PROJECT DIRECTOR DATE

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STATELINE ASPHALTS PTY LTD

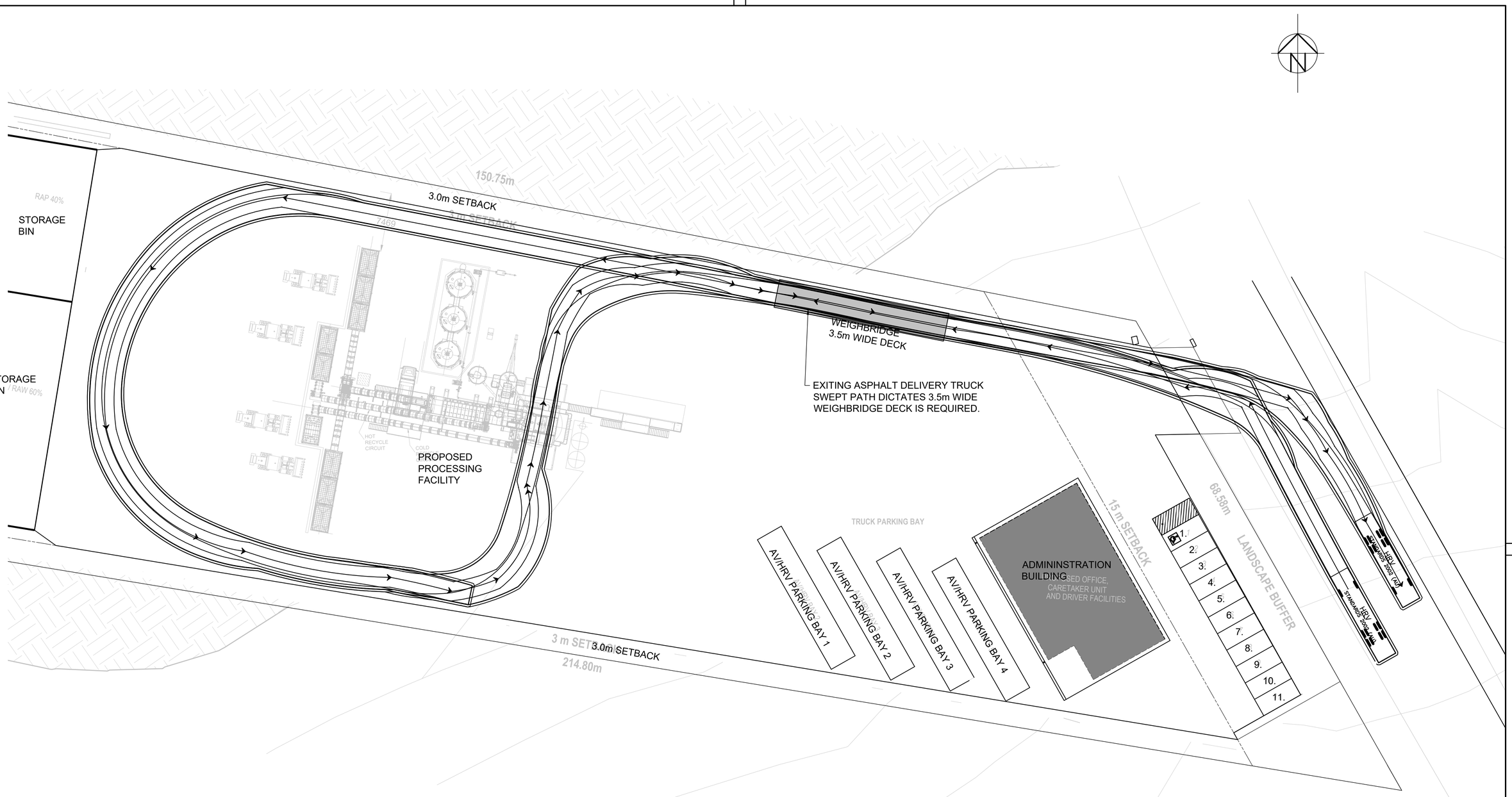
PROPOSED ASPHALT PROCESSING FACILITY
133 SOMERSBY FALLS ROAD
SOMERSBY
SWEPT PATHS - ARTICULATED DELIVERY VEHICLE

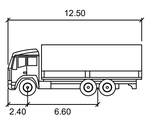
DRAWING STATUS: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

DRAWING NUMBER: 23053-CI-152
REV 1

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm A1 ON ORIGINAL

DEVICE NAME : _AUTOCAD PDF (GENERAL DOCUMENTATION).PC3




HRV

| | meters |
|---|---|
| Width | : 2.50 |
| Track | : 2.50 |
| Lock to Lock Time | : 6.0 |
| Steering Angle | : 35.2 |

## SITE PLAN - ASPHALT DELIVERY VEHICLE SWEPT PATHS

SCALE 1:250

| REV | DATE | REVISIONS | DRN | CHK |
|---|---|---|---|---|
| 1 | 1/11/23 | PRELIMINARY | IB | DB |

0 5 10 15 20 25m

SCALE 1:250 @A1

| | | | |
|---|---|---|---|
| DESIGNED: IB | DATUM: AHD | A1 | |
| DRAWN: DB | COORDINATE SYSTEM: | | |
| CHECKED: VC | | | |
| RECOMMENDED: | APPROVED: | | |
| PROJECT MANAGER DATE | PROJECT DIRECTOR DATE | | |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STATELINE ASPHALTS PTY LTD

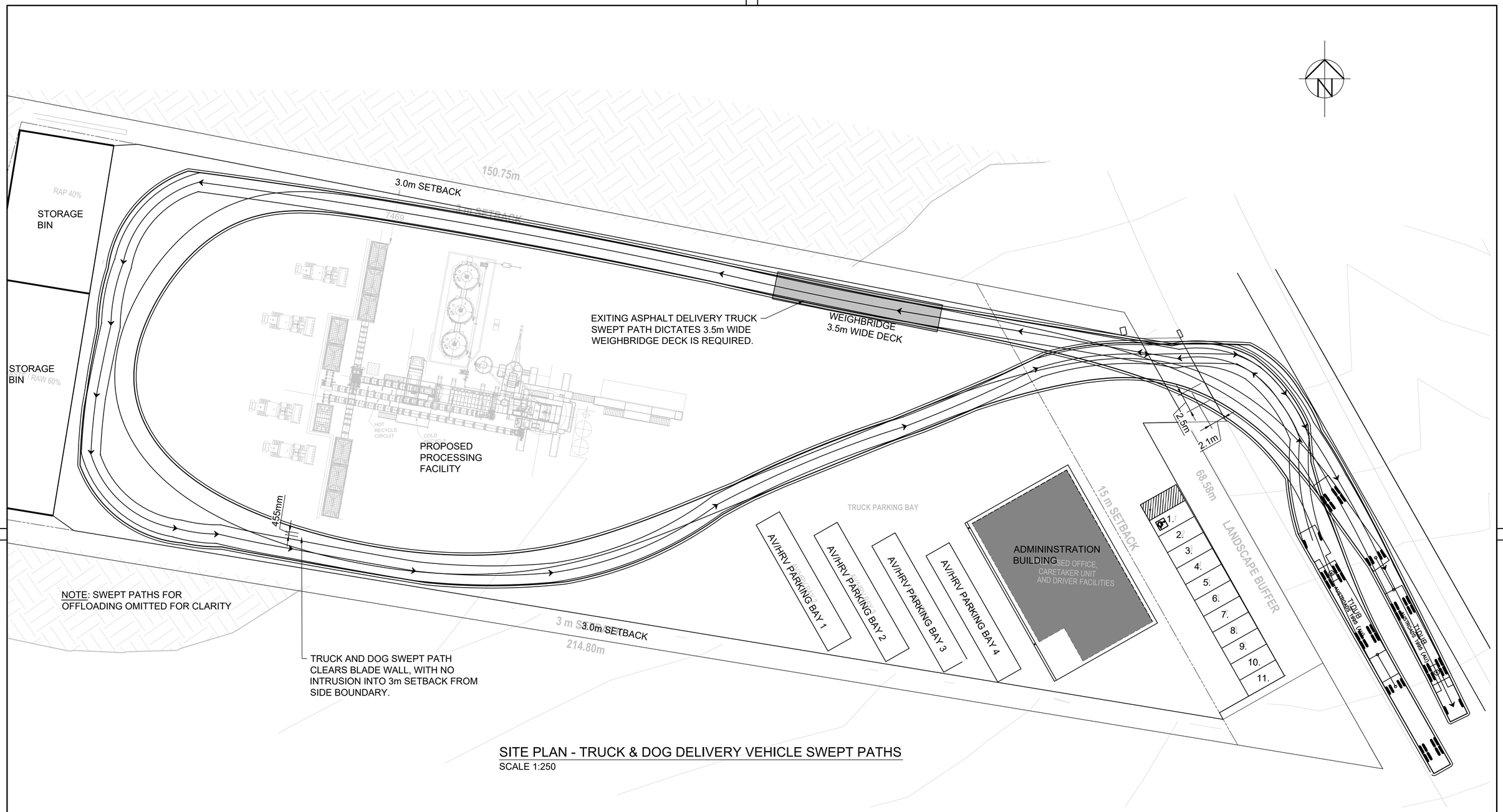
PROPOSED ASPHALT PROCESSING FACILITY
133 SOMERSBY FALLS ROAD
SOMERSBY
SWEPT PATHS - ASPHALT DELIVERY VEHICLE

DRAWING STATUS: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

DRAWING NUMBER: 23053-CI-154 REV 1

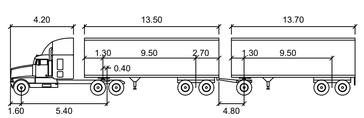
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm A1 ON ORIGINAL

DEVICE NAME : _AUTOCAD PDF (GENERAL DOCUMENTATION).PC3




## SITE PLAN - TRUCK & DOG DELIVERY VEHICLE SWEPT PATHS

SCALE 1:250




T1DUB

meters

| | | | |
|---|---|---|---|
| Tractor Width | : 2.50 | Lock to Lock Time | : 6.0 |
| Trailer Width | : 2.50 | Steering Angle | : 23.0 |
| Tractor Track | : 2.50 | Articulating Angle | : 70.0 |
| Trailer Track | : 2.50 | | |

| REV | DATE | REVISIONS | DRN | CHK |
|---|---|---|---|---|
| 1 | 1/11/23 | PRELIMINARY | IB | DB |

0 5 10 15 20 25m
SCALE 1:250 @A1

DESIGNED: IB
DRAWN: DB
CHECKED: VC
RECOMMENDED:
PROJECT MANAGER DATE

DATUM: AHD
A1
COORDINATE SYSTEM:
APPROVED:
PROJECT DIRECTOR DATE

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STATELINE ASPHALTS PTY LTD

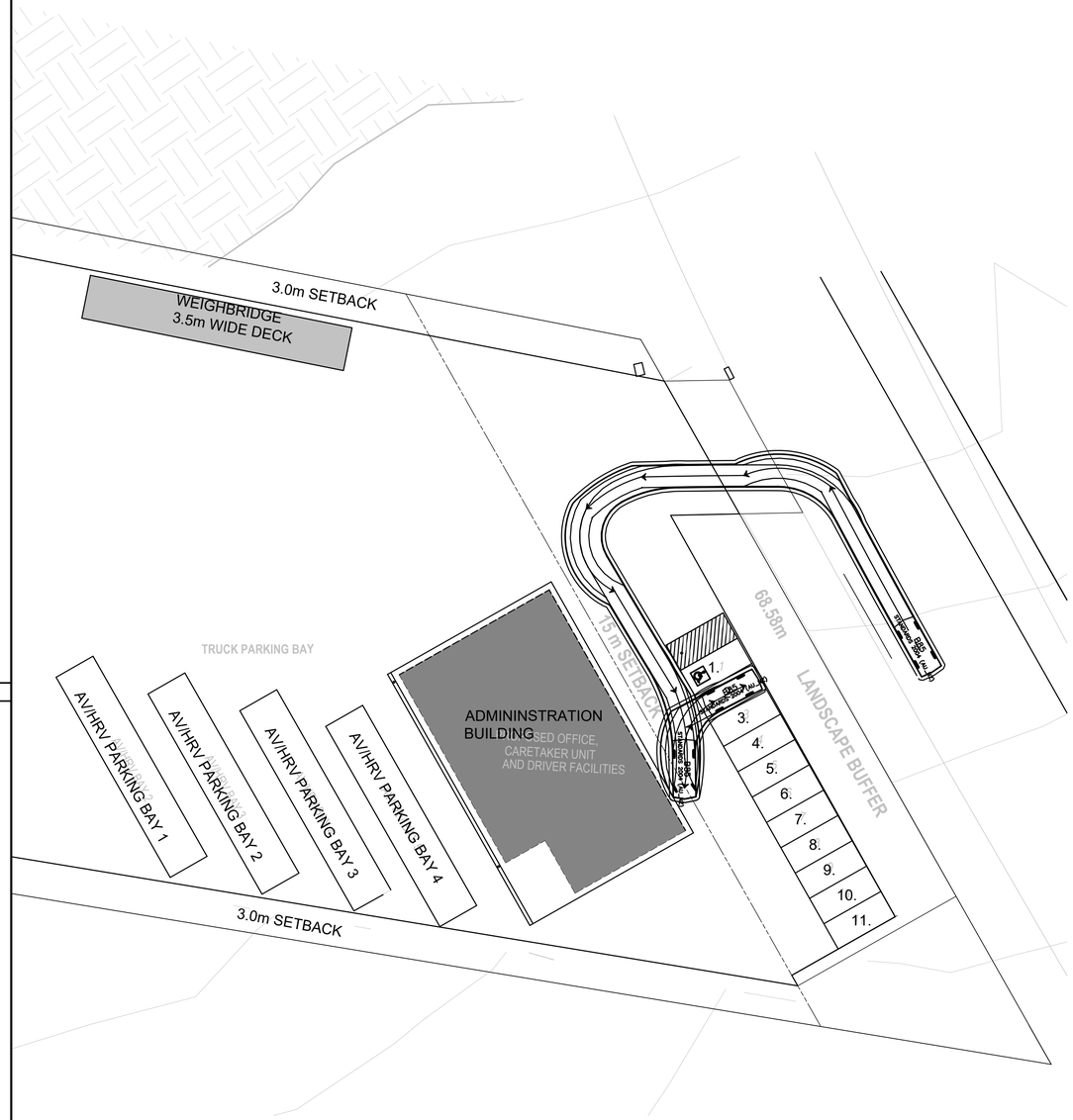
PROPOSED ASPHALT PROCESSING FACILITY
133 SOMERSBY FALLS ROAD
SOMERSBY
SWEPT PATHS - TRUCK & DOG DELIVERY VEHICLE

DRAWING STATUS:
PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

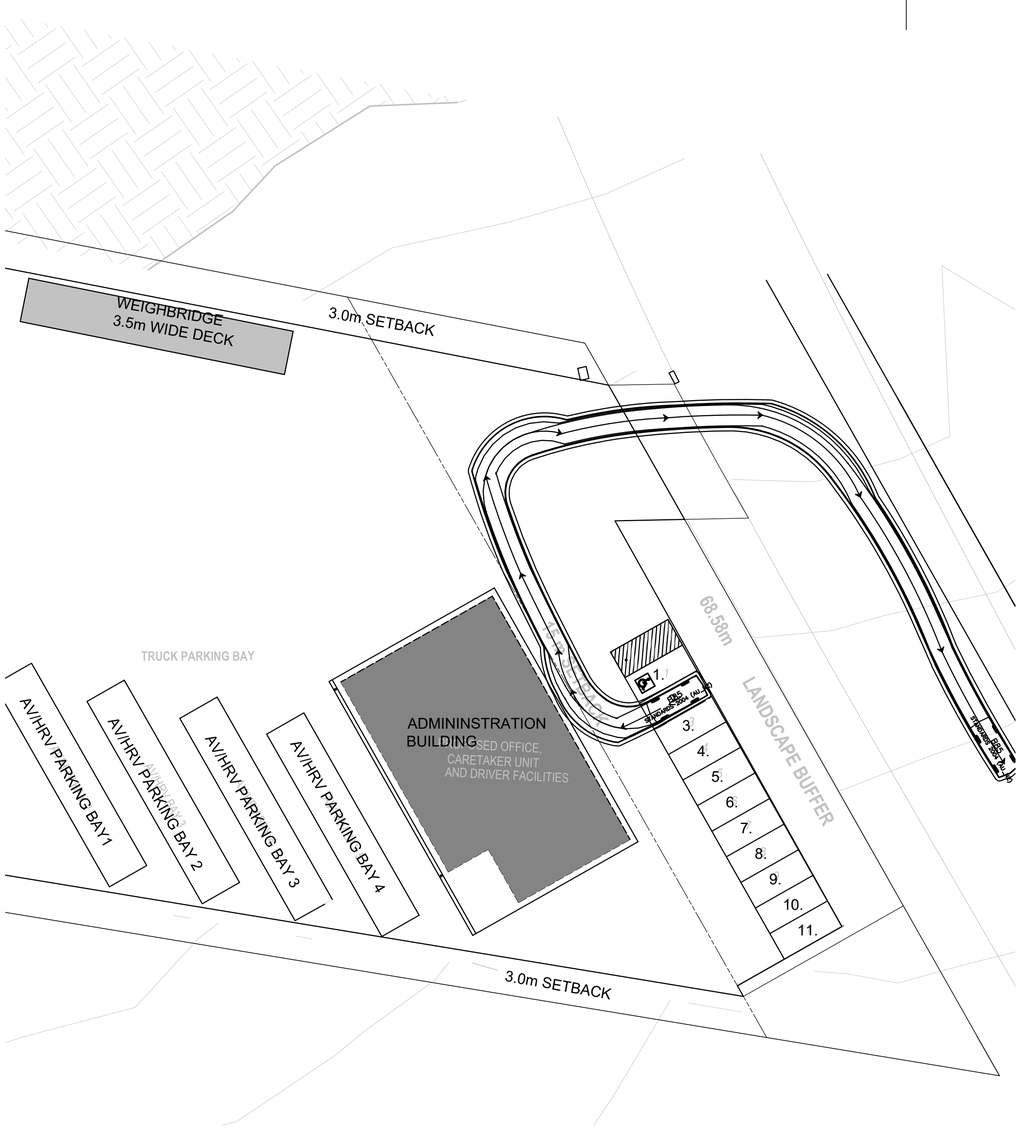
DRAWING NUMBER: 23053-CI-156
REV 1

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm A1 ON ORIGINAL

DEVICE NAME : _AUTOCAD PDF (GENERAL DOCUMENTATION).PC3




SITE PLAN - PASSENGER VEHICLE - DRIVING IN SWEPT PATH
SCALE 1:250




SITE PLAN - PASSENGER VEHICLE - DRIVING OUT SWEPT PATH
SCALE 1:250

B85

| | meters |
|---|---|
| Width | : 1.87 |
| Track | : 1.77 |
| Lock to Lock Time | : 6.0 |
| Steering Angle | : 34.1 |

| REV | DATE | REVISIONS | DRN | CHK |
|---|---|---|---|---|
| 1 | 1/11/23 | PRELIMINARY | IB | DB |

0 5 10 15 20 25m
SCALE 1:250 @A1

| | | | |
|---|---|---|---|
| DESIGNED: IB | | DATUM: AHD | A1 |
| DRAWN: DB | | COORDINATE SYSTEM: | |
| CHECKED: VC | | | |
| RECOMMENDED: | | APPROVED: | |
| PROJECT MANAGER | DATE | PROJECT DIRECTOR | DATE |

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STATELINE ASPHALTS PTY LTD
PROPOSED ASPHALT PROCESSING FACILITY
133 SOMERSBY FALLS ROAD
SOMERSBY
SWEPT PATHS - PASSENGER VEHICLE ENTRY & EXIT

DRAWING STATUS: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

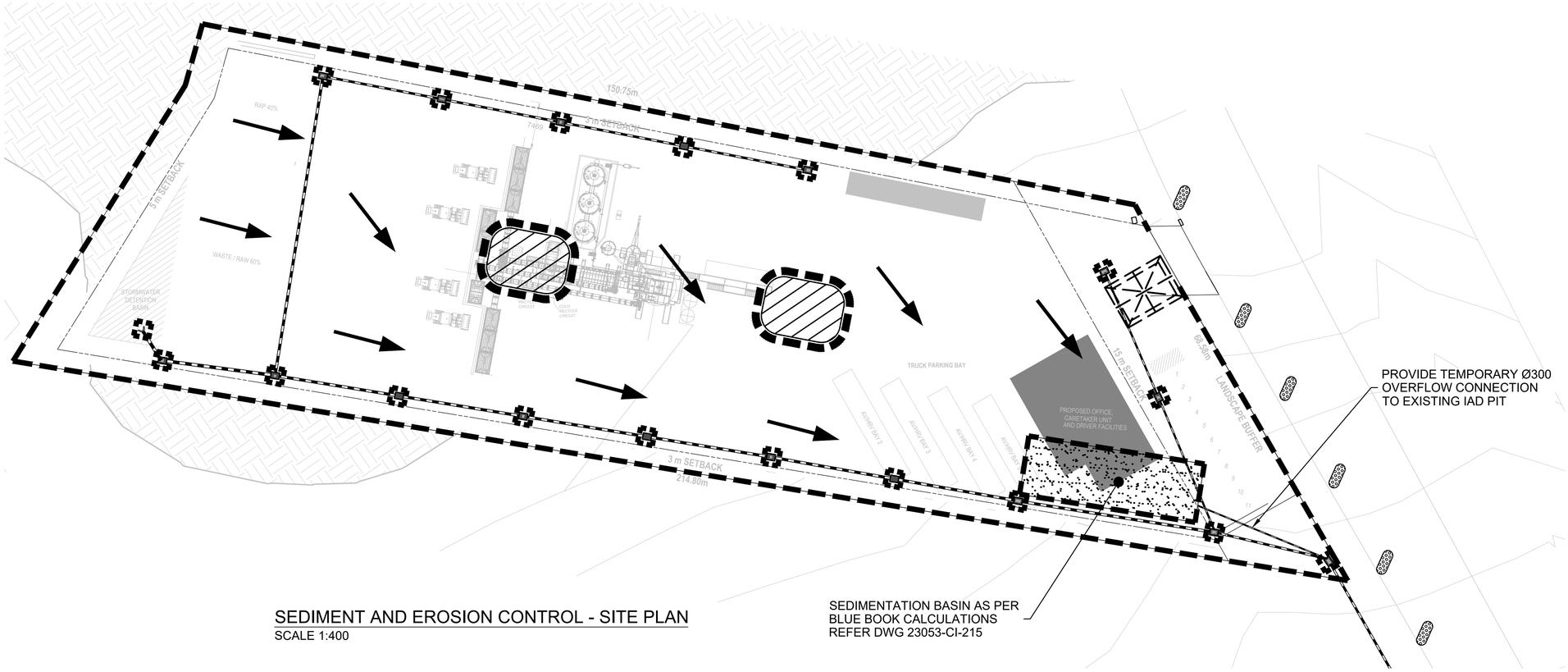
DRAWING NUMBER: 23053-CI-158 REV 1

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm A1 ON ORIGINAL

DEVICE NAME : _AUTOCAD PDF (GENERAL DOCUMENTATION).PC3

LEGEND :

- TEMPORARY SURFACE INLET SEDIMENT TRAP OR GROSS POLLUTANT TRAP TO BE PROVIDED
- SILT FENCE
- TEMPORARY CONSTRUCTION VEHICLE EXIT
- TEMPORARY STOCKPILE OF TOPSOIL SURROUNDED WITH SILT FENCE
- SURFACE RUNOFF
- DIVERSION BANK AND CHANNEL
- GRAVEL FILLED SAUSAGE




## SEDIMENT AND EROSION CONTROL - SITE PLAN

SCALE 1:400

| REV | DATE | REVISIONS | DRN | CHK |
|---|---|---|---|---|
| 1 | 1/11/23 | PRELIMINARY | IB | DB |

0 10 20 30 40m

SCALE 1:400 @A1

| | | | |
|---|---|---|---|
| DESIGNED: IB | DATUM: AHD | A1 | |
| DRAWN: DB | | | |
| CHECKED: VC | COORDINATE SYSTEM: | | |
| RECOMMENDED: | APPROVED: | | |
| PROJECT MANAGER DATE | PROJECT DIRECTOR DATE | | |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STATELINE ASPHALTS PTY LTD

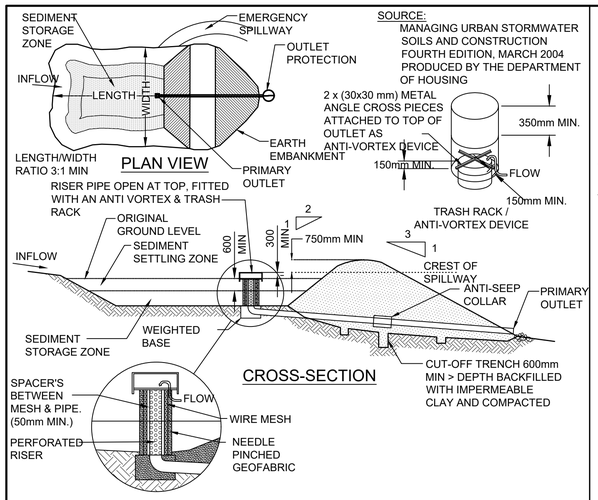
PROPOSED ASPHALT PROCESSING FACILITY
133 SOMERSBY FALLS ROAD
SOMERSBY
SEDIMENT AND EROSION CONTROL PLAN

DRAWING STATUS: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

DRAWING NUMBER: 23053-CI-200 REV 1

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm A1 ON ORIGINAL

DEVICE NAME : _AUTOCAD PDF (GENERAL DOCUMENTATION).PC3



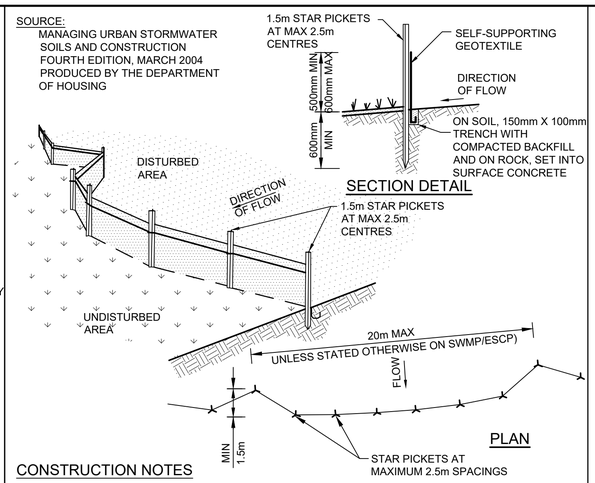

SOURCE:
MANAGING URBAN STORMWATER SOILS AND CONSTRUCTION FOURTH EDITION, MARCH 2004 PRODUCED BY THE DEPARTMENT OF HOUSING

## CONSTRUCTION NOTES:

1. REMOVE ALL VEGETATION AND TOPSOIL FROM UNDER THE DAM WALL AND FROM WITHIN THE STORAGE AREA.
2. FORM A CUT OFF TRENCH UNDER THE CENTRELINE OF THE EMBANKMENT 600mm DEEP & 1200mm WIDE, EXTENDING TO A POINT ON THE WATERCOURSE WALL ABOVE THE RISER SILL LEVEL.
3. MAINTAIN THE TRENCH FREE OF WATER AND RECOMPACT THE MATERIALS WITH EQUIPMENT AS SPECIFIED IN THE SWMP TO 95 PER CENT STANDARD PROCTOR DENSITY.
4. SELECT FILL ACCORDING TO THE SWMP THAT IS FREE FROM ROOTS, WOOD, ROCK, LARGE STONE OR FOREIGN MATERIAL.
5. PREPARE THE SITE UNDER THE EMBANKMENT BY RIPPING TO AT LEAST 100 MM TO HELP BOND COMPACTED FILL TO THE EXISTING SUBSTRATE.
6. SPREAD THE FILL IN 100 MM TO 150 MM LAYERS AND COMPACT IT AT OPTIMUM MOISTURE CONTENT FOLLOWING THE SWMP.
7. INSTALL THE PIPE OUTLET WITH SEEPAGE COLLARS AS SPECIFIED IN THE SWMP & STANDARD DRAWING 6-3b.
8. FORM BATTER GRADES AT 2(H):1(V) UPSTREAM & 3(H):1(V) DOWNSTREAM OR AS SPECIFIED IN THE SWMP.

# EARTH BASIN - DRY SD 6-3
(APPLIES TO TYPE 'C' SOILS ONLY)

SOURCE:
MANAGING URBAN STORMWATER SOILS AND CONSTRUCTION FOURTH EDITION, MARCH 2004 PRODUCED BY THE DEPARTMENT OF HOUSING

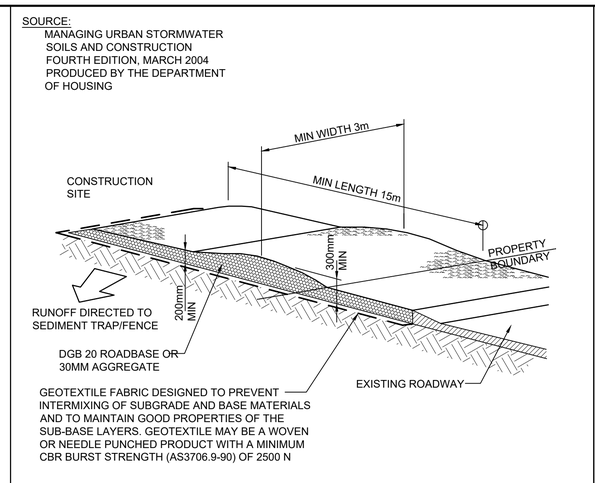



## CONSTRUCTION NOTES

1. CONSTRUCT SEDIMENT FENCES AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE, BUT WITH SMALL RETURNS AS SHOWN IN THE DRAWING TO LIMIT THE CATCHMENT AREA OF ANY ONE SECTION. THE CATCHMENT AREA SHOULD BE SMALL ENOUGH TO LIMIT WATER FLOW IF CONCENTRATED AT ONE POINT TO 50 LITRES PER SECOND IN THE DESIGN STORM EVENT, USUALL THE 10 YEAR EVENT.
2. CUT A 150 MM DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
3. DRIVE 1.5 METRE LONG STAR PICKETS INTO GROUNDAT 2.5 METRE INTERVALS (MAX) AT THE DOWNSLOPE EDGE OF THE TRENCH. ENSURE ANY STAR PICKETS ARE FITTED WITH SAFETY CAPS.
4. FIX SELF-SUPPORTING GEOTEXTILE TO THE UPSLOPE SIDE OF THE POSTS ENSURING IT GOES TO THE BASE OF THE TRENCH, FIX THE GEOTEXTILE WITH WIRE TIES OR AS RECOMMENDED BY THE MANUFACTURER. ONLY USE GEOTEXTILE SPECIFICALLY PRODUCED FOR SEDIMENT FENCING. THE USE OF SHADE CLOTH FOR THIS PURPOSE IS NOT SATISFACTORY.
5. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150 MM OVERLAP.
6. BACKFILL TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT THOROUGHLY OVER THE GEOTEXTILE

# SEDIMENT FENCE SD 6-8

SOURCE:
MANAGING URBAN STORMWATER SOILS AND CONSTRUCTION FOURTH EDITION, MARCH 2004 PRODUCED BY THE DEPARTMENT OF HOUSING

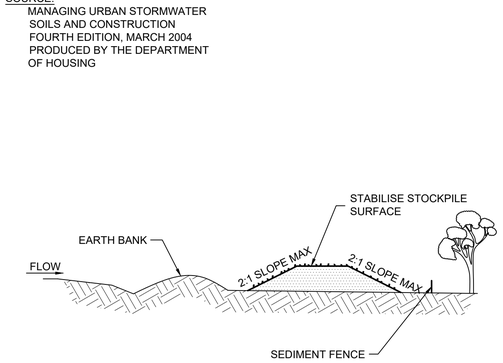



## CONSTRUCTION NOTES:

1. STRIP THE TOPSOIL, LEVEL THE SITE AND COMPACT THE SUBGRADE.
2. COVER THE AREA WITH NEEDLE-PUNCHED GEOTEXTILE.
3. CONSTRUCT A 200MM THICK PAD OVER THE GEOTEXTILE USING ROAD BASE OR 30MM AGREGATE.\
4. ENSURE THE STRUCTURE IS AT LEAST 15 METRES LONG OR TO BUILDING ALIGNMENT AND AT LEAST 3 METRES WIDE.
5. WHERE A SEDIMENT FENCE JOINS ONTO THE STABILISED ACCESS, CONSTRUCT A HUMP IN THE STABILISED ACCESS TO DIVERT WATER TO THE SEDIMENT FENCE

# STABILISED SITE ACCESS SD 6-14

SOURCE:
MANAGING URBAN STORMWATER SOILS AND CONSTRUCTION FOURTH EDITION, MARCH 2004 PRODUCED BY THE DEPARTMENT OF HOUSING

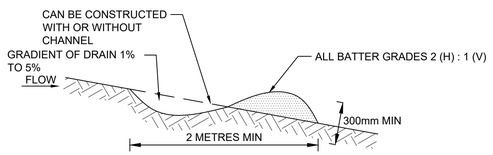



## CONSTRUCTION NOTES:

1. PLACE STOCKPILES MORE THAN 2 (PREFERABLY 5 ) METRES FROM EXISTING VEGETATION, CONCENTRATED WATER FLOW, ROADS AND HAZARD AREAS.
2. CONSTRUCT ON THE CONTOUR AS LOW, FLAT, ELONGATED MOUNDS.
3. WHERE THERE IS SUFFICIENT AREA, TOPSOIL STOCKPILES SHALL BE LESS THAN 2 METERS IN HEIGHT.
4. WHERE THEY ARE TO BE IN PLACE FOR MORE THAN 10 DAYS, STABILISE FOLLOWING THE APPROVED ESCP OR SWMP TO REDUCE THE C-FACTOR TO LESS THAN 0.10.
5. CONSTRUCT EARTH BANKS (STANDARD DRAWING 5-5) ON THE UPSLOPE SIDE TO DIVERT WATER AROUND STOCKPILES AND SEDIMENT FENCSE (STANDARD DRAWING 6-8) 1 TO 2 METRES DOWNSLOPE.

# STOCKPILES SD 4-1

SOURCE:
MANAGING URBAN STORMWATER SOILS AND CONSTRUCTION FOURTH EDITION, MARCH 2004 PRODUCED BY THE DEPARTMENT OF HOUSING



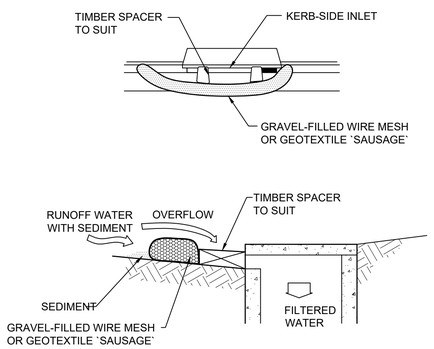

NOTE: ONLY TO BE USED AS A TEMPORARY BANK WHERE MAXIMUM UPSLOPE LENGTH IS 80 METRES.

## CONSTRUCTION NOTES:

1. BUILD WITH GRADIENTS BETWEEN 1% AND 5%.
2. AVOID REMOVING TREES AND SHRUBS IF POSSIBLE - WORK AROUND THEM
3. ENSURE THE STRUCTURES ARE FREE OF PROJECTIONS OR OTHER IRREGULARITIES THAT COULD IMPEDE WATER FLOW.
4. BUILD THE DRAINS WITH CIRCULAR, PARABOLIC OR TRAPEZOIDAL CROSS SECTIONS, NOT V SHAPED
5. ENSURE THE BANKS ARE PROPERLY COMPACTED TO PREVENT FAILURE
6. COMPLETE PERMANENT OR TEMPORARY STABILISATION WITHIN 10 DAYS OF CONSTRUCTION.

# EARTH BANK (LOW FLOW) SD 5-5

SOURCE:
MANAGING URBAN STORMWATER SOILS AND CONSTRUCTION FOURTH EDITION, MARCH 2004 PRODUCED BY THE DEPARTMENT OF HOUSING



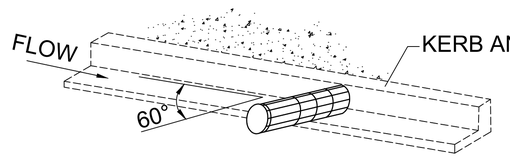

NOTE: THIS PRACTICE ONLY TO BE USED WHERE SPECIFIED IN AN APPROVED SWMP/ESCP.

## CONSTRUCTION NOTES:

1. INSTALL FILTERS TO KERB INLETS ONLY AT SAG POINTS.
2. FABRICATE A SLEEVE MADE FROM GEOTEXTILE OR WIRE MESH LONGER THAN THE LENGTH OF THE INLET PIT AND FILL IT WITH 25mm TO 50mm GRAVEL.
3. FORM AN ELLIPTICAL CROSS-SECTION ABOUT 150MM HIGH X 400MM WIDE.
4. PLACE THE FILTER AT THE OPENING LEAVING AT LEAST A 100mm SPACE BETWEEN IT AND THE KERB INLET. MAINTAIN THE OPENING WITH SPACER BLOCKS.
5. FORM A SEAL WITH THE KERB TO PREVENT SEDIMENT BYPASSING THE FILTER.
6. SANDBAGS FILLED WITH GRAVEL CAN SUBSTITUTE FOR THE MESH OR GEOTEXTILE PROVIDING THEY ARE PLACED SO THAT THEY FIRMLY ABUT EACH OTHER AND SEDIMENT - LADEN WATERS CANNOT PASS BETWEEN.

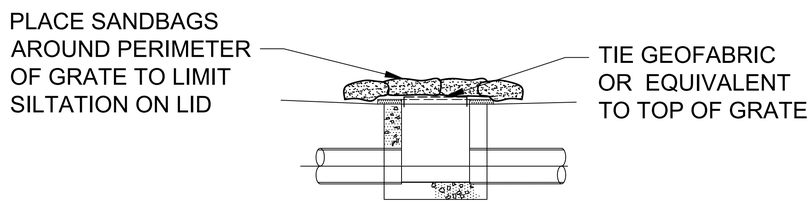
# MESH AND GRAVEL INLET FILTER SD 6-11

NOTE:
SEDIMENT BARRIERS TO BE USED ONLY WHERE ROAD WIDTHS PERMITS AND WHERE SAFETY TO PASSING TRAFFIC IS NOT AFFECTED




# GRAVEL FILLED SAUSAGE TEMPORARY GUTTER GROSS POLLUTANT/SEDIMENT TRAP

COARSE GRAVEL ROLLED IN NETTING MATERIAL TOTALING 200mm HIGH & PLACED HARD AGAINST FACE OF KERB




# TEMPORARY SURFACE INLET SEDIMENT TRAP OR GROSS POLLUTANT TRAP

WHEN USED AS A GROSS POLLUTANT TRAP STRUCTURE SHALL BE REGULARLY DESILTED

| REV | DATE | REVISIONS | DRN | CHK |
|---|---|---|---|---|
| 1 | 1/11/23 | PRELIMINARY | IB | DB |

0 10 20 30 40m
SCALE 1:400 @A1

DESIGNED: IB
DRAWN: DB
CHECKED: VC
RECOMMENDED: PROJECT MANAGER DATE
DATUM: AHD A1
COORDINATE SYSTEM:
APPROVED: PROJECT DIRECTOR DATE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STATELINE ASPHALTS PTY LTD
PROPOSED ASPHALT PROCESSING FACILITY
133 SOMERSBY FALLS ROAD
SOMERSBY
SEDIMENT AND EROSION CONTROL DETAILS

DRAWING STATUS: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES
DRAWING NUMBER: 23053-CI-210
REV 1

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm A1 ON ORIGINAL

DEVICE NAME : _AUTOCAD PDF (GENERAL DOCUMENTATION).PC3

| Site area | Sub-catch | Notes |
|---|---|---|
| | All | |
| Total catchment area (ha) | 1.01 | |
| Disturbed catchment area (ha) | 1.01 | |

## Soil analysis (enter sediment type if known, or laboratory particle size data)

| | | |
|---|---|---|
| Sediment Type (C, F or D) if known: | C | From Appendix C (if known) |
| % sand (fraction 0.02 to 2.00 mm) | | Enter the percentage of each soil fraction. E.g. enter 10 for 10% |
| % silt (fraction 0.002 to 0.02 mm) | | |
| % clay (fraction finer than 0.002 mm) | | |
| Dispersion percentage | | E.g. enter 10 for dispersion of 10% |
| % of whole soil dispersible | 0 | See Section 6.3.3(e). Auto-calculated |
| Soil Texture Group | C | Automatic calculation from above |

## Rainfall data

| | | |
|---|---|---|
| Design rainfall depth (no of days) | 5 | See Section 6.3.4 and, particularly, Table 6.3 on pages 6-24 and 6-25. |
| Design rainfall depth (percentile) | 75 | |
| x-day, y-percentile rainfall event (mm) | 27.9 | |
| Rainfall R-factor (if known) | | Only need to enter one or the other here |
| IFD: 2-year, 6-hour storm (if known) | 10.3 | |

## RUSLE Factors

| | | |
|---|---|---|
| Rainfall erosivity (*R*-factor) | 2330 | Auto-filled from above |
| Soil erodibility (*K*-factor) | 0.017 | RUSLE LS factor calculated for a high rill/interrill ratio. |
| Slope length (m) | 75 | |
| Slope gradient (%) | 5 | |
| Length/gradient (*LS*-factor) | 1.14 | |
| Erosion control practice (*P*-factor) | 1.3 | |
| Ground cover (*C*-factor) | 1 | |

## Structure Details

| | | |
|---|---|---|
| **Structure Name** | **All** | Auto-filled from Worksheet 1 |
| **Catchment Area (ha)** | 1.01 | Auto-filled from Worksheet 1 |
| **Time of concentration (tc)** | 4 | Auto-calculated assuming tc is halved |

## Rainfall Intensities (IFD Values)

| | | |
|---|---|---|
| **1 year, tc** | 72.1 | Enter the relevant rainfall intensities (in mm/hr) for each of the nominated rainfall events. |
| **2 year, tc** | 82.1 | The time of concentration (tc) determines the duration of the event to be used |
| **5 year, tc** | 116 | |
| **10 year, tc** | 142 | |
| **20 year, tc** | 169 | |
| **50 year, tc** | 208 | |
| **100 year, tc** | 241 | |

| | | |
|---|---|---|
| **$C_{10}$ runoff coefficient** | 0.8 | Use AR&R or Table F3, pg F-6 |

| | | |
|---|---|---|
| **Design ARI event (select):** | 1 | Select design ARI (years) from dropdown |
| **Frequency Factor** | 0.8 | Auto-filled based on selected ARI |
| **Flow Calculation** | 0.13 | Auto-calculated based on selected ARI |

## Type C Basin Design Criteria

| | | |
|---|---|---|
| **Structure Name** | **All** | Auto-filled from Worksheet 1 |
| **Catchment Area (ha)** | 1.01 | Auto-filled from Worksheet 1 |
| **Sediment type (C, F or D)** | C | Auto-filled from Worksheet 1 |
| **Design rainfall event** | 0.5 | Choose design event from dropdown |
| **Flow volume ($m^3/s$)** | 0.065 | Calculated from IFD values above |
| **Area Factor** | 4100 | Default is 4,100. See pg 6-12 |
| **Depth of settling (water zone) (m)** | 0.6 | Minimum is 0.6m (pg 6-12) |

## Type C Basin Volume Calculations

| | | |
|---|---|---|
| **Basin Surface Area ($m^2$)** | 266.5 | Auto-calculated |
| **Settling (water) zone volume ($m^3$)** | 159.9 | Auto-calculated |
| **Storage (soil) zone volume ($m^3$)** | 0 | Auto-calculated |
| **Total basin volume ($m^3$)** | 159.9 | Auto-calculated |

## Basin Shape

| | | |
|---|---|---|
| **Enter length:width ratio** | 3 | E.g. for 3:1 (L:W) enter 3. |
| **Length (m)** | 28.3 | These figures should be taken as a guide only. Detailed calcs might be required. |
| **Width (m)** | 9.4 | |

| REV | DATE | REVISIONS | DRN | CHK |
|---|---|---|---|---|
| 1 | 1/11/23 | PRELIMINARY | IB | DB |

0 10 20 30 40m
SCALE 1:400 @A1

DESIGNED: IB | DRAWN: DB | CHECKED: VC | RECOMMENDED: PROJECT MANAGER DATE
DATUM: AHD | A1 | COORDINATE SYSTEM: | APPROVED: PROJECT DIRECTOR DATE

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STATELINE ASPHALTS PTY LTD
PROPOSED ASPHALT PROCESSING FACILITY
133 SOMERSBY FALLS ROAD
SOMERSBY
BLUE BOOK CALCULATIONS

DRAWING STATUS: PRELIMINARY
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DRAWING NUMBER: 23053-CI-215 | REV 1

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm A1 ON ORIGINAL

PM.ANDERSON
CONSULTING

28th August 2023

The CEO
Darkinjung Local Aboriginal Lands Council
168 Pacific Highway
Wyong

Re Proposed Asphalt Batching Plant – 133 Somersby Falls Road Somersby

Dear Ms Duncan,

I am writing to you to advise of a proposed development on lands in Somersby for the development of an asphalt batching and recycling facility.

The land to be developed consists of a parcel of land that was recently rezoned by Central coast Council and the subject of a recent subdivision to create 5 industrial lots.

We are in the final phase of the preparation of the Environmental impact statement for the project and as art of the requirements for the EIS we are required to consult with your organisation and determine what issues if any you may have or want to see addressed in the EIS.

I would be appreciated if you could provide me with any issues required within 21 ay form this letter.

Please do not hesitate to reach out to discuss this proposal and I would be more than happy to come and meet with you and your team.

Yours faithfully

Paul Anderson
Director
PM.Anderson Consulting Pty Ltd

**PM ANDERSON CONSULTING**
17 Currawong Road,
Wamberal NSW 2260
M 0407 330 884
E paul@pmandersonconsulting.com.au
ABN 30 617 667 053

PIA Registered Planner
Planning Institute Australia

| Project | | Drawing Title | Issue | Description | Date | Chk | Auth | Project Number | Drawing Number | Rev |
|---|---|---|---|---|---|---|---|---|---|---|
| ASPHALT PROCESSING FACILITY | 133 SOMERSBY ROAD, SOMERSBY | EXTERIOR PHOTOMONTAGE 1 | | | | | | 22_012 | A50 | |
| | | | | | | | | Scale: @ A1 | Date Printed: 9/11/2023 6:15:55 PM | |

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ADG architects

Member Australian Institute of Architects

Client

Project
ASPHALT PROCESSING FACILITY

Location
133 SOMERSBY ROAD, SOMERSBY

Drawing
EXTERIOR PHOTOMONTAGE 2

| Issue | Description | Date | Chk | Auth |
|---|---|---|---|---|

Project Number
22_012

Drawing Number
A501

Issue

Scale
@ A3

Date Printed
9/11/2023 6:17:39 PM

File Name Autodesk Docs://22_012 - 125 Somersby Falls Road Somersby/22_012 - 125 Somersby Falls Road Somersby - DA.rvt

# APPENDICES

# AIR QUALITY IMPACT ASSESSMENT
# FOR
# STATELINE ASPHALT PTY LTD
# 133 SOMERSBY FALLS ROAD SOMERSBY 2250

***Prepared for:*** Paul Anderson, PM Anderson Consulting Pty Ltd
Stateline Asphalt Pty Ltd
Central Coast Council
NSW Environment Protection Agency
NSW Department of Planning and Environment

***Prepared by:*** Vida Nodehi, Graduate Environmental Scientist
R T Benbow, Principal Consultant

***Report No:*** 221145_AQIA_Rev2
November 2023
(Released: 10 November 2023)

Benbow
ENVIRONMENTAL

*Engineering a Sustainable Future for Our Environment*

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| Reviewed by: | Position: | Signature: | Date: |
|---|---|---|---|
| Emma Hansma | Senior Engineer | | 10 November 2023 |

| Approved by: | Position: | Signature: | Date: |
|---|---|---|---|
| R T Benbow | Principal Consultant | | 10 November 2023 |

**DOCUMENT REVISION RECORD**

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|---|---|---|---|---|
| 1 | 12-05-2023 | Draft / Rev1 | R T Benbow | R T Benbow |
| 2 | 10-11-2023 | Rev2 | R T Benbow | R T Benbow |
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| Revision | Issue Date | Issued To | Issued By |
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| 2 | 10-11-2023 | Stateline Asphalt Pty Ltd | Benbow Environmental |
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| | | | |

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# 1. INTRODUCTION

Benbow Environmental has been engaged by Stateline Asphalt Pty Ltd to prepare an Air Quality Impact Assessment for the proposed asphalt batching plant located at 133 Somersby Falls Road Somersby NSW 2250 (legally known as Lot 3 DP1292653). The purpose of this report is to support an Environmental Impact Statement which is prepared to address key issues raised in the issued SEARS Ref No. 1655.

The site's main activity will be the manufacture of asphalt, which involves the drying and heating of aggregate to remove moisture, followed by the mixing with binding material and heated bitumen.

The proponent seeks approval for production of up to 200,000 tonnes per year of new asphalt and production of up to 100,000 tonnes per year of waste road-profiling material on site, with storage bunkers with a capacity to store 3,000 tonnes of waste material (i.e. RAP) at any one time.

The raw materials required for production of the new asphalt would include:

- Bitumen;
- Aggregates including crushed stone, gravel, sand and crusher dust;
- Reclaimed Asphalt Pavement (RAP); and
- Powders.

Waste in the form of reclaimed asphalt pavement (RAP) would be brought onto the site for processing in the mobile crushing equipment and then used in the product.

## 1.1 FUEL TYPE UPDATE

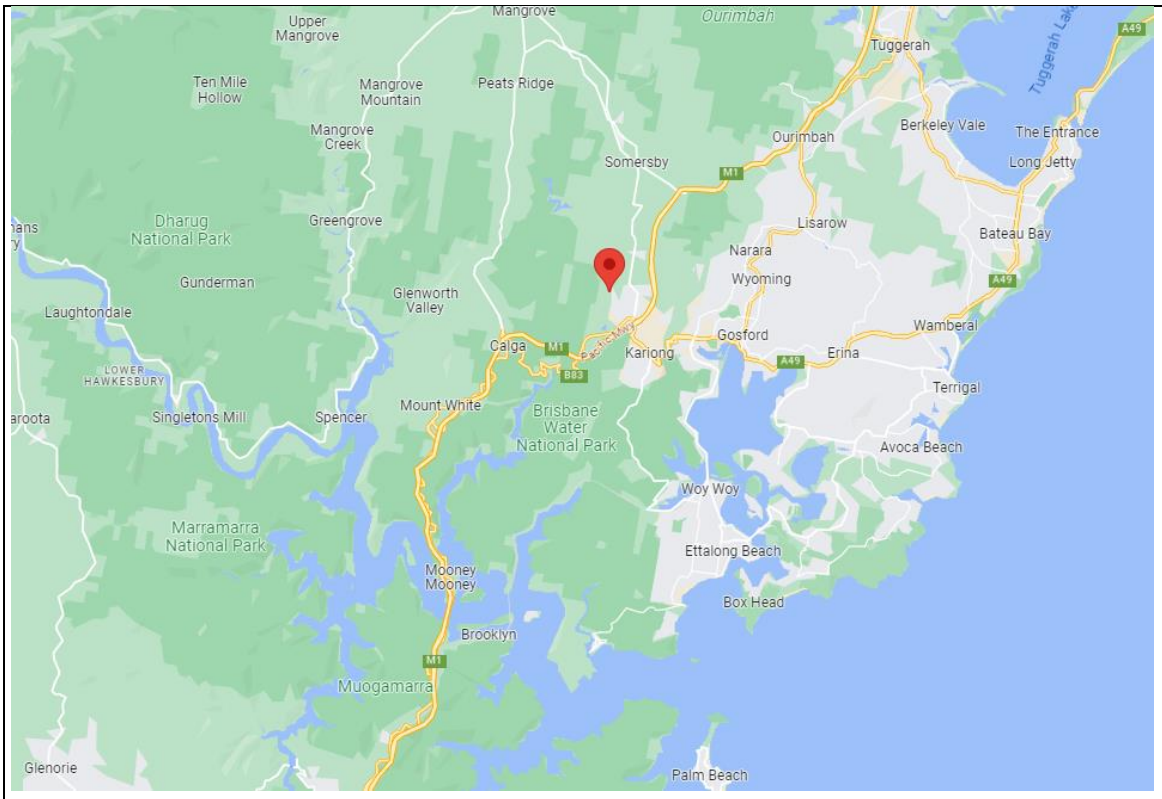
The air quality assessment is based on the of use of fuel which is 30,000 L of diesel and use of bitumen 240,000 L.

# 2. SITE DETAILS

## 2.1 SITE LOCATION

The site is located at 133 Somersby Falls Road, Somersby NSW 2250. It is legally designated as Lot 3 DP1292653. The site is located within an industrial and rural area, which is surrounded by other industry buildings to the north, east and south a large expanse of flora, fauna and waterways to the west and further around the industrial area. The land is situated within the local government area of Central Coast Council. Figure 2-1 shows the regional location of the site and Figure 2-2 shows an aerial photo of the site.

Figure 2-1: Regional Site Location




**Source:** Google Maps 2022

| | | |
|---|---|---|
| ↑N | | Benbow Environmental<br>25-27 Sherwood Street,<br>Northmead NSW 2152 |

Figure 2-2: Aerial Photograph of the Site

**Source:** Google map 2022

↑N

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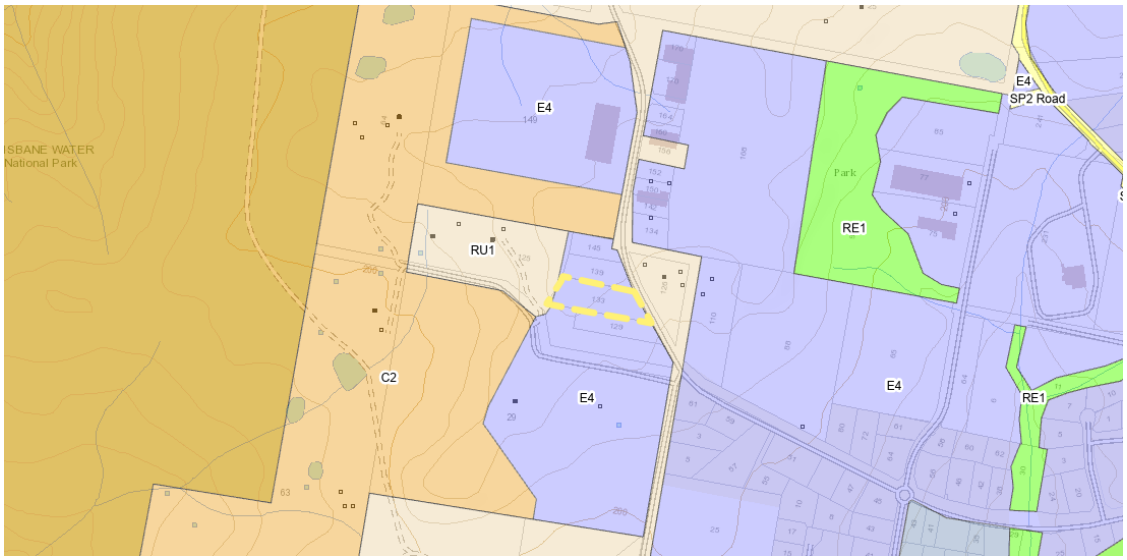
Northmead NSW 2152

## 2.2 LOCALITY AND SURROUNDING LAND USE

The site and remaining areas within the lot number are located within land zoned E4 – General Industrial and RU1 – Primary Production under the Central Coast Local Environment Plan 2022. Immediately surrounding the lot are RU1 to the east and west and E4 to the south and north also. Further surrounds are C2 – Environmental Conservation to the south east and far north, RU1 to the north and south, C1 – National Parks and Nature Reserves to the west and C4 – Environmental Living to the south. The land zoning map is shown below in Figure 2-3.

.

Figure 2-3: Land Zoning Map




**Source:** ePlanning Spatial Viewer 2022

N

Not to scale

LEGEND

Site boundary

**Zone**

| | | | |
|---|---|---|---|
| B1 | Neighbourhood Centre | E1 | National Parks and Nature Reserves |
| B2 | Local Centre | E2 | Environmental Conservation |
| B3 | Commercial Core | E3 | Environmental Management |
| B4 | Mixed Use | E4 | Environmental Living |
| B5 | Business Development | IN1 | General Industrial |
| B6 | Enterprise Corridor | IN4 | Working Waterfront |
| RE1 | Public Recreation | R1 | General Residential |
| RE2 | Private Recreation | R2 | Low Density Residential |
| RU1 | Primary Production | | |
| RU2 | Rural Landscape | | |
| RU3 | Forestry | | |
| RU5 | Village | | |
| SP1 | Special Acitivites | | |
| SP2 | Infrastructure | | |

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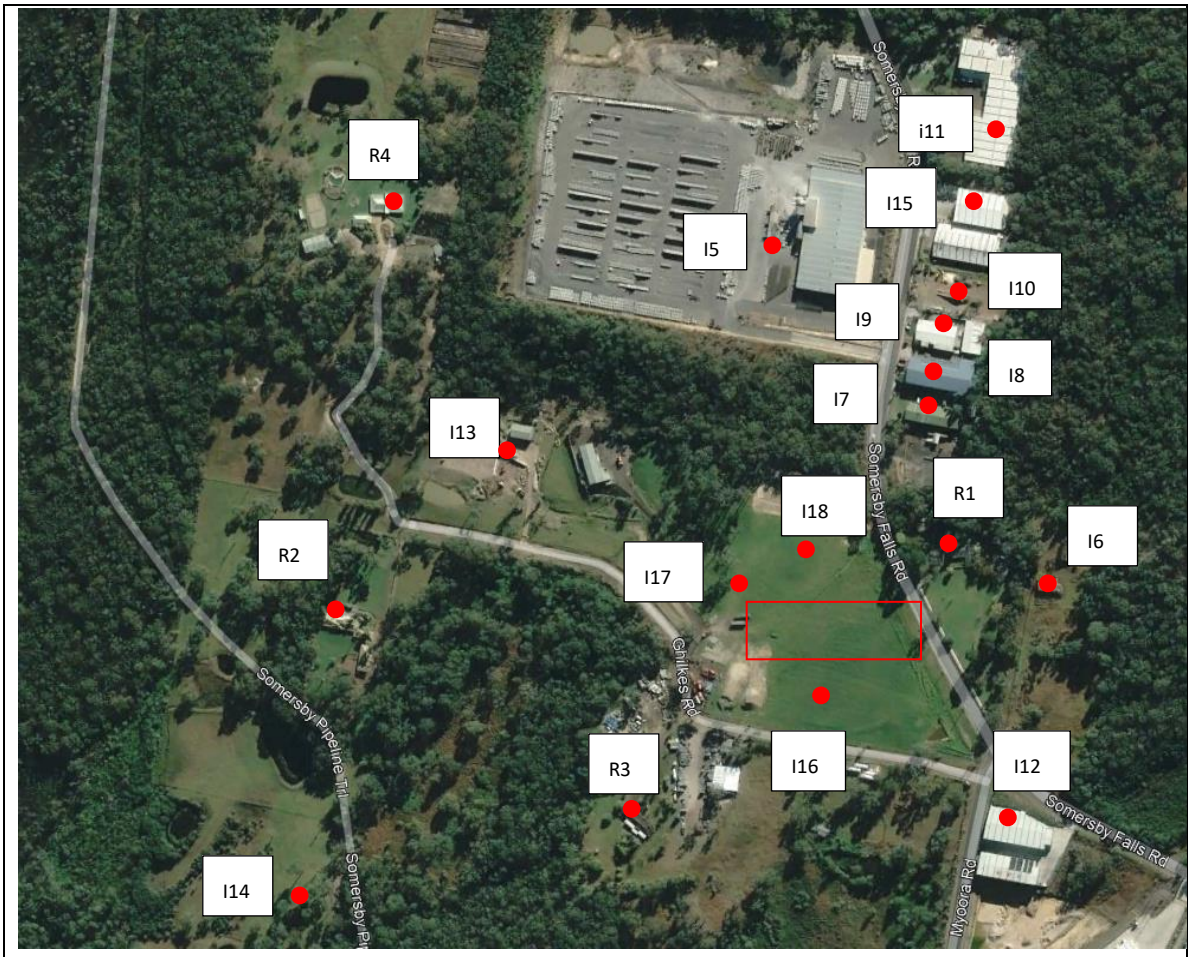
**Note:** A reference to an Environment Protection zone E1, E2, E3 or E4 within a Land Zoning Map should be taken to be a reference to a Conservation zone C1, C2, C3 or C4. For further information please see Standard Instrument (Local Environmental Plans) Amendment (Land Use Zones) Order 2021.

## 2.3 NEAREST IDENTIFIED SENSITIVE RECEPTORS

Figure 2-4 shows the nearest identified receptors that have the potential to be affected by the processes at the subject site. These receptors were selected based on their proximity and directional bearing from the subject site.

Figure 2-4: Nearest Sensitive Receptors




**Source: Google Earth 2022**

| | | |
|---|---|---|
| ↑N<br>Not to scale | LEGEND:<br>Site<br>Receptor | Benbow Environmental<br>25-27 Sherwood Street<br>Northmead NSW 2152 |

## 2.4 Overview of Operations

The asphalt batching plant produces coated roadstone, such as asphalt concrete, using a variety of aggregates, sand, and filler materials in precise proportions. The plant begins by crushing the raw materials, including reclaimed asphalt pavement (RAP), to the desired size. The RAP is then combined with new materials in the correct proportions and heated in a drum dryer. A binder, bitumen, is added to the mixture, and the temperature is carefully controlled to ensure the final product is workable.

The plant has several components, including a cold aggregate supply system, this is fed from storage bays via front end loader into hoppers, a drum dryer, a dust collector, a hot aggregate elevator, a vibrating screen, a filler supply system, a weighing and mixing (pugmill) system, a pollution control unit, asphalt storage, and a bitumen supply system. The quality of the asphalt produced is affected by each of these components, as well as the proportion of reclaimed asphalt used. The proposed asphalt batching plant and recycling facility will be designed to operate 24 hours per day, 365 days per year.

The finished good is “hot mix asphalt concrete” also called asphalt pavement which is a combination of aggregates and bitumen that is used for road construction. The hot mix asphalt concrete needs to be delivered ‘hot’ and therefore needs to be manufactured as required. The site will contain hot storage silos to hold the asphalt concrete at the required elevated temperatures until a truck is available for loading.

## 2.5 Proposed Development

The proposed development includes installation of an asphalt mixing plant with a capacity to produce approximately 200 tonnes of asphalt per hour - approximately 200,000 tonnes of new asphalt material per annum.

## 2.6 Asphalt Processing Equipment

Equipment to be used is as follows:

- Ground level hoppers;
- Heated bitumen tanks;
- Powder silos;
- Storage silos;
- Truck filling area;
- Skip bin and belt conveyor for transfer of aggregates;
- Conveyors and bucket elevators;
- Burner drum / aggregate burner;
- Aggregate screening equipment;
- Aggregate storage hoppers;
- Mobile crushing and screening equipment;
- Bitumen storage/dispensing tanks;
- Bitumen tanks heating equipment;
- Asphalt (finished product) storage silos;
- Weigh hoppers and augers;
- Pugmill mixer;
- Dust collector, baghouse and stack;
- Control room for operating and process controls;

# 3. METEOROLOGY AND LOCAL AIR QUALITY

### 3.1.1 Lakes Environmental Surface Data File

Prognostic meteorological data for the year 2022 was obtained from Lakes Environmental Services further details are provided in 7.1.1. Seasonal wind rose plots for the site using this prognostic data for 2022 is provided below in Figure 3-1. 2022 weather data is considered the most representative year due to the availability of data based on an analysis of weather from BOM mangrove mountain AWS for the last 5 years.

A summary of the prognostic wind conditions utilised in the model are provided below:

The annual average wind speed is 3.85 m/s with a calms frequency of 0.55%. Most winds occurred from the northeast at 17.5% frequency.

In the summer, winds blew mostly from the northeast at 26.6% frequency, southeast at 21.2% and east at 15.9%. The average wind speed was 3.94 m/s.

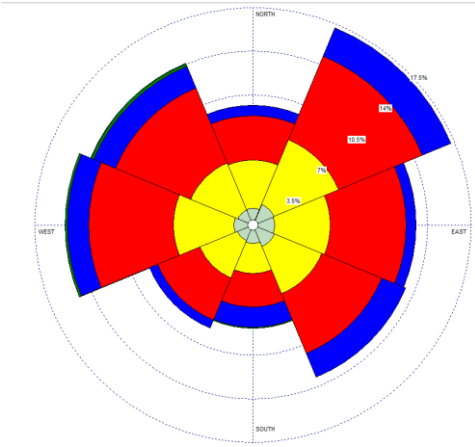
In autumn, the average wind speed was 3.31 m/s. Most winds came from the east and south-east at 16.5% frequency, northwest at 13.2% frequency and west at 9.9% frequency.

In the winter, dominant winds blew from the west at 28.9%, north-west at 23.1% and south-west at 11.5%. The average wind speed was 4.11 m/s.

The average wind speed in the spring was at 4.07 m/s. North-easterly winds occurred at 25.9%, westerly winds at 15.5%, and easterly winds at 10.3%.

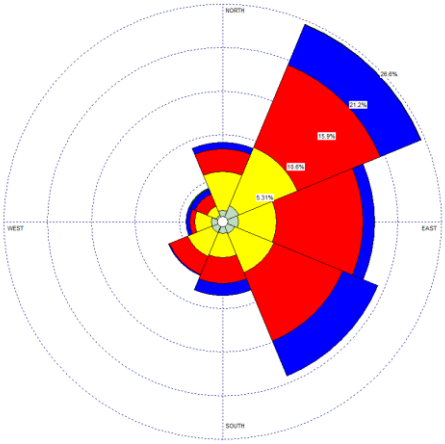
Figure 3-1: Wind rose plots – Lakes Environmental Prognostic Surface Data (2022)

**All Seasons**



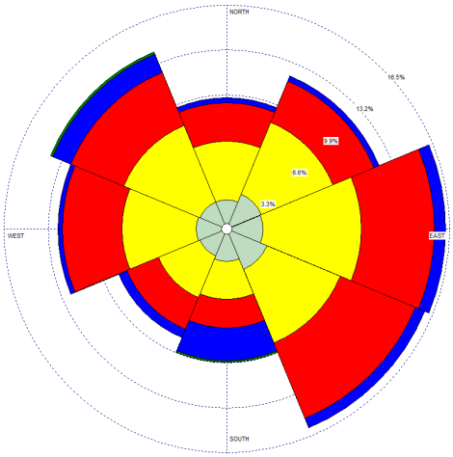

Average Wind Speed: 3.85 m/s
Calms Frequency: 0.55%
Axis Frequencies: 3.5%, 7%, 10.5%, 14%, 17.5%

**Summer Season (December – February)**



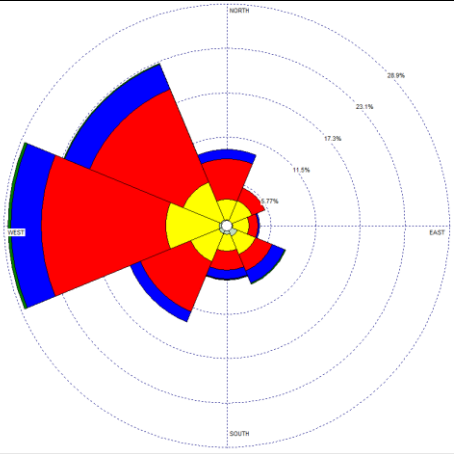

Average Wind Speed: 3.94 m/s
Calms Frequency: 0.51%
Axis Frequencies: 5.31%, 10.6%, 15.9%, 21.2%, 26.6%

**Autumn Season (March – May)**



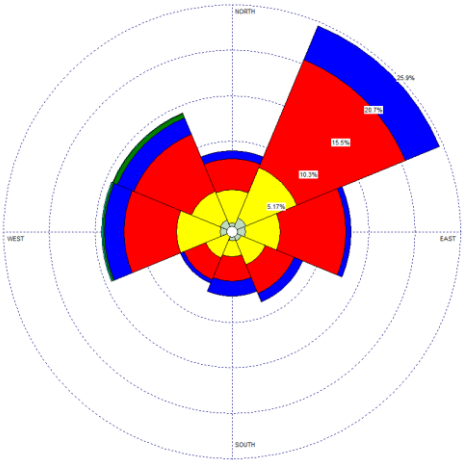

Average Wind Speed: 3.31 m/s
Calms Frequency: 1.09%
Axis Frequencies: 3.3%, 6.6%, 9.9%, 13.2%, 16.5%

**Winter Season (June – August)**



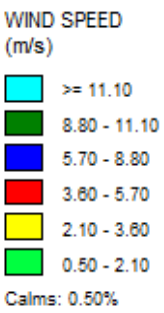

Average Wind Speed: 4.11 m/s
Calms Frequency: 0.32%
Axis Frequencies: 5.77%, 11.5%, 17.3%, 23.1%, 28.9%

**Spring Season (September – November)**




Average Wind Speed: 4.07 m/s
Calms Frequency: 0.27%
Axis Frequency: 5.17%, 10.3%, 15.5%, 20.7%, 25.9%

**Legend**



## 3.2 TERRAIN AND STRUCTURAL EFFECTS ON DISPERSION

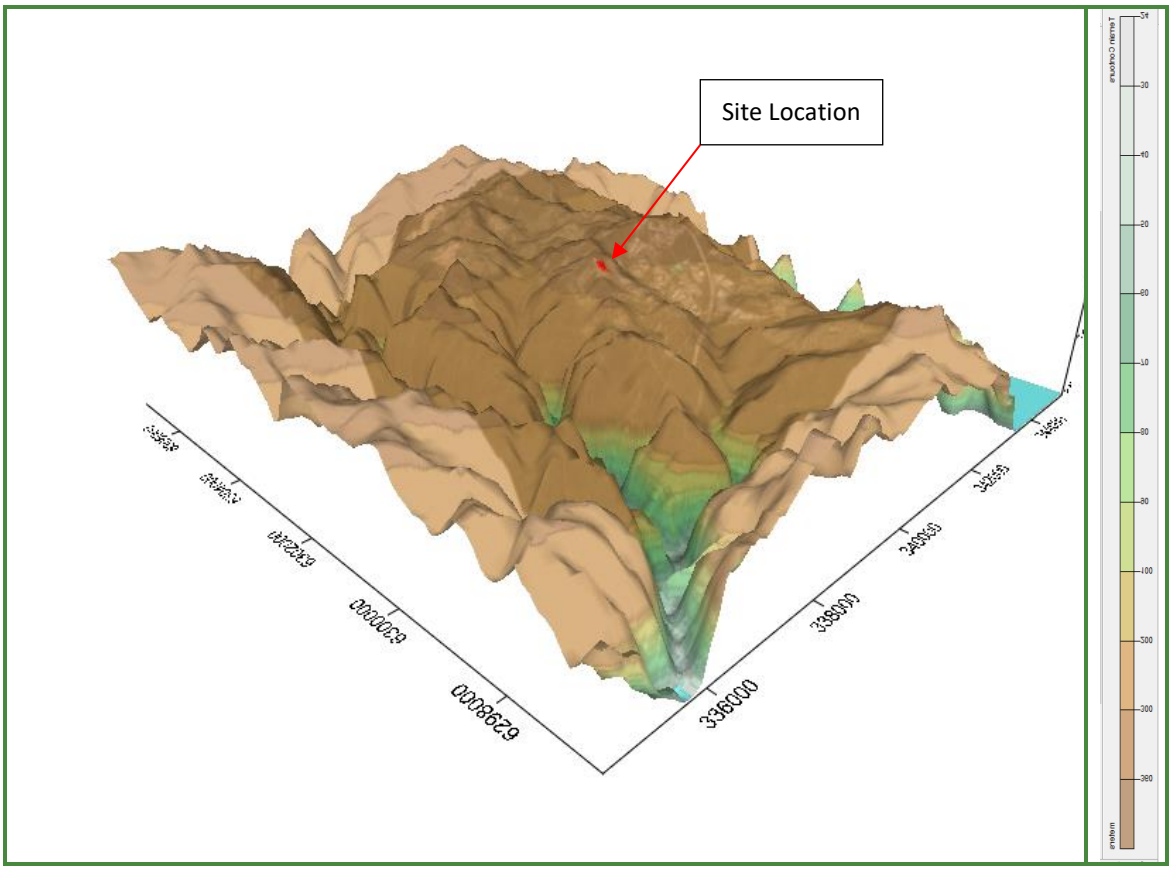
The meteorological condition known as katabatic flow (or katabatic drift) is often identified as the condition under which maximum environmental impacts from primarily ground-based sources are likely to occur. Katabatic flow is simply the movement of cold air down a slope, generally under stable atmospheric conditions. Under such circumstances, dispersion of airborne pollutants is generally slow, and the associated impacts can reach their peak.

The site is on a hill, located at a similar height or above that of the surrounding premises. Katabatic flow is unlikely to affect the impacts of emissions from the subject site at the identified near-field receptors as katabatic flow only affects receptors that are located at a lower terrain elevation compared to the site's elevation.

With regards to pollutants where assessment criteria applies at the property boundary, no wind direction-specific katabatic flow would be expected to occur. The site terrain differs in elevation between the extractive area and the haul and office area by 90 m. The site is highest at its western boundary where it is relatively flat, then the elevation lowers to the east.

Figure 3-2 shows the terrain with the z-axis (i.e. vertical axis) exaggerated by a factor of 10 (i.e. a given distance on the x-axis or y-axis appears three times as great on the z-axis) to provide a clearer description of the topography. A coloured scale bar shows elevations corresponding to the colours used in the figures. It should be noted that these figures approximate the actual terrain, based on terrain information that have been digitised from local contour terrain maps.

Figure 3-2: Local topography of site, factor of 10 vertical exaggeration



## 3.3 LOCAL AIR QUALITY

No air quality measurements have been undertaken specifically for this project. Instead, the nearest available air quality monitoring data was used to gain an understanding of what current pollutant levels may be around the site and to provide background air quality parameters for the assessment.

Ambient air quality data for $PM_{2.5}$ and $PM_{10}$ levels were obtained for the year 2022 from the NSW EPA air quality monitoring station at Wyong.

A summary of the background air quality levels from Wyong air quality monitoring is provided in Table 3-1.

Table 3-1: Ambient Air Quality Data for Pollutants Levels 2022

| Pollutant | Averaging Period | Concentration (µg/m³) |
|---|---|---|
| $PM_{2.5}$ | Max 24 Hours (10/02/2022) | 11.5 |
| | Annual | 4 |
| $PM_{10}$ | Max 24 Hours (17/01/2022) | 27.4 |
| | Annual | 11.7 |
| $SO_2$ | Max 1 Hour (21/10/2022) | 117.9 |
| | Max 24 Hours (21/102022) | 18.3 |
| $NO_2$ | Max 1 Hour (23/12/2022) | 58.2 |
| | Annual | 3.7 |
| CO | Max 1 Hour (07.12.2022) | 1 |
| | Max 8 Hours (19.08.2022) | 0.3 |

The data collected from the Wyong air quality monitoring station in 2022 shows background levels of $PM_{10}$ , $PM_{2.5}$, $SO_2$, $NO_2$, and CO that are not exceeding the *Approved Methods* 24 hour and annual average criterion.

In cases of elevated background concentrations, the *Approved Methods* states:

> *In some locations, existing ambient air pollutant concentrations may exceed the impact assessment criteria from time to time. In such circumstances, a licensee must demonstrate that no additional exceedances of the impact assessment criteria will occur as a result of the proposed activity and that best management practices will be implemented to minimise emissions of air pollutants as far as is practical.*

Using the worst-case particle size distribution data provided by the U.S. Environmental Protection Agency (USEPA) AP-42 Emissions Database, a $PM_{10}$-to-TSP ratio of 0.51 was used to estimate the TSP background concentration level of 22.9 µg/m$^3$ for an annual averaging period.

A summary of the adopted background air quality levels for assessment is provided in Table 3-2.

Table 3-2: Adopted Particulate Matter Background Levels for Assessment

| Pollutant | Averaging Period | Concentration (µg/m$^3$) |
|---|---|---|
| Total Suspended Particulates (TSP) | Annual | 22.9 |
| $PM_{10}$ | 24 Hours | 27.4 |
| | Annual | 11.7 |
| $PM_{2.5}$ | 24 Hours | 11.5 |
| | Annual | 4 |
| $SO_2$ | 1 Hour | 117.9 |
| | 24 Hour | 18.3 |
| NO | 1 Hour | 58.2 |
| | Annual | 3.7 |
| CO | 1 Hour | 1 |
| | 8 Hours | 0.3 |

# 4. AIR QUALITY CRITERIA AND GUIDELINES

## 4.1 PROTECTION OF THE ENVIRONMENT OPERATIONS ACT 1997

The Protection of the Environment Operations Act 1997 (POEO Act) applies the following definitions relating to air pollution.

> ***"Air pollution"*** *means the emission into the air of any air impurity.*
>
> *While "air impurity" includes smoke, dust (including fly ash), cinders, solid particles of any kind, gases, fumes, mists, odours and radioactive substances.*
>
> The following clauses of this Act have most relevance to the site:
>
> *Clause 124 Operation of Plant (other than domestic plant)*
> *The occupier of any premises who operates any plant in or on those premises in such a manner as to cause air pollution from those premises is guilty of an offence if the air pollution so caused, or any part of the air pollution so caused, is caused by the occupier's failure:*
>
> *a) to maintain the plant in an efficient condition, or*
> *b) to operate the plant in a proper and efficient manner,*
>
> *Clause 126 Dealing with Materials*
> *(1) The occupier of any premises who deals with materials in or on those premises in such a manner as to cause air pollution from those premises is guilty of an offence if the air pollution so caused, or any part of the air pollution so caused, is caused by the occupiers failure to deal with those materials in a proper and efficient manner.*
>
> *(2) In this section:*
>
> ***deal*** *with materials means process, handle, move, store or dispose of the materials.*
> ***materials*** *includes raw materials, materials in the process of manufacture, manufactured materials, by-products or waste materials.*
>
> *Clause 127 Proof of causing pollution*
> *To prove that air pollution was caused from premises within the meaning of Sections 124 – 126, it is sufficient to prove that air pollution was caused on the premises, unless the defendant satisfies the court that the air pollution did not cause air pollution outside the premises.*
>
> *Clause 128 Standards of air impurities not to be exceeded*
> *(1) The occupier of any premises must not carry on any activity, or operate any plant, in or on the premises in such a manner as to cause or permit the emission at any point specified in or determined in accordance with the regulations of air impurities in excess of:*
>
> *a) The standard of concentration and the rate, or*
> *b) The standard of concentration or the rate.*
>
> *Prescribed by the regulations in respect of any such activity or any such plant.*

*(1A) Subsection (1) applies only to emissions (point source emissions) released from a chimney, stack, pipe, vent or other similar kind of opening or release point.*

*(2) The occupier of any premises must carry on any activity, or operate any plant, in or on the premises by such practicable means as may be necessary to prevent or minimise air pollution if:*

*a) in the case of point source emissions – neither a standard of concentration nor a rate has been prescribed for the emissions for the purposes of subsection (1), or*

*b) The emissions are not point source emissions.*

*(3) A person who contravenes this section is guilty of an offence.*

The site would be required to adhere to the above listed legislative requirements.

## 4.2 PROTECTION OF THE ENVIRONMENT OPERATIONS (CLEAN AIR) REGULATION 2022

The Protection of the Environment Operations (Clean Air) Regulation (2022) outlines the standards of concentration for Scheduled premises in the Regulation, and the relevant standards are provided in the following table.

Table 4-1: Clean Air Regulation Limits

| Air impurity | Plant | Group | Standard of concentration |
|---|---|---|---|
| Solid particles (Total) | Any crushing, grinding, separating or materials handling activity | Group 6 | 20 mg/m$^3$ |
| Volatile Organic Compounds VOC | An activity or plant involving combustion, except as listed below | Group 6 | 40 mg/m$^3$ |

## 4.3 NSW ENVIRONMENT PROTECTION AUTHORITY GUIDELINES

The *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (Approved Methods) provide the ground level concentration limits at the nearest sensitive receptor or the site boundary. The relevant limits applicable to the site are presented in the following table.

Table 4-2: Approved Methods Criteria

| Pollutant | Averaging Period | Percentile | Concentration | | Criteria Applied At |
|---|---|---|---|---|---|
| | | | pphm | µg/m³ | |
| Sulfur Dioxide ($SO_2$) | 1 hour | 100th | 7.5 | 215 | Nearest Sensitive Receptor |
| | 24 hours | 100th | 2 | 57 | Nearest Sensitive Receptor |
| Nitrogen Dioxide ($NO_2$) | 1 Hour | 100th | 8 | 164 | Nearest Sensitive Receptor |
| | Annual | 100th | 1.5 | 31 | Nearest Sensitive Receptor |
| $PM_{2.5}$ | 24 hours | 100th | - | 25 | Nearest Sensitive Receptor |
| | Annual | 100th | - | 8 | Nearest Sensitive Receptor |
| $PM_{10}$ | 24 hours | 100th | - | 50 | Nearest Sensitive Receptor |
| | Annual | 100th | - | 25 | Nearest Sensitive Receptor |
| Total Suspended Particulates (TSP) | Annual | 100th | - | 90 | Nearest Sensitive Receptor |

| Pollutant | Averaging Period | Percentile | Concentration | | Criteria Applied At |
|---|---|---|---|---|---|
| | | | ppm | mg/m³ | |
| Carbon Monoxide (CO) | 1 hour | 100th | 25 | 30 | Nearest Sensitive Receptor |
| | Annual | 100th | 9 | 10 | Nearest Sensitive Receptor |
| Polycyclic Aromatic Hydrocarbon (as benzo[a]pyrene) | 1 hour | 99.9th | - | 0.0004 | At and beyond the boundary of the facility |
| Benzene | 1 hour | 99.9th | 0.009 | 0.029 | At and beyond the boundary of the facility |
| Formaldehyde | 1 hour | 99.9th | 0.018 | 0.02 | At and beyond the boundary of the facility |
| Acetone | 1 hour | 99.9th | 9.2 | 22 | At and beyond the boundary of the facility |
| Ethylbenzene | 1 hour | 99.9th | 1.8 | 8.0 | At and beyond the boundary of the facility |
| Acetaldehyde | 1 hour | 99.9th | 0.023 | 0.042 | At the nearest existing or likely future off-site sensitive receptor |
| Toluene | 1 hour | 99.9th | 0.09 | 0.36 | At the nearest existing or likely future off-site |
| Xylene | 1 hour | 99.9th | 0.04 | 0.19 | At the nearest existing or likely future off-site |
| Crotonaldehyde | 1 hour | 99.9th | 0.037 | 0.1 | At and beyond the boundary of the facility |
| Phenol | 1 hour | 99.9th | 0.0052 | 0.020 | At the nearest existing or likely future off-site |
| Methyl bromide (bromomethane) | 1 hour | 99.9th | 0.09 | 0.35 | At and beyond the boundary of the facility |
| Carbon Disulfide | 1 hour | 99.9th | 0.023 | 0.07 | At the nearest existing or likely future off-site |

| Pollutant | Averaging Period | Percentile | Concentration | | Criteria Applied At |
|---|---|---|---|---|---|
| | | | ppm | mg/m$^3$ | |
| Ethyl Chloride (chloroethane) | 1 hour | 99.9$^{th}$ | 18 | 48 | At and beyond the boundary of the facility |
| Methyl Chloride (chloromethane) | 1 hour | 99.9$^{th}$ | 0.9 | 1.9 | At and beyond the boundary of the facility |
| Cumene | 1 hour | 99.9$^{th}$ | 0.004 | 0.021 | At the nearest existing or likely future off-site |
| n-Hexane | 1 hour | 99.9$^{th}$ | 0.9 | 3.2 | At and beyond the boundary of the facility |
| Dichloromethane (methylene chloride) | 1 hour | 99.9$^{th}$ | 0.9 | 3.19 | At and beyond the boundary of the facility |
| Styrene | 1 hour | 99.9$^{th}$ | 0.027 | 0.12 | At the nearest existing or likely future off-site |
| Trichlorofluoromethane | 1 hour | 99.9$^{th}$ | 18.3 | 103 | At and beyond the boundary of the facility |
| Polycyclic Aromatic Hydrocarbon (as benzo[a]pyrene) | 1 hour | 99.9$^{th}$ | - | 0.0004 | Nearest Sensitive Receptor |
| Formaldehyde | 1 hour | 99.9$^{th}$ | 0.018 | 0.02 | Nearest Sensitive Receptor |
| Toluene | 1 hour | 99.9$^{th}$ | 0.09 | 0.36 | Nearest Sensitive Receptor |
| Xylene | 1 hour | 99.9$^{th}$ | 0.04 | 0.19 | Nearest Sensitive Receptor |

Note: Gas volumes are expressed at 25°C and at an absolute pressure of 1 atmosphere (101.325 kPa).

## 4.4 Additional Guidelines

The identified individual VOC species anticipated as a result of the operation of the facility are limited to the information provided in the NPI EETM Asphalt (Hot Mix) Manufacturing (1999) and US EPA AP 42 Section 11.1 Hot mix Asphalt Plants. The ATASU has requested that where additional VOC's are emitted from the proposed process that the AMMAAP does not specify impact assessment criteria for, the assessment should propose defensible conservative criteria for assessment against.

The following Australian state documents were reviewed:

- Victoria Government Gazette (2001) State Environment Protection Policy (Air Quality Management) Environment Reference Standard (ERS) No. S245 Gazette 26 May 2021;
- South Australia Environment Protection (Air Quality) Policy 2016;
- Queensland Environmental Protection (Air) Policy 2019; and
- Tasmania Environment Protection Policy (Air Quality) 2004.

No additional VOC's anticipated as a result of the proposed development were found to be listed with impact assessment criteria in the above documents.

Providing defensible and conservative criteria for all species of VOC's emitted, not provided by any of the various states guidelines, is an infeasible task due to the extremely complicated nature of assessing environmental impacts of particular substances on environmental health and is not within the scope of an Air Quality Impact Assessment. The review of other state's legislation is

considered sufficient in addressing this comment and no further assessment of additional substances is considered warranted.

# 5. ASSESSMENT OF AIR QUALITY IMPACTS FROM CONSTRUCTION

For the construction of the asphalt plant and the crushing/screening operation of the RAP, construction would involve the following steps:

- Excavation of the pits for the foundations;
- Forming of the foundations;
- Laying of concrete;
- Delivery of shipping containers and low loader deliveries;
- Unloading of these using a large mobile crane; and
- Assembling of the components of the asphalt plant and the building for the stockpiles.

The only air emission of significance with the potential to be emitted is roadway dust and dust from the construction area. This would be controlled by having a water tanker on site and nuisance to adjoining industrial/commercial premises would be avoided. No modelling of dust emissions is considered to be warranted.

# 6. AIR QUALITY IMPACT

During the preparation of the AQIA existing asphalt plants were investigated to be fully aware of all potential air emissions. A great deal of emphasis was placed on assessing sources of odour from the storage of raw materials and the processes that may cause the bitumen and hot mix to release smoke.

As the production of asphalt involves heat and the coating of aggregates, sand and filling materials with heated bitumen, once the bitumen is in contact with these other materials there is the potential for blue smoke to be released as witnessed at the plants inspected.

There are available a number of effective controls as discussed with designers and operators of the current generation of asphalt plants. These controls and the addition of fully enclosing the plant and truck loading bays would provide effective removal of the release of uncontrolled blue smoke.

## 6.1 AIR EMISSION SOURCES

The operations of the asphalt site are based on the description in the EIS.

- Emissions of dust may occur from truck unloading of materials to stockpiles.
- Wind erosion from aggregate and RAP stockpile areas.
- Front end loader transport of materials from the storage bunkers to ground hoppers is a potential source of dust emission.
- Emissions of VOCs and odour from bitumen storage tanks during filling.
- Pollutants generated from plant activities that are exhausted from the main exhaust stack include dust, odour, VOC's, PAH, $SO_2$, $NO_x$ and CO. The height of the designed stack promotes dispersion of pollutants and dilution with external air so as to decrease ground level concentrations at the nearby sensitive receptors.

The dimensions and characteristics of the main exhaust stack are provided in Table 6-1

Table 6-1: Characteristics of the Main Exhaust Stack

| Main Exhaust Stack Characteristics | |
|---|---|
| Stack Height | 20 m |
| Stack Diameter | 1.25 m |
| Exhaust Flowrate | 22.6 $m^3/s$ |
| Exhaust Velocity | 18.38 m/s |
| Exhaust Temperature | $110^0C$ |

## 6.2 AIR QUALITY IMPACT MITIGATION MEASURES

The following summarises the pollutant controls and mitigation measures. The site layout will be specifically designed to minimise any emission.

- The site surface is to be hardstand, which reduces the potential for wind erosion of site surfaces and wheel generated emissions.

- A cold aggregate feeder with multiple bins will be installed as part of the processing plant. The feeder works by using a conveyor belt or other mechanism to transport the cold aggregate materials from the aggregate stockpile to the mixing area. The aggregate feeder will minimise the potential for wind erosion to occur.

- The RAP stockpile area will be protected by using barriers such as windbreaks or walls to minimise the potential for wind erosion to occur. In addition, according to the National Pollutant Inventory (NPI), since RAP is coated with bitumen, it is not likely to cause significant dust emissions.

- Aggregate hoppers will be roofed, minimising dust emissions during loading activities.

- The aggregate conveyor, bucket elevator and screen are all completely enclosed thus preventing any dust emissions from those processes.

- The skip, carrying the asphalt mixture to the storage silos and the supporting structure are fully enclosed and exhausted to a baghouse.

- While truck filling is usually a potential emissions point in asphalt plants, the design of this plant will fully enclose truck filling operations and thus odour and emissions of blue smoke, PAH and VOC's will be captured and passed through the dust extractor, in order to remove blue smoke particulates, and exhausted via the plant's exhaust stack. Fast acting doors will open for trucks entering and exiting.

Note: The plant will be entirely enclosed and under negative pressure with the exception of the top of the aggregate hoppers and the fast doors for truck movements.

## 6.3 AIR EMISSION FACTORS

The following emission factors were utilised in this assessment.

### 6.3.1 Particulate Emission Factors

Table 6-2: Particulate Emission Factors

| Source | $PM_{10}$ Emission Factor (kg/tonne) | TSP Emission Factor (kg/tonne) |
|---|---|---|
| Unloading to Stockpiles[1] | 0.0017 | 0.004 |
| Stockpile (kg/ha/hr)[2] | 0.1625 | 0.325 |
| Crushing[3] | 0.0012 | 0.0027 |
| Screening[3] | 0.0043 | 0.0125 |
| FEL Transport[1] | 0.012 | 0.025 |
| Batch Mix Asphalt Plant (dryer, hot screens, mixer)[4] | 0.0122 | 0.0190 |

[1]NPI Mining (2012)
[2]NPI Concrete Batching and Concrete Manufacturing (1999)
[3]NPI Mining and Processing of Non-Metallic Minerals (2014)
[4]The NPI Particulate emissions factors are sourced from the USEPA AP42 Vol 1 Section 11.1 Hot Mix Asphalt Plants. Metric conversions of the USEPA AP42 stated emission factors are used here.

The NPI provides emissions factors for particulates based on tonnage processed for batch mix asphalt plants. As requested by the ATASU, this has since been revised to use the dust collector specifications. For a raw gas dust load of maximum 250 g/Nm$^3$ the dust emission maximum is 20 mg/Nm$^3$. This represents a reduction efficiency of 99.992% and therefore the assumption in the dust collector achieves a 99.9% was considered conservative for the purposes of the assessment.

It should be noted that based on the proposed production capacity of the plant and the above emission factors, the raw dust load entering the dust collector would be significantly lower than the maximum raw dust load of 250 g/Nm$^3$ and therefore the use of the corresponding 20 mg/Nm$^3$ output concentration is not representative of the site's actual emissions and would act to significantly over-predict the contribution to TSP emissions from the plant's main stack by a factor of 4.

### 6.3.2 Other Pollutant Emission Factors

#### 6.3.2.1 Main Stack Emission Factors

This assessment considers total VOCs emissions assessed as asphalt fumes as per the Tasmanian Environment Protection Policy. It has been requested that instead individually speciated VOCs be included in this assessment. The identified individual VOC species anticipated as a result of the operation of the facility are limited to the information provided in the NPI EETM Asphalt (Hot Mix) Manufacturing (1999) and US EPA AP 42 Section 11.1 Hot mix Asphalt Plants.

The following listed rates are applicable for diesel batch mix hot mix asphalt plants. Note only those specific VOC species that are individually assessable under the AMMAAP have been included in this assessment.

Table 6-3: Main Stack Emission Factors from NPI Asphalt (Hot Mix) Manufacturing (1999)

| Pollutant | Emission Factor (kg/tonne)[1] |
|---|---|
| $SO_2$ | 0.0025 |
| $NO_2$ | 0.013 |
| CO | 0.17 |
| Total PAH | 0.000063 |
| Benzene | 0.00017 |
| Formaldehyde | 0.00043 |
| Acetone | 0.0032 |
| Ethylbenzene[2] | 0.0011 |
| Acetaldehyde | 0.00032 |
| Toluene | 0.00088 |
| Xylene | 0.0021 |
| Crotonaldehyde[2] | 0.000015 |

[1]Emission factors stated for natural gas batch mix asphalt plants.
[2]Ethylbenzene and Crotonaldehyde emission factors are adopted from the US EPA AP 42.,

Pollutants are also emitted from load out activities.

Emission factors for CO released during load out are calculated using the US AP42 formula:

$$EF_{CO} = 0.5 \times 0.00558(-V)e^{((0.0251)(T+460)-20.43))}$$

where
- $EF_{CO}$ – Carbon monoxide emission factor in kg/tonne
- V – Asphalt volatility as percent loss-on-heating, default value -0.5
- T – Temperature in Fahrenheit

Emission factors for VOC's released during load out are calculated using the US AP42 formula:

$$EF_{TOC} = 0.0172(-V)e^{((0.0251)(T+460)-20.43))}$$

where
- $EF_{TOC}$ – Total organic compound emission factor in lb/ton
- V – Asphalt volatility as percent loss-on-heating, default value -0.5
- T – Temperature in Fahrenheit

The specific emission factor for individual VOC's is calculated using the below formula and speciation profile in Table 6-4. Emission factors from the US EPA have been converted to kg/tonne by multiplying by 0.5 as specified in the reference document.

$$EF = EF_{TOC} \times SP \times 0.5$$

where
- EF – emission factor for individual VOC in kg/tonne
- $EF_{TOC}$ – Total organic compound emission factor in lb/ton
- SP – Speciation percentage expressed as a decimal

Table 6-4: VOC Speciation Profile for Load Out

| Pollutant | Speciation Profile for Load Out Compound/TOC |
|---|---|
| Benzene | 0.052% |
| Formaldehyde | 0.088% |
| Acetone | 0.046% |
| Ethylbenzene | 0.28% |
| Toluene | 0.21% |
| Xylene | 0.49% |
| Methyl Bromide | 0.0096% |
| Carbon Disulfide | 0.013% |
| Ethyl Chloride | 0.00021% |
| Methyl Chloride | 0.015% |
| Cumene | 0.11% |
| n-Hexane | 0.15% |
| Styrene | 0.0073% |
| Trichlorofluoromethane | 0.0013% |

Emission factors for PAH and phenol released during load out are calculated using the US AP42 formula:

$$EF_{OPM} = 0.00141(-V)e^{((0.0251)(T+460)-20.43))}$$

where

$EF_{OPM}$ – Organic particulate matter emission factor in lb/ton
V – Asphalt volatility as percent loss-on-heating, default value -0.5
T – Temperature in Fahrenheit

The specific emission factors for PAH is calculated using the below formula and speciation profile in Table 6-5. Emission factors from the US EPA have been converted to kg/tonne by multiplying by 0.5 as specified in the reference document.

$$EF = EF_{OPM} \times SP \times 0.5$$

where

EF – emission factor for PAH/phenol in kg/tonne
$EF_{OPM}$ – Organic particulate matter emission factor in lb/ton
SP – Speciation percentage expressed as a decimal

Table 6-5: PAH Speciation Profile for Load Out

| Pollutant | Speciation Profile for Load Out Compound/Organic PM |
|---|---|
| Total PAH | 5.93% |
| Phenol | 1.18% |

#### 6.3.2.2 Bitumen Storage Tanks Emission Factors

Emission factors for CO released during silo filling are calculated using the US AP42 formula:

$$EF_{CO} = 0.5 \times 0.00488(-V)e^{((0.0251)(T+460)-20.43))}$$

where

$EF_{CO}$ – Carbon monoxide emission factor in kg/tonne
V – Asphalt volatility as percent loss-on-heating, default value -0.5
T – Temperature in Fahrenheit

Emission factors for VOC's released during silo filling are calculated using the US AP42 formula:

$$EF_{TOC} = 0.0504(-V)e^{((0.0251)(T+460)-20.43))}$$

where

$EF_{TOC}$ – Total organic compound emission factor in lb/ton
V – Asphalt volatility as percent loss-on-heating, default value -0.5
T – Temperature in Fahrenheit

The specific emission factor for individual VOC's is calculated using the below formula and speciation profile in Table 6-6. Emission factors from the US EPA have been converted to kg/tonne by multiplying by 0.5 as specified in the reference document.

$$EF = EF_{TOC} \times SP \times 0.5$$

where

EF – emission factor for individual VOC in kg/tonne
$EF_{TOC}$ – Total organic compound emission factor in lb/ton
SP – Speciation percentage expressed as a decimal

Table 6-6: VOC Speciation Profile for Tank Filling

| Pollutant | Speciation Profile for Tank Filling Compound/TOC |
|---|---|
| Benzene | 0.032% |
| Formaldehyde | 0.69% |
| Acetone | 0.055% |
| Ethylbenzene | 0.038% |
| Toluene | 0.062% |
| Xylene | 0.257% |
| Methyl Bromide | 0.0049% |
| Carbon Disulfide | 0.016% |
| Ethyl Chloride | 0.0040% |
| Methyl Chloride | 0.023% |
| n-Hexane | 0.10% |
| Dichloromethane | 0.00027% |
| Styrene | 0.0054% |

Emission factors for PAH released during silo filling are calculated using the US AP42 formula:

$$EF_{OPM} = 0.00105(-V)e^{((0.0251)(T+460)-20.43))}$$

where

$EF_{OPM}$ – Organic particulate matter emission factor in lb/ton
V – Asphalt volatility as percent loss-on-heating, default value -0.5
T – Temperature in Fahrenheit

The specific emission factor for PAH is calculated using the below formula and speciation profile in Table 6-7. Emission factors from the US EPA have been converted to kg/tonne by multiplying by 0.5 as specified in the reference document.

$$EF = EF_{OPM} \times SP \times 0.5$$

where

EF – emission factor for PAH in kg/tonne
$EF_{OPM}$ – Organic particulate matter emission factor in lb/ton
SP – Speciation percentage expressed as a decimal

Table 6-7: PAH Speciation Profile for Tank Filling

| Pollutant | Speciation Profile for Tank Filling Compound/Organic PM |
|---|---|
| Total PAH | 11.40% |

## 6.4 EMISSION RATES

The emission rates for each source were estimated by multiplying the emission factors previously discussed by the quantity of materials handled at the relevant activities for the corresponding activity period of time. Appropriate reduction factors were then applied.

$$ER = 1000(EF \times OpHrs \times Q) \times RF$$

where:

ER = Emission Rate (g/s)
EF = Emission Factor (kg/tonne)
OpHrs = Annual operational time (s/year)
Q = Materials processed (tonnes/year)
RF = Reduction Factor (if applicable)

Emission rates from the batch mix plant and load out activities have been added together to calculate the total main stack emission rate for relevant pollutants.

### 6.4.1 $PM_{2.5}$ and $PM_{10}$ Emission Rates

The US EPA *Examination of the Multiplier Used to Estimate $PM_{2.5}$ Fugitive dust Emissions from $PM_{10}$* and *Background Document for Revisions to Fine Fraction Rations Used for AP-42 Fugitive Dust Emission Factors* (2006) were used in determination of $PM_{2.5}$ emission rates. The applicable ratio of 0.15 $PM_{2.5}/PM_{10}$ for wind erosion and aggregate handling and storage was utilised in this assessment.

It should be noted that the stack is only a very minor source of emissions, with the major sources associated with this development being related to the handling and processing of aggregate and RAP prior to the aggregate conveyor. Upon review the US EPA does provide a particle size distribution for batch mix dryers, hot screens and mixers controlled with a fabric filter. While the ATASU wants to consider the maximum emissions concentration of 20 mg/Nm$^3$ for both $PM_{10}$ and $PM_{2.5}$ from the stack post bag filtration the US EPA factors provided in Table 6-8 below indicate that post bag filtration the percentage of $PM_{10}$ and $PM_{2.5}$ are 39% and 33% respectively. It is believed that the use of this particle size distribution data is far more realistic of actual emissions than the use of 20 mg/Nm$^3$ for both $PM_{10}$ and $PM_{2.5}$.

Table 6-8: USEPA AP-42 Particle Size Distribution for Batch Mix Dryers, Hot Screens and Mixers

| Particle Size (µm) | Cumulative % ≤ Stated Size (Controlled with fabric filter) |
|---|---|
| 1.0 | 30 |
| 2.5 | 33 |
| 5.0 | 36 |
| 10.0 | 39 |
| 15.0 | 47 |

For particulate emissions from the main stack the maximum emissions concentration has been assumed to be 20 mg/Nm$^3$ for TSP, with predicted emissions from $PM_{10}$ and $PM_{2.5}$ scaled as per the above stated particle size distribution. Similarly, as above it should be noted that based on the tonnage of materials proposed to be processed, the raw gas dust load would be significantly lower than 250 g/Nm$^3$ and so use of the corresponding maximum dust emissions concentration is not representative of the sites actual processing capacity. The use of this maximum produces an emission rate for $PM_{10}$ more than double that of the emission rate calculated using the NPI factors.

### 6.4.2 $NO_x$ Emission Rates

A conservative method was utilised for the assessment of nitrogen dioxide, where in the absence of the actual $NO_2$ to $NO_x$ ratio, it is assumed that 100% of the $NO_x$ emitted is converted to $NO_2$.

### 6.4.3 PAH Emission Rates

Total Polycyclic Aromatic Hydrocarbons (PAH) is assessed as benzo(a)pyrene as per the AMMAAP. The identified individual PAH species anticipated as a result of the operation of the facility are limited to the information provided in the NPI EETM Asphalt (Hot Mix) Manufacturing (1999) and US EPA AP 42 Section 11.1 Hot mix Asphalt Plants. The AMMAAP potency equivalence factors for PAH listed for the relevant fuel type in the above reference documents are less than that of benzo(a)pyrene and thus further assessment of PAH utilising PEF is not considered necessary.

### 6.4.4 VOC Emission Rates

While emission rates were calculated for the volatile organic substances Ethyl Chloride (chloroethane), Methylene Chloride (dichloromethane) and trichlorofluoromethane were less than *$10^{-6}$ g/s and therefore not considered significant for the purpose of inclusion in the model.

### 6.4.5 Odour Emission Rates

In the case of odour, the NSW EPA Approved Methods require that an averaging time of one hour be used. This makes sense given that one hour is usually the shortest time spacing available for the meteorological data needed for modelling.

However, the modelling of odour faces a serious limitation in that human noses generally detect odour over a period of approximately one second or less. The comparatively long one hour model averaging time means that the peak odour concentrations of modelled plumes at levels that would cause annoyance would effectively be averaged during modelling to a point of being non-offensive, and thus makes a source seem less of a nuisance odour-wise than it actually might be.

To compensate for this and allow more realistic predictions of odour impacts, peak-to-mean ratios, which relate long-term modelled averages to the short-term averages that would better approximate peak concentrations, are applied to odour emission rates.

Peak-to-mean ratios are dependent on the distance of the receptor to the source, the stability of weather during the transport of the odour through the air, the type of source, and length of the averaging time used in the model.

NSW EPA-recommended factors developed by Katestone Scientific are shown in Table 6-9, reproduced from Section 6.6 of the NSW EPA Approved Methods.

The ratios for a wake-affected point were applied to the odour emissions from the main stack.

Table 6-9: Peak to Mean Ratio for Estimating Peak Odour Concentrations

| Source Type | Pasquill-Gifford Stability Class | Near-field P/M60* | Far-field P/M60* |
|---|---|---|---|
| Area | A, B, C, D | 2.5 | 2.3 |
| | E, F | 2.3 | 1.9 |
| Line | A – F | 6 | 6 |
| Surface wake-free point | A, B, C | 12 | 4 |
| | D, E, F | 25 | 7 |
| Tall wake-free point | A, B, C | 17 | 3 |
| | D, E, F | 35 | 6 |
| Wake-affected point | A – F | 2.3 | 2.3 |
| Volume | A – F | 2.3 | 2.3 |

**Note**: * Ratio of peak 1-second average concentrations to mean 1-hour average concentrations.
**Source**: NSW EPA Approved Methods, Section 6.6.

#### 6.4.5.1 Load Out

As stated in Section 6.2 truck filling is usually a major potential source of odour emissions. The facilities design fully encloses the truck filling operation and thus emissions of odour are redirected out of the main stack. While the captured odorous blue smoke is passed through the dust filter which would remove some of the blue smoke particulates, for the purpose of this assessment no reduction has been applied to the odour emission rate.

Load-out odour emission rates were obtained from a study written by GHD 'Report on Ulverstone Asphalt Plant Air Quality Assessment' 2008. There is limited data regarding emissions of odour from asphalt plants. Where there are no emission factors in the NPI or AP42 it is considered appropriate to use publicly available report data. The GHD reference report was considered the most appropriate data available in estimating emissions of odour from the subject site. Note that no raw data from the odour sampling is available for evaluation in this report. The GHD stack value of 1,040,000 OU $m^3$/min was used to calculate the odour emission rate and converted appropriately to reflect the Stateline Asphalt maximum hourly capacity and stack parameters. The reference report is based on 80 tonnes per hour production rate while the subject site proposes a rate of 240 tonnes per hour (tph). The odour emission rate was determined by deriving the OU per 80 tph from the reference report, scaling it by a factor of 3 to account for the increase to 240 tph and multiplying by the airflow and peak to mean ratio to determine the odour emission rate.

The following equation was used to determine the odour concentration for a maximum processing capacity of 80 tonnes per hour:

$$OU_{80TPH} = RO \times RA$$

where

$OU_{80TPA}$ – Odour concentration for 80 tonnes per hour capacity
RA – Reference airflow in $m^3$/min
RO – Reference odour emission rate in OU$m^3$/min

The following equation was used to determine the odour concentration for a maximum processing capacity of 240 tonnes per hour:

$$OU_{240TPH} = OU_{80TPH} \times 3$$

where

$OU_{240TPA}$ – Odour concentration for 240 tonnes per hour capacity
$OU_{80TPA}$ – Odour concentration for 80 tonnes per hour capacity

The following equation was used to determine the odour emission rate for a maximum processing capacity of 240 tonnes per hour:

$$ER = OU_{240TPH} \times FR \times PM$$

where

ER – Emission rate in OU $m^3$/s
$OU_{240TPA}$ – Odour concentration for 240 tonnes per hour capacity
FR – Outlet flow rate in $m^3$/s
PM – Peak top mean ratio

#### 6.4.5.2 Criteria

The relevant criteria for odour assessments is provided by the *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (2017). It has designed the impact assessment criteria for complex mixtures of odour to take in consideration the size of the affected population. Statistically, as the population density increases, the proportion of individuals particularly sensitive to odours is also likely to increase, indicating that more stringent criteria are necessary in these situations, as summarised in Table 6-10.

Table 6-10: Impact Assessment Criteria for Complex Mixtures of Odour

| Population of affected community | Impact assessment criteria for complex mixtures of odorous air pollutants (OU) |
|---|---|
| **Urban (Population ≥ ~ 2000)** | 2.0 |
| Population ~ 500 | 3.0 |
| Population ~ 125 | 4.0 |
| Population ~ 30 | 5.0 |
| Population ~ 10 | 6.0 |
| Single residence (≤ ~ 2) | 7.0 |

Defining an affected community is based on the population within the 2 OU contour taken from dispersion modelling. This means the criteria varies dependent on the dispersion modelling results.

**In this case the appropriate criteria for industrial area is 5.0 OU/m$^3$**

### 6.4.6 Averaging Period Adjustment

A limitation of the Lakes AERMOD dispersion modelling program is that the smallest averaging time computable is a 1 hour period. The following formula

$$c1/c2 = (t2/t1)^{0.2}$$

was used to calculate the relevant factor to transform the emissions from a 1 hour averaging period so that the results may be evaluated against the shorter averaging time criteria of 10 minutes for $SO_2$ and 15 minutes for CO.

## 6.5 Summary of Assumptions Utilised

The following assumptions were used in the air dispersion modelling phase of the assessment:

- The plant is assumed to operate 24 hours, 7 days a week;
- Total annual production of 200,000 tonnes was used to estimate emissions from the subject site;
- The maximum hourly production is assumed to be 240 tonnes per hour;
- A maximum of 3,000 tonnes of recycled asphalt product was assumed to be stored on site at any given time;
- Delivery of materials was conservatively assumed to occur 24/7;
- A front end loader is conservatively assumed to be operating 24 hours per day to transport materials from stockpiles to the hopper;
- A reduction factor of 0.1 was applied to wind erosion emissions of the aggregate storage stockpiles due to its enclosure with 3 side walls and a roof awning;
- Reduction factors of 0.7 were applied to the RAP stockpile, crushing, screening and FEL transport as they operate behind wind breaks;
- Dust emissions are assumed to be completely controlled where processes are enclosed i.e. aggregate conveyor, bucket elevator and screen; and
- The site surface will be hardstand and thus wheel generated emissions are assumed to be negligible.

The following conditions were also utilised as inputs into the model using the AERMOD modelling program:

- A constant emission rate was assumed; and
- Ambient air conditions were assumed for the modelling, except for emissions from the main exhaust stack which were at a fixed temperature of $110^0$C.

## 6.6 AIR EMISSIONS INVENTORY

The inventory of calculated emissions rate inputs used in the dispersion modelling are given in Table 6-11.

Table 6-11: Inventory of Emission Sources

| Pollutant | Source | Source Type | Emission Rate (g/s) |
|---|---|---|---|
| $PM_{2.5}$ | Unloading to Stockpiles | Volume | 0.00011 |
| | Aggregate Stockpiles | Area | 0.00007 |
| | RAP Stockpiles | Area | 0.00057 |
| | RAP Crushing | Volume | 0.00012 |
| | RAP Screening | Volume | 0.00043 |
| | FEL Transport to Ground Bins | Line | 0.00086 |
| | Main Stack | Point | 0.14883 |
| $PM_{10}$ | Unloading to Stockpiles | Volume | 0.00070 |
| | Aggregate Stockpiles | Area | 0.00047 |
| | RAP Stockpiles | Area | 0.00379 |
| | RAP Crushing | Volume | 0.00080 |
| | RAP Screening | Volume | 0.00286 |
| | FEL Transport to Ground Bins | Line | 0.00572 |
| | Main Stack | Point | 0.17589 |
| TSP | Unloading to Stockpiles | Volume | 0.00165 |
| | Aggregate Stockpiles | Area | 0.00095 |
| | RAP Stockpiles | Area | 0.00758 |
| | RAP Crushing | Volume | 0.00180 |
| | RAP Screening | Volume | 0.00832 |
| | FEL Transport to Ground Bins | Line | 0.01192 |
| | Main Stack | Point | 0.451 |
| $SO_2$ | Main Stack | Point | 0.15855 |
| $NO_2$ | Main Stack | Point | 0.82445 |
| CO | Main Stack | Point | 10.82411 |
| PAH | Main Stack | Point | 0.00464 |
| Benzene | Main Stack | Point | 0.01085 |
| Formaldehyde | Main Stack | Point | 0.02739 |
| Acetone | Main Stack | Point | 0.20300 |
| Ethylbenzene | Main Stack | Point | 0.07013 |

Table 6-11: Inventory of Emission Sources

| Pollutant | Source | Source Type | Emission Rate (g/s) |
|---|---|---|---|
| Acetaldehyde | Main Stack | Point | 0.02029 |
| Toluene | Main Stack | Point | 0.05581 |
| Xylene | Main Stack | Point | 0.13318 |
| Crotonaldehyde | Main Stack | Point | 0.00092 |
| Phenol | Main Stack | Point | 0.00013 |
| Methyl Bromide | Main Stack | Point | 0.00001 |
| Carbon Disulfide | Main Stack | Point | 0.00002 |
| Chloromethane | Main Stack | Point | 0.00002 |
| Cumene | Main Stack | Point | 0.00015 |
| n-Hexane | Main Stack | Point | 0.00020 |
| Styrene | Main Stack | Point | 0.00001 |
| Odour | Main Stack | Point | 284508.12 OU $m^3/s$ |

### 6.6.1 Main VOC Pollutants

Note only top three VOC pollutants with the highest ratio of stack emission rate to impact assessment criteria have been modelled. Modelling of the following 3 pollutants: Toluene, Formaldehyde and Xylene was conducted including emissions from the main stack as these present the greatest risk of non-compliance.

Table 6-11: VOC's Ratio Emission Rate: Impact Criteria

| Pollutants | Main Stack Emission rate | Impact Criteria (mg/m3) | Ratio |
|---|---|---|---|
| Toluene | 0.05581 | 0.009 | 6.21 |
| Formaldehyde | 0.02739 | 0.02 | 1.4 |
| Xylene | 0.13318 | 0.19 | 0.7 |
| Acetaldehyde | 0.02029 | 0.042 | 0.483095238 |
| Benzene | 0.01085 | 0.029 | 0.374137931 |
| Acetone | 0.203 | 22 | 0.009227273 |
| Crotonaldehyde | 0.00092 | 0.1 | 0.0092 |
| Ethylbenzene | 0.07013 | 8 | 0.00876625 |
| Cumene | 0.00015 | 0.021 | 0.007142857 |
| Phenol | 0.00013 | 0.02 | 0.0065 |
| Carbon Disulfide | 0.00002 | 0.07 | 0.000285714 |

| Pollutants | Main Stack Emission rate | Impact Criteria (mg/m3) | Ratio |
|---|---|---|---|
| Styrene | 0.00001 | 0.12 | 8.33333E-05 |
| n-Hexane | 0.0002 | 3.2 | 0.0000625 |
| Methyl Bromide | 0.00001 | 0.35 | 2.85714E-05 |
| Chloromethane | 0.00002 | 1.9 | 1.05263E-05 |

### 6.6.2 Stack Concentrations

Stack concentrations in mg/m$^3$ were calculated by dividing the emission rate in g/s by the airflow in m$^3$/s times 1000 to convert from g to mg. The following stack concentrations are compared with the Clean Air Regulation stack limits.

Table 6-12: Stack Concentrations Compared with the Clean Air Stack Limits

| Contaminant | Stack Concentration (mg/m$^3$) | Criteria (mg/m$^3$) |
|---|---|---|
| Solid Particles | 20* | 20 |
| Volatile Organic Compounds VOC | 20 | 40 |

*As per the specifications, the dust emission maximum is 20 mg/m$^3$ for a raw gas dust load of maximum 250 g/m$^3$. However based on the calculated emission rate, the raw dust load is to be significantly lower than this maximum value and thus the stack concentration is predicted to be reduced.

# 7. AIR DISPERSION MODELLING

## 7.1 DISPERSION MODEL

This section presents the model results for each pollutant. The new generation air dispersion model, AERMOD ver. 10.0.1, was used for the prediction of off-site impacts associated with the air emissions from the proposed operations. AERMOD uses air dispersion based on planetary boundary layer turbulence structure and scaling concepts. The AERMOD model replaced AUSPLUME as the air dispersion model accepted by the Victorian EPA in January 2014 and is a suitable model to use for this air assessment.

The model was used to estimate the concentration impacts on receptors for each hour of input meteorology. Terrain was assumed to be elevated.

### 7.1.1 Meteorological Data

A one year (2022) no observation prognostic meteorological data file was created by Lakes Environmental using the WRF-MMIF model.

#### 7.1.1.1 WRF-MMIF

Meteorological files were provided by Lakes Environmental. The WRF model is used to compute accurate windfields of a selected area. The MMIF program is used to convert WRF output into AERMOD-Ready Surface & Profile files.

The Weather Research and Forecasting (WRF) Model is a next-generation mesoscale numerical weather prediction system designed as a collaborative effort between the American National Center for Atmospheric Research and other meteorological specialist organisations. It was created for both atmospheric research and operational forecasting applications and serves a wide range of meteorological applications across scales from tens of metres to thousands of kilometres.

The Mesoscale Model Interface Program (MMIF) converts prognostic meteorological model output fields to the parameters and formats required for direct input into supported dispersion models such as AERMOD.

Execution of MMIF was done according to the recommendations found in the EPA's '*Guidance on the Use of the Mesoscale Modeling Interface Program (MMIF) for AERMOD Applications* document'.

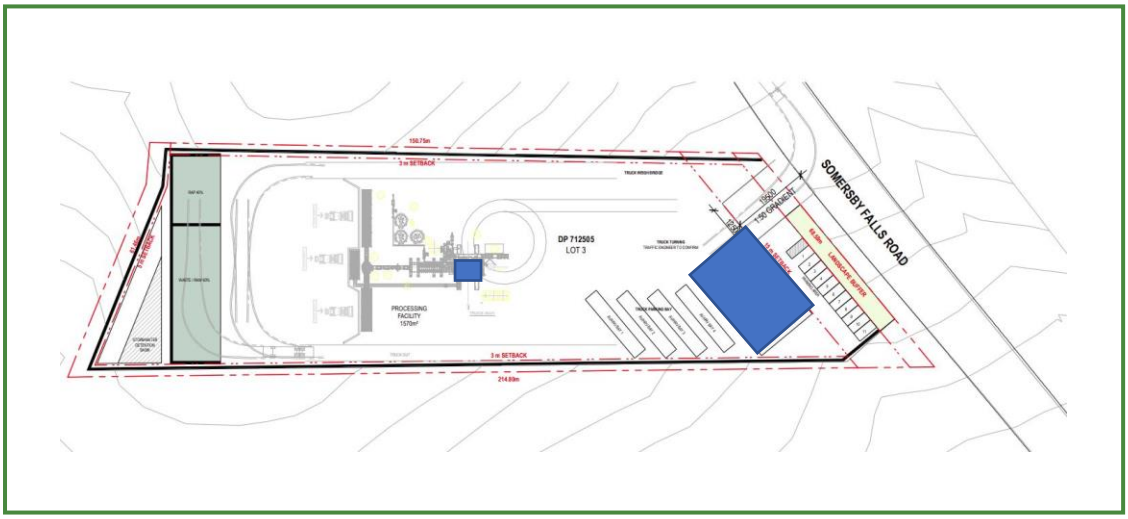
### 7.1.2 Building Wake Effects

Building-wake effects occur when emissions from a source are hindered as they move from winds "washing" the emissions down to the nearest building structure. This phenomenon can enhance off-site impacts (depending on the location of the building structure, wind direction and the source).

Building-wake effects are considered in the air dispersion modelling phase of the assessment by representing all buildings and structures on and around the site as structures in the model using

the BPIP/PRIME algorithm. Figure 7-1 outlines in blue all of the buildings considered in this assessment for building-wake effects.

Figure 7-1: Building Inputs




## 7.2 RESULTS OF DISPERSION MODELLING

The estimated impact results for each pollutant and corresponding averaging time are given in Table 7-1 to Table 7-19 for the identified receptors. Isopleths for each averaging period are provided in Figure 7-2 to Figure 7-17.

### 7.2.1 $PM_{2.5}$ Results

Table 7-1: Estimated Impact Results for PM2.5, 24 Hours Averaging Period

| Receptor ID | Incremental Impact (µg/m³) | Background (µg/m³) | Cumulative Impact (µg/m³) | Criteria (µg/m³) |
|---|---|---|---|---|
| R1 | 5.4 | 11.5 | 16.9 | 25 |
| R2 | 1.6 | | 13.1 | |
| R3 | 2.7 | | 14.2 | |
| R4 | 1.4 | | 12.9 | |
| I5 | 2.6 | | 14.1 | |
| I6 | 4.1 | | 15.6 | |
| I7 | 2.7 | | 14.2 | |
| I8 | 1.8 | | 13.3 | |
| I9 | 1.9 | | 13.4 | |
| I10 | 1.5 | | 13 | |
| I11 | 1.2 | | 12.7 | |
| I12 | 2.4 | | 13.9 | |
| I13 | 2 | | 13.5 | |
| I14 | 1.4 | | 12.9 | |
| I15 | 1.4 | | 12.9 | |
| I16 | 8.3 | | 19.8 | |
| I17 | 11.6 | | 23.1 | |
| I18 | 9.3 | | 20.8 | |

✓Complies × Non-compliance

For each receptor, the level of Daily $PM_{2.5}$ is well below the criteria.

Table 7-2: Estimated Impact Results for PM2.5, Annual Averaging Period

| Receptors | Incremental Impact (µg/m³) | Background (µg/m³) | Cumulative Impact (µg/m³) | 100th Percentile Limit (µg/m³) |
|---|---|---|---|---|
| R1 | 0.65 | 4 | 4.65 | 8 |
| R2 | 0.16 | | 4.16 | |
| R3 | 0.48 | | 4.48 | |
| R4 | 0.13 | | 4.13 | |
| I5 | 0.21 | | 4.21 | |
| I6 | 0.43 | | 4.43 | |
| I7 | 0.31 | | 4.31 | |
| I8 | 0.25 | | 4.25 | |
| I9 | 0.22 | | 4.22 | |
| I10 | 0.17 | | 4.17 | |
| I11 | 0.12 | | 4.12 | |
| I12 | 0.29 | | 4.29 | |
| I13 | 0.26 | | 4.26 | |
| I14 | 0.14 | | 4.14 | |
| I15 | 0.15 | | 4.15 | |
| I16 | 0.98 | | 4.98 | |
| I17 | 1.49 | | 5.49 | |
| I18 | 0.87 | | 4.87 | |

✓Complies × Non-compliance

The levels of annual $PM_{2.5}$ are well below the criteria at each receptor. I17 is the worst affected by incremental impacts.

Figure 7-2: PM2.5 24 Hour Averaging Period Modelling Results

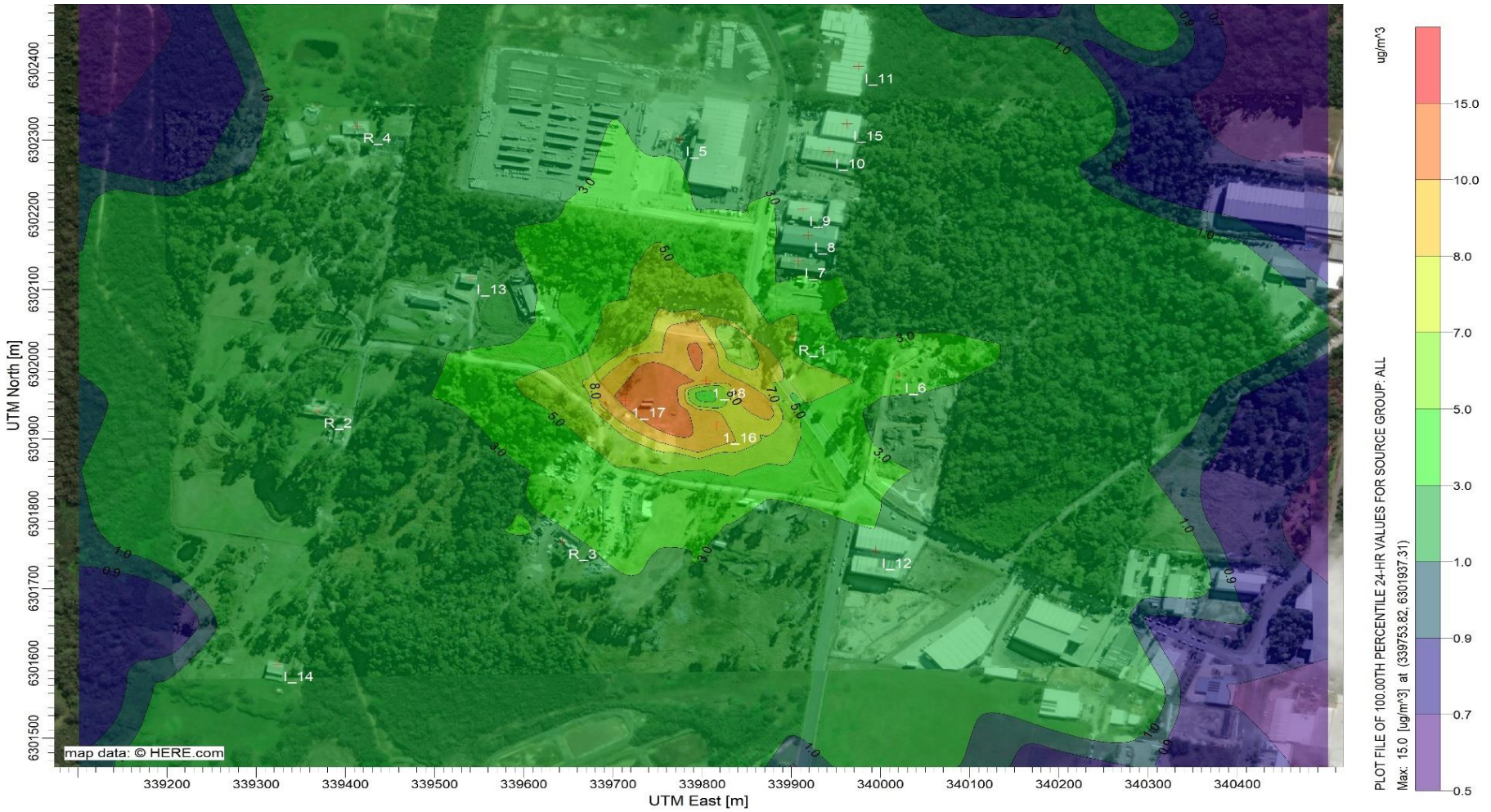
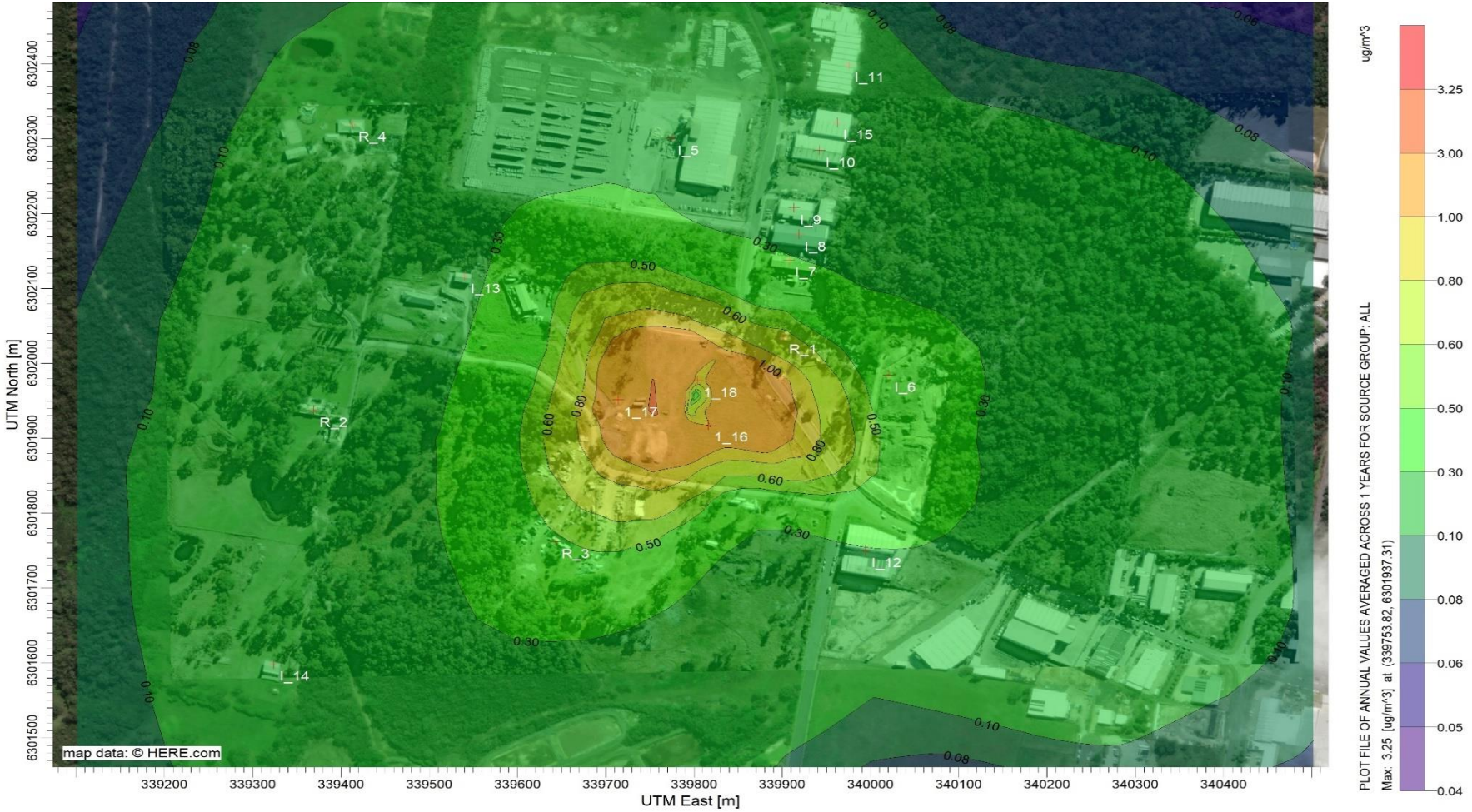


Figure 7-3: PM2.5 Annual Averaging Period Modelling Results



### 7.2.2 $PM_{10}$ Results

Table 7-3: Estimated Impact Results for PM10, 24 Hours Averaging Period

| Receptors | Incremental Impact (µg/m³) | Background (µg/m³) | Cumulative Impact (µg/m³) | 100th Percentile Limit (µg/m³) |
|---|---|---|---|---|
| R1 | 1.56 | 27.4 | 28.96 | 50 |
| R2 | 0.81 | | 28.21 | |
| R3 | 1.63 | | 29.03 | |
| R4 | 0.76 | | 28.16 | |
| I5 | 1.10 | | 28.5 | |
| I6 | 1.74 | | 29.14 | |
| I7 | 1.66 | | 29.06 | |
| I8 | 1.52 | | 28.92 | |
| I9 | 1.56 | | 28.96 | |
| I10 | 1.17 | | 28.57 | |
| I11 | 0.77 | | 28.17 | |
| I12 | 1.38 | | 28.78 | |
| I13 | 1.06 | | 28.46 | |
| I14 | 0.65 | | 28.05 | |
| I15 | 0.98 | | 28.38 | |
| I16 | 7.06 | | 34.46 | |
| I17 | 11.37 | | 38.77 | |
| I18 | 10.15 | | 37.55 | |

✓Complies × Non-compliance

Table 7-4: Estimated Impact Results for PM10, Annual Averaging Period

| Receptors | Incremental Impact (µg/m³) | Background (µg/m³) | Cumulative Impact (µg/m³) | 100th Percentile Limit (µg/m³) |
|---|---|---|---|---|
| R1 | 0.29 | 11.7 | 11.99 | 25 |
| R2 | 0.10 | | 11.8 | |
| R3 | 0.31 | | 12.01 | |
| R4 | 0.09 | | 11.79 | |
| I5 | 0.13 | | 11.83 | |
| I6 | 0.21 | | 11.91 | |
| I7 | 0.18 | | 11.88 | |
| I8 | 0.16 | | 11.86 | |
| I9 | 0.14 | | 11.84 | |
| I10 | 0.11 | | 11.81 | |
| I11 | 0.07 | | 11.77 | |
| I12 | 0.17 | | 11.87 | |
| I13 | 0.17 | | 11.87 | |
| I14 | 0.09 | | 11.79 | |
| I15 | 0.09 | | 11.79 | |
| I16 | 0.97 | | 12.67 | |
| I17 | 1.75 | | 13.45 | |
| I18 | 1.70 | | 13.4 | |

✓Complies × Non-compliance

The level of daily and annual $PM_{10}$ are well below the criteria and I17 is the most affected receptor for both daily and annual levels.

Figure 7-4: $PM_{10}$ 24 Hours Averaging Period Modelling Results

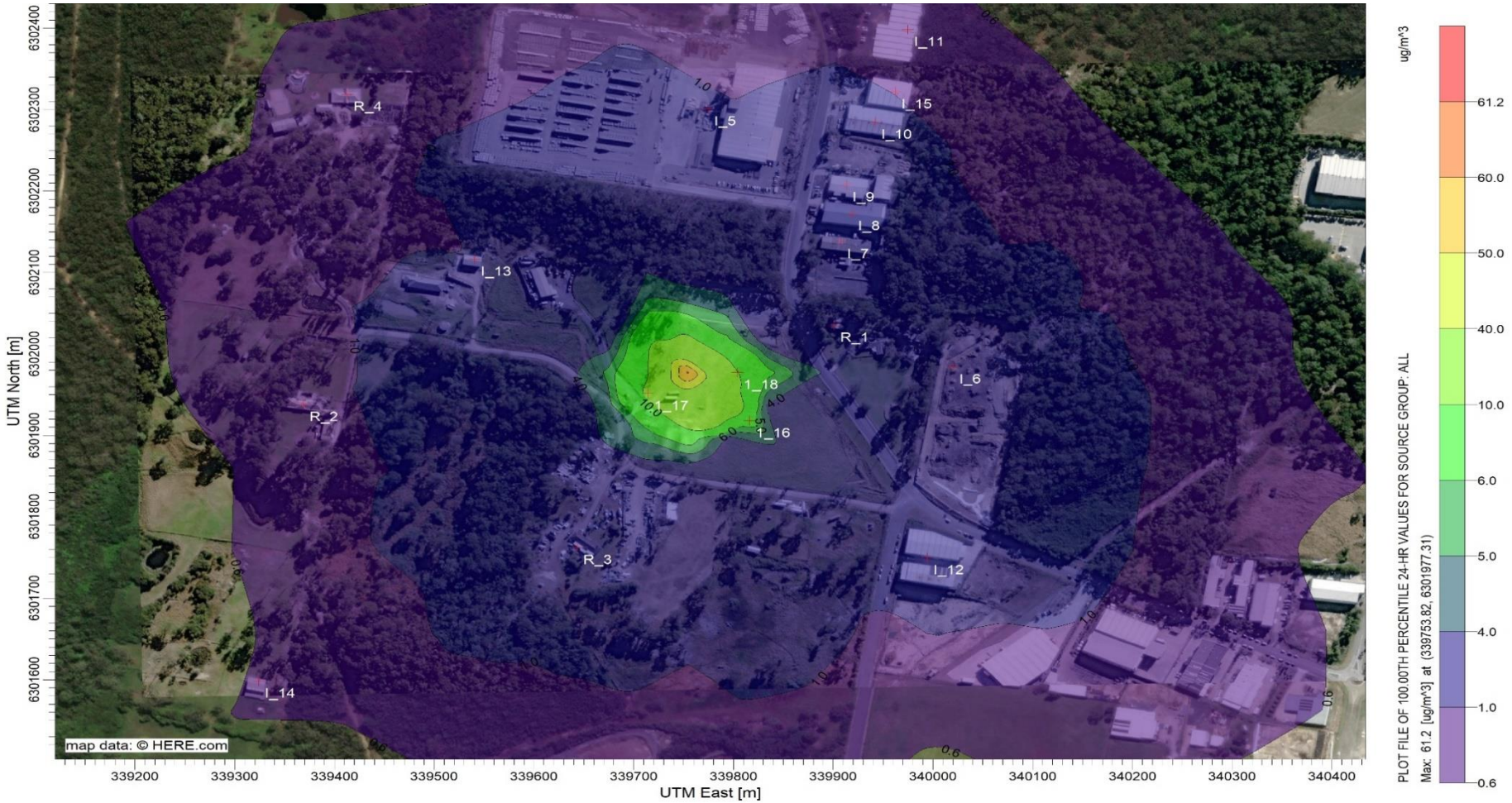
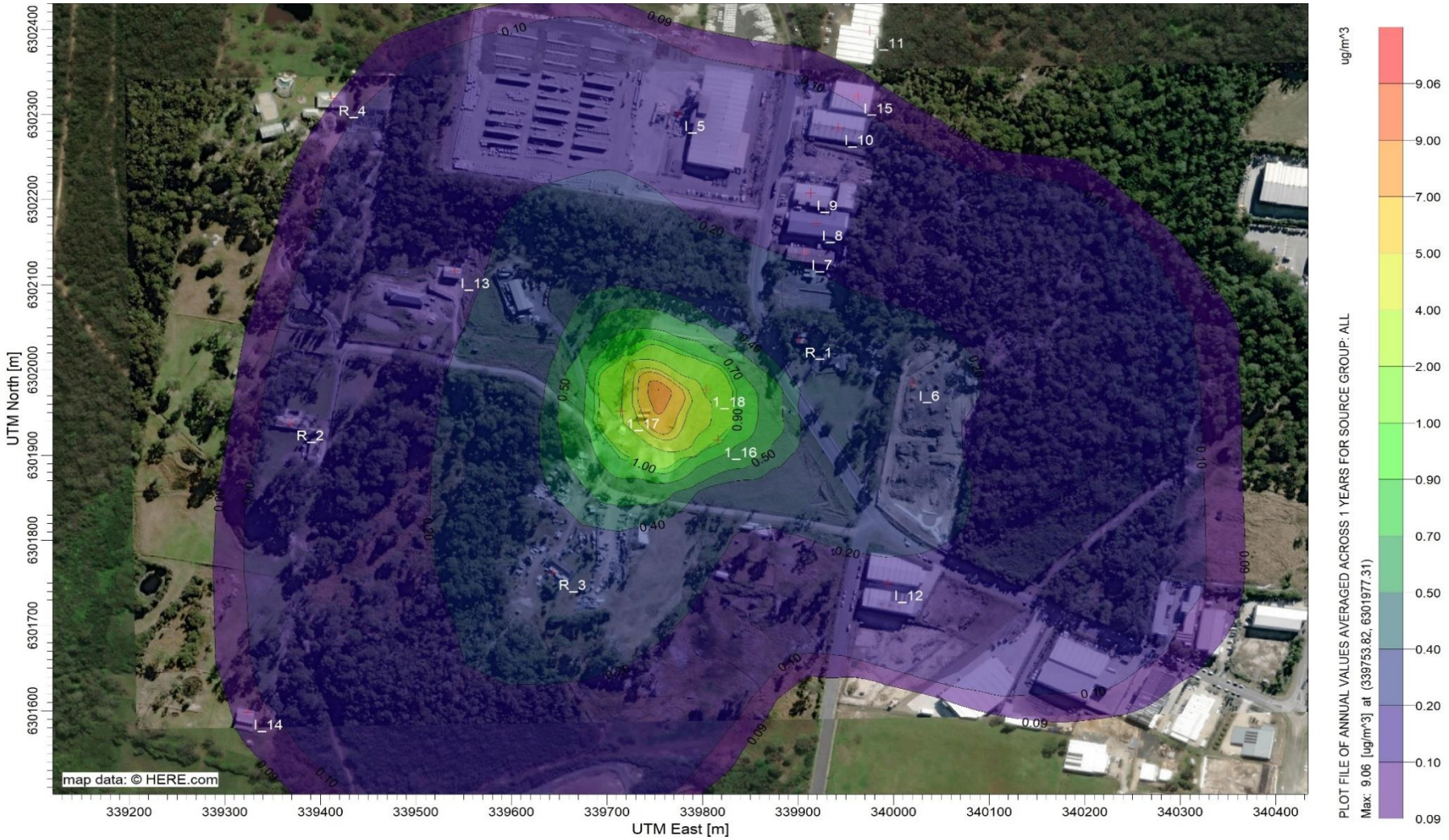


Figure 7-5: $PM_{10}$ 24 Annual Averaging Period Modelling Results



### 7.2.3 TSP Results

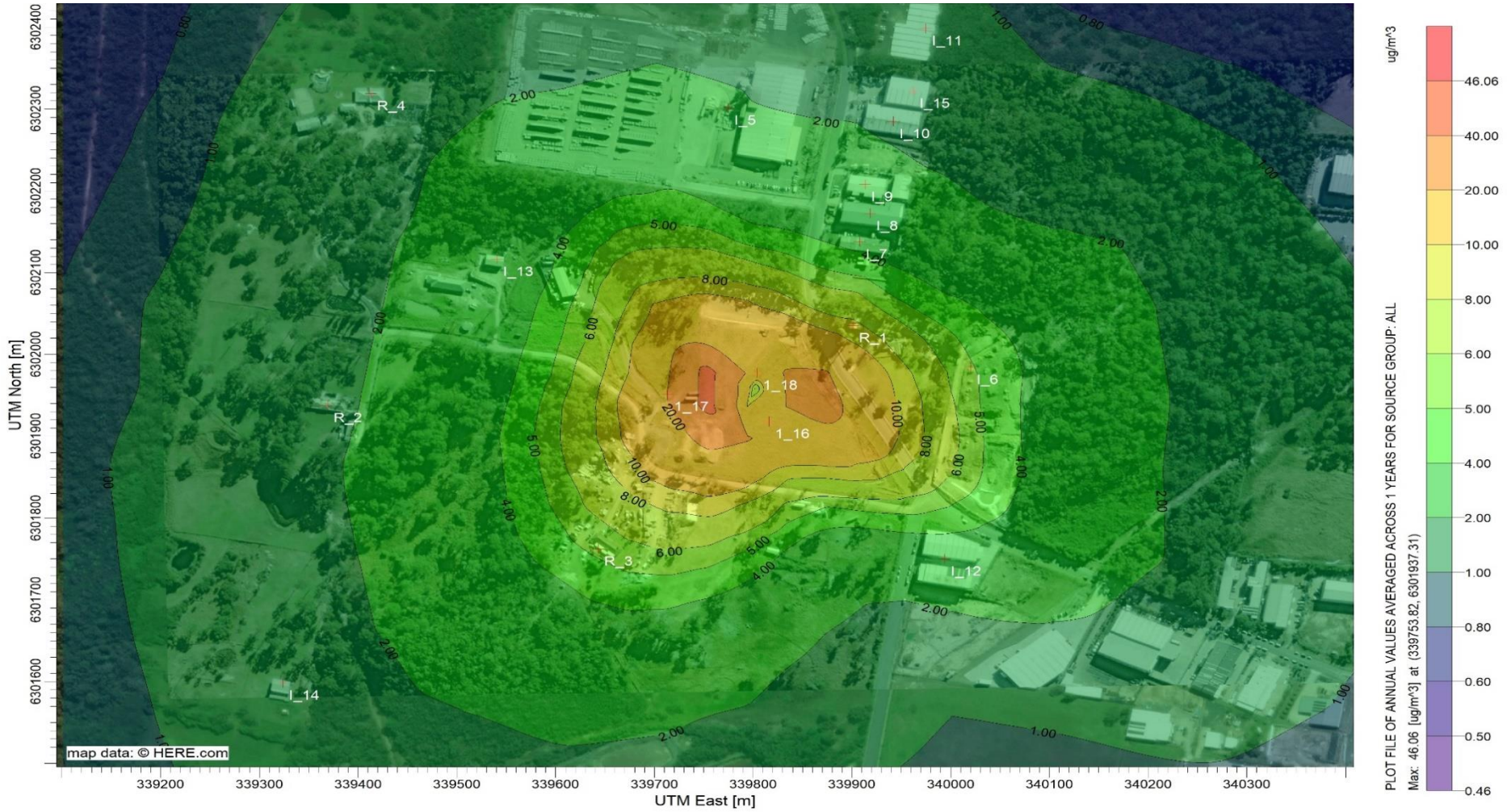
Table 7-5: Estimated Impact Results for TSP, Annual Averaging Period

| Receptors | Incremental Impact (µg/m³) | Background (µg/m³) | Cumulative Impact (µg/m³) | 100th Percentile Limit (µg/m³) |
|---|---|---|---|---|
| R1 | 8.56 | 22.9 | 31.46 | 90 |
| R2 | 1.78 | | 24.68 | |
| R3 | 5.25 | | 28.15 | |
| R4 | 1.42 | | 24.32 | |
| I5 | 2.31 | | 25.21 | |
| I6 | 5.10 | | 28 | |
| I7 | 3.58 | | 26.48 | |
| I8 | 2.86 | | 25.76 | |
| I9 | 2.48 | | 25.38 | |
| I10 | 1.82 | | 24.72 | |
| I11 | 1.25 | | 24.15 | |
| I12 | 3.16 | | 26.06 | |
| I13 | 2.96 | | 25.86 | |
| I14 | 1.41 | | 24.31 | |
| I15 | 1.63 | | 24.53 | |
| I16 | 13.72 | | 36.62 | |
| I17 | 20.64 | | 43.54 | |
| I18 | 12.59 | | 35.49 | |

✓Complies × Non-compliance

Level of TSP in each receptor shows meeting with criteria. The incremental impact most affects I17.

Figure 7-6: TSP Averaging Period Modelling Results



### 7.2.4 $SO_2$ Results

Table 7-6: Estimated Impact Results for SO2, 1 Hour Averaging Period

| Receptors | Incremental Impact (µg/m³) | Background (µg/m³) | Cumulative Impact (µg/m³) | 100th Percentile Limit (µg/m³) |
|---|---|---|---|---|
| R1 | 2.38 | 117.9 | 120.28 | 215 |
| R2 | 1.20 | | 119.1 | |
| R3 | 2.26 | | 120.16 | |
| R4 | 1.14 | | 119.04 | |
| I5 | 1.88 | | 119.78 | |
| I6 | 2.32 | | 120.22 | |
| I7 | 2.57 | | 120.47 | |
| I8 | 2.40 | | 120.3 | |
| I9 | 2.26 | | 120.16 | |
| I10 | 1.87 | | 119.77 | |
| I11 | 1.56 | | 119.46 | |
| I12 | 1.93 | | 119.83 | |
| I13 | 1.67 | | 119.57 | |
| I14 | 1.04 | | 118.94 | |
| I15 | 1.77 | | 119.67 | |
| I16 | 9.78 | | 127.68 | |
| I17 | 1.91 | | 119.81 | |
| I18 | 8.70 | | 126.6 | |

✓Complies × Non-compliance

Table 7-7: Estimated Impact Results for SO2, 24 Hour Averaging Period

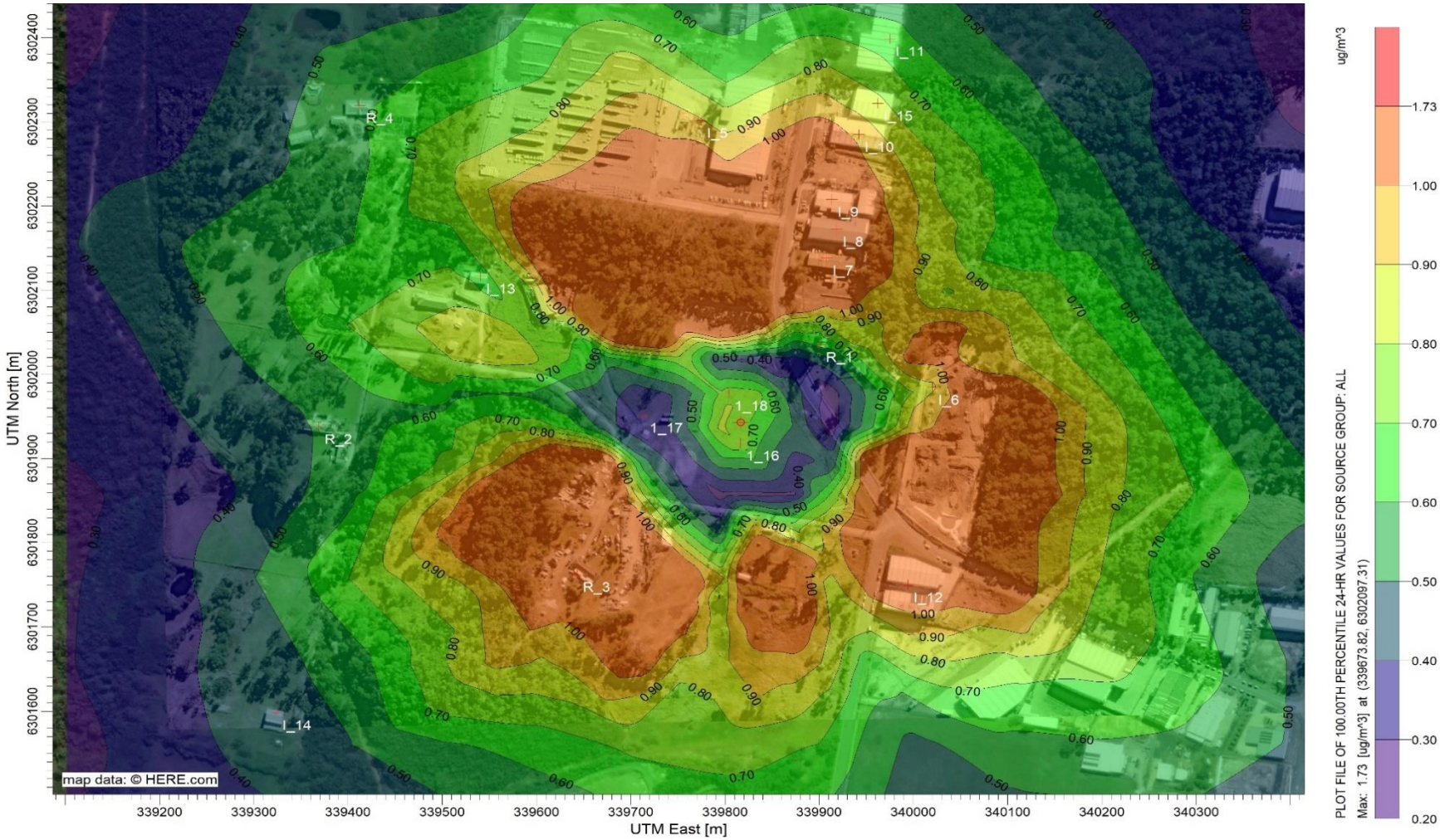
| Receptors | Incremental Impact (µg/m³) | Background (µg/m³) | Cumulative Impact (µg/m³) | 100th Percentile Limit (µg/m³) |
|---|---|---|---|---|
| R1 | 0.63 | 18.3 | 18.93 | 57 |
| R2 | 0.50 | | 18.8 | |
| R3 | 1.25 | | 19.55 | |
| R4 | 0.58 | | 18.88 | |
| I5 | 0.90 | | 19.2 | |
| I6 | 0.87 | | 19.17 | |
| I7 | 1.26 | | 19.56 | |
| I8 | 1.20 | | 19.5 | |
| I9 | 1.27 | | 19.57 | |
| I10 | 0.97 | | 19.27 | |
| I11 | 0.64 | | 18.94 | |
| I12 | 1.10 | | 19.4 | |
| I13 | 0.67 | | 18.97 | |
| I14 | 0.45 | | 18.75 | |
| I15 | 0.82 | | 19.12 | |
| I16 | 0.78 | | 19.08 | |
| I17 | 0.31 | | 18.61 | |
| I18 | 0.76 | | 19.06 | |

✓Complies × Non-compliance

Impact results for 1 hour and 24 hour $SO_2$ for all receptors are below the criteria. The 1 hour incremental impact most affects I16 and daily incremental impact most affects I9.

Figure 7-7: SO2 1 Hour Averaging Period Modelling Results

Figure 7-8: SO2 24 Hour Averaging Period Modelling Results



### 7.2.5 $NO_2$ Results

Table 7-8: Estimated Impact Results for NO2, 1 Hours Averaging Period

| Receptors | Incremental Impact (µg/m³) | Background (µg/m³) | Cumulative Impact (µg/m³) | 100th Percentile Limit (µg/m³) |
|---|---|---|---|---|
| R1 | 12.40 | 58.2 | 70.6 | 164 |
| R2 | 6.28 | | 64.48 | |
| R3 | 11.77 | | 69.97 | |
| R4 | 5.97 | | 64.17 | |
| I5 | 9.77 | | 67.97 | |
| I6 | 12.08 | | 70.28 | |
| I7 | 13.37 | | 71.57 | |
| I8 | 12.52 | | 70.72 | |
| I9 | 11.77 | | 69.97 | |
| I10 | 9.75 | | 67.95 | |
| I11 | 8.11 | | 66.31 | |
| I12 | 10.05 | | 68.25 | |
| I13 | 8.72 | | 66.92 | |
| I14 | 5.44 | | 63.64 | |
| I15 | 9.22 | | 67.42 | |
| I16 | 50.88 | | 109.08 | |
| I17 | 9.96 | | 68.16 | |
| I18 | 45.26 | | 103.46 | |

✓Complies × Non-compliance

Table 7-9: Estimated Impact Results for NO2, Annual Averaging Period

| Receptors | Incremental Impact (µg/m³) | Background (µg/m³) | Cumulative Impact (µg/m³) | 100th Percentile Limit (µg/m³) |
|---|---|---|---|---|
| R1 | 0.25 | 3.7 | 3.95 | 31 |
| R2 | 0.29 | | 3.99 | |
| R3 | 0.75 | | 4.45 | |
| R4 | 0.25 | | 3.95 | |
| I5 | 0.36 | | 4.06 | |
| I6 | 0.45 | | 4.15 | |
| I7 | 0.37 | | 4.07 | |
| I8 | 0.36 | | 4.06 | |
| I9 | 0.34 | | 4.04 | |
| I10 | 0.29 | | 3.99 | |
| I11 | 0.22 | | 3.92 | |
| I12 | 0.44 | | 4.14 | |
| I13 | 0.40 | | 4.1 | |
| I14 | 0.29 | | 3.99 | |
| I15 | 0.26 | | 3.96 | |
| I16 | 0.02 | | 3.72 | |
| I17 | 0.23 | | 3.93 | |
| I18 | 0.03 | | 3.73 | |

✓Complies × Non-compliance

At each receptor, the levels of 1 hour and annual $NO_2$ meet the criteria, but I16 experiences the greatest incremental impacts in 1 hour and R3 in annual averaging period.

Figure 7-9: NO2 1 Hour Averaging Period Modelling Results

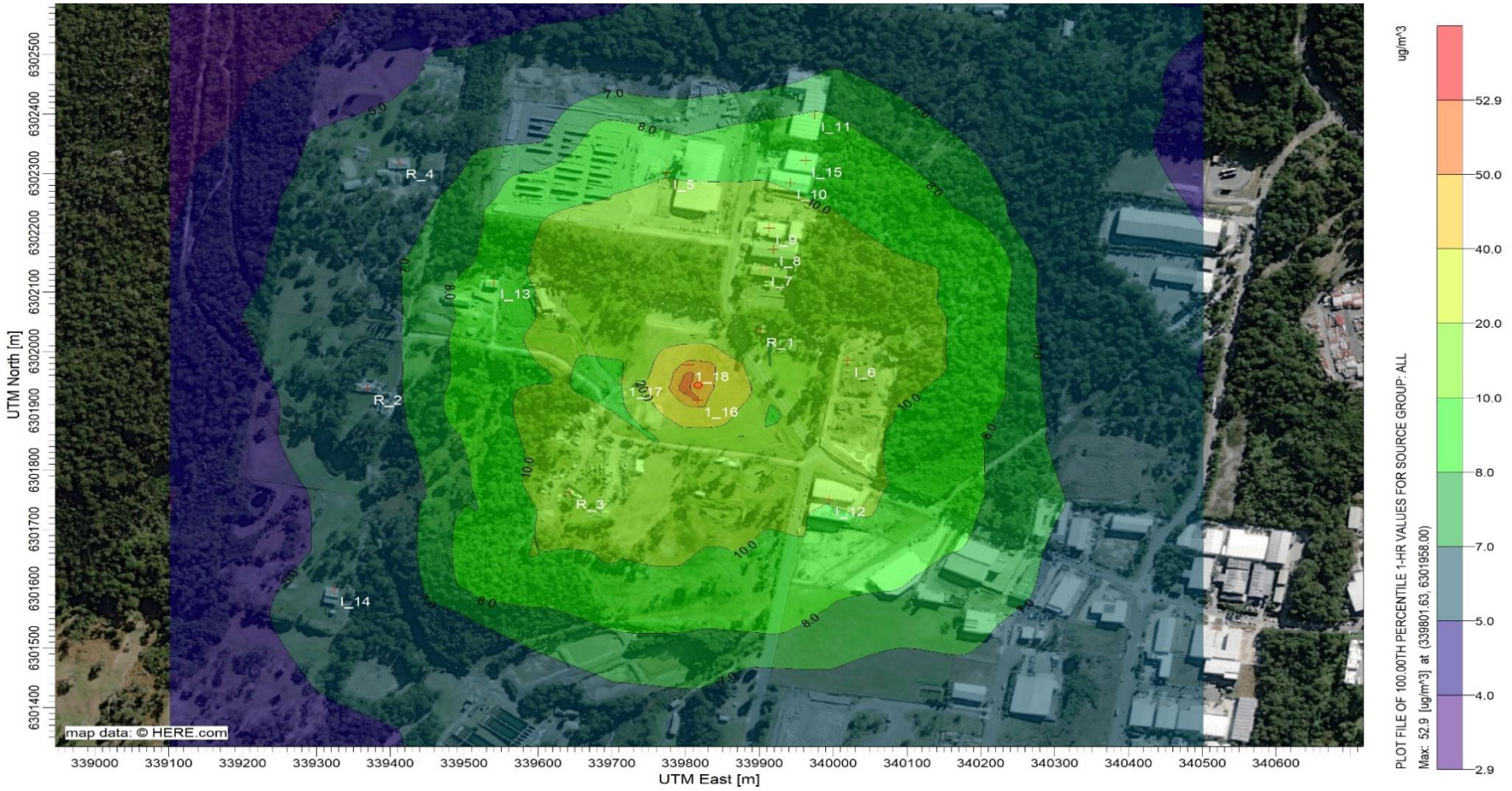
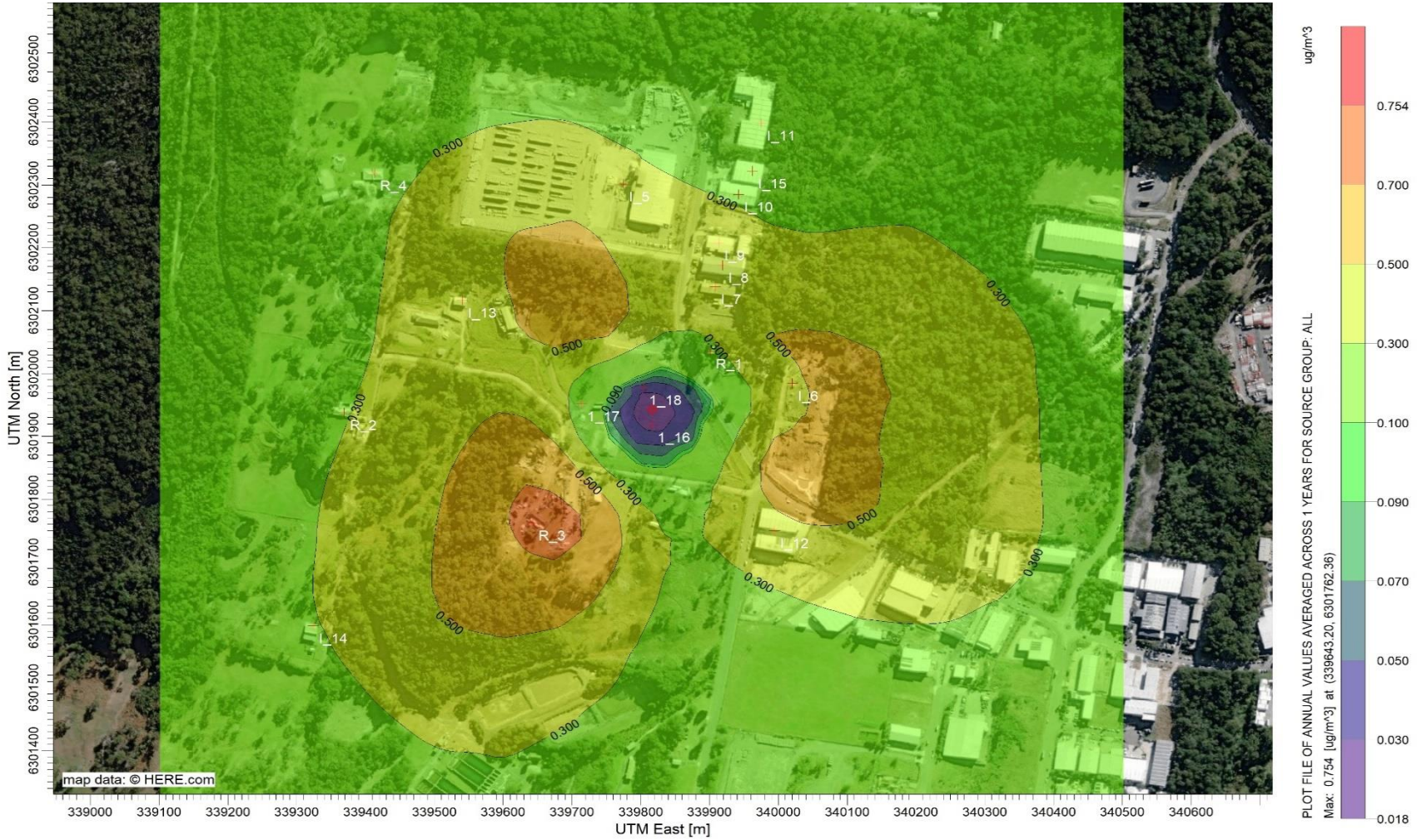


Figure 7-10: NO2 Annual Averaging Period Modelling Results



### 7.2.6 CO Results

Table 7-10: Estimated Impact Results for CO, 1 Hour Averaging Period

| Receptors | Incremental Impact (mg/m³) | Background (mg/m³) | Cumulative Impact (mg/m³) | 100th Percentile Limit (mg/m³) |
|---|---|---|---|---|
| R1 | 0.16 | 1 | 1.16 | 30 |
| R2 | 0.82 | | 1.82 | |
| R3 | 0.15 | | 1.15 | |
| R4 | 0.07 | | 1.07 | |
| I5 | 0.12 | | 1.12 | |
| I6 | 0.15 | | 1.15 | |
| I7 | 0.17 | | 1.17 | |
| I8 | 0.16 | | 1.16 | |
| I9 | 0.15 | | 1.15 | |
| I10 | 0.12 | | 1.12 | |
| I11 | 0.10 | | 1.1 | |
| I12 | 0.13 | | 1.13 | |
| I13 | 0.11 | | 1.11 | |
| I14 | 0.07 | | 1.07 | |
| I15 | 0.12 | | 1.12 | |
| I16 | 0.66 | | 1.66 | |
| I17 | 0.13 | | 1.13 | |
| I18 | 0.59 | | 1.59 | |

✓Complies × Non-compliance

While the levels of CO at each receptor satisfy the criteria, R2 experiences the most significant incremental impacts.

Table 7-11: Estimated Impact Results for CO, 8 Hour Averaging Period

| Receptors | Incremental Impact (mg/m³) | Background (mg/m³) | Cumulative Impact (mg/m³) | 100th Percentile Limit (mg/m³) |
|---|---|---|---|---|
| R1 | 0.11 | 0.3 | 0.41 | 10 |
| R2 | 0.05 | | 0.35 | |
| R3 | 0.12 | | 0.42 | |
| R4 | 0.05 | | 0.35 | |
| I5 | 0.10 | | 0.4 | |
| I6 | 0.13 | | 0.43 | |
| I7 | 0.15 | | 0.45 | |
| I8 | 0.13 | | 0.43 | |
| I9 | 0.12 | | 0.42 | |
| I10 | 0.09 | | 0.39 | |
| I11 | 0.07 | | 0.37 | |
| I12 | 0.11 | | 0.41 | |
| I13 | 0.07 | | 0.37 | |
| I14 | 0.04 | | 0.34 | |
| I15 | 0.08 | | 0.38 | |
| I16 | 0.16 | | 0.46 | |
| I17 | 0.05 | | 0.35 | |
| I18 | 0.15 | | 0.45 | |

✓Complies × Non-compliance

The levels of 8 hours CO at each receptor are within the acceptable limits. The incremental impact most influence I16.

Figure 7-11: CO 1 Hour Averaging Period Modelling Results

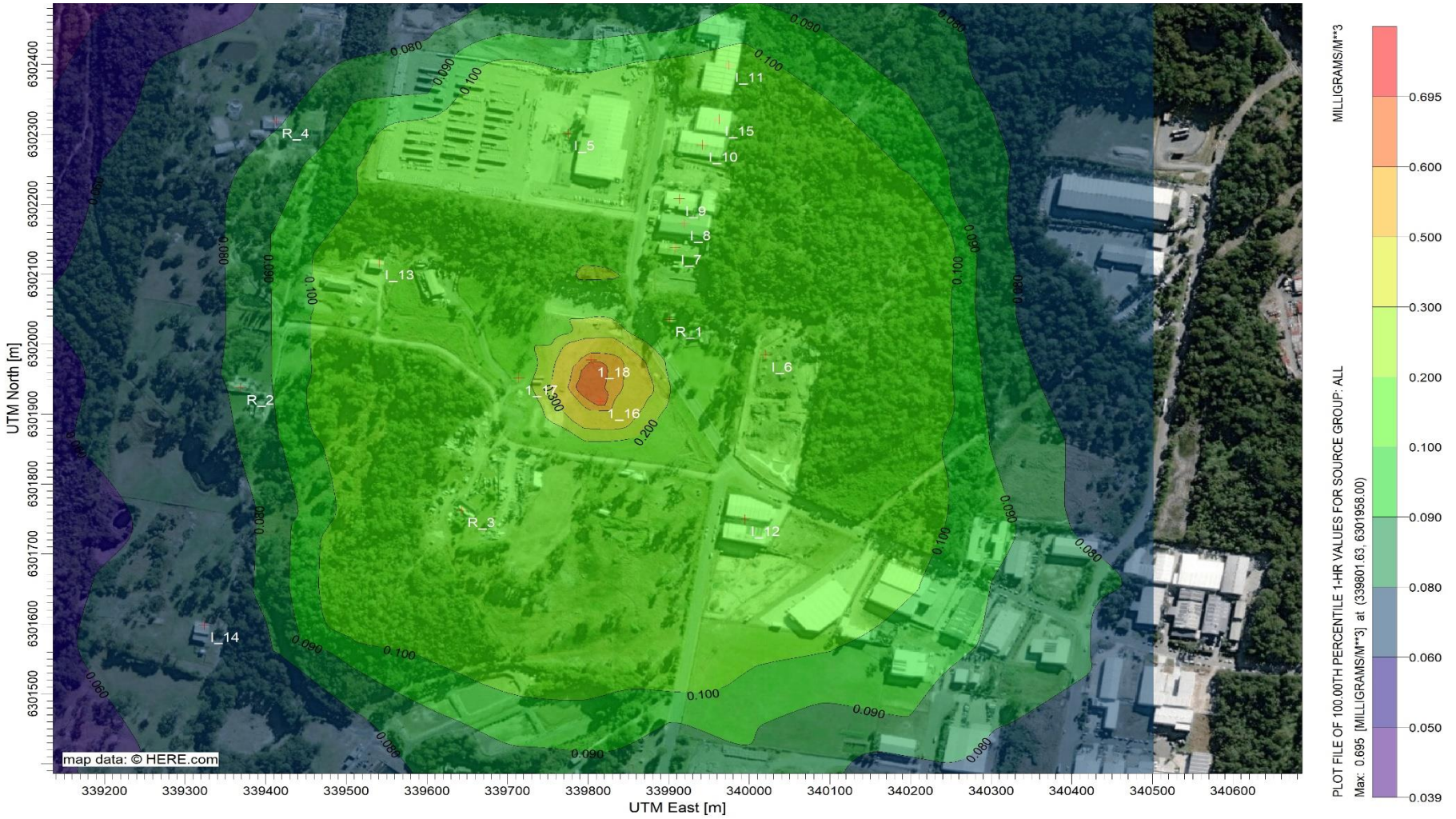
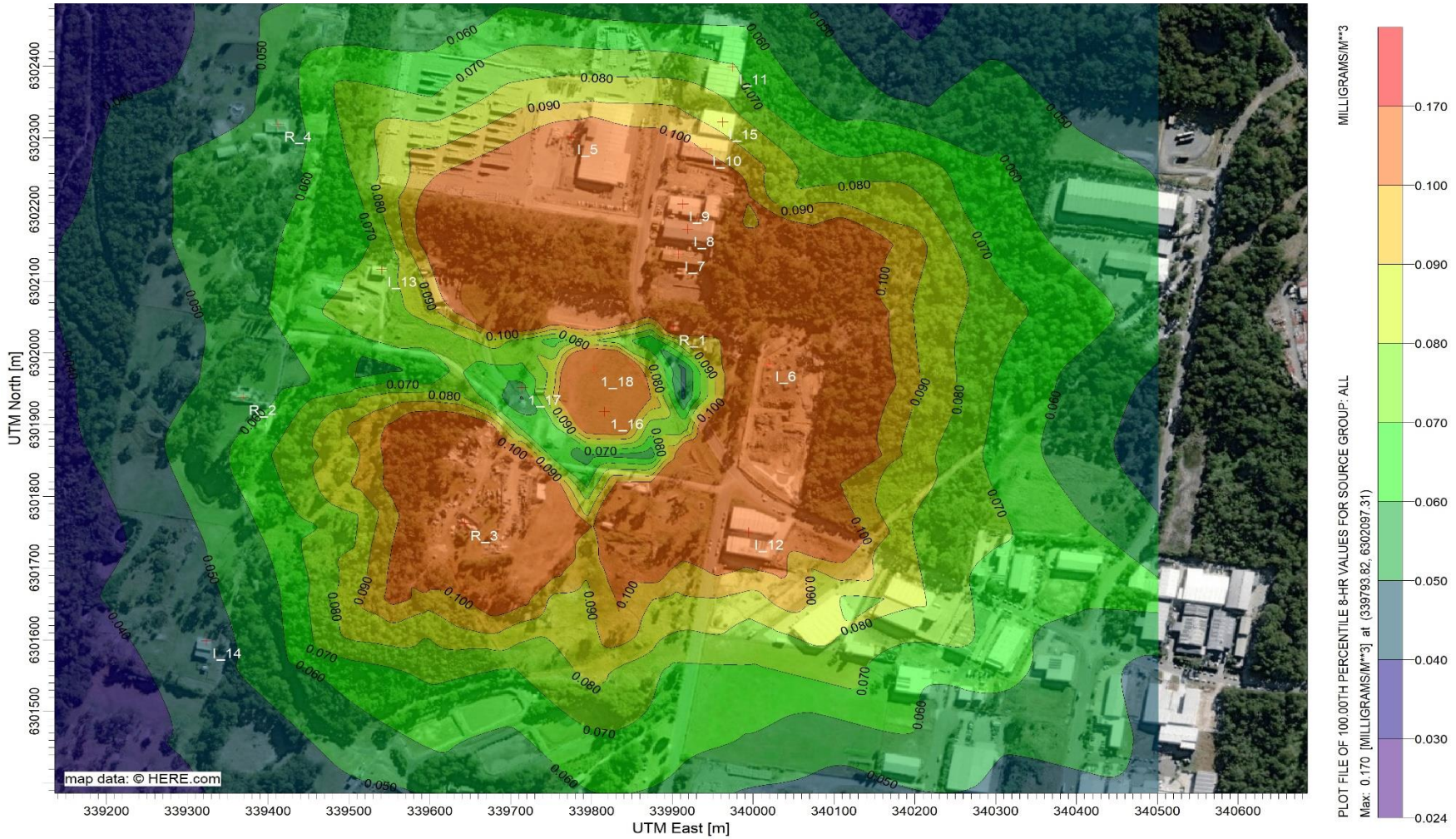


Figure 7-12: CO 8 Hour Averaging Period Modelling Results



### 7.2.7 PAH Results

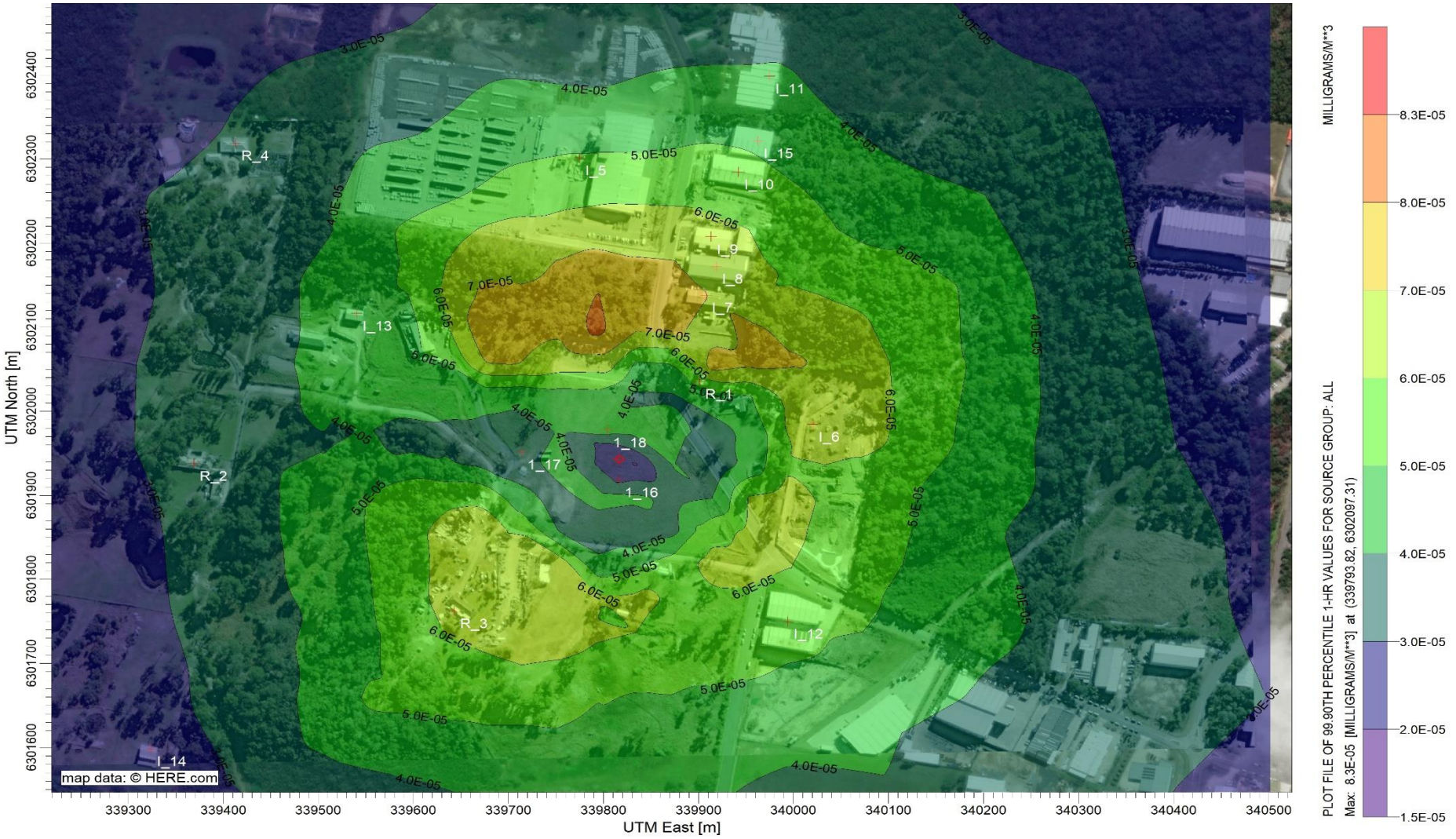
Table 7-12: Estimated Impact Results for PAH, 1 Hour Averaging Period

| Receptors | Incremental Impact (mg/m$^3$) | 99.9$^{th}$ Percentile Limit (mg/m$^3$) |
|---|---|---|
| R1 | 0.00007 | 0.0004 |
| R2 | 0.00004 | |
| R3 | 0.00007 | |
| R4 | 0.00003 | |
| I5 | 0.00006 | |
| I6 | 0.00007 | |
| I7 | 0.00008 | |
| I8 | 0.00007 | |
| I9 | 0.00007 | |
| I10 | 0.00005 | |
| I11 | 0.00005 | |
| I12 | 0.00006 | |
| I13 | 0.00005 | |
| I14 | 0.00003 | |
| I15 | 0.00005 | |
| I16 | 0.0002 | |
| I17 | 0.00006 | |
| I18 | 0.0002 | |

✓Complies × Non-compliance

1hour PAH level are below the criteria for all receptors.

Figure 7-13: PAH 1 Hour Averaging Period Modelling Results



### 7.2.8 Odour Results

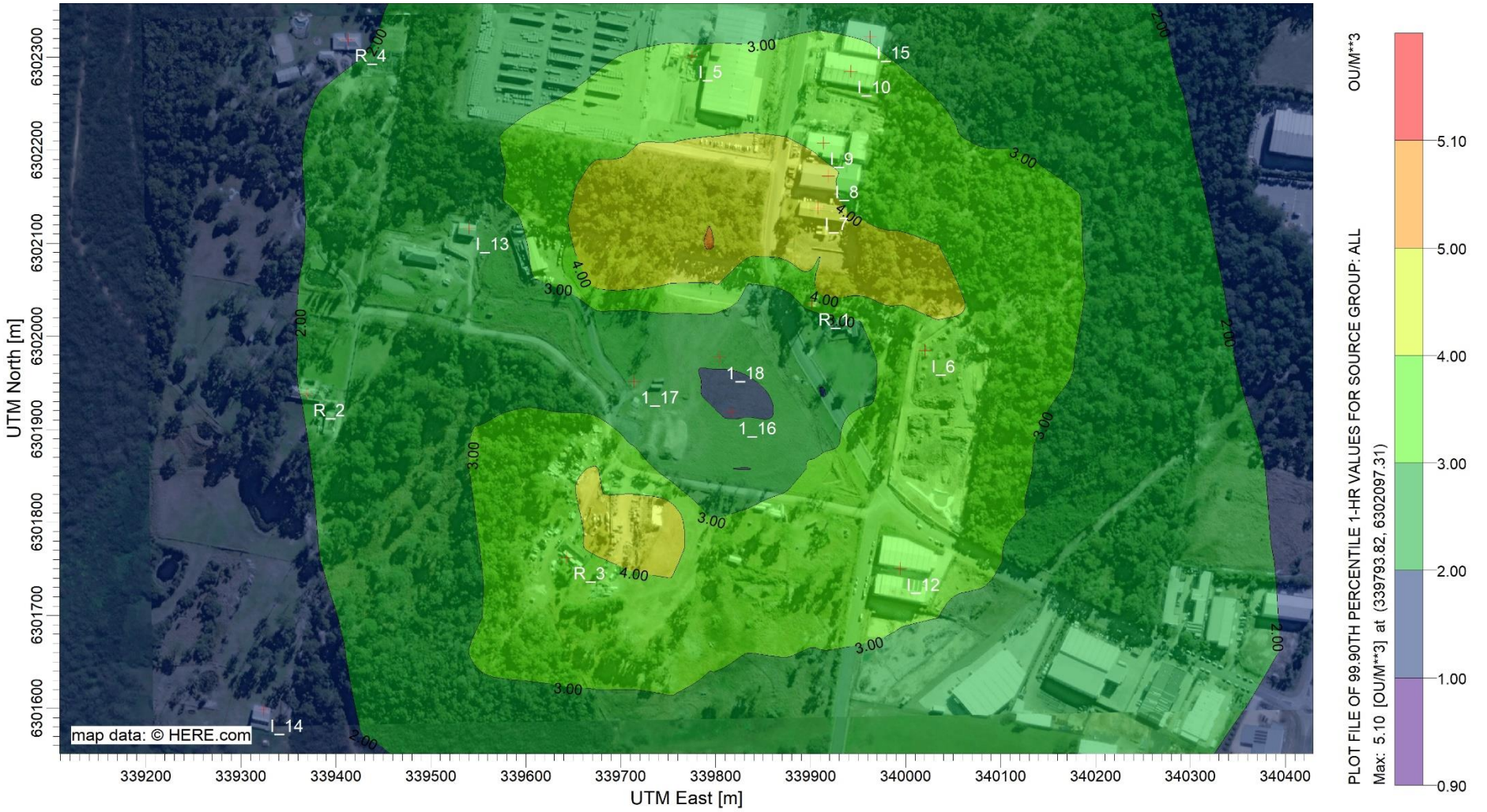
Table 7-13: Estimated Impact Results for Odour, 1Hour Averaging Period

| Receptors | Impact ($OU/m^3$) | 99th Percentile Limit ($OU/m^3$) |
|---|---|---|
| R1 | 3.2 | 5 |
| R2 | 2 | |
| R3 | 3.8 | |
| R4 | 1.8 | |
| I5 | 3.1 | |
| I6 | 3.9 | |
| I7 | 4.3 | |
| I8 | 4 | |
| I9 | 3.8 | |
| I10 | 3.2 | |
| I11 | 2.5 | |
| I12 | 3.3 | |
| I13 | 2.7 | |
| I14 | 1.6 | |
| I15 | 2.9 | |
| I16 | 1.7 | |
| I17 | 2.1 | |
| I18 | 2.7 | |

✓Complies × Non-compliance

1hour odour level are below the criteria for all receptors.

Figure 7-14: : Odour 1 Hour Averaging Period Modelling Result



### 7.2.9 Formaldehyde Results

According to *Approved methods*

> *7.2.2. Application of impact assessment criteria*
> *The impact assessment criteria for individual toxic air pollutants in Tables 12 and 13 must be applied as follows:*

The model simulations used an averaging time of the year and the 99.9$^{th}$ percentile was selected. The assessment of 99.9th percentile maximum ground level concentrations at site boundaries for one meteorological year are shown in Table 7-13 to Table 7-18. These results are assessed against design criteria from *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales.*

Table 7-14: Predicted maximum concentration 99.9th Percentile (1 year averaging time) for one meteorological year at site boundary at the worse case boundary location.

| Meteorological Year | X Coordinate | Y coordinate | Incremental Criteria (mg/m$^3$) | Impact (mg/m$^3$) |
|---|---|---|---|---|
| 2022 | 339778.2 | 6301971 | 0.02 | 0.00028 |

✓Complies × Non-compliance

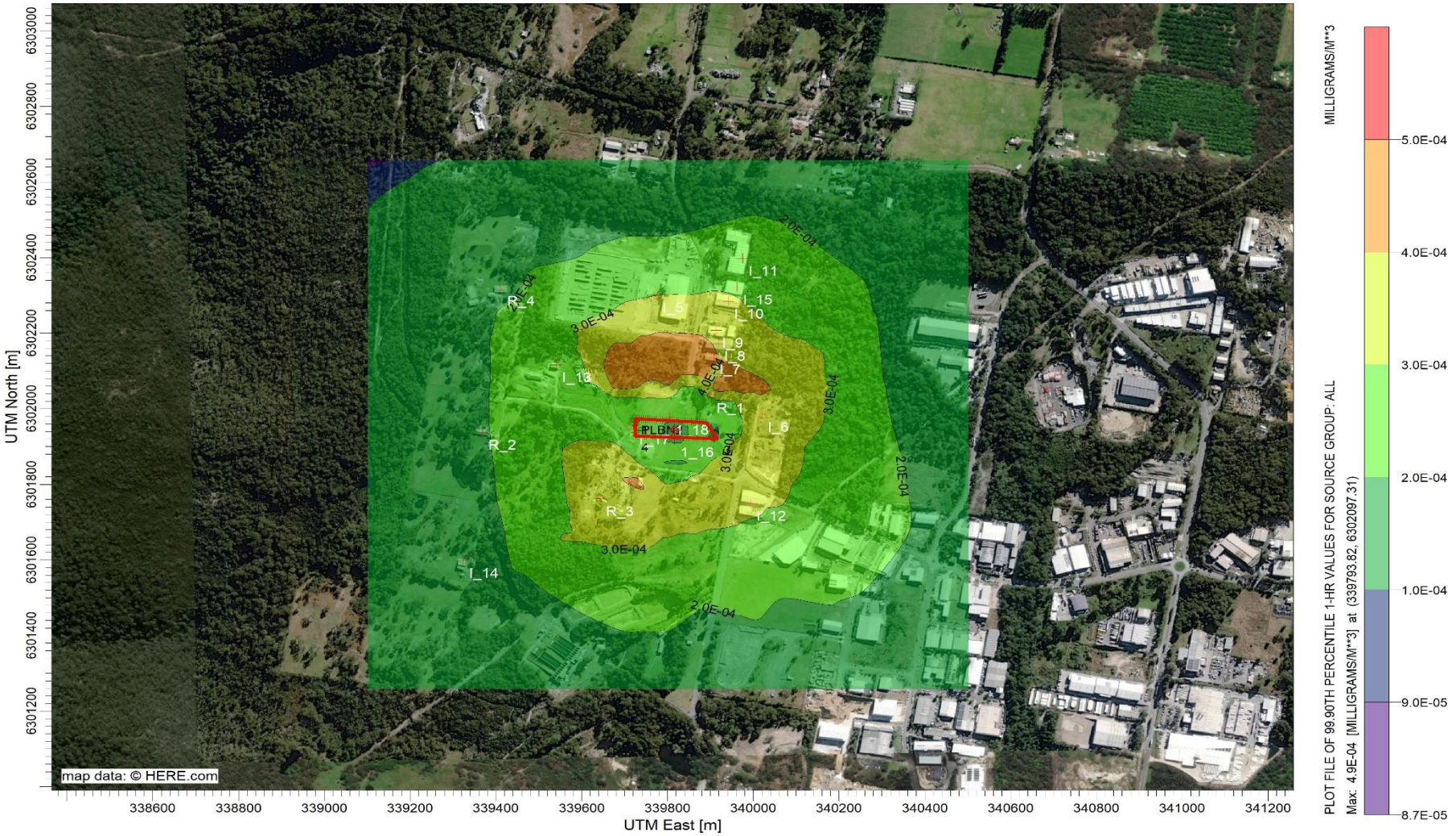
#### 7.2.9.1 Receptor Impacts

Table 7-15: Predicted maximum concentration 99.9th Percentile at receptors (1 year averaging time)

| Receptor ID | Incremental Criteria (mg/m$^3$) | Predicted Impact (mg/m$^3$) |
|---|---|---|
| R1 | 0.02 | 0.00037 |
| R2 | | 0.00031 |
| R3 | | 0.00019 |
| R4 | | 0.00018 |
| I5 | | 0.00042 |
| I6 | | 0.00039 |
| I7 | | 0.00038 |
| I8 | | 0.00037 |
| I9 | | 0.00032 |
| I10 | | 0.00032 |
| I11 | | 0.00030 |
| I12 | | 0.00029 |
| I13 | | 0.00026 |
| I14 | | 0.00024 |
| I15 | | 0.00016 |
| I16 | | 0.00037 |
| I17 | | 0.00031 |
| I18 | | 0.00019 |

✓Complies × Non-compliance

Figure 7-15: Formaldehyde 1 Hour Averaging Period Modelling Results



### 7.2.10 Toluene Results

Table 7-16: Predicted maximum concentration 99.9th Percentile (1 year averaging time) for one meteorological year at site boundary

| Meteorological Year | X Coordinate | Y coordinate | Incremental Criteria (mg/m³) | Impact (mg/m³) |
|---|---|---|---|---|
| 2022 | 339812.2 | 6301969 | 0.36 | 0.00184 |

✓Complies × Non-compliance

#### 7.2.10.1 Receptor Impacts

Table 7-17: Predicted maximum concentration 99.9th Percentile at receptors (1 year averaging time)

| Receptor ID | Incremental Criteria (mg/m³) | Predicted Impact (mg/m³) |
|---|---|---|
| R1 | 0.36 | 0.0002 |
| R2 | | 0.00021 |
| R3 | | 0.00039 |
| R4 | | 0.00041 |
| I5 | | 0.00018 |
| I6 | | 0.00027 |
| I7 | | 0.00029 |
| I8 | | 0.00031 |
| I9 | | 0.00032 |
| I10 | | 0.00032 |
| I11 | | 0.00033 |
| I12 | | 0.00039 |
| I13 | | 0.0004 |
| I14 | | 0.00042 |
| I15 | | 0.00044 |
| I16 | | 0.0002 |
| I17 | | 0.00021 |
| I18 | | 0.00039 |

✓Complies × Non-compliance

Figure 7-16: Toluene 1 Hour Averaging Period Modelling Results

### 7.2.11 Xylene Results

Table 7-18: Predicted maximum concentration 99.9th Percentile (1 year averaging time) for one meteorological year at site boundary

| Meteorological Year | X Coordinate | Y coordinate | Incremental Criteria (mg/m³) | Impact (mg/m³) |
|---|---|---|---|---|
| 2022 | 339817.1 | 6301969 | 0.19 | 0.00894 |

✓Complies × Non-compliance

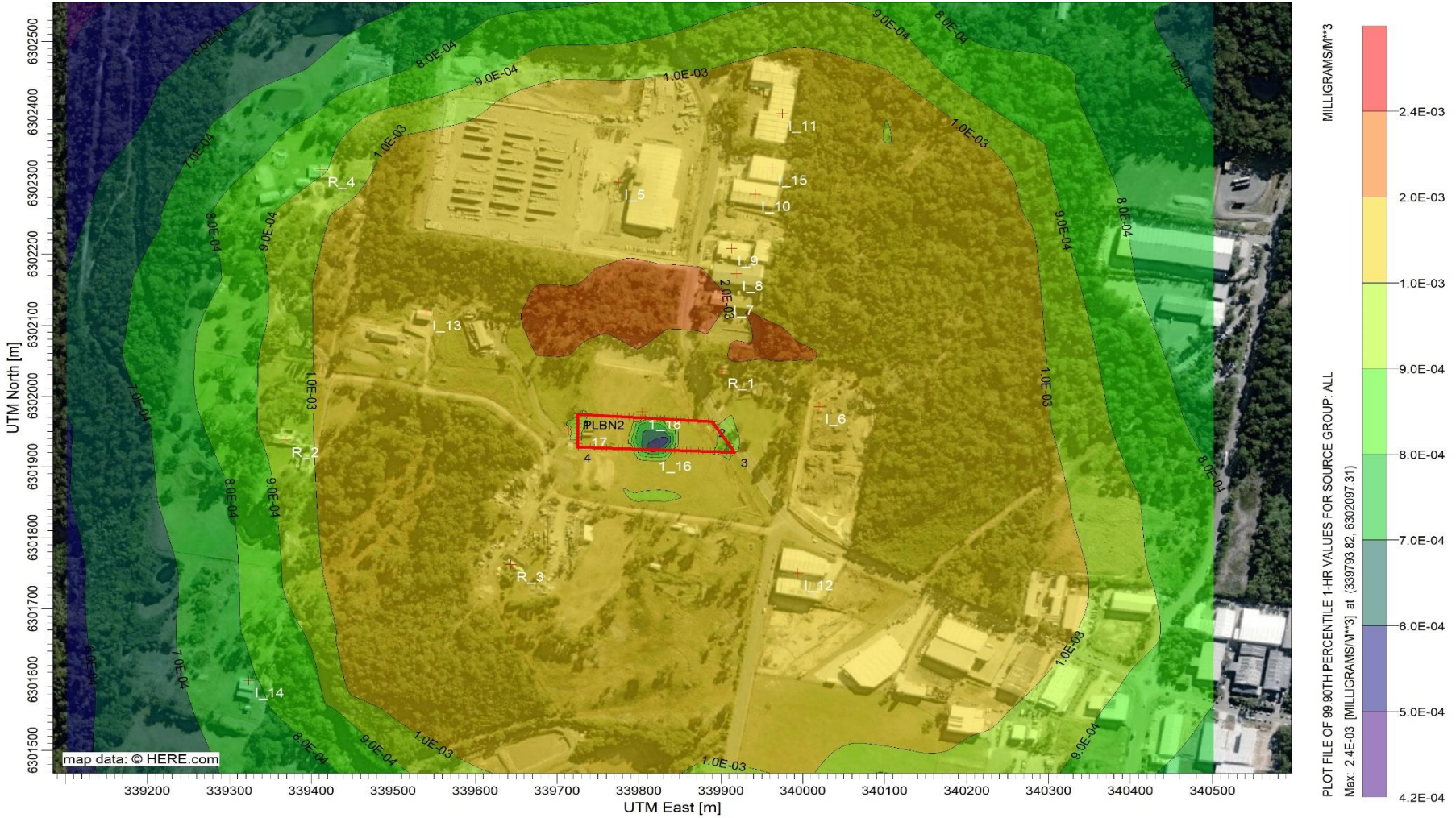
#### 7.2.11.1 Receptor Impacts

Table 7-19: Predicted maximum concentration 99.9th Percentile at receptors (1 year averaging time)

| Receptor ID | Incremental Criteria (mg/m³) | 2022 (mg/m³) |
|---|---|---|
| R1 | 0.19 | 0.002 |
| R2 | | 0.00102 |
| R3 | | 0.0019 |
| R4 | | 0.00097 |
| I5 | | 0.00158 |
| I6 | | 0.00195 |
| I7 | | 0.00216 |
| I8 | | 0.00202 |
| I9 | | 0.0019 |
| I10 | | 0.00158 |
| I11 | | 0.00131 |
| I12 | | 0.00162 |
| I13 | | 0.00141 |
| I14 | | 0.00088 |
| I15 | | 0.00149 |
| I16 | | 0.002 |
| I17 | | 0.00102 |
| I18 | | 0.0019 |

✓Complies × Non-compliance

Figure 7-17: Xylene 1 Hour Averaging Period Modelling Results



# 8. CONCLUSION

Benbow Environmental has been engaged by Stateline Asphalt Pty Ltd to prepare an Air Quality Impact Assessment for the proposed asphalt batching plant at 133 Somersby Falls Road, Somersby NSW to support an Environmental Impact Statement.

The proposed development will comply with the Approved Methods criteria for all pollutants of concern at all receptors.

Vida Nodehi
Graduate Environmental Scientist

Emma Hansma
Senior Engineer

R T Benbow
Principal Consultant

# 9. LIMITATIONS

Our services for this project are carried out in accordance with our current professional standards for site assessment investigations. No guarantees are either expressed or implied.

This report has been prepared solely for the use of Stateline Asphalt Pty Ltd, as per our agreement for providing environmental services. Only Stateline Asphalt Pty Ltd is entitled to rely upon the findings in the report within the scope of work described in this report. Otherwise, no responsibility is accepted for the use of any part of the report by another in any other context or for any other purpose.

Although all due care has been taken in the preparation of this study, no warranty is given, nor liability accepted (except that otherwise required by law) in relation to any of the information contained within this document. We accept no responsibility for the accuracy of any data or information provided to us by Stateline Asphalt Pty Ltd for the purposes of preparing this report.

Any opinions and judgements expressed herein, which are based on our understanding and interpretation Environmental of current regulatory standards, should not be construed as legal advice.

# STATELINE ASPHALT BATCHING PLANT
# NOISE AND VIBRATION IMPACT ASSESSMENT
# 133 SOMERSBY FALLS ROAD, SOMERSBY NSW 2250

***Prepared for:*** Paul Anderson, PM Anderson Consulting Pty Ltd
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NSW Environment Protection Agency
NSW Department of Planning and Environment

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***Report No:*** 221145_NIA_Rev2
November 2023
(Released: 10 November 2023)

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# EXECUTIVE SUMMARY

Benbow Environmental has been engaged by Stateline Asphalt Pty Ltd to prepare a Noise and Vibration Impact Assessment for an asphalt batching plant at 125 Somersby Falls Road, Somersby NSW 2250 (Lot 2 DP712505 This report has been completed as part of an Environmental Impact Statement (EIS) for the proposed development. It was prepared after the issue of the Secretary's environmental assessment requirements (SEARs) number 1655.

The proposed development includes installation of an asphalt mixing plant with a capacity to produce approximately 200 tonnes of asphalt per hour would generate up to 200,000 tonnes of new asphalt material per annum. This noise report assesses contributions from the proposed asphalt plant operations.

The nearest receivers and the noise generating activities have been identified. Noise criteria for the project have been formed, with assessment of the proposed site activities conducted against the NSW Noise Policy for Industry (EPA, 2017), NSW Interim Construction Guidelines (DECCW, 2009) and the NSW Road Noise Policy (DECCW, 2011). Modelling of the activities was conducted using the noise modelling software SoundPlan.

This noise impact assessment finds that predicted noise levels exceed the Noise Policy for Industry 2017 Project Noise Trigger Levels for a residential land use at R1 (126 Somersby Falls Road). Additionally sleep disturbance $L_{Amax}$ levels are exceeded from trucks entering and leaving the site. As asphalt batching plants require truck movements during night-time hours due to road works occurring at these times, compliance at this receiver is not considered achievable.

Based on consultation with the neighbour, R1 is looking to be re-zoned to industrial, and considering the surrounding land zoning, it would be an appropriate planning decision. Therefore, exceedances of the residential criteria will not be of concern, and it is recommended the operational certificate not be issued until rezoning of this property is complete. Operational noise is predicted to comply with all other residential receptors with the noise controls presented in Section 7.4.

The predicted noise levels associated with construction exceed the noise management level at residential receiver R1, compliance is achieved at all other receivers. None of the predicted noise levels exceed the highly noise affected management level of 75 dB(A). Standard construction hours and universal work practices are recommended.

The site is predicted to comply with the Road Noise Policy.

Vibration impacts from the proposed asphalt batching plant are considered negligible.

Prasanna Manoharan
Graduate Chemical Engineer

Bethany Carlyon
Graduate Environmental Scientist

R T Benbow
Principal Consultant

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Attachment 1: Noise Terminology
Attachment 2: Calibration Certificates
Attachment 3: QA/QC Procedures
Attachment 4: Daily Noise Logger Charts

# 1. INTRODUCTION

Benbow Environmental has been engaged by Stateline Asphalt Pty Ltd to prepare a Noise and Vibration Impact Assessment for an asphalt batching plant at 125 Somersby Falls Road, Somersby NSW 2250 (Lot 2 DP712505). This report has been completed as part of an Environmental Impact Statement (EIS) for the proposed development. It was prepared after the issue of the Secretary's environmental assessment requirements (SEARs) number 1655.

The proposed development includes installation of an asphalt mixing plant with a capacity to produce approximately 200 tonnes of asphalt per hour would generate up to 200,000 tonnes of new asphalt material per annum.

The asphalt plant would consist of several components including a control system, vibrating screens, dryers, burners, mixers, weighing equipment, aggregate storage and hot storage silos for bitumen with circulation and supply equipment. The plant would also be equipped with a dust collection system to capture any dust generated by the process. The plant would be designed so that the individual components are concealed from public view to maintain visual amenity of the area. The company is currently in discussions with suppliers to determine the most effective options for plant design. The facility will operate 24 hours per day, 7 days per week.

The potential noise impacts of operational and road traffic activities on the nearby receivers have been predicted utilising noise modelling software, SoundPlan. This noise impact assessment has been prepared in accordance with the following guidelines and documents:

- NSW Noise Policy for Industry (EPA, 2017);
- NSW Interim Construction Guideline (DECCW, 2009);
- NSW Road Noise Policy (RNP) (DECCW, 2011);
- British Standard BS 7385–Part 2: 1993 '*Evaluation and measurement for vibration in buildings*';
- German standard DIN4150–Part 3: 1999 '*Structural Vibration Part 3 – effects of vibration on structures*'; and
- The *Assessing Vibration – A Technical Guideline* (DEC, 2006).

## 1.1 SCOPE OF WORKS

This noise impact assessment has been limited to the following scope of works:

a) Review of proposed plans and operations;
b) Long term and short term ambient and background noise monitoring in accordance with relevant guidelines;
c) Identify project specific noise levels;
d) Determine all potential noise sources associated with the proposed development;
e) Collect required noise source data;
f) Predict potential noise impacts at the nearest potentially affected receptors to the site;
g) Assess potential noise impacts against relevant legislation and guidelines;
h) Recommend control measures where required; and
i) Compile this report with concise statements of potential noise impact.

To aid in the review of this report, supporting documentation has been included within the Attachments. A glossary of terminology is included in Attachment 1.

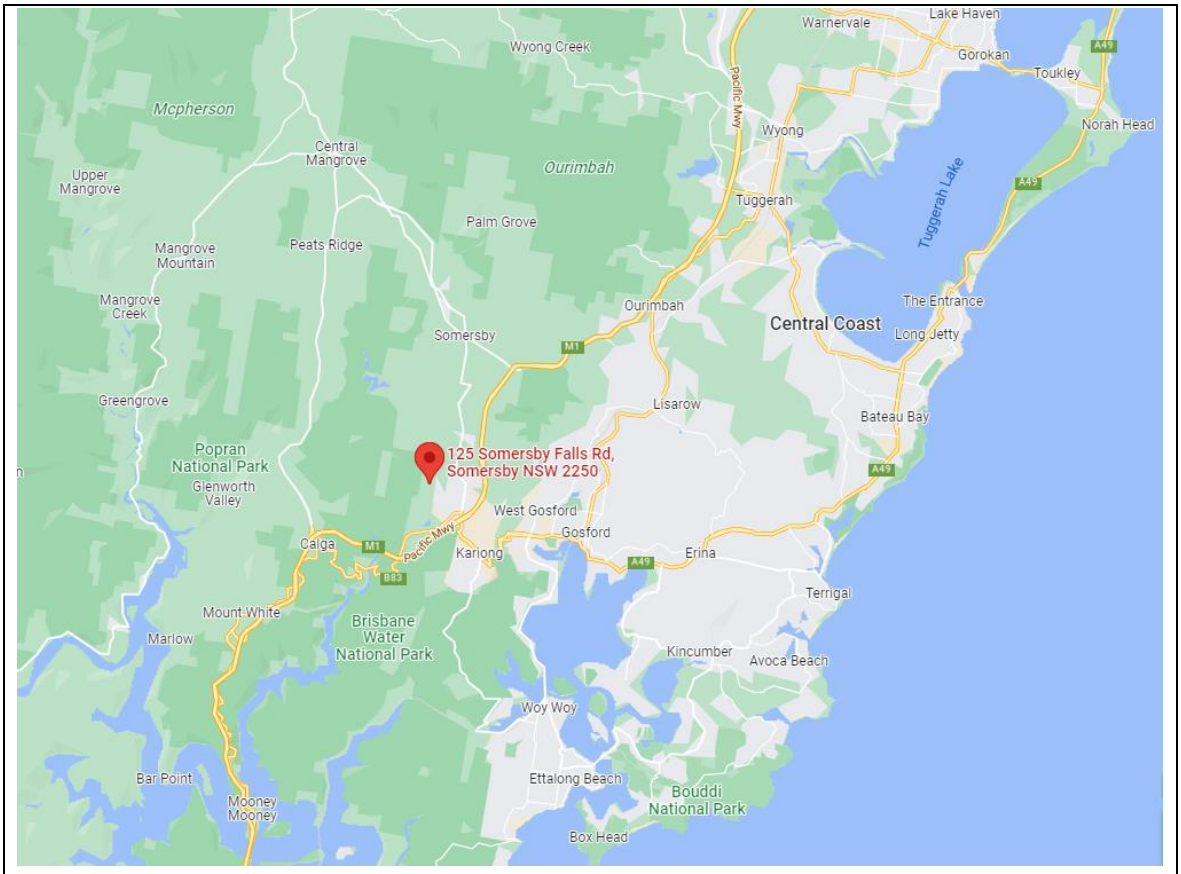
# 2. LOCATION AND SETTING

## 2.1 SITE LOCATION

The site is located at 125 Somersby Falls Road, Somersby NSW 2250. It is legally designated as Lot 2 DP712505. The site is located within an industrial and rural area, which is surrounded by other industry buildings to the north, east and south a large expanse of flora, fauna and waterways to the west and further around the industrial area.

The site has an area of approximately 1 ha within a 7.5 ha and can be accessed from Somersby Falls Road. The site is situated in IN1 – General Industrial land use zoning under the Central Coast Local Environmental Plan (LEP) 2022, though it is noted that the entirety of the address and lot number are also partly designated as RU1 – Primary Production. It is located at the edge of an industrial precinct, adjacent receptors are industrial, rural and environmental. Figure 2-1 shows the site in a regional context., Figure 2-2 shows the site and the surrounding area.

Figure 2-1: Site Location in a regional context




**Source:** Google Maps 2022

| | | |
|---|---|---|
| N<br>Not to scale | | Benbow Environmental<br>25-27 Sherwood Street,<br>Northmead NSW 2152 |

Figure 2-2: Site and Surrounding Area

**Source:** Google Earth 2020

| | | |
|---|---|---|
| ↑N<br>Not to scale | | Benbow Environmental<br>25-27 Sherwood Street,<br>Northmead NSW 2152 |

## 2.2 HOURS OF OPERATIONS

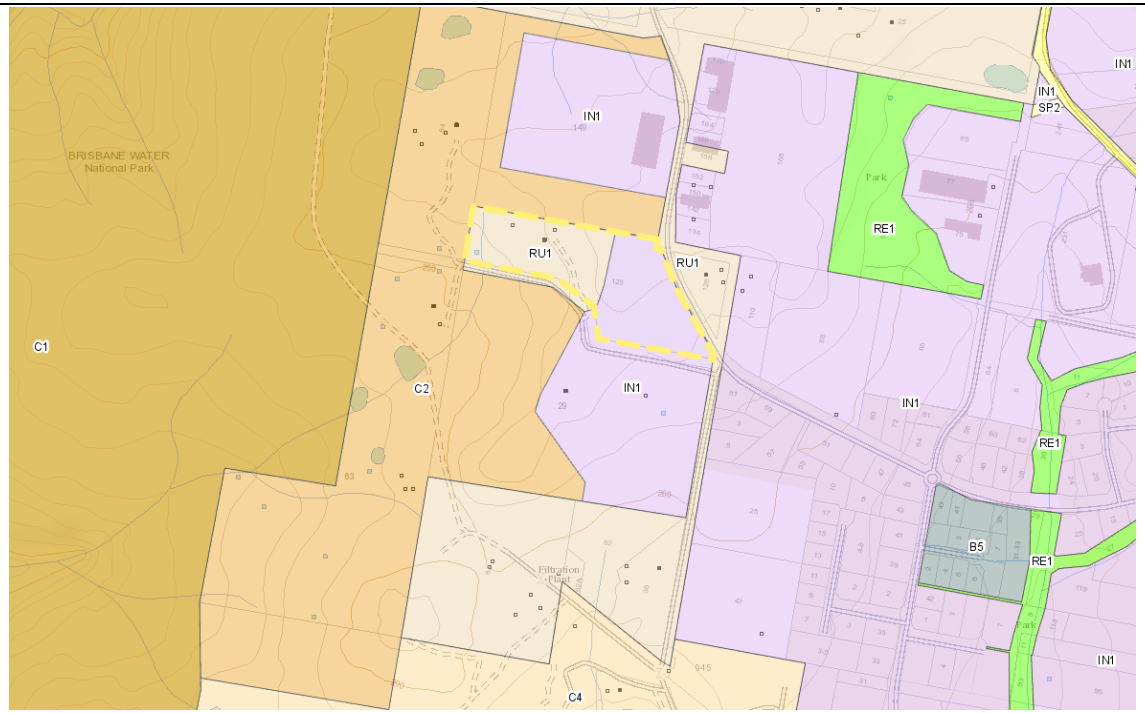
The proposed facility will seek 24/7 approval.

## 2.3 DESCRIPTION OF THE SURROUNDING AREA

The site and remaining areas within the lot number are located within land zoned IN1 – General Industrial and RU1 – Primary Production under the Central Coast Local Environment Plan 2022. Immediately surrounding the lot are RU1 to the east, C2 – Environmental Conservation to the north, west and south and IN1 to the south also. Further surrounds are IN1 to north, east, and south, RU1 to the north and south, C1 – National Parks and Nature Reserves to the west and C4 – Environmental Living to the south. The land zoning map is shown below in Figure 2-3.

**Note:** A reference to an Environment Protection zone E1, E2, E3 or E4 within a Land Zoning Map should be taken to be a reference to a Conservation zone C1, C2, C3 or C4. For further information please see Standard Instrument (Local Environmental Plans) Amendment (Land Use Zones) Order 2021.

Figure 2-3: Land Zoning Map




**Source:** ePlanning Spatial Viewer 2022

↑N
Not to scale

LEGEND
Site boundary

**Zone**

| | | | | | |
|---|---|---|---|---|---|
| B1 | Neighbourhood Centre | E1 | National Parks and Nature Reserves | RE1 | Public Recreation |
| B2 | Local Centre | E2 | Environmental Conservation | RE2 | Private Recreation |
| B3 | Commercial Core | E3 | Environmental Management | RU1 | Primary Production |
| B4 | Mixed Use | E4 | Environmental Living | RU2 | Rural Landscape |
| B5 | Business Development | IN1 | General Industrial | RU3 | Forestry |
| B6 | Enterprise Corridor | IN4 | Working Waterfront | RU5 | Village |
| | | R1 | General Residential | SP1 | Special Acitivites |
| | | R2 | Low Density Residential | SP2 | Infrastructure |

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## 2.4 NEAREST SENSITIVE RECEPTORS

Table 2-1 provides the list of the nearest identified receptors that have the potential to be affected by the processes at the subject site. These receptors were selected based on their proximity and directional bearing from the subject site.

Figure 2-4 shows an aerial of the site and nearest sensitive receptors.

Table 2-1: Nearest Potentially Affected Receivers Considered

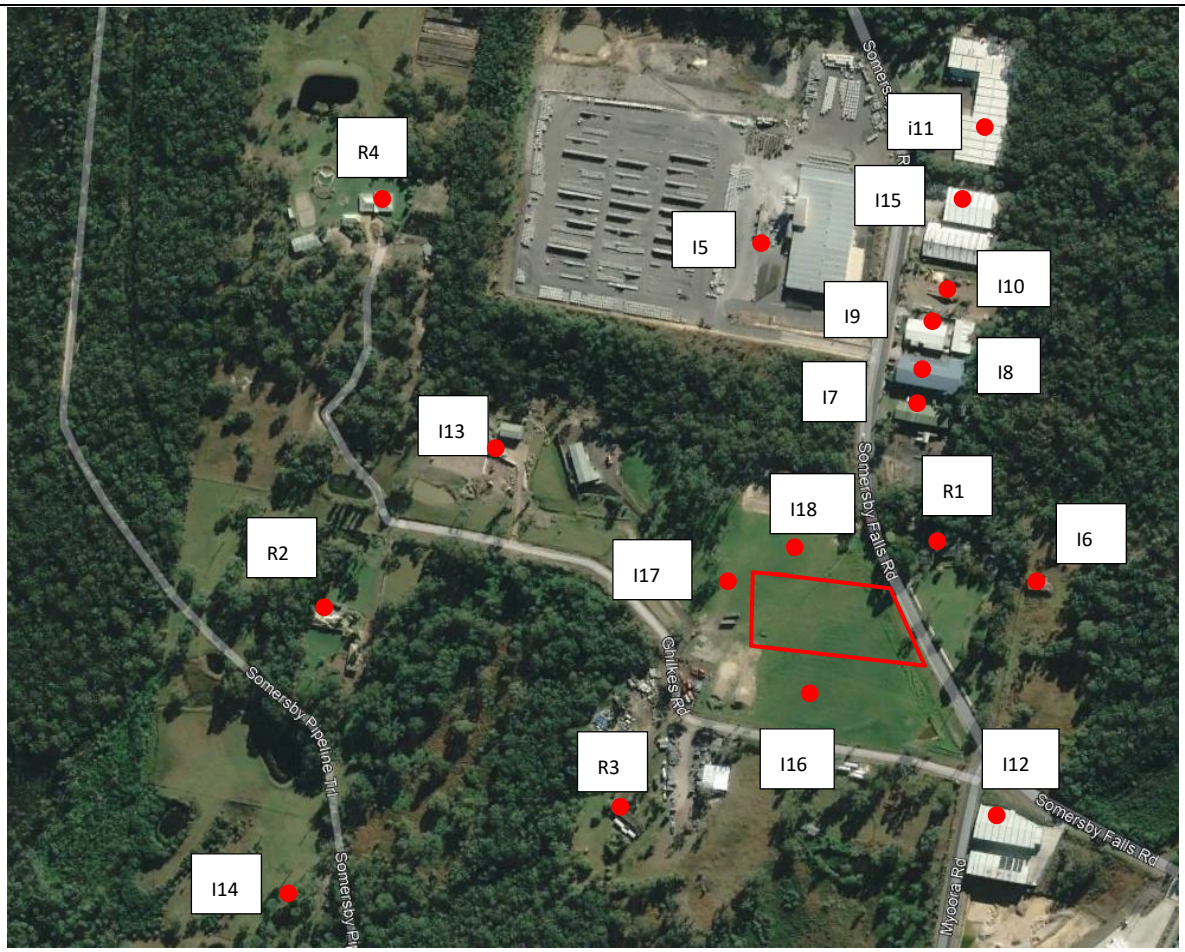
| Receptor ID | Address | Lot & DP | Approx. Distance from Proposed Development | Direction from Site | Type of Receptor |
|---|---|---|---|---|---|
| R1 | 126 Somersby Falls Road, Somersby | 1/ DP712505 | 35 m | E | Residential |
| R2 | 63 Ghilkes Road Somersby | 502/ DP712506 | 350 m | W | Residential |
| R3 | 29 Ghilkes Road, Somersby | 3/ DP712505 | 60 m | S | Residential/ Commercial |
| R4 | 64 Ghilkes Road, Somersby | 501/ DP712506 | 340 m | NW | Residential/ Commercial |
| I5 | 149 Somersby Falls Road, Somersby | 4/ DP654894 | 160 m | N | Industrial |
| I6 | 110 Somersby Falls Road, Somersby | 1/ DP510364 | 60 m | E | Industrial |
| I7 | 134 Somersby Falls Road, Somersby | 1/ DP787857 | 140 m | NE | Industrial |
| I8 | 142 Somersby Falls Road, Somersby | 2/ DP787857 | 200 m | NE | Industrial |
| I9 | 150 Somersby Falls Road, Somersby | 3/ DP787857 | 240 m | NE | Industrial |
| I10 | 156 Somersby Falls Road, Somersby | 91/ DP546768 | 305 m | NE | Industrial |
| I11 | 170 Somersby Falls Road | 7/ DP787857 | 435 m | NE | Industrial |
| I12 | 2/61 Somersby Falls Road, Somersby | 29/ DP1093201 | 130 m | S | Industrial |
| I13 | 125 Somersby Falls Road, Somersby | 5/ DP1292653 | 229 m | NW | Industrial |
| I14 | 63 Ghilkes Road, somersby | 502/ DP712506 | 590 m | SW | Industrial |
| I15 | 164 Somersby Falls Road, Somersby | 6/ DP787857 | 363 m | NE | Industrial |
| I16 | 129 Somersby Falls Road, Somersby | 4/ DP1292653 | 30 m | S | Industrial |
| I17 | 125 Somersby Falls Road, Somersby | 5/ DP1292653 | 48 m | W | Industrial |

Table 2-1: Nearest Potentially Affected Receivers Considered

| Receptor ID | Address | Lot & DP | Approx. Distance from Proposed Development | Direction from Site | Type of Receptor |
|---|---|---|---|---|---|
| I18 | 139 Somersby Falls Road, Somersby | 2/ DP1292653 | 35 m | N | Industrial |

**Note:** distances measured from the boundaries of the site

Figure 2-4: Aerial Photograph of the Project Site Location and the Nearest Potentially Affected Receptors




**Source: Google Earth 2022**

| | | |
|---|---|---|
| N<br>Not to scale | LEGEND:<br>Site<br>Receptor | Benbow Environmental<br>25-27 Sherwood Street<br>Northmead NSW 2152 |

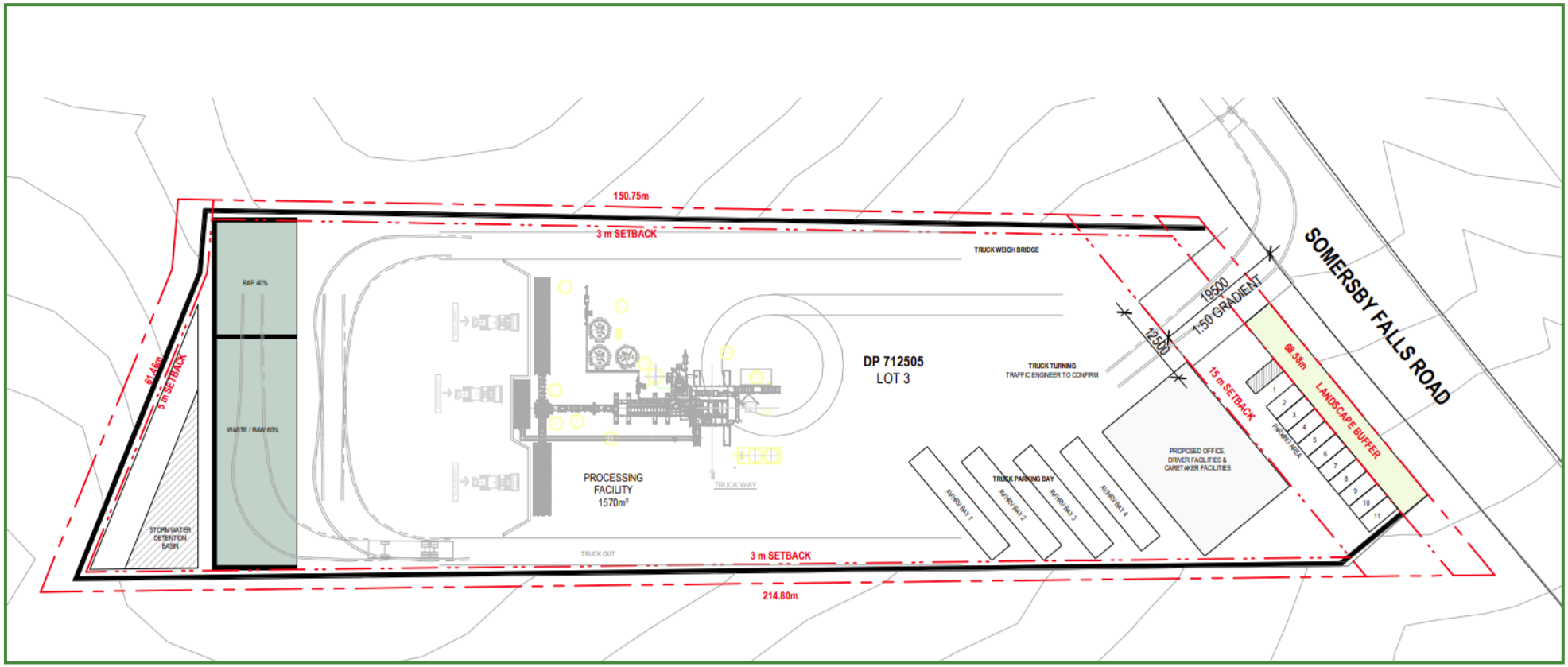
# 3. PROPOSED DEVELOPMENT

The proposed development includes the construction and operation of an asphalt batching plant that will produce up to 200,000 tonnes per annum (tpa), a RAP yard, office and depot.

The asphalt batching plant produces coated roadstone, such as asphalt concrete, using a variety of aggregates, sand, and filler materials in precise proportions. The plant begins by crushing the raw materials, including reclaimed asphalt pavement (RAP), to the desired size. The RAP is then combined with new materials in the correct proportions and heated in a drum dryer. A binder, bitumen, is added to the mixture, and the temperature is carefully controlled to ensure the final product is workable.

The plant has several components, including a cold aggregate supply system, this is fed from storage bays via front end loader into hoppers, a drum dryer, a dust collector, a hot aggregate elevator, a vibrating screen, a filler supply system, a weighing and mixing (pugmill) system, a pollution control unit, asphalt storage, and a bitumen supply system. The quality of the asphalt produced is affected by each of these components, as well as the proportion of recycled asphalt used.

Figure 3-1: Site Plan



# 4. EXISTING ACOUSTIC ENVIRONMENT

The level of background noise varies over the course of any 24 hour period, typically from a minimum at 3.00am to a maximum during morning and afternoon traffic peak hours. Therefore, the NSW EPA Noise Policy for Industry (2017) requires that the level of background and ambient noise be assessed separately for the daytime, evening and night time periods. The Noise Policy for Industry defines these periods as follows:

- **Day** – the period from 7am to 6pm Monday to Saturday or 8am to 6pm on Sundays and public holidays;
- **Evening** – the period from 6pm to 10pm; and
- **Night** – the remaining periods.

## 4.1 NOISE MONITORING EQUIPMENT AND METHODOLOGY

Background noise level measurements were carried out using a Svantek SVAN 957 Precision Sound Level Meter (attended noise monitoring) and two (2) Acoustic Research Laboratories statistical Environmental Noise Loggers, type EL-215 (unattended noise monitoring). The instrument sets were calibrated by a NATA accredited laboratory within two years of the measurement period. Calibration certificates have been included in Attachment 2.

To ensure accuracy and reliability in the results, field reference checks were applied both before and after the measurement period with an acoustic calibrator. There were no excessive variances observed in the reference signal between the pre-measurement and post-measurement calibration. The instruments were set on A-weighted Fast response and noise levels were measured over 15-minute statistical intervals. QA/QC procedures applied for the measurement and analysis of noise levels have been presented in Attachment 3. The microphones were fitted with windsocks and were positioned between 1.2 metres and 1.5 metres above ground level. Details of the instrumentation and setting utilised are provided in Table 4-1.

Table 4-1: Noise Monitoring Locations

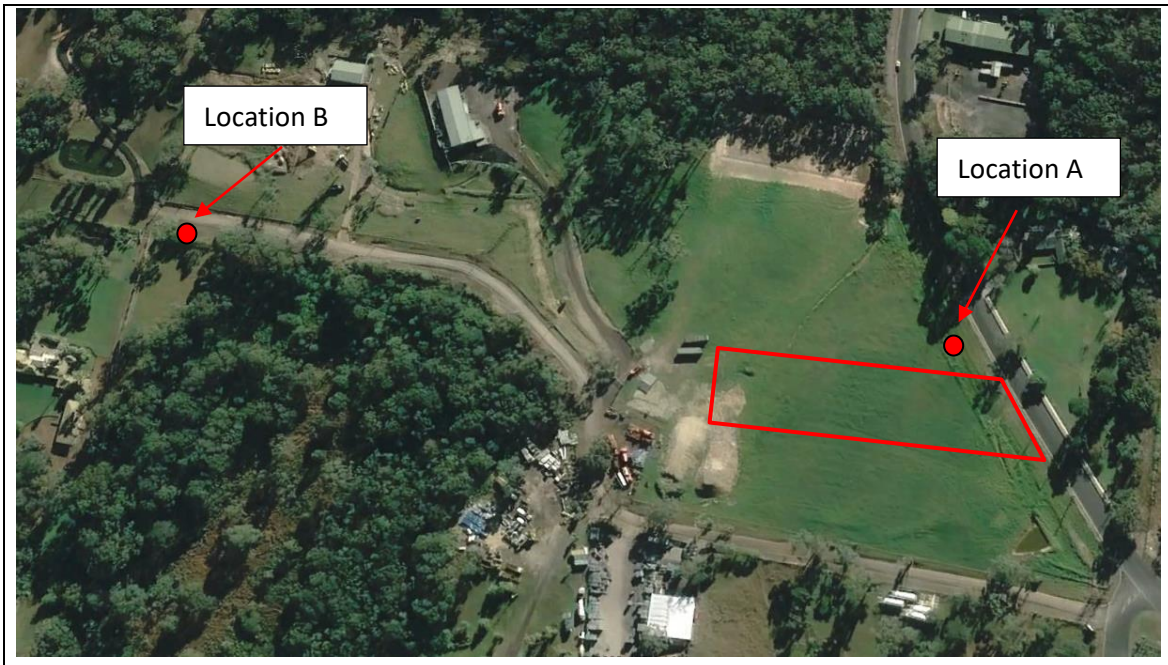
| Location | Type of Monitoring | Serial Number | Address |
|---|---|---|---|
| A | Unattended and attended monitoring | 87823C | 126 Somersby Falls Road, Somersby |
| B | Unattended and attended monitoring | 194552 | 29 Ghilkes Road, Somersby |

## 4.2 MEASUREMENT LOCATION

Unattended long-term noise monitoring was undertaken from 30th November 2022 to 9th December 2022 at two representative locations, as shown in Figure 4-1. The logger at the site location captured the existing road noise also.

Attended noise monitoring was undertaken at the same locations on 30th November 2022.

Figure 4-1: Noise Logging Locations




**Source:** Six Maps 2019

| | | |
|---|---|---|
| ↑N<br>Not to scale | **Legend**:<br>Noise logging and Attended location ●<br>Site Boundaries ▭ | Benbow Environmental<br>25-27 Sherwood Street,<br>Northmead NSW 2152 |

## 4.3 MEASURED NOISE LEVELS

### 4.3.1 Long-Term Unattended Noise Monitoring Results

The data was analysed to determine a single assessment background level (ABL) for each day, evening and night time period, in accordance with the NSW EPA Noise Policy for Industry. That is, the ABL is established by determining the lowest tenth-percentile level of the $L_{A90}$ noise data over each period of interest. The background noise level or rating background level (RBL) representing the day, evening and night assessment periods is based on the median of individual ABL's determined over the entire monitoring period.

The results of the long-term unattended noise monitoring are displayed in Table 4-2. Daily noise logger graphs have been included in Attachment 3.

Table 4-2: Unattended Noise Monitoring Results Location A, dB(A)

| Date | Average $L_1$ | | | Average $L_{10}$ | | | ABL ($L_{90}$) | | | $L_{eq}$ | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Day | Evening | Night | Day | Evening | Night | Day | Evening | Night | Day | Evening | Night |
| 30/11/2022 | 66 | 58 | 56 | 58 | 50 | 54 | 43 | 41 | 41 | 78 | 52 | 53 |
| 1/12/2022 | 64 | 62 | 56 | 54 | 53 | 48 | 43 | 42 | 39 | 56 | 56 | 51 |
| 2/12/2022 | 65 | 56 | 56 | 56 | 50 | 50 | 45 | 41 | 40 | 55 | 52 | 51 |
| 3/12/2022 | 58 | 56 | 52 | 49 | 47 | 45 | 38 | 38 | 33 | 50 | 53 | 46 |
| 4/12/2022 | 58 | 57 | 49 | 49 | 51 | 43 | 34 | 40 | 32 | 51 | 54 | 44 |
| 5/12/2022 | 64 | 64 | 53 | 53 | 57 | 45 | 37 | 43 | 33 | 54 | 60 | 48 |
| 6/12/2022 | 64 | 57 | 54 | 55 | 50 | 47 | 44 | 41 | 40 | 54 | 52 | 49 |
| 7/12/2022 | 65 | 61 | 54 | 53 | 53 | 46 | 35 | 34 | 31 | 54 | 59 | 49 |
| 8/12/2022 | 64 | 57 | 54 | 54 | 49 | 46 | 42 | 42 | 35 | 54 | 51 | 49 |
| 9/12/2022 | 68 | - | 55 | 56 | - | 48 | 44 | - | 34 | 56 | - | 51 |
| **Average** | **64** | **59** | **54** | **54** | **51** | **47** | * | * | * | * | * | * |
| **Median (RBL)** | * | * | * | * | * | * | **42** | **41** | **35** | * | * | * |
| **Logarithmic Average** | * | * | * | * | * | * | * | * | * | **68** | **55** | **50** |

**Note:** - indicates values that has not been considered due to adverse weather conditions.
* Indicates values that are not relevant to that noise descriptor.
Value in bold indicates relevant noise descriptor.

Table 4-3: Unattended Noise Monitoring Results Location B, dB(A)

| Date | Average $L_1$ | | | Average $L_{10}$ | | | ABL ($L_{90}$) | | | $L_{eq}$ | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Day | Evening | Night | Day | Evening | Night | Day | Evening | Night | Day | Evening | Night |
| 30/11/2022 | 60 | 51 | 46 | 50 | 44 | 42 | 30 | 38 | 36 | 74 | 46 | 48 |
| 1/12/2022 | 51 | 48 | 46 | 44 | 45 | 42 | 37 | 39 | 34 | 44 | 43 | 42 |
| 2/12/2022 | 52 | 50 | 49 | 46 | 46 | 45 | 39 | 39 | 36 | 45 | 45 | 44 |
| 3/12/2022 | 55 | 49 | 50 | 48 | 45 | 44 | 34 | 35 | 35 | 57 | 45 | 45 |
| 4/12/2022 | 52 | 49 | 48 | 44 | 46 | 43 | 33 | 37 | 31 | 45 | 45 | 43 |
| 5/12/2022 | 53 | 54 | 48 | 45 | 49 | 43 | 35 | 41 | 34 | 45 | 49 | 43 |
| 6/12/2022 | 54 | 50 | 48 | 46 | 46 | 45 | 35 | 36 | 38 | 45 | 45 | 44 |
| 7/12/2022 | 52 | 52 | 49 | 44 | 48 | 43 | 35 | 36 | 34 | 44 | 46 | 44 |
| 8/12/2022 | 54 | 49 | 49 | 47 | 44 | 44 | 38 | 39 | 35 | 46 | 43 | 44 |
| 9/12/2022 | 56 | - | 48 | 45 | - | 42 | 35 | - | 33 | 62 | - | 42 |
| **Average** | **54** | **50** | **48** | **46** | **46** | **43** | * | * | * | * | * | * |
| **Median (RBL)** | * | * | * | * | * | * | **35** | **38** | **34** | * | * | * |
| **Logarithmic Average** | * | * | * | * | * | * | * | * | * | **64** | **45** | **44** |

**Note:** - indicates values that has not been considered due to adverse weather conditions.
* Indicates values that are not relevant to that noise descriptor.
Value in bold indicates relevant noise descriptor.

### 4.3.2 Short-Term Attended Noise Monitoring Results

Given that the results of the unattended noise monitoring are affected by all ambient noise sources such as local fauna, road traffic and industrial sources, it is not possible to determine with precision the exact existing industrial noise contribution based on unattended monitoring alone. Therefore, the attended noise monitoring allows for a more detailed understanding of the existing ambient noise characteristics and a more meaningful final analysis to be undertaken. The results of the short-term attended noise monitoring are displayed in Table 4-4.

Table 4-4: Attended Noise Monitoring Results, dB(A)

| Location / Time | Address | Noise Descriptor | | | | Comments |
|---|---|---|---|---|---|---|
| | | $L_{Aeq}$ | $L_{A90}$ | $L_{A10}$ | $L_{A1}$ | |
| Location A<br><br>30/11/2022 16:47 | 126 Somersby Falls Road, Somersby | 52 | 44 | 57 | 63 | *Cars < 62 dB(A)*<br>*Distant Traffic < 50 dB(A)*<br>*Wind, < 51 dB(A)*<br>*Birds< 49 dB(A)*<br>*Machinery < 49 dB(A)* |
| Location B<br><br>30/11/2022 17:35 | 29 Ghilkes Road, Somersby | 47 | 39 | 49 | 58 | *Cars < 57 dB(A)*<br>*Trucks < 55 dB(A)*<br>*Wind, < 51 dB(A)*<br>*Birds< 65 dB(A)*<br>*Helicopter < 65 dB(A)*<br>*Plane <49 dB(A)* |

### 4.3.3 Existing Road Traffic Noise

Existing road traffic noise levels have been obtained from the unattended environmental noise logger located at the site 126 Somersby Falls Road.

Table 4-5 shows the results of the long term unattended road traffic noise monitoring. Daily noise logger graphs have been included in Attachment 3.

Table 4-5: Existing Road Traffic Noise Data for Location A

| Date | Existing Road Traffic Noise – dB(A) | | | |
|---|---|---|---|---|
| | Daytime (7am to 10pm) | | Nightime (10pm to 7am) | |
| | $L_{eq\ (15\ hour)}$ | $L_{eq\ (1\ hour)}$ | $L_{eq\ (9\ hour)}$ | $L_{eq\ (1\ hour)}$ |
| 30/11/2022 | 78 | 80 | 51 | 51 |
| 1/12/2022 | 56 | 57 | 47 | 50 |
| 2/12/2022 | 55 | 56 | 50 | 51 |
| 3/12/2022 | 48 | 50 | 45 | 46 |
| 4/12/2022 | 48 | 51 | 41 | 44 |
| 5/12/2022 | 55 | 56 | 45 | 48 |
| 6/12/2022 | 54 | 54 | 47 | 49 |
| 7/12/2022 | 54 | 55 | 45 | 48 |
| 8/12/2022 | 54 | 54 | 46 | 49 |
| 9/12/2022 | 57 | 57 | 45 | 47 |
| **Overall LEq** | 54 | 55 | 46 | 49 |

*excluding 30/11/2022

Based on the results of the noise logging undertaken, the road traffic noise levels measured on Somersby Falls road for day time $L_{eq\ (1\ hour)}$ of 55 dB(A) and night time $L_{eq\ (1\ hour)}$ of 49 dB(A).

# 5. METEOROLOGICAL CONDITIONS

Wind and temperature inversions may affect the noise emissions from the site and are to be incorporated in the assessment when considered to be a feature of the area.

A site-representative meteorological data file was obtained from the Bureau of Meteorology (BOM) for the Mangrove Mountain AWS NSW (AWS ID 061375), approximately 11 km away from the site. In this Section, an analysis of the 2019 weather data has been conducted to establish whether significant winds are characteristic of the area.

## 5.1 WIND EFFECTS

Wind is considered to be a feature where source-to-receiver wind speeds (at 10 m height) of 3 m/s or below occur for 30% or more of the time in any assessment period in any season.

### 5.1.1 Wind Rose Plots

Wind rose plots show the direction that the wind is coming from, with triangles known as "petals". The petals of the plots in the figures summarise wind direction data into 8 compass directions i.e. north, north-east, east, south-east, etc. The length of the triangles, or "petals", indicates the frequency that the wind blows from that direction. Longer petals for a given direction indicate a higher frequency of wind from that direction. Each petal is divided into segments, with each segment representing one of the six wind speed classes.

Thus, the segments of a petal show what proportion of wind for a given direction falls into each class. The proportion of time for which wind speed is less than 0.5 m/s, when speed is negligible, is referred to as calm hours or "calms". Calms are not shown on a wind rose as they have no direction, but the proportion of time consisting of the period under consideration is noted under each wind rose.

The concentric circles in each wind rose are the axis, which denote frequencies. In comparing the plots it should be noted that the axis varies between wind roses, although all wind roses are similar in size. The frequencies denoted on the axes are indicated beneath each wind rose.

### 5.1.2 Local Wind Trends

Seasonal wind rose plots for this site utilising Mangrove Mountain AWS 2019 data have been included in Figure 5-1, Figure 5-2 and Figure 5-3 for day, evening and night periods respectively.

Figure 5-1: Wind Rose Plots – BOM Mangrove Mountain AWS ID 061375 – 2019 – Day time

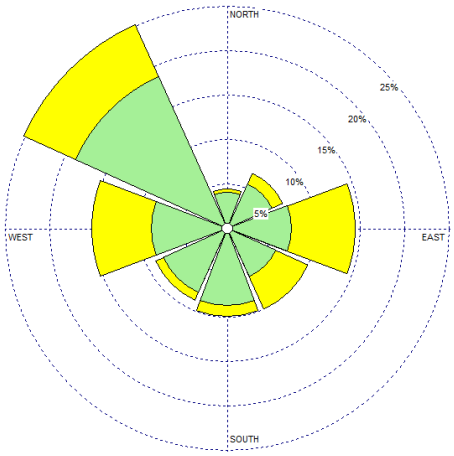
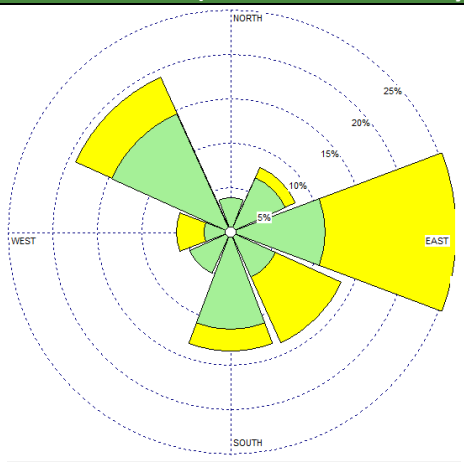
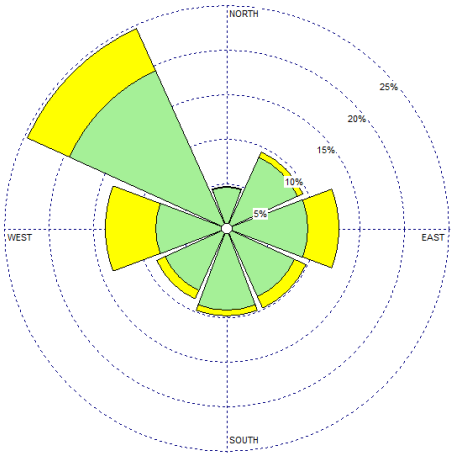
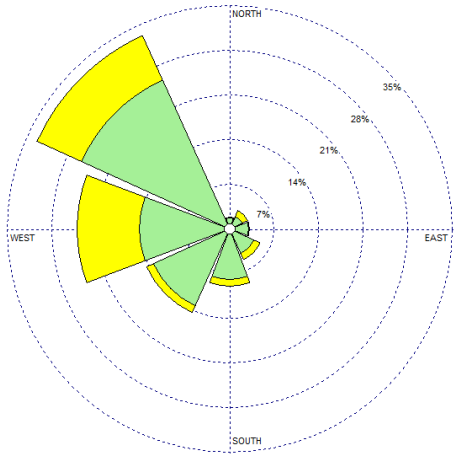
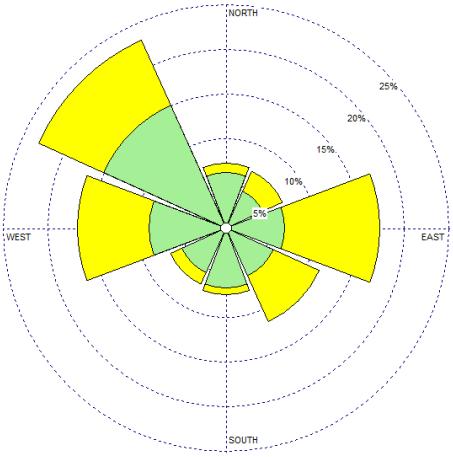
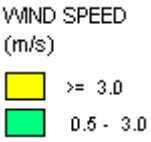
| All Seasons | Summer Season (December – February) |
|---|---|
|  |  |
| Average Wind Speed: 2.32 m/s<br>Calms Frequency: 5.17%<br>Axis Frequencies: 5%, 10%, 15%, 20%, 25% | Average Wind Speed: 2.44 m/s<br>Calms Frequency: 4.72%<br>Axis Frequencies: 5%, 10%, 15%, 20%, 25% |
| **Autumn Season (March – May)** | **Winter Season (June – August)** |
|  |  |
| Average Wind Speed: 2.04 m/s<br>Calms Frequency: 5.97%<br>Axis Frequencies: 5%, 10%, 15%, 20%, 25% | Average Wind Speed: 2.16 m/s<br>Calms Frequency: 5.38%<br>Axis Frequencies: 7%, 14%, 21%, 28%, 35% |
| **Spring Season (September – November)** | **Legend** |
|  |  |
| Average Wind Speed: 2.64 m/s<br>Calms Frequency: 2.58%<br>Axis Frequencies: 5%, 10%, 15%, 20%, 25% | |

Figure 5-2: Wind Rose Plots – BOM Mangrove Mountain AWS ID 061375 – 2019 – Evening time

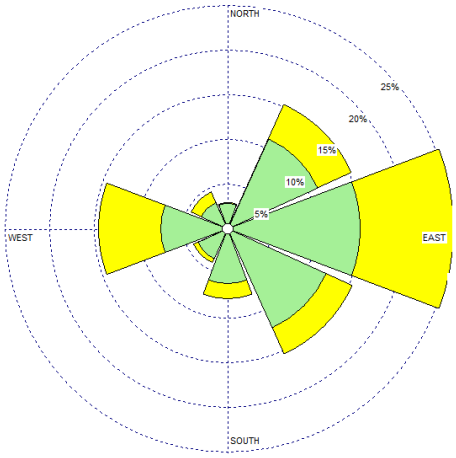
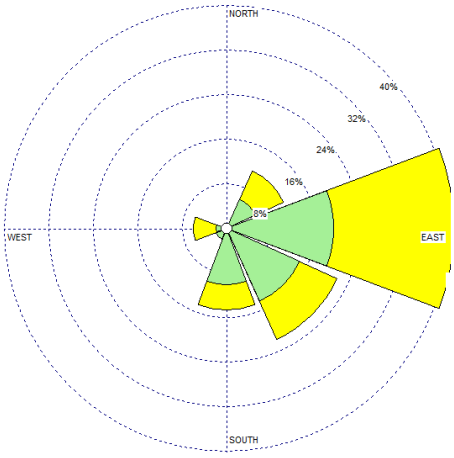
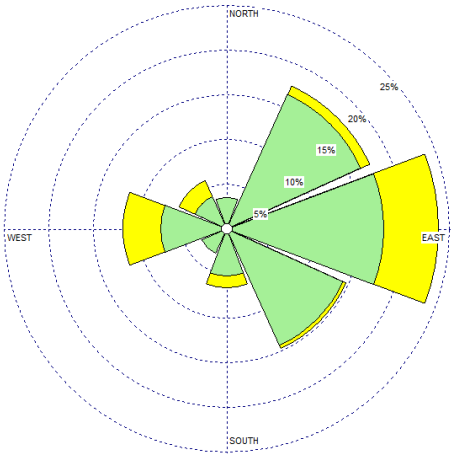
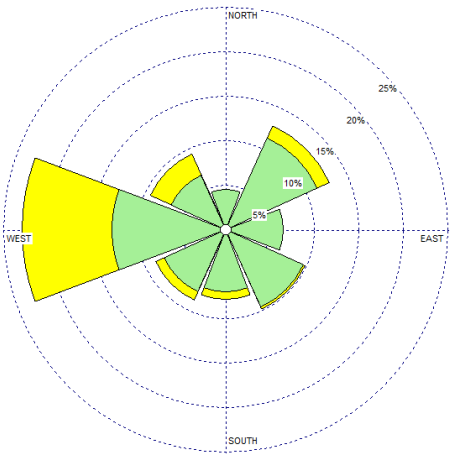
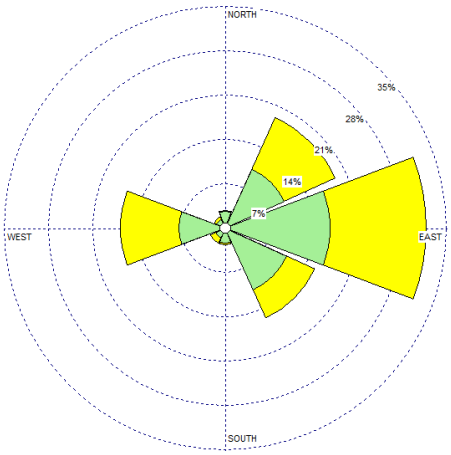
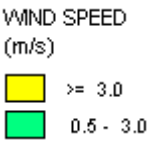
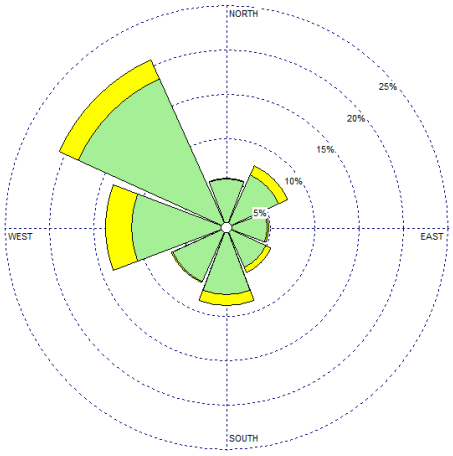
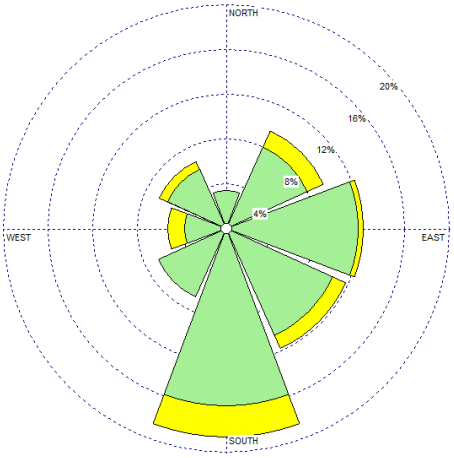
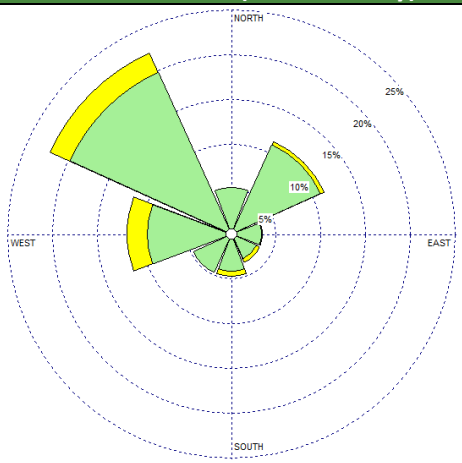
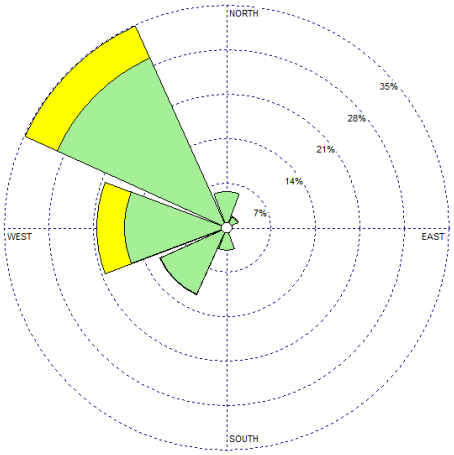
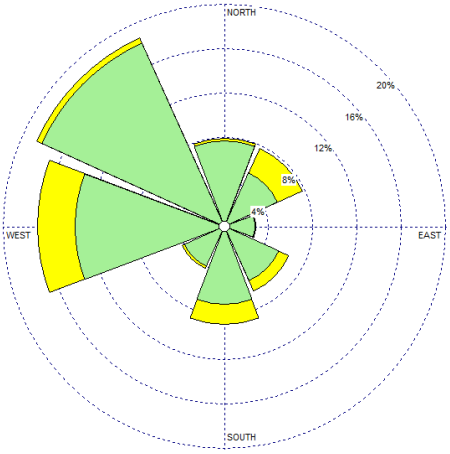
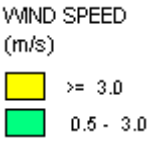
| All Seasons | Summer Season (December – February) |
|---|---|
|  |  |
| Average Wind Speed: 2.15 m/s<br>Calms Frequency: 9.40%<br>Axis Frequencies: 5%, 10%, 15%, 20%, 25% | Average Wind Speed: 2.80 m/s<br>Calms Frequency: 1.73%<br>Axis Frequencies: 8%, 16%, 24%, 32%, 40% |
| **Autumn Season (March – May)** | **Winter Season (June – August)** |
|  |  |
| Average Wind Speed: 1.75 m/s<br>Calms Frequency: 9.87%<br>Axis Frequencies: 5%, 10%, 15%, 20%, 25% | Average Wind Speed: 1.57 m/s<br>Calms Frequency: 13.02%<br>Axis Frequencies: 5%, 10%, 15%, 20%, 25% |
| **Spring Season (September – November)** | **Legend** |
|  |  |
| Average Wind Speed: 2.56 m/s<br>Calms Frequency: 5.06%<br>Axis Frequencies: 7%, 14%, 21%, 28%, 35% | |

Figure 5-3: Wind Rose Plots – BOM Mangrove Mountain AWS ID 061375 – 2019 – Night time

| All Seasons | Summer Season (December – February) |
|---|---|
|  |  |
| Average Wind Speed: 1.20 m/s<br>Calms Frequency: 25.39%<br>Axis Frequencies: 5%, 10%, 15%, 20%, 25% | Average Wind Speed: 1.27 m/s<br>Calms Frequency: 21.90%<br>Axis Frequencies: 4%, 8%, 12%, 16%, 20% |
| **Autumn Season (March – May)** | **Winter Season (June – August)** |
|  |  |
| Average Wind Speed: 1.01 m/s<br>Calms Frequency: 28.27%<br>Axis Frequencies: 5%, 10%, 15%, 20%, 25% | Average Wind Speed: 1.29 m/s<br>Calms Frequency: 17.21%<br>Axis Frequencies: 7%, 14%, 21%, 28%, 35% |
| **Spring Season (September – November)** | **Legend** |
|  |  |
| Average Wind Speed: 1.23 m/s<br>Calms Frequency: 1.23%<br>Axis Frequencies: 4%, 8%, 12%, 16%, 20% | |

Appendix D2 of the Noise Policy for Industry (EPA, 2017), refers to utilising the Noise Enhancing Wind Analysis (NEWA) program on the NSW EPA website to determine the significance of source-to-receiver winds.

Table 5-1 below contains the noise wind component analysis from the NEWA software. Wind speeds are taken up to 3 m/s and wind direction is taken from source-to-receiver, plus and minus 45 degrees, as per appendix D2 of the Noise Policy for Industry.

It can be seen from Table 5-1 that there are multiple instances where during a period/season, more than 30% of wind speeds are less than 3 m/s in the plus and minus 45 degree arc from source to receiver.

Therefore, wind effects have been included in the assessment.

Table 5-1: Noise Wind Component Analysis 2019 Mangrove Mountain AWS

| Receiver | Day | | | | Evening | | | | Night | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Summer | Autumn | Winter | Spring | Summer | Autumn | Winter | Spring | Summer | Autumn | Winter | Spring |
| R1 | 7.0 | 16.3 | 27.6 | 13.1 | 6.4 | 10.6 | 21.5 | 11.5 | 11.6 | 12.6 | 25.0 | 17.1 |
| R2 | 21.5 | 18.6 | 7 | 19.4 | 36.7 | 36.4 | 16.6 | 34.1 | 16.9 | 8 | 0.8 | 5.1 |
| R3 | 18.4 | 16.1 | 4.2 | 16.2 | 26.7 | 32.3 | 17.4 | 27.5 | 16 | 12.4 | 2.4 | 7.2 |
| R4 | 22.7 | 22.2 | 11.6 | 17.1 | 33.6 | 20.1 | 14.7 | 19.5 | 22.6 | 4.5 | 1.9 | 10.4 |
| I5 | 12.6 | 13.9 | 8.4 | 8.8 | 21.9 | 10.1 | 9.5 | 9.6 | 17.7 | 3.6 | 1.6 | 8.8 |
| I6 | 8.1 | 16.6 | 30.4 | 16 | 5.3 | 11.1 | 25.3 | 11.3 | 9.9 | 18.5 | 32.2 | 21 |
| I7 | 14 | 18.4 | 21.7 | 12 | 18.6 | 9.2 | 16.3 | 6 | 23.8 | 8.1 | 14.3 | 12.8 |
| I8 | 14.9 | 18.9 | 22.1 | 12.1 | 19.2 | 9 | 15.8 | 5.8 | 25.8 | 8 | 13.3 | 13.1 |
| I9 | 14.9 | 19.1 | 21.8 | 12.4 | 19.7 | 9 | 15.5 | 5.5 | 26.2 | 8.2 | 13.2 | 12.8 |
| I10 | 14.7 | 19.2 | 21.4 | 12.3 | 20 | 8.7 | 16 | 5.8 | 26.3 | 8.2 | 12.6 | 13.2 |
| I11 | 14.8 | 19.1 | 21.8 | 12.4 | 19.7 | 9 | 15.5 | 5.5 | 26.2 | 8.2 | 13.2 | 12.8 |
| I12 | 16.1 | 23.8 | 33.3 | 21 | 1.1 | 10.3 | 19.3 | 8.5 | 12 | 31.4 | 46.1 | 33.8 |
| I13 | 23.7 | 21.8 | 8.4 | 19.8 | 37.5 | 24.7 | 14.1 | 25.3 | 19.4 | 3.4 | 1.3 | 8.2 |
| I14 | 20 | 19.1 | 5.4 | 16.7 | 28.9 | 34.2 | 16.6 | 31 | 16.9 | 11.5 | 1.6 | 5.5 |
| I15 | 15.1 | 19.1 | 21.9 | 12.4 | 19.7 | 9 | 15.5 | 5.5 | 26.2 | 8.2 | 13.2 | 12.8 |
| I16 | 13.0 | 15.9 | 10.4 | 13.8 | 3.3 | 11.7 | 13 | 11.8 | 10.7 | 18.1 | 17.9 | 20.1 |
| I17 | 23.3 | 22.4 | 8.4 | 19.5 | 36.9 | 24.5 | 14.1 | 24.5 | 19.1 | 3.5 | 1.3 | 8.3 |
| I18 | 13.9 | 15.4 | 8.9 | 10.7 | 25.8 | 13.6 | 11.1 | 11.3 | 18.8 | 4.1 | 1.7 | 9.5 |

Noise enhancing meteorological conditions occur for 30% or more of the period and season

## 5.2 TEMPERATURE INVERSIONS

Temperature inversion is considered a feature where this occurs more than 30% of the nights in winter.

Temperature inversion conditions would be best associated with F-class stability conditions – generally associated with still/light winds and clear skies during the night time or early morning period (these are referred to as stable atmospheric conditions).

The analysis conducted on the 2019 weather data highlighted that during winter 26.52% of the nights presented temperature inversion conditions.

### 5.2.1 Weather Conditions Considered in the Assessment

The following conditions were considered:

- Condition A: Neutral Weather Conditions
- Condition B: 3 m/s Wind from source to receiver (at R2, R3, R4, I6, I12, I13, I14, I17)

The meteorological condition considered in the noise model has been displayed in detail in Table 5-2.

Table 5-2: Meteorological Conditions Assessed in Noise Propagation Modelling

| Condition | Classification | Ambient Temp. | Ambient Humidity | Wind Speed | Wind Direction (blowing from) | Temperature Inversion | Affected Receptors | Applicability |
|---|---|---|---|---|---|---|---|---|
| A | Neutral | 10°C | 70% | – | – | No | All | All periods |
| B | Wind | 10 °C | 70% | 3 m/s | From Source to Receiver | No | R2, R3, R4, I6, I12, I13, I14, I17 | All Periods |

# 6. CURRENT LEGISLATION AND GUIDELINES

## 6.1 NSW EPA NOISE POLICY FOR INDUSTRY

### 6.1.1 Introduction

The NSW Noise Policy for Industry was developed by the NSW EPA primarily for the assessment of noise emissions from industrial sites regulated by the NSW EPA.

The policy sets out two components that are used to assess potential site-related noise impacts. The intrusiveness noise level aims at controlling intrusive noise impacts in the short-term for residences. The amenity noise level aims at maintaining a suitable amenity for particular land uses including residences in the long-term. The more stringent of the intrusiveness or amenity level becomes the project noise trigger levels for the project.

### 6.1.2 Project Intrusiveness Noise Level

The project intrusiveness noise level is determined as follows:

**$L_{Aeq,\ 15\ minute}$ = rating background noise level + 5 dB**

Where the $L_{Aeq,(15minute)}$ is the predicted or measured $L_{Aeq}$ from noise generated within the project site over a fifteen minute interval at the receptor.

This is to be assessed at the most affected point on or within the residential property boundary or if that is more than 30 m from the residence, at the most affected point within 30 m of the residential dwelling.

### 6.1.3 Amenity Noise Level

To limit continuing increases in noise levels, the maximum ambient noise level within an area from industrial noise sources should not normally exceed the acceptable noise levels specified in Table 2.2 of the NSW Noise Policy for Industry 2017. The relevant recommended noise levels applicable from the Noise Policy for Industry are reproduced in Table 6-1. The urban category has been selected for the residential noise amenity criteria to match the characteristics of the area.

Table 6-1: Relevant amenity noise levels.

| Receiver | Noise Amenity Area | Time of Day | $L_{Aeq}$ dB(A) |
|---|---|---|---|
| | | | Recommended amenity noise level |
| Residential | Rural | Day | 50 |
| | | Evening | 45 |
| | | Night | 40 |
| Industrial premises | All | When in use | 70 |

**Source:** Table 2.2 and Section 2.6, NSW Noise Policy for Industry

**The project amenity noise level for industrial developments = recommended amenity noise level minus 5 dB(A)**

*The following exceptions to the above method to derive the project amenity noise levels apply:*

1. *In areas with high traffic noise levels*
2. *In proposed developments in major industrial clusters*
3. *Where the resultant project amenity noise level is 10 dB or more lower than the existing industrial noise level. In this case the project amenity noise levels can be set at 10 dB below existing industrial noise levels if it can be demonstrated that existing industrial noise levels are unlikely to reduce over time.*
4. *Where cumulative industrial noise is not a necessary consideration because no other industries are present in the area, or likely to be introduced into the area in the future. In such cases the relevant amenity noise level is assigned as the project amenity noise level for development.*

This development is not considered to be captured by the above exceptions.

### 6.1.4 Sleep Disturbance Criteria

In accordance with the NSW EPA Noise Policy for Industry, the potential for sleep disturbance from maximum noise level events from premises during the night-time period needs to be considered. Sleep disturbance is considered to be both awakenings and disturbance to sleep stages.

Where the subject development/premises night-time noise levels at a residential location exceed:

- **$L_{Aeq,\ 15\ minute}$ 40 dB(A) or the prevailing RBL plus 5 dB, whichever is the greater, and/or**
- **$L_{AFmax}$ 52 dB(A) or the prevailing RBL plus 15 dB, whichever is the greater,**

a detailed maximum noise level assessment should be undertaken.

### 6.1.5 Project Noise Trigger Levels

The project noise trigger levels for the site have been established in accordance with the principles and methodologies of the NSW Noise Policy for Industry (EPA, 2017).

The table below presents the rating background level, project intrusive noise level, recommended amenity noise level, and project amenity noise level. The project noise trigger level is the lowest value of intrusiveness or project amenity noise level after conversion to $L_{Aeq\ 15\ minute}$, dB(A) equivalent level. Sleep disturbance trigger levels associated with operational activities are presented in Table 6-2.

Different time periods apply for the noise criteria as the intrusive criterion considers a 15 minute assessment period while the amenity criterion requires assessment over the total length of time that a site is operational within each day, evening or night period. In order to ensure compliance under all circumstances, a 15 minute period assessment has been considered for all receptors.

Table 6-2: Project Noise Trigger Levels (PNTL) for Operational Activities, dB(A)

| Receiver | Type of Receptor | Time of day | Rating background noise level | Project intrusiveness noise level $L_{eq\ 15\ minute}$ | Recommended amenity noise level $L_{Aeq\ period}$ | Project amenity noise level $L_{Aeq\ 15\ minute}$ [1] | PNTL $L_{Aeq\ 15\ minute}$ | Sleep Disturbance $L_{Amax}$ |
|---|---|---|---|---|---|---|---|---|
| R1, R3 | Residential – Rural | Day | 42 | **47** | 50 | 48 | **47** | - |
| | | Evening | 41 | 46 | 45 | **43** | **43** | - |
| | | Night | 35 | 40 | 40 | **38** | **38** | **52** |
| R2, R4 | Residential – Rural | Day | 35 | **40** | 50 | 48 | **40** | - |
| | | Evening | 35[2] | **40** | 45 | 43 | **40** | - |
| | | Night | 34 | 39 | 40 | **38** | **38** | **52** |
| I5-I18 | Industrial Premises | When in use | - | - | 70 | 68 | **68** | - |

Notes:

1) These levels have been converted to $L_{Aeq\ 15\ minute}$ using the following: $L_{Aeq\ 15\ minute} = L_{Aeq\ period}$ - 2 dB (NSW Noise Policy for Industry Section 2.2).
2) The project intrusiveness noise level for evening be set at no greater than the project intrusiveness noise level for daytime (NSW Noise Policy for Industry Section 2.3).

## 6.2 NSW Road Noise Policy

The NSW Road Noise Policy (RNP) has been adopted to establish the noise criteria for the potential noise impact associated with additional traffic generated by the proposed development. The RNP was developed by the NSW EPA primarily to identify the strategies that address the issue of road traffic noise from:

- Existing roads;
- New road projects;
- Road redevelopment projects; and
- New traffic-generating developments.

### 6.2.1 Road Category

The subject site is accessed via Somersby Falls Road. This is classified as a local road in accordance with the RNP descriptions.

### 6.2.2 Noise Assessment Criteria

Section 2.3 of the RNP outlines the criteria for assessing road traffic noise. The relevant sections of Table 3 of the RNP are shown in Table 6-3.

Table 6-3: Road Traffic Noise Assessment Criteria For Residential Land Uses, dB(A)

| Road Category | Type of Project/Land Use | Assessment Criteria, dB(A)* | |
|---|---|---|---|
| | | Day (7am-10pm) | Night (10pm-7am) |
| Local Roads | 6. Existing residences affected by additional traffic on existing local roads generated by land use developments | $L_{Aeq\ (1\ hour)}$ 55 dB | $L_{Aeq\ (1\ hour)}$ 50 dB |

* Measured at 1 m from a building façade.

### 6.2.3 Relative Increase Criteria

In addition to the assessment criteria outlined above, any increase in the total traffic noise level at a location due to a proposed project or traffic-generating development, must be considered. Residences experiencing increases in total traffic noise levels above the relative criteria should also be considered for mitigation as described in Section 3.4 of the RNP. For road projects where the main subject road is a local road, the relative increase criterion does not apply.

### 6.2.4 Exceedance of Criteria

If the criteria shown in Table 6-3 cannot be achieved, justification should be provided that all feasible and reasonable mitigation measures have been applied.

For existing residences and other sensitive land uses affected by additional traffic on existing roads generated by land use developments, any increase in the total traffic noise level should be limited to 2 dB above that of the corresponding 'no build option'.

### 6.2.5 Assessment Locations for Existing Land Uses

Table 6-4: Assessment Locations for Existing Land Uses

| Assessment Type | Assessment Location |
|---|---|
| External noise levels at residences | The noise level should be assessed at 1 metre from the façade and at a height of 1.5 metres from the floor.<br><br>Separate noise criteria should be set and assessment carried out for each façade of a residence, except in straightforward situations where the residential façade most affected by road traffic noise can be readily identified.<br><br>The residential noise level criterion includes an allowance for noise reflected from the façade ('façade correction'). Therefore, when taking a measurement in the free field where reflection during measurement is unlikely (as, for instance, when measuring open land before a residence is built), an appropriate correction – generally 2.5 dB – should be added to the measured value. The 'façade correction' should not be added to measurements taken 1 metre from the façade of an existing building. Free measurements should be taken at least 15 metres from any wall, building or other reflecting pavement surface on the opposite side of the roadway, and at least 3.5 metres from any wall, building or other pavement surface, behind or at the sides of the measurement point which would reflect the sound. |
| Noise levels at multi-level residential buildings | The external points of reference for measurement are the two floors of the building that are most exposed to traffic noise.<br><br>On other floors, the internal noise level should be at least 10 dB less than the relevant external noise level on the basis of openable windows being opened sufficiently to provide adequate ventilation. (Refer to the Building Code of Australia (Australian Building Codes Board 2010) for additional information.) |
| Internal noise levels | Internal noise levels refer to the noise level at the centre of the habitable room that is most exposed to the traffic noise with openable windows being opened sufficiently to provide adequate ventilation. (Refer to the Building Code of Australia (Australian Building Codes Board 2010) for additional information.) |
| Open space – passive or active use | The noise level is to be assessed at the time(s) and location(s) regularly attended by people using the space. In this regard, 'regular' attendance at a location means at least once a week. |
| Commercial or industrial premises | The noise level is to be assessed at the reasonably most affected point or within the property boundary. This requirement should not be read to infer that the noise level only applies at the 'reasonably worst-affected location'. |

## 6.3 CONSTRUCTION NOISE CRITERIA

Criteria for construction and demolition noise has been obtained from the NSW Interim Construction Noise Guideline (DECC, 2009). Guidance for construction vibration has been taken from British Standard BS7385-Part 2: 1993 '*Evaluation and measurement for vibration in buildings*' and other standards.

### 6.3.1 NSW Interim Construction Noise Guideline

**Residential Criteria**

Table 2 of the Interim Construction Noise Guideline (DECC, 2009), sets out construction noise management levels for noise at residences and how they are to be applied. The management noise levels are reproduced in Table 6-5 below. Restrictions to the hours of construction may apply to activities that generate noise at residences above the 'highly noise affected' noise management level.

Table 6-5: Management Levels at Residences Using Quantitative Assessment

| Time of Day | Management Level $L_{Aeq(15\ minute)}$ | How to Apply |
|---|---|---|
| **Recommended standard hours:**<br><br>Monday to Friday<br>7am – 6pm<br><br>Saturday<br>8am – 1pm<br><br>No work on Sundays or Public Holidays | Noise Affected<br>RBL + 10 dB | The noise affected level represents the point above which there may be some community reaction to noise.<br><br>• Where the predicted or measured $L_{Aeq(15\ minute)}$ is greater than the noise affected level, the proponent should apply all feasible and reasonable work practises to meet the noise affected level.<br>• The proponent should also inform all potentially affected residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details. |
| | Highly Noise Affected<br>75 dB(A) | The highly noise affected level represents the point above which there may be strong community reaction to noise.<br><br>• Where noise is above this level, the relevant authority (consent, determining or regulatory) may require respite periods by restricting the hours that the very noisy activities can occur, taking into account:<br>1. times identified by the community when they are less sensitive to noise (such as before and after school, or mid-morning or mid-afternoon for works near residents.<br>2. if the community is prepared to accept a longer period of construction in exchange for restrictions on construction times. |

Table 6-5: Management Levels at Residences Using Quantitative Assessment

| Time of Day | Management Level $L_{Aeq(15\ minute)}$ | How to Apply |
|---|---|---|
| **Outside recommended standard hours** | Noise Affected RBL + 5 dB | • A strong justification would typically be required for works outside the recommended standard hours.<br>• The proponent should apply all feasible and reasonable work practices to meet the noise affected level.<br>• Where all feasible and reasonable practices have been applied and noise is more than 5 dB(A) above the noise affected level, the proponent should negotiate with the community.<br>• For guidance on negotiating agreements see Section 7.2.2 (RNP) |

Noise levels apply at the property boundary that is most exposed to construction noise, and at a height of 1.5 m above ground level. If the property boundary is more than 30 m from the residence, the location for measuring or predicting noise levels is at the most noise-affected point within 30 m from the residence.

**Other Land Uses**

Table 6-6 sets out management levels for construction noise at other land uses applicable to the surrounding area.

Table 6-6: Management Levels at Other Land Uses

| Land use | Management Level $L_{Aeq(15\ minute)}$ (applies when properties are being used) |
|---|---|
| Industrial Premises | External Noise Level 75 dB(A) |
| School Classrooms[1] | External Noise Level 55 dB(A) |
| Place of Worship | External Noise Level 55 dB(A) |

Note: [1] As per Section 4.1.2 of the Interim Construction Noise Guideline, a conservative estimate of 10 dB difference between internal and external levels is applied.

There are no other sensitive land uses in the area surrounding the site.

**Noise Criterion**

The noise criterion for construction noise is presented in Table 6-7.

Table 6-7: Construction Noise Criterion dB(A)

| Receiver | Land Use | Period | RBL $L_{A90}$ | Management Level $L_{Aeq(15\ minute)}$ |
|---|---|---|---|---|
| R1,R3 | Residential | Standard Hours | 42 | 52 |
| R2, R4 | Residential | Standard Hours | 35 | 45 |
| I5-I18 | Industrial | During Use | - | 75 |

### 6.3.2 Vibration Criteria

Vibration criteria from construction works and operations are outlined in this section, including guidelines to avoid cosmetic damage, structural damage or human discomfort. There is no specific vibration standard in NSW to assess cosmetic or structural damage to buildings. Usually the British Standard BS 7385–Part 2: 1993 '*Evaluation and measurement for vibration in buildings*' or the German standard DIN4150–Part 3: 1999 '*Structural Vibration Part 3 – effects of vibration on structures*' is referenced. The *Assessing Vibration – A Technical Guideline* (DEC, 2006) provides guidance on preferred levels for human exposure.

### 6.3.3 BS 7385-2:1993

The British Standard BS 7385–Part 2:1993 '*Evaluation and measurement for vibration in buildings*' provides vibration limits to avoid cosmetic damage on surrounding structures. Limits are set at the lowest limits where cosmetic damage has previously been shown.

Table 6-8: Vibration criteria for cosmetic damage (BS 7385:2 1993)

| Type of building | Peak component particle velocity in frequency range of predominant pulse | | |
|---|---|---|---|
| | 4 Hz to 15 Hz | 15 Hz to 40 Hz | 40 Hz and above |
| Reinforced or framed structures. Industrial and heavy commercial buildings | 50 mm/s at 4 Hz and above | | |
| Unreinforced or light framed structures. Residential or light commercial type buildings | 15 to 20 mm/s | 20 to 50 mm/s | 50 mm/s |

### 6.3.4 DIN4150-3:1999

The German standard DIN4150-Part 3:1999 'Structural Vibration Part 3 – effects of vibration on structures' has also been considered. The German standard is considered more onerous than the British standard, and specifically includes more stringent limits to avoid structural damage to surrounding heritage buildings.

Table 6-9: Structural damage criteria heritage structures (DIN4150-3 1999)

| Type of building | Peak component particle velocity (PPV) mm/s | | | |
|---|---|---|---|---|
| | Vibration at the foundation at a frequency of: | | | Vibration of horizontal plane of highest floor at all frequencies |
| | 1 to 10 Hz | 10 to 50 Hz | 50 to 100 Hz | |
| Buildings used for commercial purposes, industrial buildings or buildings of similar design | 20 | 20 to 40 | 40 to 50 | 40 |
| Residential dwellings and similar | 5 | 5 to 15 | 15 to 20 | 15 |

| Type of building | Peak component particle velocity (PPV) mm/s | | | |
|---|---|---|---|---|
| | Vibration at the foundation at a frequency of: | | | Vibration of horizontal plane of highest floor at all frequencies |
| | 1 to 10 Hz | 10 to 50 Hz | 50 to 100 Hz | |
| Structures that, because of their particular sensitivity to vibration, cannot be classified as the two categories above, and are of intrinsic value (for example heritage listed buildings). | 3 | 3 to 8 | 8 to 10 | 8 |

### 6.3.5 Human Exposure

The guideline *Assessing Vibration – A Technical Guideline* (DEC, 2006) describes preferred criteria for human exposure. The limits describe values where occupants of buildings would be impacted by construction work.

Table 6-10: Preferred and maximum weighted rms z-axis values, 1-80 Hz

| Location | Daytime | | Night time | |
|---|---|---|---|---|
| | Preferred | Maximum | Preferred | Maximum |
| Continuous Vibration (weighted root mean square (rms) vibration levels for continuous acceleration ($m/s^2$) in the vertical direction) | | | | |
| Residences | 0.01 | 0.02 | 0.007 | 0.014 |
| Offices, schools, educational institutions and places of worship | 0.02 | 0.04 | 0.02 | 0.04 |
| Workshops | 0.04 | 0.08 | 0.04 | 0.08 |
| Impulsive Vibration (weighted root mean square (rms) vibration levels for impulsive acceleration ($m/s^2$) in the vertical direction) | | | | |
| Residences | 0.3 | 0.6 | 0.1 | 0.2 |
| Offices, schools, educational institutions and places of worship | 0.64 | 1.28 | 0.64 | 1.28 |
| Workshops | 0.64 | 1.28 | 0.64 | 1.28 |
| Intermittent Vibration (m/s) | | | | |
| Residences | 0.2 | 0.4 | 0.13 | 0.26 |
| Offices, schools, educational institutions and places of worship | 0.4 | 0.8 | 0.4 | 0.8 |
| Workshops | 0.8 | 1.6 | 0.8 | 1.6 |

# 7. OPERATIONAL NOISE IMPACT ASSESSMENT

An outline of the predictive noise modelling methodology and operational noise modelling scenarios has been provided in this section of the report. This assessment considers existing and proposed noise sources operating simultaneously in accordance with the Noise Policy for Industry requirements.

## 7.1 MODELLING METHODOLOGY

Noise propagation modelling was carried out using the Concawe algorithm within SoundPLAN. This model has been extensively utilised by Benbow Environmental for assessing noise emissions for existing and proposed developments, and is recognised by regulatory authorities throughout Australia. The model allows for the prediction of noise from a site at the specified receptor, by calculating the contribution of each noise source. Other model inputs included the noise sources, topographical features of the subject area, surrounding buildings, noise walls and receiver locations.

The modelling scenario has been carried out using the $L_{Aeq}$ and $L_{Amax}$ descriptors. Using the model, noise levels were predicted at the potentially most affected receivers to determine the noise impact against the project specific noise levels and other relevant noise criteria in accordance with the NSW Noise Policy for Industry (EPA, 2017).

### 7.1.1 Noise Sources

The sound power levels for the identified noise sources associated with the operational activities have been taken from Benbow Environmental's database.

A-weighted third octave band centre frequency sound power levels have been used and are presented in Table 7-1 below. The noise sources utilised as part of this assessment comprise of the primary noise generating activities associated with the effective operation of the proposed development.

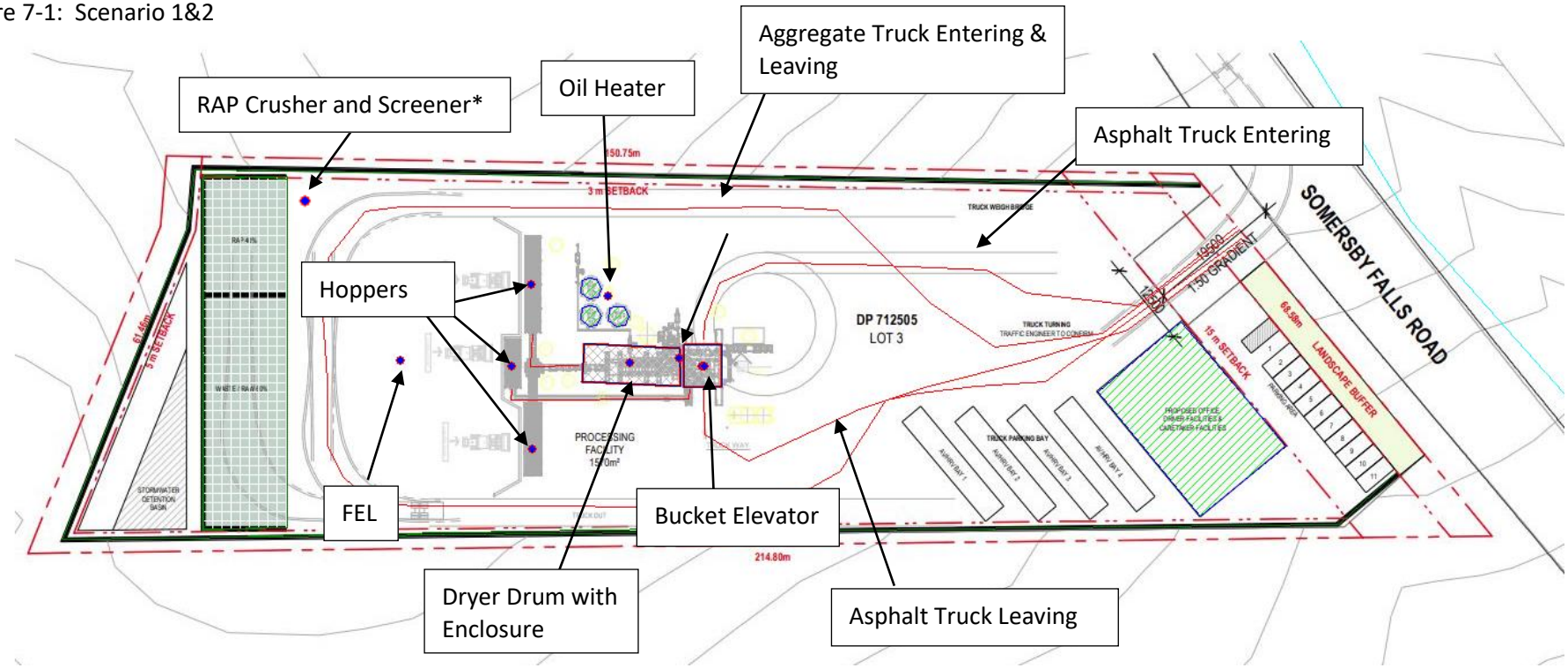
Table 7-1: A-weighted Sound Power Levels Associated with Operational Activities, dB(A)

| Noise Source | Max | Overall | Third Octave Band Centre Frequency (Hz) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 25 | 31 | 40 | 50 | 63 | 80 | 100 | 125 | 160 | 200 |
| | | | 250 | 315 | 400 | 500 | 630 | 800 | 1000 | 1250 | 1600 | 2000 |
| | | | 2500 | 3150 | 4000 | 5000 | 6300 | 8000 | 10000 | 12500 | 16000 | 20000 |
| RAP Crusher and Screen | - | 110 | 52 | 65 | 70 | 77 | 84 | 88 | 93 | 96 | 99 | 99 |
| | | | 93 | 92 | 96 | 101 | 103 | 100 | 98 | 99 | 98 | 96 |
| | | | 94 | 91 | 88 | 86 | 83 | 80 | 77 | 73 | 69 | 64 |
| FEL | 110 | 101 | 48 | 58 | 71 | 72 | 79 | 77 | 75 | 80 | 82 | 85 |
| | | | 92 | 87 | 90 | 92 | 90 | 91 | 90 | 90 | 89 | 89 |
| | | | 88 | 84 | 82 | 80 | 77 | 74 | 70 | 66 | 61 | 56 |
| Aggregate Hopper | 110 | 106 | - | 65 | - | - | 72 | - | - | 77 | - | - |
| | | | 84 | - | - | 91 | - | - | 95 | - | - | 98 |
| | | | - | - | 100 | - | - | 102 | - | - | 95 | - |
| Conveyor | 88 | 78 | 27 | 30 | 28 | 34 | 37 | 47 | 44 | 47 | 52 | 56 |
| | | | 56 | 63 | 66 | 69 | 67 | 70 | 69 | 71 | 70 | 69 |
| | | | 62 | 61 | 57 | 55 | 51 | 47 | 43 | 41 | 34 | 27 |
| Dryer | - | 113 | - | - | 67 | 69 | 71 | 74 | 78 | 85 | 93 | 91 |
| | | | 93 | 97 | 104 | 103 | 102 | 102 | 99 | 100 | 102 | 102 |
| | | | 102 | 100 | 100 | 99 | 98 | 94 | 90 | - | - | - |
| Oil Heater | 103 | 91 | - | - | 53 | 63 | 65 | 63 | 67 | 73 | 74 | 73 |
| | | | 74 | 74 | 76 | 78 | 79 | 79 | 80 | 80 | 80 | 80 |
| | | | 80 | 79 | 79 | 77 | 75 | 72 | 69 | - | - | - |
| Bucket Elevator | 97 | 86 | - | - | 48 | 55 | 52 | 52 | 55 | 61 | 61 | 62 |
| | | | 62 | 67 | 66 | 68 | 70 | 69 | 70 | 71 | 73 | 77 |
| | | | 79 | 77 | 76 | 74 | 73 | 71 | 68 | - | - | - |
| Screen | - | 102 | 42 | 57 | 58 | 66 | 71 | 78 | 75 | 80 | 84 | 85 |
| | | | 84 | 89 | 95 | 93 | 90 | 91 | 91 | 90 | 90 | 90 |
| | | | 89 | 88 | 85 | 83 | 80 | 77 | 74 | 69 | 62 | 54 |
| Pugmil | - | 97 | - | - | 55 | 59 | 60 | 65 | 66 | 69 | 72 | 74 |
| | | | 74 | 80 | 75 | 83 | 84 | 87 | 84 | 86 | 90 | 92 |
| | | | 86 | 84 | 82 | 80 | 79 | 77 | 74 | - | - | - |
| Truck Exhaust | 103 | 101 | 42 | 46 | 55 | 63 | 68 | 71 | 76 | 76 | 78 | 80 |
| | | | 81 | 83 | 92 | 96 | 92 | 94 | 87 | 86 | 80 | 85 |
| | | | 83 | 82 | 80 | 81 | 81 | 80 | 76 | - | - | - |
| Truck Engine | 106 | 103 | 44 | 48 | 57 | 65 | 70 | 73 | 78 | 78 | 80 | 82 |
| | | | 83 | 85 | 94 | 98 | 94 | 96 | 89 | 88 | 82 | 87 |
| | | | 85 | 84 | 82 | 83 | 83 | 82 | 78 | - | - | - |

### 7.1.2 Modelling Scenario

Two scenarios have been modelled. Scenario 1 all sources including crushing and screening of the RAP occurring only during the day. Scenario 2 includes all other activities operating except the RAP crushing and screening during the day evening and night. Scenario 1 and 2 have been modelled under neutral and noise enhancing wind conditions. Figure 7-1 shows the locations of the noise sources for the operational scenarios.

Figure 7-1: Scenario 1&2




*Scenario 1 Only

### 7.1.3 Modelling Assumptions

The relevant assessment period for operational noise emissions is 15 minutes when assessing noise levels against the Intrusive Criterion; therefore noise source durations detailed throughout the following assumptions section should be considered per 15 minute period in view of potential noise impacts under worst-case scenarios. Each assessment-specific assumption has been detailed below:

- Topographical information has been obtained from sixmaps and implemented in SoundPLAN.
- All ground areas surrounding the subject site and the nearest nominated occupancies have been modelled considering different ground factors ranging from 0 to 1. The site and surrounding industrial areas have been modelled with a ground absorption factor of 0 (hard).
- Surrounding buildings have been included in the noise model.
- 2 trucks are assumed to enter and leave the site every 15 minutes in a worst case scenario. Trucks have been assumed to travel on the site at 10 km/h. Trucks are modelled in sound plan as line sources, utilising moving point source definition. They occur during all time periods.
- The dryer and main stack enclosure have been modelled with noise controls as presented in Figure 7-1.
- All point sources are modelled operating 100% of the time. Except the hopper loading which are modelled with a time histogram of 2mins/hour.
- All residential receivers were modelled at 1.5 m above ground level at the most noise-affected point within the property boundary 30m from the dwelling.

## 7.2 PREDICTED NOISE LEVELS – OPERATIONAL

Noise levels at the nearest receptors have been calculated and results of the predictive noise modelling considering operational activities are shown in Table 7-2. The modelled scenarios are predicted to comply with the $L_{Aeq(15\ minute)}$ and $L_{AMax}$ project specific criteria at all sensitive receptors except R1.

Noise controls are outlined in Section 7.4.

Table 7-2: Predicted Noise Levels – Operational Activities dB(A)

| Receptor | Project Criteria $L_{eq(15\ minute)}$ | | | Project Criteria $L_{Amax}$ | Scenario 1A – Day All Equipment | Scenario 1B – Day All Equipment (noise enhancing wind conditions) | Scenario 2A – Night Without RAP Crusher and Screener | | Scenario 2B – Night Without RAP Crusher and Screener (noise enhancing wind conditions) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Day | Evening | Night | | Predicted $L_{eq(15\ minute)}$ | Predicted $L_{eq(15\ minute)}$ | Predicted $L_{eq(15\ minute)}$ | Sleep Disturbance $L_{Amax}$ | Predicted $L_{eq(15\ minute)}$ | Sleep Disturbance $L_{Amax}$ |
| R1 | 47 | 43 | 38 | 52 | 60× | 62× | 53× | 70× | 55× | 70× |
| R2 | 40 | 40 | 38 | 52 | 33✓ | 37✓ | 29✓ | 35✓ | 32✓ | 44✓ |
| R3 | 47 | 43 | 38 | 52 | 40✓ | 42✓ | 36✓ | 48✓ | 38✓ | 50✓ |
| R4 | 40 | 40 | 38 | 52 | 34✓ | 39✓ | 32✓ | 43✓ | 37✓ | 48✓ |
| I5 | 68 | | | - | 53✓ | 57✓ | 49✓ | | 53✓ | |
| I6 | 68 | | | - | 53✓ | 57✓ | 46✓ | | 49✓ | |
| I7 | 68 | | | - | 55✓ | 58✓ | 50✓ | | 54✓ | |
| I8 | 68 | | | - | 53✓ | 56✓ | 49✓ | | 53✓ | |
| I9 | 68 | | | - | 51✓ | 55✓ | 47✓ | | 52✓ | |
| I10 | 68 | | | - | 49✓ | 52✓ | 44✓ | | 49✓ | |
| I11 | 68 | | | - | 46✓ | 50✓ | 42✓ | | 47✓ | |
| I12 | 68 | | | - | 48✓ | 52✓ | 37✓ | | 40✓ | |
| I13 | 68 | | | - | 40✓ | 44✓ | 36✓ | | 40✓ | |
| I14 | 68 | | | - | 27✓ | 32✓ | 23✓ | | 27✓ | |
| I15 | 68 | | | - | 48✓ | 52✓ | 45✓ | | 49✓ | |
| I16 | 68 | | | - | 56✓ | 58✓ | 56✓ | | 58✓ | |
| I17 | 68 | | | - | 52✓ | 53✓ | 48✓ | | 49✓ | |
| I18 | 68 | | | - | 65✓ | 66✓ | 64✓ | | 65✓ | |

✓Complies × Non-compliance

## 7.3 Assessment of Annoying Characteristics

The following table addresses annoying noise as per fact sheet C of the noise policy for industry.

Table 7-3: Annoying Noise Characteristics

| Factor | Comment | Applies |
|---|---|---|
| Tonal Noise | Z – Weighted 1/3 octave were assessed for tonal impacts. No tonal noise associated with the site was found. | No |
| Low-Frequency Noise | The difference between predicted C-weighted levels and predicted A-weighted levels are less than 15 dB for all scenarios, therefore low frequency impacts do not apply. | No |
| Intermittent noise | There are no intermittent noise sources associated with the operation of the asphalt batching plant. No other noise sources operate at night. | No |

## 7.4 RECOMMENDED MITIGATION MEASURES

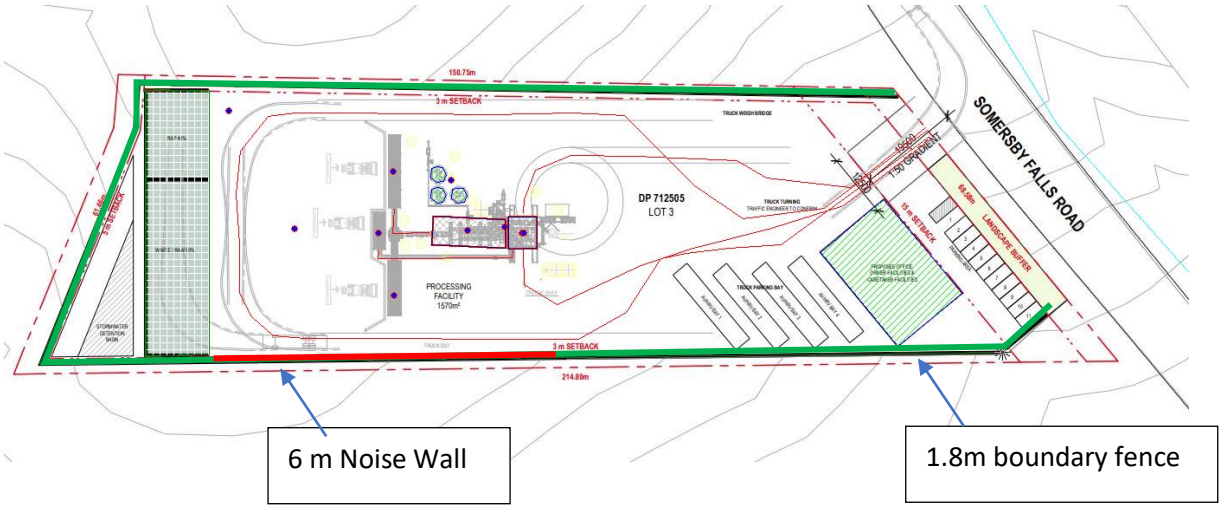
### 7.4.1 R1 - 126 Somersby Falls Road, Somersby

Predicted noise levels exceed the Noise Policy for Industry 2017 Project Noise Trigger Levels for a residential land use at R1 by a significant amount. Notably sleep disturbance $L_{Amax}$ levels are exceeded from trucks entering and leaving the site. There are no feasible noise controls for this impact. Based on consultation with the neighbour, the site is looking to be re-zoned to industrial, and based on the surrounding land zoning would be an appropriate planning decision. Therefore, it is recommended the operational certificate not be issued until rezoning of this property is complete.

### 7.4.2 Noise Walls/Adjoining Property Structures

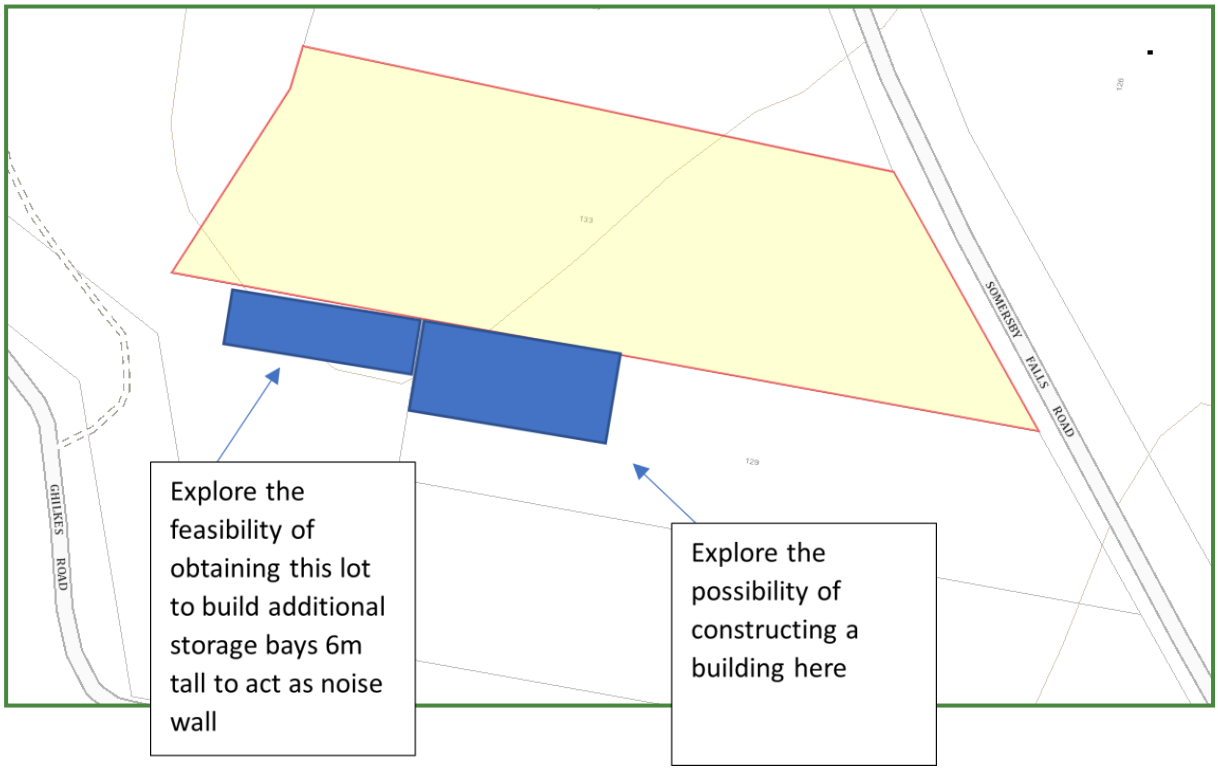
Implementation of the following walls are required to achieve compliance.

Figure 7-2: Noise wall required for compliance




If the construction of the illustrated 6m noise wall is not feasible, it may be worth obtaining or consulting with the vacant lots to the south of the site to construct structures equivalent to a noise wall. A 6m high building or an extension of storage bays 6m tall built along the boundary (illustrated below) in place of the noise wall, will help achieve compliance while servicing the site.

Figure 7-3: Proposed building structures equivalent to 6m high noise wall




### 7.4.3 Plant Enclosures

- Drum burner must be enclosed – Building Rw≥27 (0.8 BMT)

- The main stack processing plant must be enclosed – Building Rw≥27 (0.8 BMT)
  - The asphalt loading area underneath the batching plant must be enclosed to house the truck loading. Fast acting roller shutter doors are to be installed.
- The roller shutter doors to the south of the main plant are assumed to be open for only 3 minutes every hour and the roller shutter doors to the north are assumed to be open for 15 minutes every hour. Therefore, it's critical that the doors can be closed during loading as such space must be allowed for trucks to be housed fully within.

# 8. ROAD TRAFFIC NOISE IMPACT ASSESSMENT

Truck movements are modelled moving south along Somersby Falls Road passing the only residential receiver R1. The maximum number of truck movements along Somersby Falls Road is assumed to be 8 trucks per hour associated with the proposed asphalt plant. Trucks have been modelled passing this house as 2 moving line sources (engine and exhaust) using sound power levels as shown in operational noise source table traveling at 50km/hr.

Table 8-1: Predicted Levels for Road Traffic Noise

| Receptor | Noise Criteria | | Site Contribution | | Existing Road Traffic Noise | | Total Road Traffic Noise | |
|---|---|---|---|---|---|---|---|---|
| | Day $L_{Aeq,\ 1\ hour}$ | Night $L_{Aeq,\ 1\ hour}$ | Day $L_{Aeq,\ 1\ hour}$ | Night $L_{Aeq,\ 1\ hour}$ | Day $L_{Aeq,\ 1\ hour}$ | Night $L_{Aeq,\ 1\ hour}$ | Day $L_{Aeq,\ 1\ hour}$ | Night $L_{Aeq,\ 1\ hour}$ |
| R1 | 55 | 50 | 46 | 46 | 55 | 49 | 56 | 51 |

Although this exceeds the residential criteria, based on consultation with the neighbour, as R1 is looking to be re-zoned to industrial, the exceedance will not be of concern. The predicted levels also do not exceed the relative increase criteria of 2dB(A). Therefore the site complies with the Road Noise Policy, never the less as discussed in section 7.4.1 it is not practical to achieve compliance for operational noise impacts at this receiver so in the event this receiver is rezoned to industrial the truck route would not pass residential receptors and would comply with the road noise policy regardless.

Step 3 of Section 3.4.1 of the RNP identifies possible reasonable and feasible control measures when exceedances of either outlined criteria.

# 9. CONSTRUCTION NOISE IMPACT MANAGEMENT

## 9.1 MODELLED NOISE GENERATING SCENARIOS

Two construction scenarios that have the potential to generate noise at surrounding receivers are modelled. The scenarios are listed in Table 9-1, and are modelled for:

- Excavation and earthworks (scenario 1); and
- Concreting works (scenario 2);

The noise generating scenarios consider a situation in which all equipment was running for 100% of the time over the 15 minute assessment period. The equipment list for the scenario is detailed in Table 9-1, with an equipment location diagrams in Figure 9-1 and Figure 9-2.

All works are proposed to be undertaken during standard construction hours, that is:

- Monday to Friday, 7am to 6pm;
- Saturday 8am to 1pm ; and
- No work on Sundays or public holidays.

Table 9-1: Modelled Noise Scenarios for Proposed Construction Works

| Scenario | Time of the day | Noise Sources for Worst 15-minute Period |
|---|---|---|
| 1. Excavation and Regrading works | Standard hours | • 20T Excavator<br>• Backhoe<br>• Truck<br>• Hand Tools |
| 2. Concreting construction works | Standard hours | • Concrete mixer truck<br>• Concrete pump<br>• Hand tools |

Note 1: As per section 4.5 of the Interim Construction Noise Guideline (DECC, 2009), a number of activities have proven to be particularly annoying to residents and have therefore had 5 dB added to their predicted levels.

Figure 9-1: Construction Scenario 1 – Excavation and Regrading Works

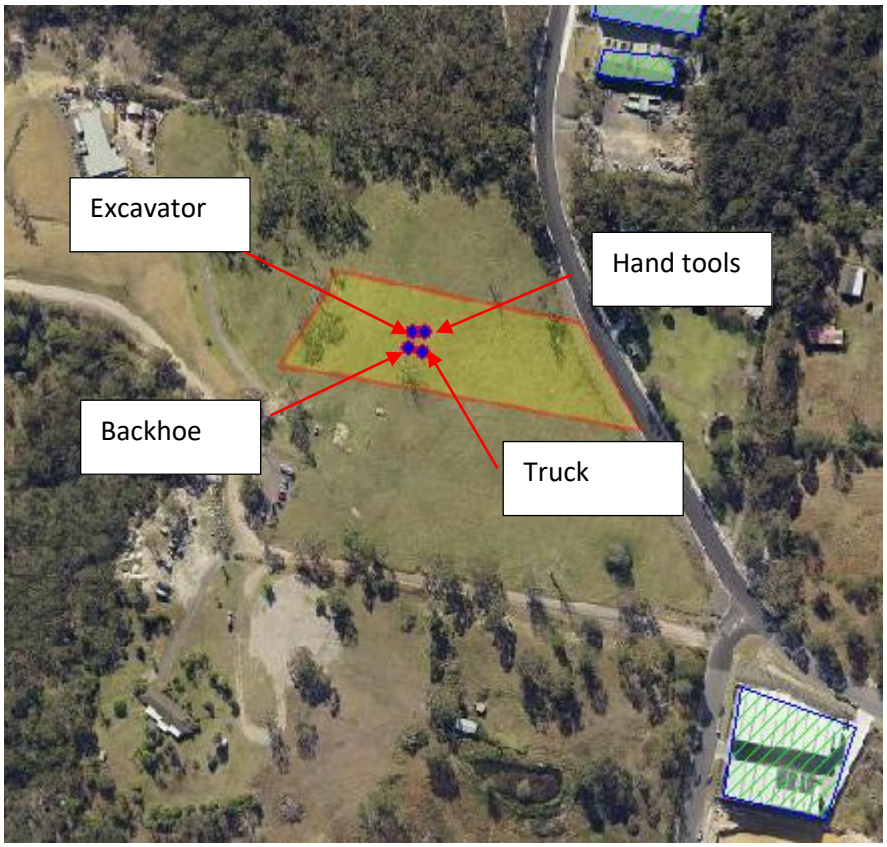



Figure 9-2: Construction Scenario 2 – Concreting Construction Works

## 9.2 MODELLING METHODOLOGY

### 9.2.1 Noise Model

Noise propagation modelling for the construction activities was carried out using the ISO 9613 algorithm within SoundPLAN v7.3. The construction scenarios were modelled using the $L_{Aeq,\ 15\ minutes}$ descriptor.

Assumptions made in the noise modelling of the construction noise scenarios are as follows:

- The relevant assessment period for operational noise emissions has been considered to be 15 minutes. Construction scenarios assume all equipment is running 100% of the time during the 15 minute assessment period, to provide a worst case scenario;
- All noise sources associated with the construction works have been modelled as point sources.

### 9.2.2 Noise Sources

A-weighted octave band centre frequency sound power levels are presented shown in Table 9-2 below. The sound power levels for the relevant noise sources have been calculated from measurements of sound pressure levels undertaken by an acoustic engineer from Benbow Environmental at similar sites and sourced from Benbow Environmental's noise source database, as well as taken from AS 2436: 2010 and the UK Department for Environmental Food and Rural Affairs (DEFRA) database, *Update of noise database for prediction of noise on construction and open sites*.

Table 9-2: A-weighted Sound Power Levels Associated with Construction Activities, dB(A)

| Noise Source | Overall | Octave Band Centre Frequency (Hz) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 63 | 125 | 250 | 500 | 1k | 2k | 4k | 8k |
| Excavator 20T | **110** | 103 | 101 | 100 | 101 | 102 | 102 | 97 | 90 |
| Truck | **106** | 76 | 84 | 89 | 104 | 95 | 93 | 88 | 88 |
| Hand tools | **100** | 71 | 81 | 91 | 96 | 94 | 90 | 87 | 81 |
| Backhoe | **104** | 102 | 94 | 92 | 92 | 91 | 88 | 87 | 78 |
| Concrete truck | **108** | 85 | 86 | 85 | 94 | 98 | 107 | 89 | 82 |
| Concrete pump truck | **105** | 77 | 92 | 97 | 99 | 100 | 95 | 95 | 89 |

## 9.3 CONSTRUCTION PREDICTED NOISE LEVELS

Results of the predictive noise modelling of the construction activities are shown in

Table 9-3.

Table 9-3: Noise Modelling Results Associated with Construction Activities for $L_{eq}$, dB(A)

| Receiver | PSNL ($L_{eq,15\ minute}$ dB(A)) | Scenario (Standard Hours) ($L_{eq}$, dB(A)) | |
|---|---|---|---|
| | Standard Hours | 1 | 2 |
| R1 | 52 | 58× | 59× |
| R2 | 45 | 36✓ | 39✓ |
| R3 | 52 | 48✓ | 51✓ |
| R4 | 45 | 44✓ | 45✓ |
| I5 | 75 | 52✓ | 54✓ |
| I6 | 75 | 50✓ | 53✓ |
| I7 | 75 | 54✓ | 56✓ |
| I8 | 75 | 52✓ | 54✓ |
| I9 | 75 | 51✓ | 54✓ |
| I10 | 75 | 48✓ | 50✓ |
| I11 | 75 | 46✓ | 47✓ |
| I12 | 75 | 46✓ | 49✓ |
| I13 | 75 | 46✓ | 49✓ |
| I14 | 75 | 35✓ | 38✓ |
| I15 | 75 | 48✓ | 51✓ |
| I16 | 75 | 60✓ | 62✓ |
| I17 | 75 | 63✓ | 65✓ |
| I18 | 75 | 62✓ | 64✓ |

✓Complies × Non-compliance

It can be seen that the predicted noise levels associated with construction exceed the noise management level at R1. The construction noise scenario represents a worst case scenario that may not occur in practice, and expected impacts on the surrounding receivers are predicted to be lower than the results presented in Table 9-3. None of the predicted noise levels exceed the highly noise affected management level of 75 dB(A).

### 9.3.1 Construction Noise Mitigation Measures

In the event R1 is not rezoned as per section 7.4.1 and the site is still occupied by a resident during construction, as per the guidance from the NSW Interim Construction Noise Guidelines, the proponent should consider notifying the nearby receivers where applicable via letter box drops of the proposed construction works:

*Where the predicted or measured $L_{Aeq(15\ minute)}$ is greater than the noise affected level, the proponent should apply all feasible and reasonable work practises to meet the noise affected level. The proponent should also inform all potentially affected residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.*

Construction activities are therefore proposed to take place during standard construction hours as follows:

| | |
|---|---|
| Monday to Friday: | 7am to 6pm |
| Saturday: | 8am to 1pm |
| Sunday and Public Holidays: | No works permitted |

Using Chapter 6 of the Interim Construction Noise Guideline, some reasonable and feasible work practises and mitigation measures that could be considered for adoption are as follows:

- Construct the boundary walls before commencing other construction operations;
- Where possible stagger the use of noisy equipment (front end loader, grinder, welder etc.) such that they do not operate simultaneously;
- Regular reinforcement (such as at toolbox talks) of the need to minimise noise and vibration;
- Regular identification of noisy activities and adoption of improvement techniques;
- Avoiding the use of portable radios, public address systems or other methods of site Communication that may unnecessarily impact upon nearby residents;
- Where possible, avoiding the use of equipment that generates impulsive noise;
- Minimising the need for vehicle reversing for example, by arranging for one-way site traffic routes;
- Use of broadband audible reverse alarms on vehicles and elevating work platforms used on site;
- Minimising the movement of materials and plant and unnecessary metal-on-metal contact;
- Choosing quieter plant and equipment based on the optimal power and size to most efficiently perform the required tasks;
- Regularly inspecting and maintaining plant and equipment to minimise noise and vibration level increases, to ensure that all noise and vibration reduction devices are operating effectively;
- Locating noisy equipment behind structures that act as barriers, or at the greatest distance from the noise-sensitive area; or
- Orientating the equipment so that noise emissions are directed away from any sensitive areas, to achieve the maximum attenuation of noise;
- Minimising truck movements; and
- Scheduling respite periods for intensive works.

Adopting these work practices will significantly reduce the impact of the construction works at the nearest sensitive receivers.

# 10. VIBRATION IMPACT ASSESSMENT

In the Transport for NSW Construction Noise Strategy document and Assessing Vibration – a Technical Guideline, construction equipment that may cause vibration impacts includes hydraulic hammers, vibratory pile drivers, pile boring, jackhammers, 'wacker packers', concrete vibrators, and pavement breakers, amongst other equipment. The construction work proposed would not use this type of equipment and is not expected to cause vibration impacts. The equipment utilised for the asphalt batching plant will not generate vibration impacts therefore a detailed Vibration Impact Assessment is therefore not considered warranted.

# 11. STATEMENT OF POTENTIAL NOISE IMPACT

Benbow Environmental has been engaged by Stateline Asphalt Pty Ltd to prepare a Noise and Vibration Impact Assessment for an asphalt batching plant at 125 Somersby Falls Road, Somersby NSW 2250 (Lot 2 DP712505 This report has been completed as part of an Environmental Impact Statement (EIS) for the proposed development. It was prepared after the issue of the Secretary's environmental assessment requirements (SEARs) number 1655.

The proposed development includes installation of an asphalt mixing plant with a capacity to produce approximately 200 tonnes of asphalt per hour would generate up to 200,000 tonnes of new asphalt material per annum. This noise report assesses contributions from the proposed asphalt plant operations.

The nearest receivers and the noise generating activities have been identified. Noise criteria for the project have been formed, with assessment of the proposed site activities conducted against the NSW Noise Policy for Industry (EPA, 2017), NSW Interim Construction Guidelines (DECCW, 2009) and the NSW Road Noise Policy (DECCW, 2011). Modelling of the activities was conducted using the noise modelling software SoundPlan.

This noise impact assessment finds that predicted noise levels exceed the Noise Policy for Industry 2017 Project Noise Trigger Levels for a residential land use at R1 (126 Somersby Falls Road). Additionally sleep disturbance $L_{Amax}$ levels are exceeded from trucks entering and leaving the site. As asphalt batching plants require truck movements during night-time hours due to road works occurring at these times, compliance at this receiver is not considered achievable.

Based on consultation with the neighbour, R1 is looking to be re-zoned to industrial, and considering the surrounding land zoning, it would be an appropriate planning decision. Therefore, exceedances of the residential criteria will not be of concern, and it is recommended the operational certificate not be issued until rezoning of this property is complete. Operational noise is predicted to comply with all other residential receptors with the noise controls presented in Section 7.4.

The predicted noise levels associated with construction exceed the noise management level at residential receiver R1, compliance is achieved at all other receivers. None of the predicted noise levels exceed the highly noise affected management level of 75 dB(A). Standard construction hours and universal work practices are recommended.

The site is predicted to comply with the Road Noise Policy.

Vibration impacts from the proposed asphalt batching plant are considered negligible.

| | | |
|---|---|---|
| Prasanna Manoharan | Bethany Carlyon | R T Benbow |
| Graduate Chemical Engineer | Graduate Environmental Scientist | Principal Consultant |

# 12. LIMITATIONS

Our services for this project are carried out in accordance with our current professional standards for site assessment investigations. No guarantees are either expressed or implied.

This report has been prepared solely for the use of Stateline Asphalt Pty Ltd , as per our agreement for providing environmental services. Only Stateline Asphalt Pty Ltd is entitled to rely upon the findings in the report within the scope of work described in this report. Otherwise, no responsibility is accepted for the use of any part of the report by another in any other context or for any other purpose.

Although all due care has been taken in the preparation of this study, no warranty is given, nor liability accepted (except that otherwise required by law) in relation to any of the information contained within this document. We accept no responsibility for the accuracy of any data or information provided to us by Stateline Asphalt Pty Ltd for the purposes of preparing this report.

Any opinions and judgements expressed herein, which are based on our understanding and interpretation of current regulatory standards, should not be construed as legal advice.

# ATTACHMENTS

**'A' FREQUENCY WEIGHTING**

The 'A' frequency weighting roughly approximates to the Fletcher-Munson 40 phon equal loudness contour. The human loudness perception at various frequencies and sound pressure levels is equated to the level of 40 dB at 1 kHz. The human ear is less sensitive to low frequency sound and very high frequency sound than midrange frequency sound (i.e. 500 Hz to 6 kHz). Humans are most sensitive to midrange frequency sounds, such as a child's scream. Sound level meters have inbuilt frequency weighting networks that very roughly approximates the human loudness response at low sound levels. It should be noted that the human loudness response is not the same as the human annoyance response to sound. Here low frequency sounds can be more annoying than midrange frequency sounds even at very low loudness levels. The 'A' weighting is the most commonly used frequency weighting for occupational and environmental noise assessments. However, for environmental noise assessments, adjustments for the character of the sound will often be required.

**AMBIENT NOISE**

The ambient noise level at a particular location is the overall environmental noise level caused by all noise sources in the area, both near and far, including all forms of traffic, industry, lawnmowers, wind in foliage, insects, animals, etc. Usually assessed as an energy average over a set time period 'T' ($L_{Aeq}$,T).

**AUDIBLE**

Audible refers to a sound that can be heard. There are a range of audibility grades, varying from "barely audible", "just audible" to "clearly audible" and "prominent".

**BACKGROUND NOISE LEVEL**

Total silence does not exist in the natural or built-environments, only varying degrees of noise. The Background Noise Level is the minimum repeatable level of noise measured in the absence of the noise under investigation and any other short-term noises such as those caused by all forms of traffic, industry, lawnmowers, wind in foliage, insects, animals, etc.. It is quantified by the noise level that is exceeded for 90 % of the measurement period 'T' ($L_{A90}$, T). Background Noise Levels are often determined for the day, evening and night time periods where relevant. This is done by statistically analysing the range of time period (typically 15 minute) measurements over multiple days (often 7 days). For a 15 minute measurement period the Background Noise Level is set at the quietest level that occurs at 1.5 minutes.

**'C' FREQUENCY WEIGHTING**

The 'C' frequency weighting approximates the 100 phon equal loudness contour. The human ear frequency response is more linear at high sound levels and the 100 phon equal loudness contour attempts to represent this at various frequencies at sound levels of approximately 100 dB.

**DECIBEL**

The decibel (dB) is a logarithmic scale that allows a wide range of values to be compressed into a more comprehensible range, typically 0 dB to 120 dB. The decibel is ten times the logarithm of the ratio of any two quantities that relate to the flow of energy (i.e. power). When used in acoustics it is the ratio of square of the sound pressure level to a reference sound pressure level, the ratio of the sound power level to a reference sound power level, or the ratio of the sound intensity level to a reference sound intensity level. See also Sound Pressure Level and Sound Power Level. Noise levels in decibels cannot be added arithmetically since they are logarithmic numbers. If one machine is generating a noise level of 50 dB, and another similar machine is placed beside it, the level will increase to 53 dB (from $10 \log_{10} (10^{(50/10)} + 10^{(50/10)})$ and not 100 dB. In theory, ten similar machines placed side by side will increase the sound level by 10 dB, and one hundred machines increase the sound level by 20 dB. The human ear has a vast sound-sensitivity range of over a thousand billion to one so the logarithmic decibel scale is useful for acoustical assessments.

**dBA – See 'A' frequency weighting**

**dBC – See 'C' frequency weighting**

**EQUIVALENT CONTINUOUS SOUND LEVEL, LAeq**

Many sounds, such as road traffic noise or construction noise, vary repeatedly in level over a period of time. More sophisticated sound level meters have an integrating/averaging electronic device inbuilt, which will display the energy time-average (equivalent continuous sound level - $L_{Aeq}$) of the 'A' frequency weighted sound pressure level. Because the decibel scale is a logarithmic ratio, the higher noise levels have far more sound energy, and therefore the LAeq level tends to indicate an average which is strongly influenced by short term, high level noise events. Many studies show that human reaction to level-varying sounds tends to relate closer to the $L_{Aeq}$ noise level than any other descriptor.

**'F'(FAST) TIME WEIGHTING**

Sound level meter design-goal time constant which is 0.125 seconds.

**FLETCHER–MUNSON EQUAL LOUDNESS CONTOUR CURVES**

The Fletcher–Munson curves are one of many sets of equal loudness contours for the human ear, determined experimentally by Harvey Fletcher and Wilden A. Munson, and reported in a 1933 paper entitled "Loudness, its definition, measurement and calculation" in the Journal of the Acoustic Society of America.

**FREE FIELD**

In acoustics a free field is a measurement area not subject to significant reflection of acoustical energy. A free field measurement is typically not closer than 3.5 metres to any large flat object (other than the ground) such as a fence or wall or inside an anechoic chamber.

**FREQUENCY**

The number of oscillations or cycles of a wave motion per unit time, the SI unit is the hertz (Hz). 1 Hz is equivalent to one cycle per second. 1000 Hz is 1 kHz.

**IMPACT ISOLATION CLASS (IIC)**

The American Society for Testing and Materials (ASTM) has specified that the IIC of a floor/ceiling system shall be determined by operating an ISO 140 Standard Tapping Machine on the floor and measuring the noise generated in the room below. The IIC is a number found by fitting a reference curve to the measured octave band levels and then deducting the sound pressure level at 500 Hz from 110 decibels. Thus the higher the IIC, the better the impact sound isolation. Not commonly used in Australia.

**'I' (IMPULSE) TIME WEIGHTING**

Sound level meter time constant now not in general use. The 'I' (impulse) time weighting is not suitable for rating impulsive sounds with respect to their loudness. It is also not suitable for assessing the risk of hearing impairment or for determining the 'impulsiveness' of a sound.

**IMPACT SOUND INSULATION ($L_{nT,w}$ )**

Australian Standard AS ISO 717.2 – 2004 has specified that the Impact Sound Insulation of a floor/ceiling system be quantified by operating an ISO 140 Standard Tapping Machine on the floor and measuring the noise generated in the room below. The Weighted Standardised Impact Sound Pressure Level ($L_{nT,w}$ ) is the sound pressure level at 500 Hz for a reference curve fitted to the measured 1/3 octave band levels. Thus the lower $L_{nT,w}$ the better the impact sound insulation.

**IMPULSE NOISE**

An impulse noise is typified by a sudden rise time and a rapid sound decay, such as a hammer blow, rifle shot or balloon burst.

**LOUDNESS**

The volume to which a sound is audible to a listener is a subjective term referred to as loudness. Humans generally perceive an approximate doubling of loudness when the sound level increases by about 10 dB and an approximate halving of loudness when the sound level decreases by about 10 dB.

**MAXIMUM NOISE LEVEL, LAFmax**

The root-mean-square (rms) maximum sound pressure level measured with sound level meter using the 'A' frequency weighting and the 'F' (Fast) time weighting. Often used for noise assessments other than aircraft.

**MAXIMUM NOISE LEVEL, LASmax**

The root-mean-square (rms) maximum sound pressure level measured with sound level meter using the 'A' frequency weighting and the 'S' (Slow) time weighting. Often used for aircraft noise assessments.

**NOISE RATING NUMBERS**

A set of empirically developed equal loudness curves has been adopted as Australian Standard AS1469-1983. These curves allow the loudness of a noise to be described with a single NR number. The Noise Rating number is that curve which touches the highest level on the measured spectrum of the subject noise. For broadband noise such as fans and engines, the NR number often equals the 'A' frequency weighted dB level minus five.

**NOISE**

Noise is unwanted, harmful or inharmonious (discordant) sound. Sound is wave motion within matter, be it gaseous, liquid or solid. Noise usually includes vibration as well as sound.

**NOISE REDUCTION COEFFICIENT – See: "Sound Absorption Coefficient"**

**OFFENSIVE NOISE**

Reference: Dictionary of the NSW Protection of the Environment Operations Act (1997). "Offensive Noise means noise:
(a) that, by reason of its level, nature, character or quality, or the time at which it is made, or any other circumstances:
(i) is harmful to (or likely to be harmful to) a person who is outside the premise from which it is emitted, or
(ii) interferes unreasonably with (or is likely to interfere unreasonably with) the comfort or repose of a person who is outside the premises from which it is emitted, or
(b) that is of a level, nature, character or quality prescribed by the regulations or that is made at a time, or in other circumstances prescribed by the regulations."

**PINK NOISE**

Pink noise is a broadband noise with an equal amount of energy in each octave or third octave band width. Because of this, Pink Noise has more energy at the lower frequencies than White Noise and is used widely for Sound Transmission Loss testing.

**REVERBERATION TIME, T60**

The time in seconds, after a sound signal has ceased, for the sound level inside a room to decay by 60 dB. The first 5 dB decay is often ignored, because of fluctuations that occur while reverberant sound conditions are being established in the room. The decay time for the next 30 dB is measured and the result doubled to determine the $T_{60}$. The Early Decay Time (EDT) is the slope of the decay curve in the first 10 dB normalised to 60 dB.

**SOUND ABSORPTION COEFFICIENT, $\alpha$**

Sound is absorbed in porous materials by the viscous conversion of sound energy to a small amount of heat energy as the sound waves pass through it. Sound is similarly absorbed by the flexural bending of internally damped panels. The fraction of incident energy that is absorbed is termed the Sound Absorption Coefficient, $\alpha$. An absorption coefficient of 0.9 indicates that 90 % of the incident sound energy is absorbed. The average $\alpha$ from 250 to 2 kHz is termed the Noise Reduction Coefficient (NRC).

**'S' (SLOW) TIME WEIGHTING**

Sound level meter design-goal time constant which is 1 second.

**SOUND ATTENUATION**

A reduction of sound due to distance, enclosure or some other devise. If an enclosure is placed around a machine, or an attenuator (muffler or silencer) is fitted to a duct, the noise emission is reduced or attenuated. An enclosure that attenuates the noise level by 20 dB reduces the sound energy by one hundred times.

**SOUND EXPOSURE LEVEL (LAE)**

Integration (summation) rather than an average of the sound energy over a set time period. Use to assess single noise events such as truck or train pass by or aircraft flyovers. The sound exposure level is related to the energy average ($L_{Aeq}$, T) by the formula $L_{Aeq}$, T = $L_{AE}$ – 10 $\log_{10}$ T. The abbreviation (SEL) is sometimes inconsistently used in place of the symbol ($L_{AE}$).

**SOUND PRESSURE**

The rms sound pressure measured in pascals (Pa). A pascal is a unit equivalent to a newton per square metre ($N/m^2$).

**SOUND PRESSURE LEVEL, Lp**

The level of sound measured on a sound level meter and expressed in decibels (dB). Where $L_P$ = 10 $\log_{10}$ $(Pa/Po)^2$ dB (or 20 log10 (Pa/ Po) dB) where Pa is the rms sound pressure in Pascal and Po is a reference sound pressure conventionally chosen is 20 µPa (20 x $10^{-6}$ Pa) for airborne sound. $L_p$ varies with distance from a noise source.

**SOUND POWER**

The rms sound power measured in watts (W). The watt is a unit defined as one joule per second. A measures the rate of energy flow, conversion or transfer.

**SOUND POWER LEVEL, Lw**

The sound power level of a noise source is the inherent noise of the device. Therefore sound power level does not vary with distance from the noise source or with a different acoustic environment. Lw = Lp + 10 $\log_{10}$ 'a' dB, re: 1pW, ($10^{-12}$ watts) where 'a' is the measurement noise-emission area ($m^2$) in a free field.

**SOUND TRANSMISSION CLASS (STC)**

An internationally standardised method of rating the sound transmission loss of partition walls to indicate the sound reduction from one side of a partition to the other in the frequency range of 125 Hz to 4000 kHz. (Refer: Australian Standard AS 1276 – 1979). Now not in general use in Australia see: weighted sound reduction index.

**SOUND TRANSMISSION LOSS**

The amount in decibels by which a random sound is reduced as it passes through a sound barrier. A method for the measurement of airborne Sound Transmission Loss of a building partition is given in Australian Standard AS 1191 - 2002.

**STATISTICAL NOISE LEVELS, Ln.**

Noise which varies in level over a specific period of time 'T' (standard measurement times are 15 minute periods) may be quantified in terms of various statistical descriptors for example:-

- The noise level, in decibels, exceeded for 1% of the measurement time period, when 'A' frequency weighted and 'F' time weighted is reference to as $L_{AF1}$, T. This may be used for describing short-term noise levels such as could cause sleep arousal during the night.
- The noise level, in decibels, exceeded for 10% of the measurement time period, when 'A' frequency weighted and 'F' time weighted is reference to as $L_{AF10}$, T. In most countries the LAF10, T is measured over periods of 15 minutes, and is used to describe the average maximum noise level.
- The noise level, in decibels, exceeded for 90% of the measurement time period, when 'A' frequency weighted and 'F' time weighted is reference to as $L_{AF90}$, T. In most countries the LAF90, T is measured over periods of 15 minutes, and is used to describe the average minimum or background noise level.

**STEADY NOISE**

Noise, which varies in level by 6 dB or less, over the period of interest with the time-weighting set to "Fast", is considered to be "steady". (Refer AS 1055.1 1997).

**WEIGHTED SOUND REDUCTION INDEX, Rw**

This is a single number rating of the airborne sound insulation of a wall, partition or ceiling. The sound reduction is normally measured over a frequency range of 100 Hz to 3.150 kHz and averaged in accordance with ISO standard weighting curves (Refer AS/NZS 1276.1:1999). Internal partition wall Rw + C ratings are frequency weighted to simulate insulation from human voice noise. The $R_w$ + C is similar in value to the STC rating value. External walls, doors and windows may be $R_w$ + $C_{tr}$ rated to simulate insulation from road traffic noise. The spectrum adaptation term Ctr adjustment factor takes account of low frequency noise. The weighted sound reduction index is normally similar or slightly lower number than the STC rating value.

**WHITE NOISE**

White noise is broadband random noise whose spectral density is constant across its entire frequency range. The sound power is the same for equal bandwidths from low to high frequencies. Because the higher frequency octave bands cover a wider spectrum, white noise has more energy at the higher frequencies and sounds like a hiss.

**'Z' FREQUENCY WEIGHTING**

The 'Z' (Zero) frequency weighting is 0 dB within the nominal 1/3 octave band frequency range centred on 10 Hz to 20 kHz. This is within the tolerance limits given in AS IEC 61672.1–2004: 'Electroacoustics - Sound level meters – Specifications'.

# CERTIFICATE OF CALIBRATION

**CERTIFICATE NO: SLM29941**

**EQUIPMENT TESTED:** Sound & Vibration Analyser

| | | | |
|---|---|---|---|
| **Manufacturer:** | Svantek | | |
| **Type No:** | Svan-957 | **Serial No:** | 15336 |
| **Mic. Type:** | 7052E | **Serial No:** | 47869 |
| **Pre-Amp. Type:** | SV12L | **Serial No:** | 18743 |
| **Filter Type:** | 1/3 Octave | **Test No:** | FILT 6546 |

**Owner:** Benbow Environmental
25-27 Sherwood Street
Northmead, NSW 2152

**Tests Performed:** IEC 61672-3:2013,
IEC 1260:1995, & AS/NZS 4476:1997

**Comments:** All Test passed for Class 1. (See overleaf for details)

**CONDITIONS OF TEST:**

| | | | | |
|---|---|---|---|---|
| **Ambient Pressure** | 1006 | hPa ±1 hPa | **Date of Receipt :** | 02/07/2021 |
| **Temperature** | 22 | °C ±1° C | **Date of Calibration :** | 05/07/2021 |
| **Relative Humidity** | 37 | % ±5% | **Date of Issue :** | 05/07/2021 |

**Acu-Vib Test Procedure:** AVP10 (SLM) & AVP06 (Filters)

**CHECKED BY:** ..... **AUTHORISED SIGNATURE:** .....

Hein Soe

Accredited for compliance with ISO/IEC 17025 - Calibration

Results of the tests, calibration and/or measurements included in this document are traceable to SI units through reference equipment that has been calibrated by the Australian National Measurement Institute or other NATA accredited laboratories demonstrating traceability.

This report applies only to the item identified in the report and may not be reproduced in part.

The uncertainties quoted are calculated in accordance with the methods of the ISO Guide to the Uncertainty of Measurement and quoted at a coverage factor of 2 with a confidence interval of approximately 95%.

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Head Office & Calibration Laboratory
Unit 14, 22 Hudson Ave. Castle Hill NSW 2154
(02) 9680 8133
www.acu-vib.com.au

# CERTIFICATE OF CALIBRATION

**CERTIFICATE NO: C35924**

**EQUIPMENT TESTED :** Sound Level Calibrator

**Manufacturer:** Rion
**Type No:** NC-73 **Serial No:** 10186522
**Owner:** Benbow Environmental
25-27 Sherwood Street
Northmead, NSW 2152
**Tests Performed:** Measured Output Pressure level, Frequency & Distortion
**Comments:** See Details overleaf. All Test Passed.

| Parameter | Pre-Adj | Adj Y/N | Output: (dB re 20 µPa) | Frequency (Hz) | THD&N (%) |
|---|---|---|---|---|---|
| Level: | 93.9 | Y | 94.02 dB | 989.59 Hz | 0.79 % |
| Uncertainty | | | ±0.11 dB | ±0.05% | ±0.20 % |
| Uncertainty (at 95% c.l.) k=2 | | | | | |

**CONDITION OF TEST:**

| | | | | |
|---|---|---|---|---|
| **Ambient Pressure** | 999 | hPa ±1 hPa | **Date of Receipt :** | 26/04/2023 |
| **Temperature** | 23 | °C ±1° C | **Date of Calibration :** | 01/05/2023 |
| **Relative Humidity** | 52 | % ±5% | **Date of Issue :** | 01/05/2023 |

**Acu-Vib Test Procedure:** AVP02 (Calibrators)
Test Method: AS IEC 60942 - 2017

**CHECKED BY:** ..... **AUTHORISED SIGNATURE:** ..... Hein Soe

Accredited for compliance with ISO/IEC 17025 - Calibration
Results of the tests, calibration and/or measurements included in this document are traceable to SI units through reference equipment that has been calibrated by the Australian National Measurement Institute or other NATA accredited laboratories demonstrating traceability.

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Ph: +61 2 9484 0800 A.B.N. 65 160 399 119
www.acousticresearch.com.au

# Sound Level Meter
## IEC 61672-3:2013
# Calibration Certificate

**Calibration Number** C22501

| | |
|---|---|
| **Client Details** | Benbow Environmental Pty Ltd<br>25-27 Sherwood Street<br>Northmead NSW 2152 |

| | |
|---|---|
| **Equipment Tested/ Model Number :** | ARL Ngara |
| **Instrument Serial Number :** | 87823C |
| **Microphone Serial Number :** | 21753 |
| **Pre-amplifier Serial Number :** | 28663 |
| **Firmware Version :** | 12.6 |

| **Pre-Test Atmospheric Conditions** | | **Post-Test Atmospheric Conditions** | |
|---|---|---|---|
| **Ambient Temperature :** | 23.9°C | **Ambient Temperature :** | 24°C |
| **Relative Humidity :** | 46.2% | **Relative Humidity :** | 46.2% |
| **Barometric Pressure :** | 100.56kPa | **Barometric Pressure :** | 100.5kPa |

| | | | |
|---|---|---|---|
| **Calibration Technician :** | Lucky Jaiswal | **Secondary Check:** | Dhanush Bonu |
| **Calibration Date :** | 27 Jul 2022 | **Report Issue Date :** | 28 Jul 2022 |

**Approved Signatory :** Ken Williams

| Clause and Characteristic Tested | Result | Clause and Characteristic Tested | Result |
|---|---|---|---|
| 12: Acoustical Sig. tests of a frequency weighting | *Pass* | 17: Level linearity incl. the level range control | *N/A* |
| 13: Electrical Sig. tests of frequency weightings | *Pass* | 18: Toneburst response | *Pass* |
| 14: Frequency and time weightings at 1 kHz | *Pass* | 19: C Weighted Peak Sound Level | *N/A* |
| 15: Long Term Stability | *Pass* | 20: Overload Indication | *Pass* |
| 16: Level linearity on the reference level range | *Pass* | 21: High Level Stability | *Pass* |

The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed.

However, no general statement or conclusion can be made about conformance of the sound level meter to the full requirements of IEC 61672-1:2013 because evidence was not publicly available, from an independent testing organisation responsible for pattern approvals, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2013 and because the periodic tests of IEC 61672-3:2013 cover only a limited subset of the specifications in IEC 61672-1:2013.

Uncertainties of Measurement -

| Acoustic Tests | | Environmental Conditions | |
|---|---|---|---|
| *125Hz* | *±0.13dB* | *Temperature* | *±0.1°C* |
| *1kHz* | *±0.13dB* | *Relative Humidity* | *±1.9%* |
| *8kHz* | *±0.14dB* | *Barometric Pressure* | *±0.014kPa* |
| Electrical Tests | *±0.13dB* | | |

*All uncertainties are derived at the 95% confidence level with a coverage factor of 2.*

This calibration certificate is to be read in conjunction with the calibration test report.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172.
Accredited for compliance with ISO/IEC 17025 - Calibration.

The results of the tests, calibrations and/or measurements included in this document are traceable to SI units.

NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration and inspection reports.

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www.acousticresearch.com.au

# Sound Level Meter
## AS 1259.1:1990 - AS 1259.2:1990
# Calibration Certificate

**Calibration Number** C21453

**Client Details** Benbow Environmental
25-27 Sherwood Street
Northmead NSW 2152

**Equipment Tested/ Model Number :** ARL EL-215
**Instrument Serial Number :** 194552
**Microphone Serial Number :** N/A
**Pre-amplifier Serial Number :** N/A

**Atmospheric Conditions**
**Ambient Temperature :** 23.6°C
**Relative Humidity :** 39.9%
**Barometric Pressure :** 100.9kPa

**Calibration Technician :** Lucky Jaiswal
**Calibration Date :** 8 Jul 2021
**Secondary Check:** Rhys Gravelle
**Report Issue Date :** 8 Jul 2021
**Approved Signatory :** Ken Williams

| Clause and Characteristic Tested | Result | Clause and Characteristic Tested | Result |
|---|---|---|---|
| 10.2.2: Absolute sensitivity | *Pass* | 10.3.4: Inherent system noise level | *Pass* |
| 10.2.3: Frequency weighting | *Pass* | 10.4.2: Time weighting characteristic F and S | *Pass* |
| 10.3.2: Overload indications | *Pass* | 10.4.3: Time weighting characteristic I | *Pass* |
| 10.3.3: Accuracy of level range control | *Pass* | 10.4.5: R.M.S performance | *Pass* |
| 8.9: Detector-indicator linearity | *Pass* | 9.3.2: Time averaging | *Pass* |
| 8.10: Differential level linearity | *Pass* | 9.3.5: Overload indication | *Pass* |

Least Uncertainties of Measurement -

| Acoustic Tests | | Environmental Conditions | |
|---|---|---|---|
| *31.5 Hz to 8kHz* | *±0.13dB* | *Temperature* | *±0.2°C* |
| *12.5kHz* | *±0.19dB* | *Relative Humidity* | *±2.4%* |
| *16kHz* | *±0.31dB* | *Barometric Pressure* | *±0.015kPa* |
| Electrical Tests | | | |
| *31.5 Hz to 20 kHz* | *±0.1dB* | | |

*All uncertainties are derived at the 95% confidence level with a coverage factor of 2.*

*The sound level meter under test has been shown to conform to the type 2 requirements for periodic testing as described in AS 1259.1:1990 and AS 1259.2:1990 for the tests stated above.*

This calibration certificate is to be read in conjunction with the calibration test report.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172.
Accredited for compliance with ISO/IEC 17025 - calibration.

The results of the tests, calibrations and/or measurements included in this document are traceable to SI units.

NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration and inspection reports.

## Calibration of Sound Level Meters

A sound level meter requires regular calibration to ensure its measurement performance remains within specification. Benbow Environmental sound level meters are calibrated by a National Association of Testing Authority (NATA) registered laboratory or a laboratory approved by the NSW Environment Protection Authority (EPA) every two years and after each major repair, in accordance with AS 1259–1990.

The calibration of the sound level meter was checked immediately before and after each series of measurements using an acoustic calibrator. The acoustic calibrator provides a known sound pressure level, which the meter indicates when the calibrator is activated while positioned on the meter microphone.

The sound level meters also incorporate an internal calibrator for use in setting up. This provides a check of the electrical calibration of the meter, but does not check the performance of the microphone. Acoustical calibration checks the entire instrument including the microphone. Calibration certificates for the instrument sets used have been included as Attachment 1.

## Care and Maintenance of Sound Level Meters

Noise measuring equipment contains delicate components and therefore must be handled accordingly. The equipment is manufactured to comply with international and national standards and is checked periodically for compliance. The technical specifications for sound level meters used in Australia are defined in Australian Standard AS 1259–1990 "*Sound Level Meters"*.

The sound level meters and associated accessories are protected during storage, measurement and transportation against dirt, corrosion, rapid changes of temperature, humidity, rain, wind, vibration, electric and magnetic fields. Microphone cables and adaptors are always connected and disconnected with the power turned off. Batteries are removed (with the instrument turned off) if the instrument is not to be used for some time.

## Investigation Procedures

All investigative procedures were conducted in accordance with AS 1055.1–1997 *Acoustics – Description and Measurement of Environmental Noise* Part 1: *General Procedures*.

The following information was recorded and kept for reference purposes:

- type of instrumentation used and measurement procedure conducted;
- description of the time aspect of the measurements, ie. measurement time intervals; and
- positions of measurements and the time and date were noted.

As per AS 1055.1–1997, all measurements were carried out at least 3.5 m from any reflecting structure other than the ground. The preferred measurement height of 1.2 m above the ground was utilised. A sketch of the area was made identifying positions of measurement and the approximate location of the noise source and distances in meters (approx.).

## Unattended Noise Monitoring

*NOISE MONITORING EQUIPMENT*

ARL noise loggers type Ngara and EL-215 were used to conduct the long-term unattended noise monitoring. This equipment complies with Australian Standard 1259.2–1990 *Acoustics – Sound Level Meters* and is designated as a Type 1 and Type 2 instrument suitable for field use.

The measured data is processed statistically and stored in memory every 15 minutes. The equipment was calibrated prior and subsequent to the measurement period using a Rion NC-73 sound level calibrator. There were no significant variances observed in the reference signal between the pre-measurement and post-measurement calibrations. Instrument calibration certificates have also been included in Attachment 1.

*METEOROLOGICAL CONSIDERATION DURING MONITORING*

For the long-term attended monitoring, meteorological data for the relevant period were provided by the Bureau of Meteorology, which was considered representative of the site for throughout the monitoring period.

*DESCRIPTORS & FILTERS USED FOR MONITORING*

Noise levels are commonly measured using A-weighted filters and are usually described as dB(A). The "A-weighting" refers to standardised amplitude versus frequency curve used to "weight" sound measurements to represent the response of the human ear. The human ear is less sensitive to low frequency sound than it is to high frequency sound. Overall A-weighted measurements quantify sound with a single number to represent how people subjectively hear different frequencies at different levels.

Noise environments can be described using various descriptors depending on characteristics of noise or purpose of assessments. For this survey the $L_{A90}$ was used to analyse the monitoring results. The statistical descriptors $L_{A90}$ measures the noise level exceeded for 90% of the sample measurement time, and is used to describe the “Background noise”. Background noise is the underlying level of noise present in the ambient noise, excluding extraneous noise or the noise source under investigation.

Measurement sample periods were fifteen minutes. The Noise -vs- Time graphs representing measured noise levels at the noise monitoring location are presented in Attachment 3.

## ATTENDED NOISE MONITORING

*NOISE MONITORING EQUIPMENT*

The attended short-term noise monitoring was carried out using a SVANTEK SVAN957 Class 1 Precision Sound Level Meter. The instrument was calibrated by a NATA accredited laboratory within two years of the measurement period. The instrument sets comply with AS 1259 and was set on A-weighted, fast response.

The microphone was positioned at 1.5 metres above ground level and was fitted with a windsock. The instrument was calibrated using a Rion NC-73 sound level calibrator prior and subsequent to the measurement period to ensure the reliability and accuracy of the instrument sets. There were no significant variances observed in the reference signal between the pre-measurement and post-measurement calibrations. Instrument calibration certificates have also been included in Attachment 1.

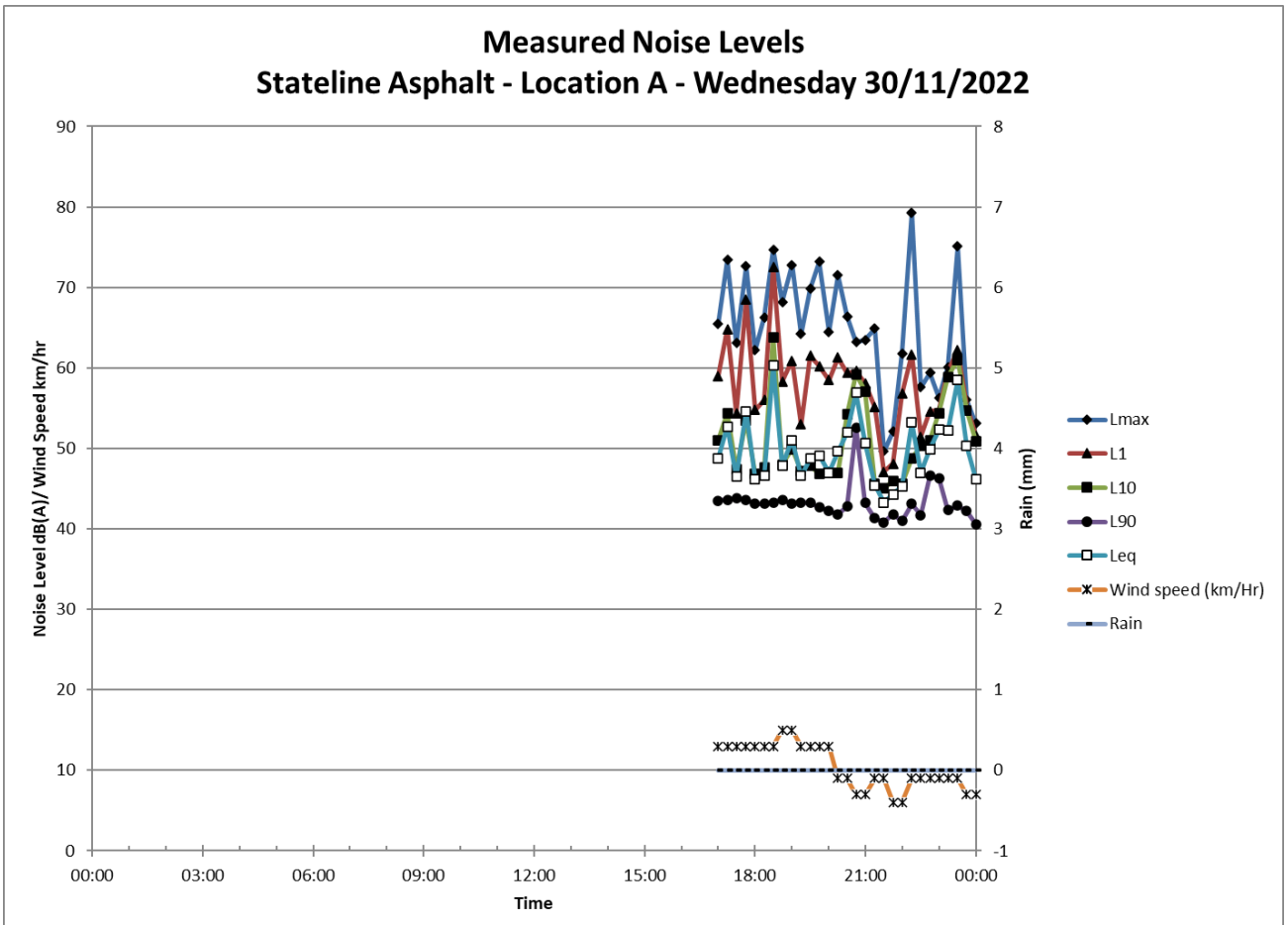
WEATHER CONDITIONS

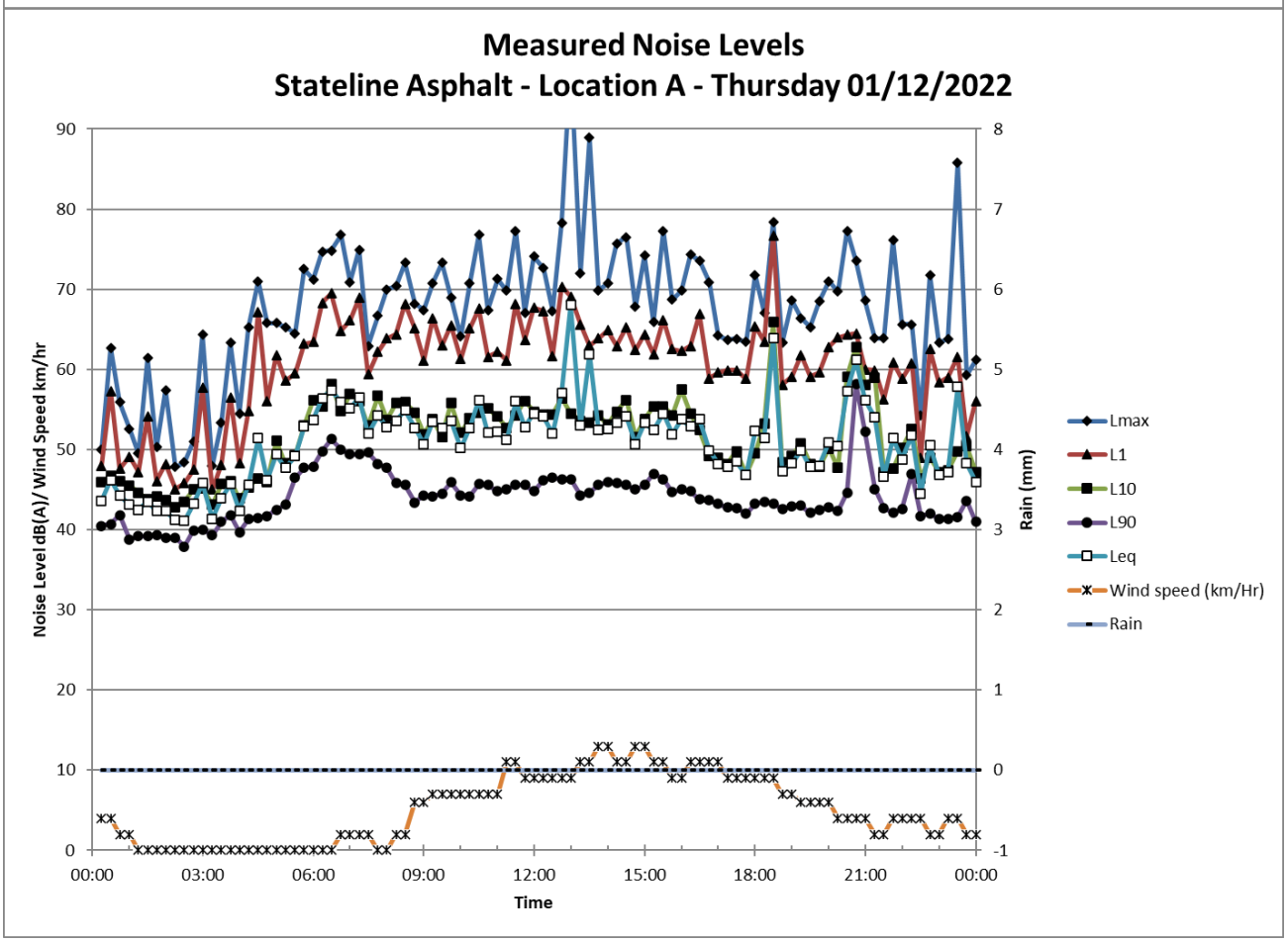
It was partially cloudy, fine without significant breeze.

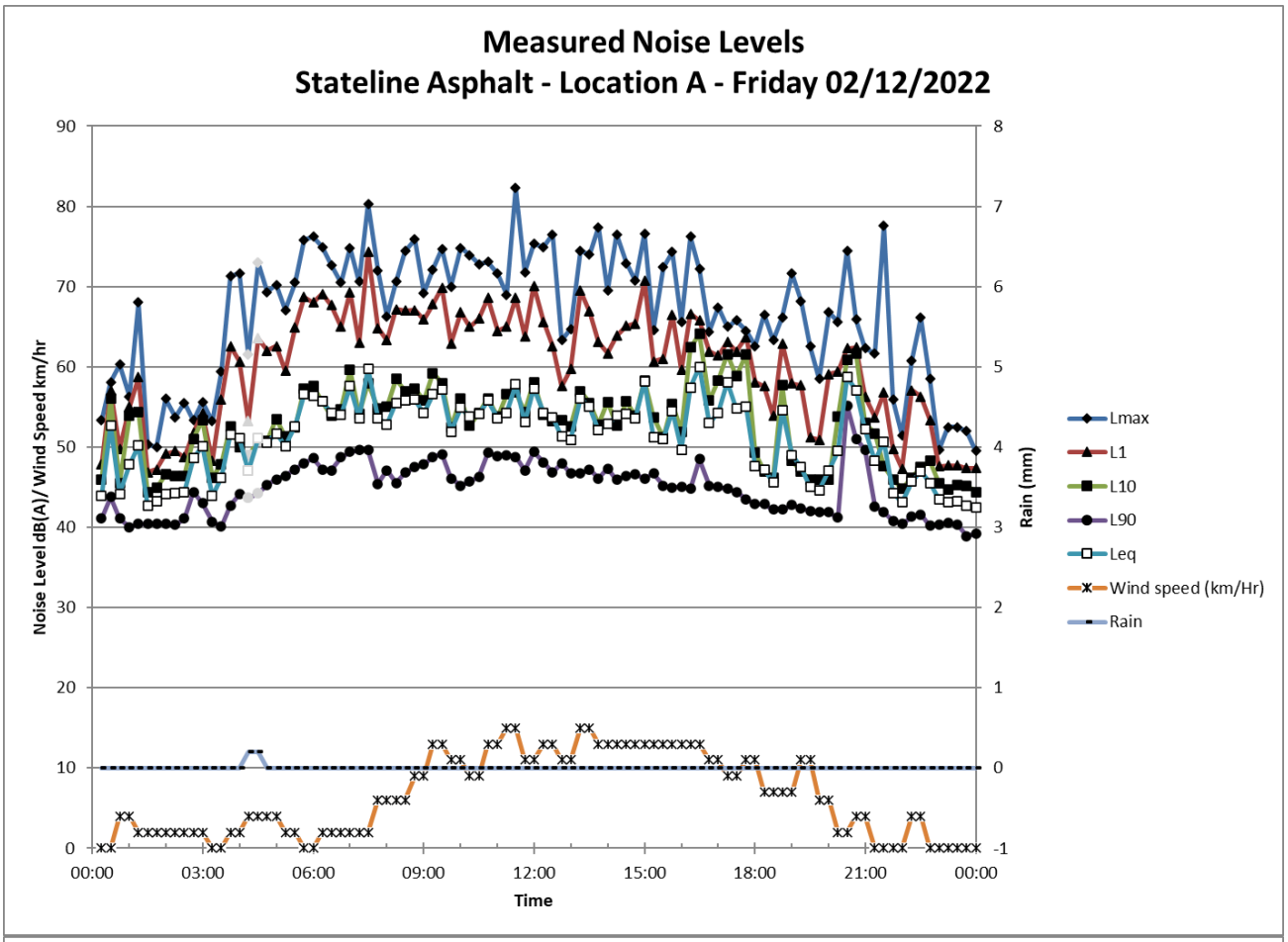
METHODOLOGY

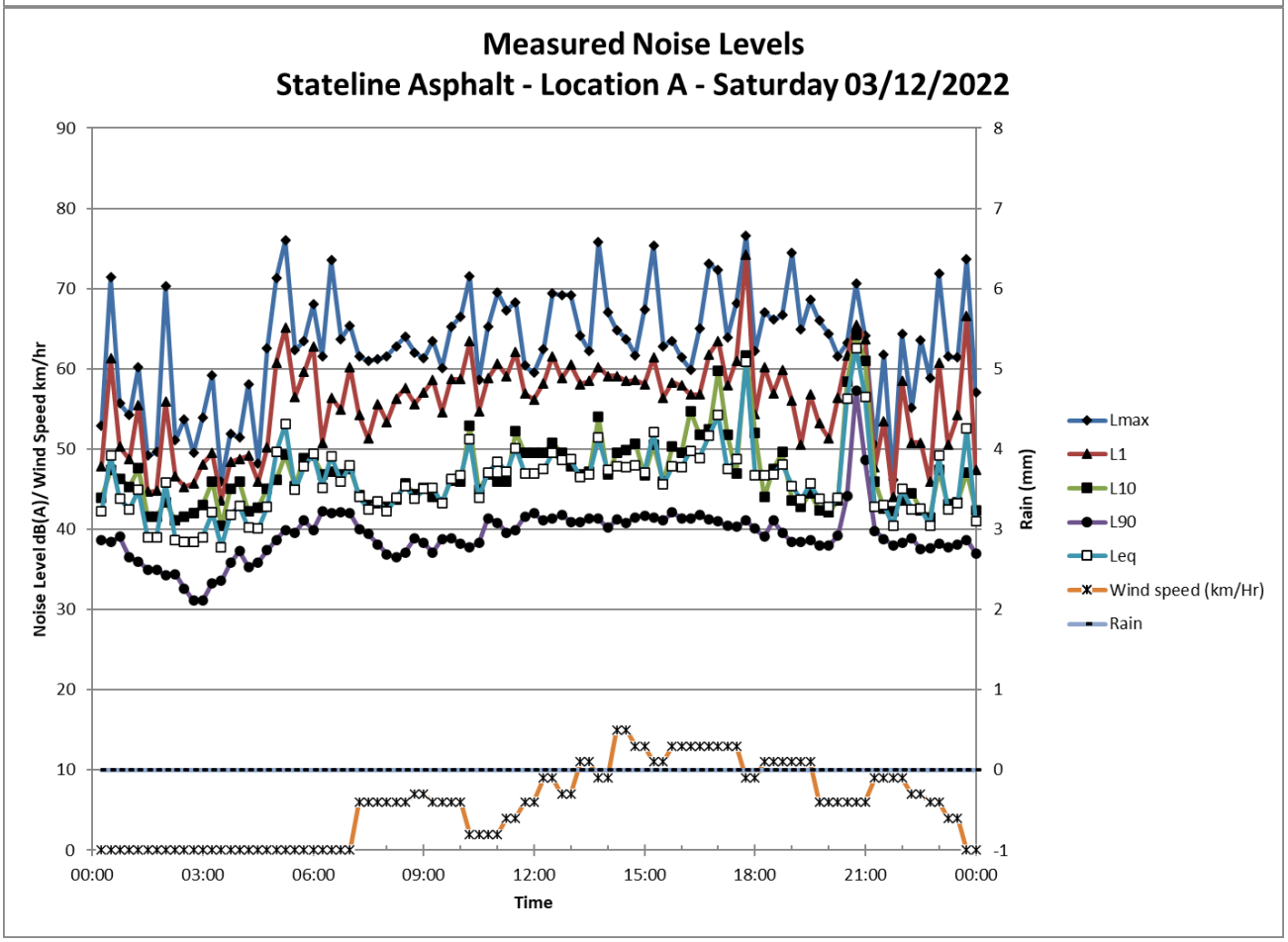
The attended noise measurements were carried out generally in accordance with Australian Standard AS 1055-1997 "Acoustics – Description and Measurement of Environmental Noise".

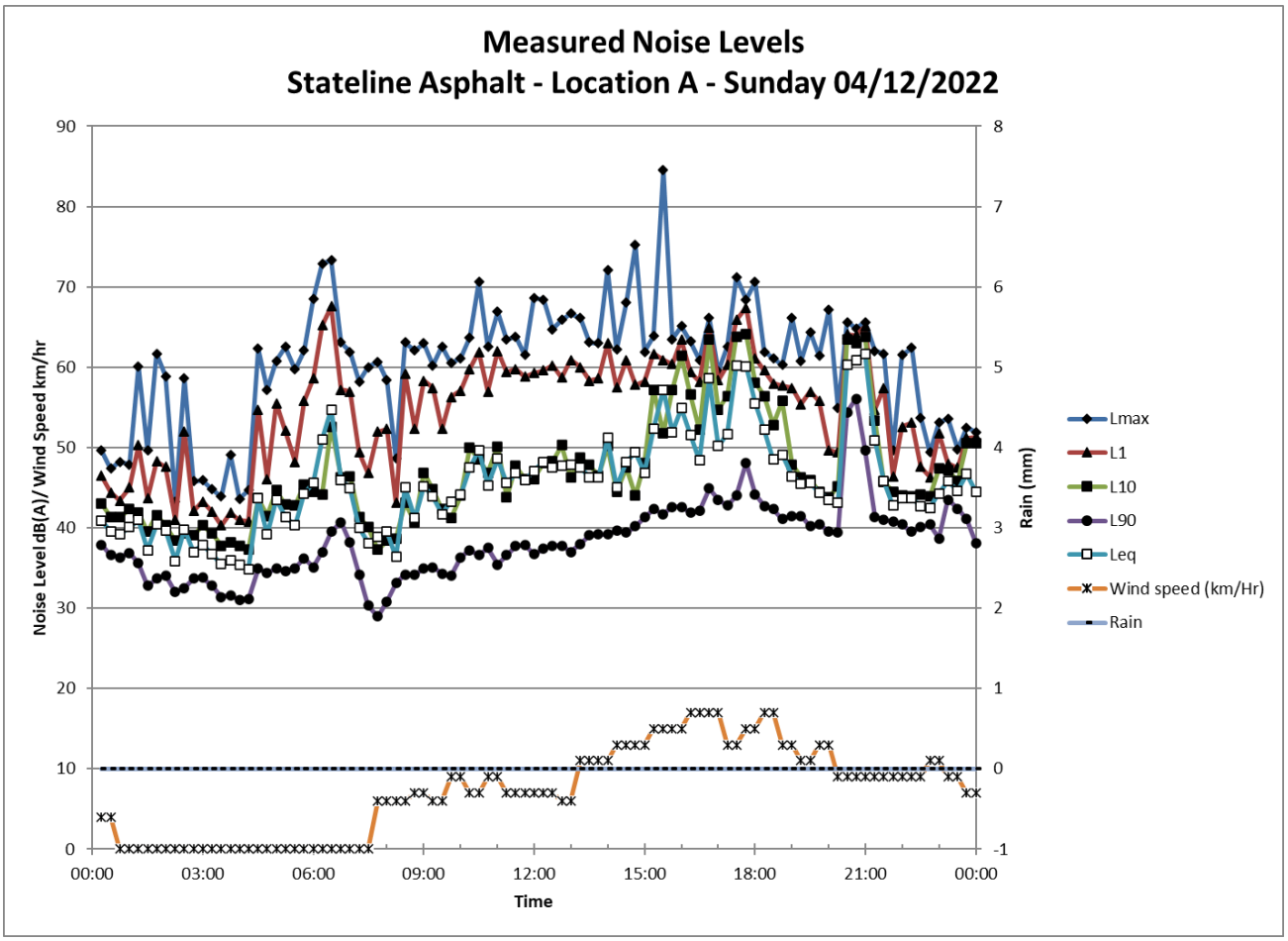
Attachment 4:  Daily Noise Logger Charts

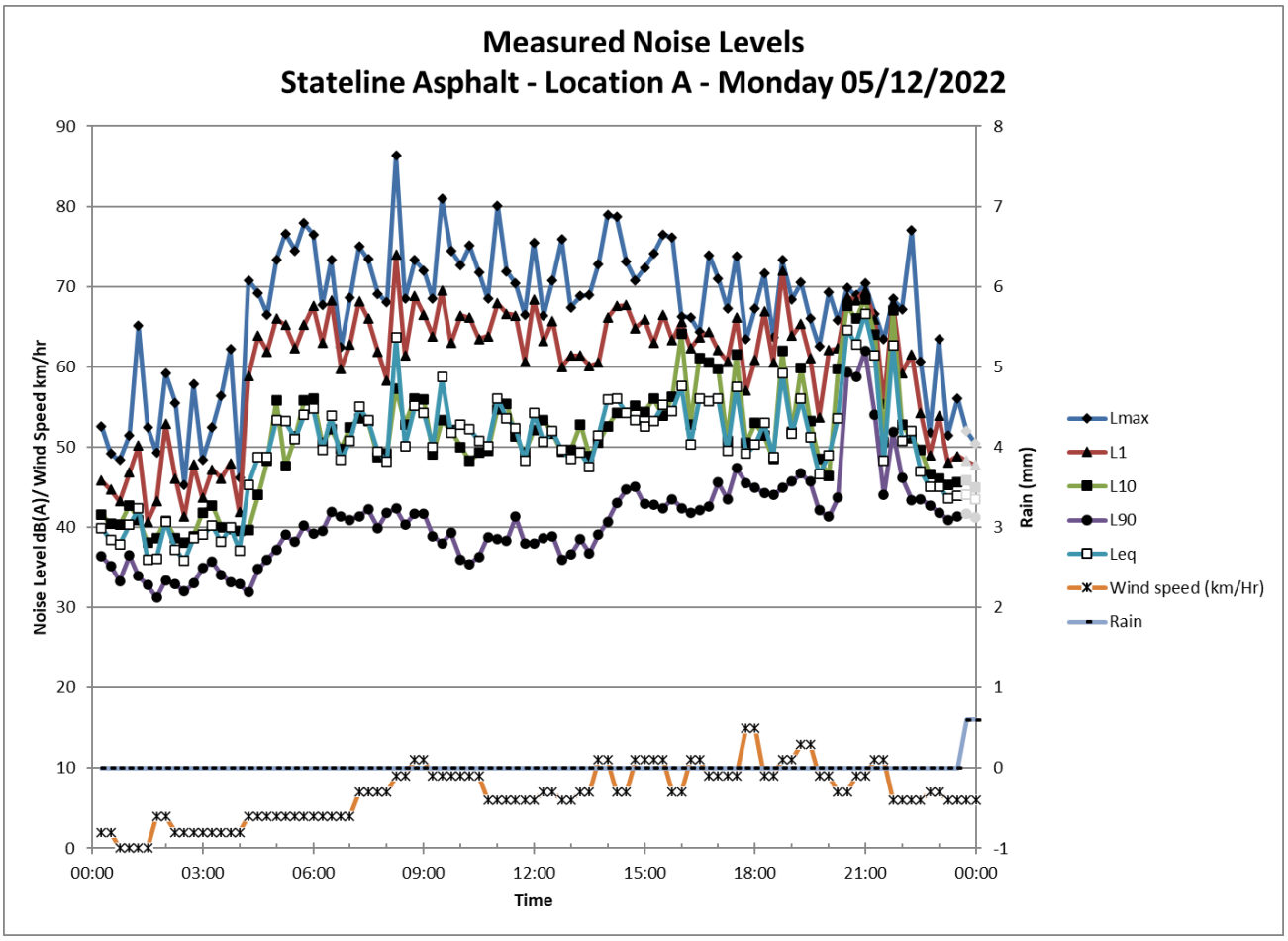

Measured Noise Levels
Stateline Asphalt - Location A - Wednesday 30/11/2022
Noise Level dB(A)/ Wind Speed km/hr
Rain (mm)
Time
00:00
03:00
06:00
09:00
12:00
15:00
18:00
21:00
00:00
Lmax
L1
L10
L90
Leq
Wind speed (km/Hr)
Rain

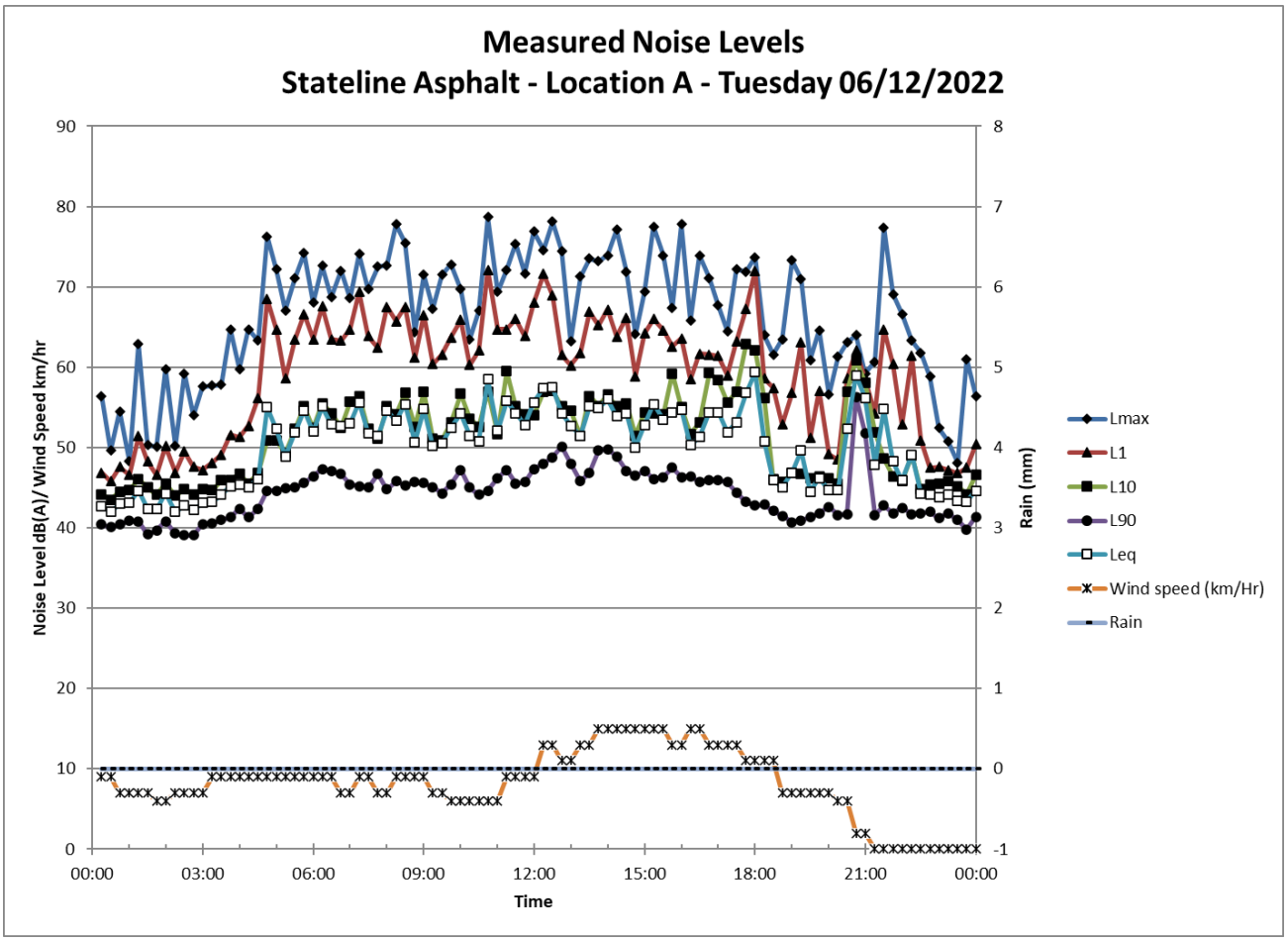

Measured Noise Levels
Stateline Asphalt - Location A - Thursday 01/12/2022
Noise Level dB(A)/ Wind Speed km/hr
Rain (mm)
Time
00:00
03:00
06:00
09:00
12:00
15:00
18:00
21:00
00:00
Lmax
L1
L10
L90
Leq
Wind speed (km/Hr)
Rain

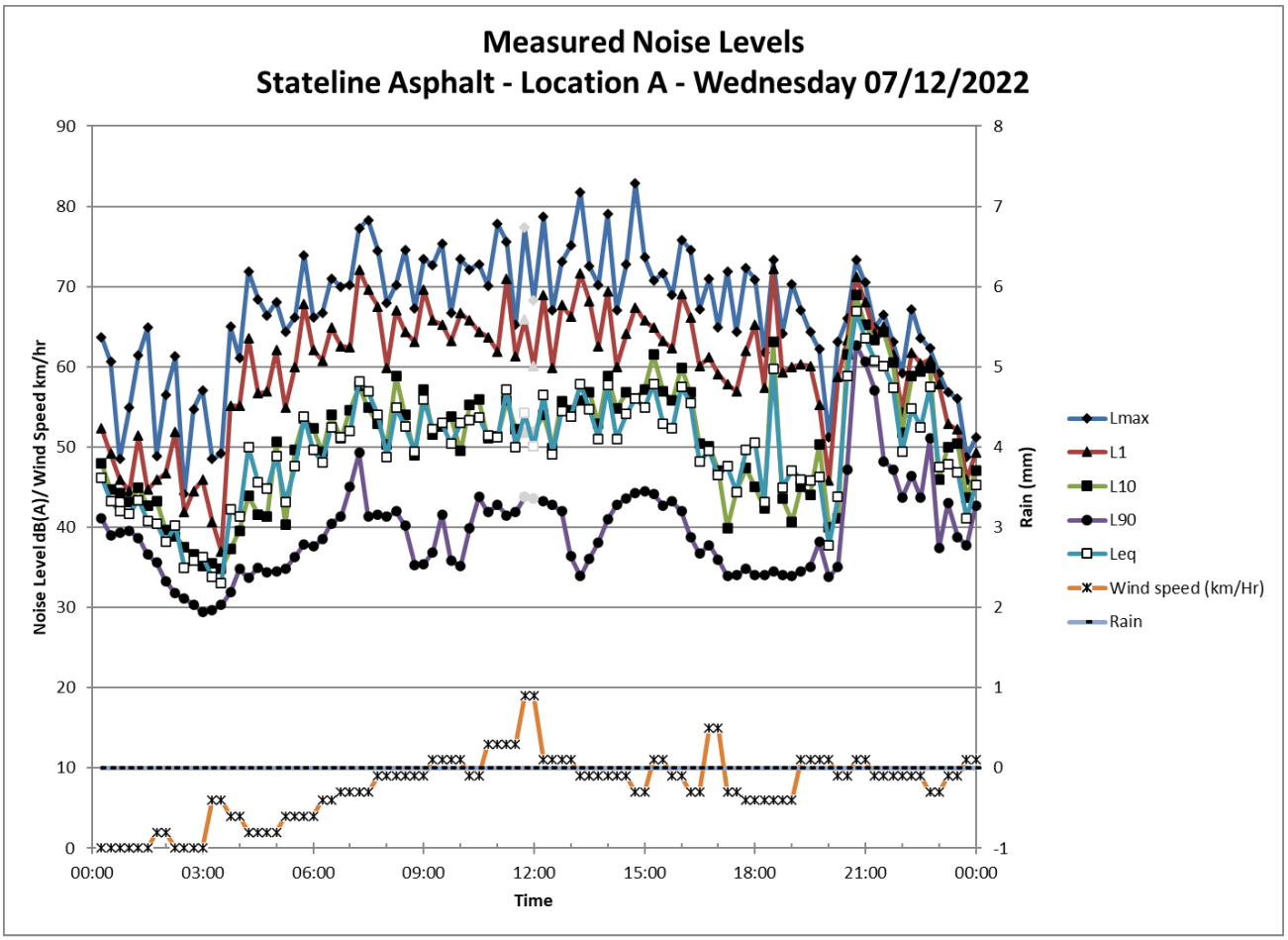

Measured Noise Levels
Stateline Asphalt - Location A - Friday 02/12/2022
Noise Level dB(A)/ Wind Speed km/hr
Rain (mm)
Time
00:00
03:00
06:00
09:00
12:00
15:00
18:00
21:00
00:00
Lmax
L1
L10
L90
Leq
Wind speed (km/Hr)
Rain

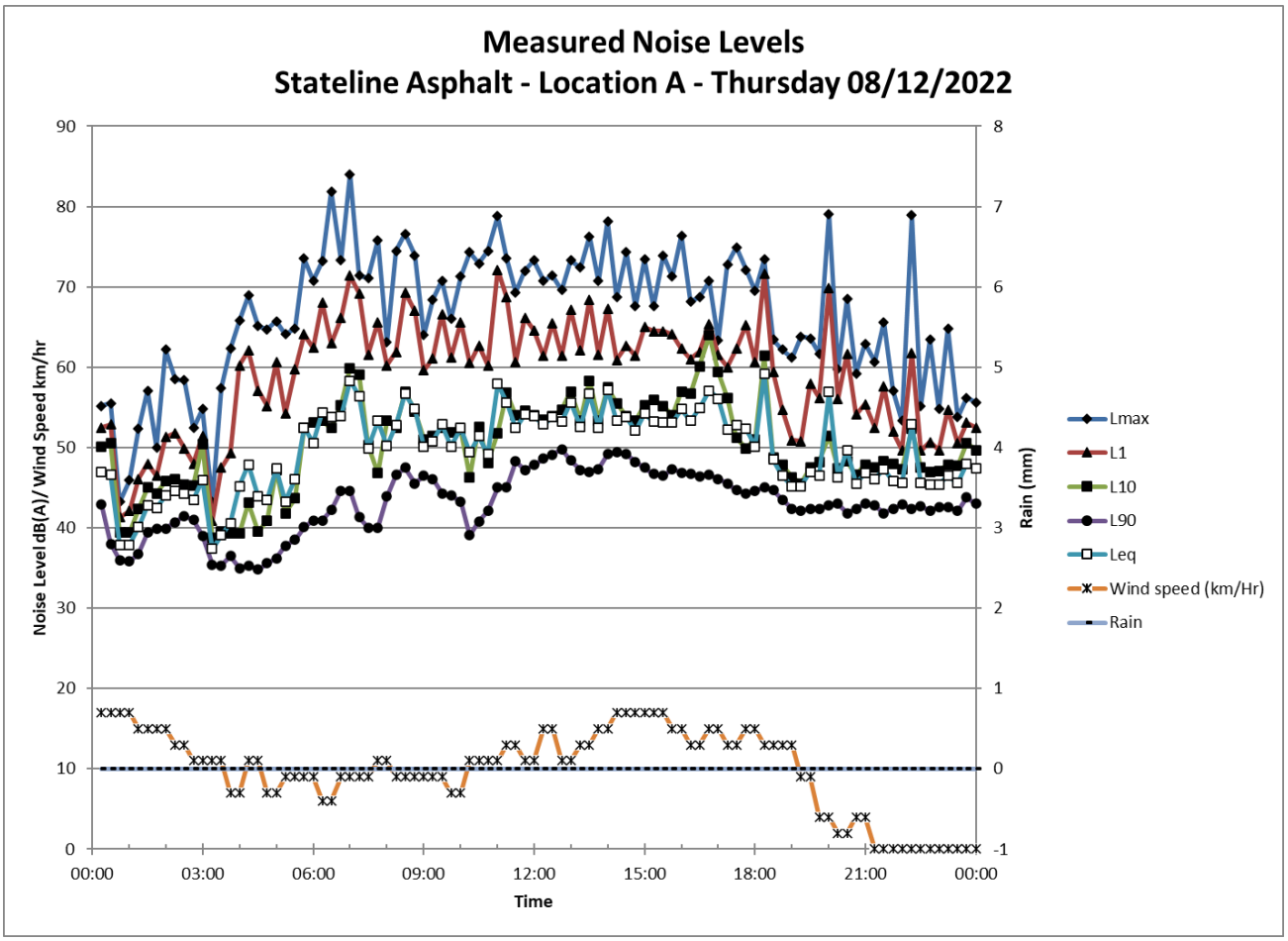

Measured Noise Levels
Stateline Asphalt - Location A - Saturday 03/12/2022
Noise Level dB(A)/ Wind Speed km/hr
Rain (mm)
Time
00:00
03:00
06:00
09:00
12:00
15:00
18:00
21:00
00:00
Lmax
L1
L10
L90
Leq
Wind speed (km/Hr)
Rain

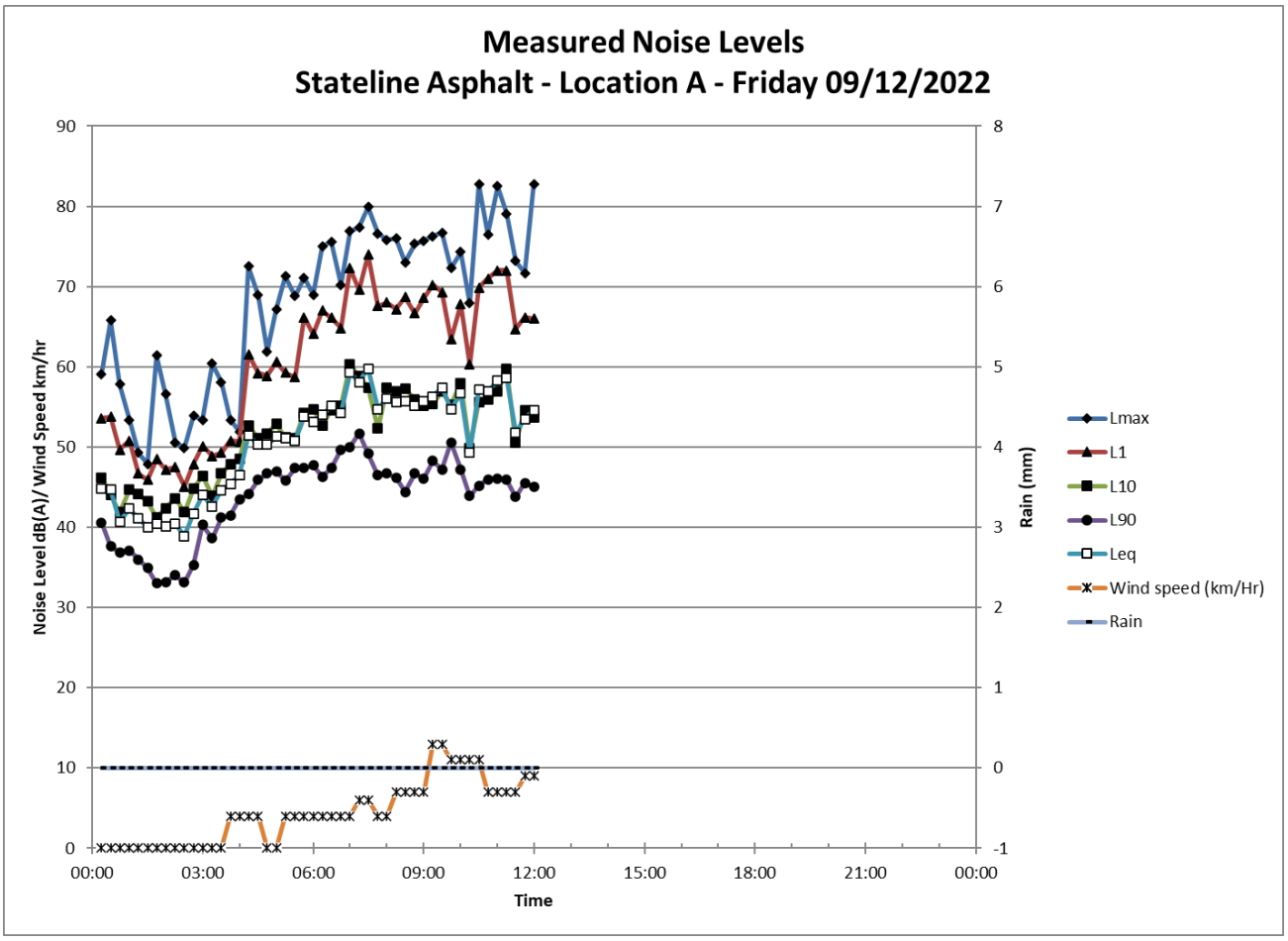

Measured Noise Levels
Stateline Asphalt - Location A - Sunday 04/12/2022
Noise Level dB(A)/ Wind Speed km/hr
Rain (mm)
Time
00:00
03:00
06:00
09:00
12:00
15:00
18:00
21:00
00:00
Lmax
L1
L10
L90
Leq
Wind speed (km/Hr)
Rain


Measured Noise Levels
Stateline Asphalt - Location A - Monday 05/12/2022
Noise Level dB(A)/ Wind Speed km/hr
Rain (mm)
Time
00:00
03:00
06:00
09:00
12:00
15:00
18:00
21:00
00:00
Lmax
L1
L10
L90
Leq
Wind speed (km/Hr)
Rain


Measured Noise Levels
Stateline Asphalt - Location A - Tuesday 06/12/2022
Noise Level dB(A)/ Wind Speed km/hr
Rain (mm)
Time
00:00
03:00
06:00
09:00
12:00
15:00
18:00
21:00
00:00
Lmax
L1
L10
L90
Leq
Wind speed (km/Hr)
Rain


Measured Noise Levels
Stateline Asphalt - Location A - Wednesday 07/12/2022
Noise Level dB(A)/ Wind Speed km/hr
Rain (mm)
Time
00:00
03:00
06:00
09:00
12:00
15:00
18:00
21:00
00:00
Lmax
L1
L10
L90
Leq
Wind speed (km/Hr)
Rain


Measured Noise Levels
Stateline Asphalt - Location A - Thursday 08/12/2022
Noise Level dB(A)/ Wind Speed km/hr
Rain (mm)
Time
00:00
03:00
06:00
09:00
12:00
15:00
18:00
21:00
00:00
Lmax
L1
L10
L90
Leq
Wind speed (km/Hr)
Rain


Measured Noise Levels
Stateline Asphalt - Location A - Friday 09/12/2022
Noise Level dB(A)/ Wind Speed km/hr
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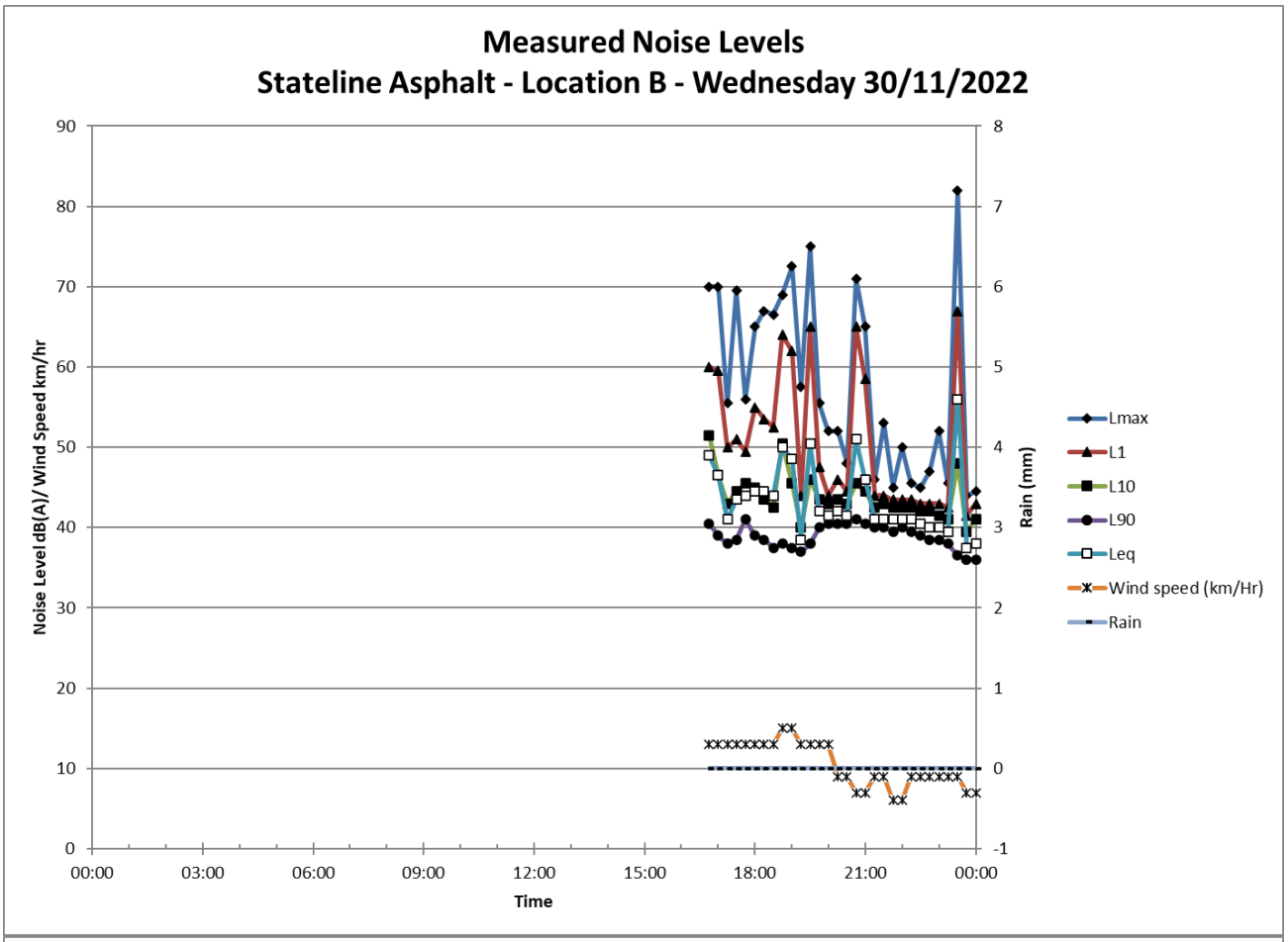
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Noise Level dB(A)/ Wind Speed km/hr
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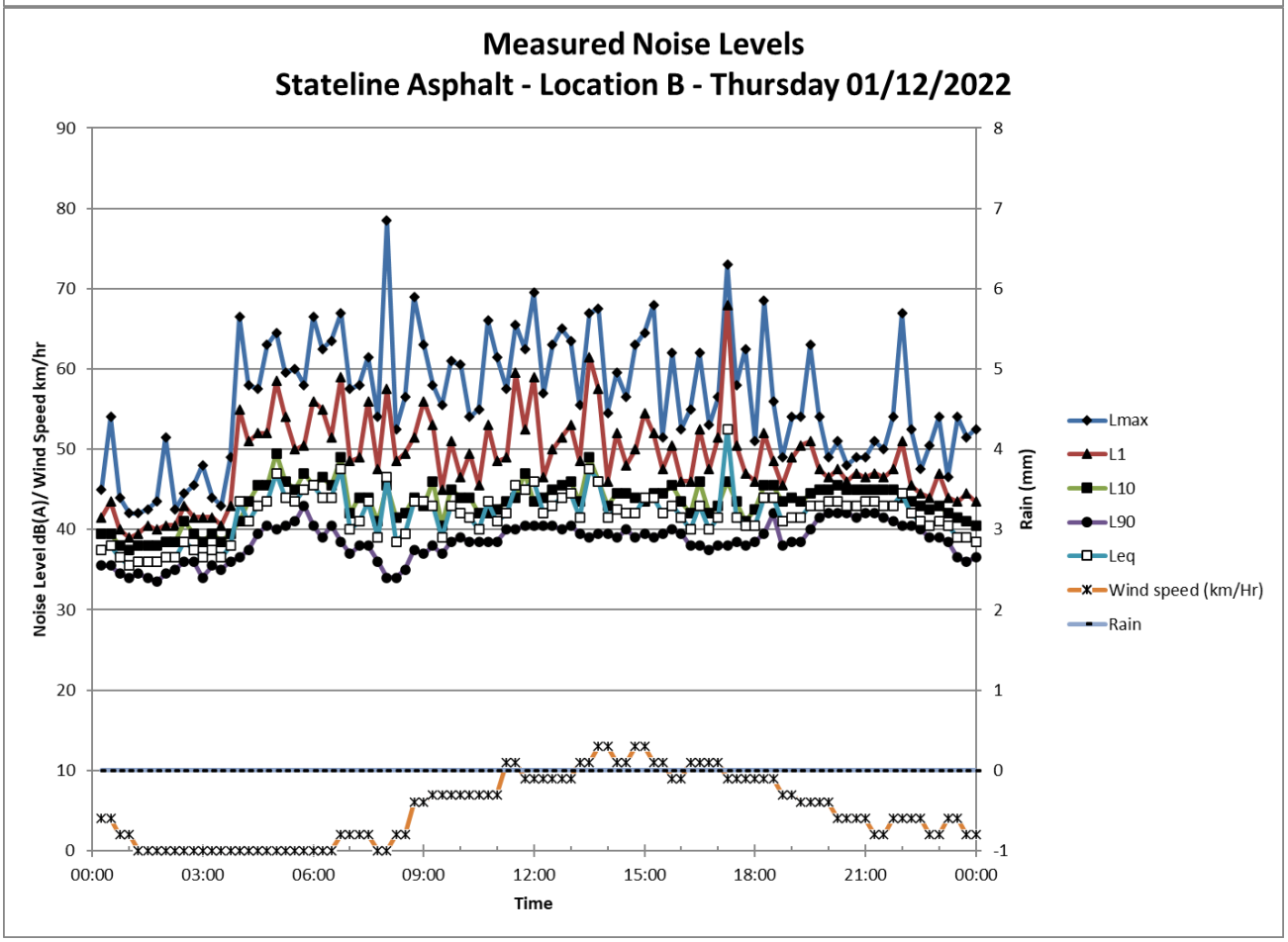
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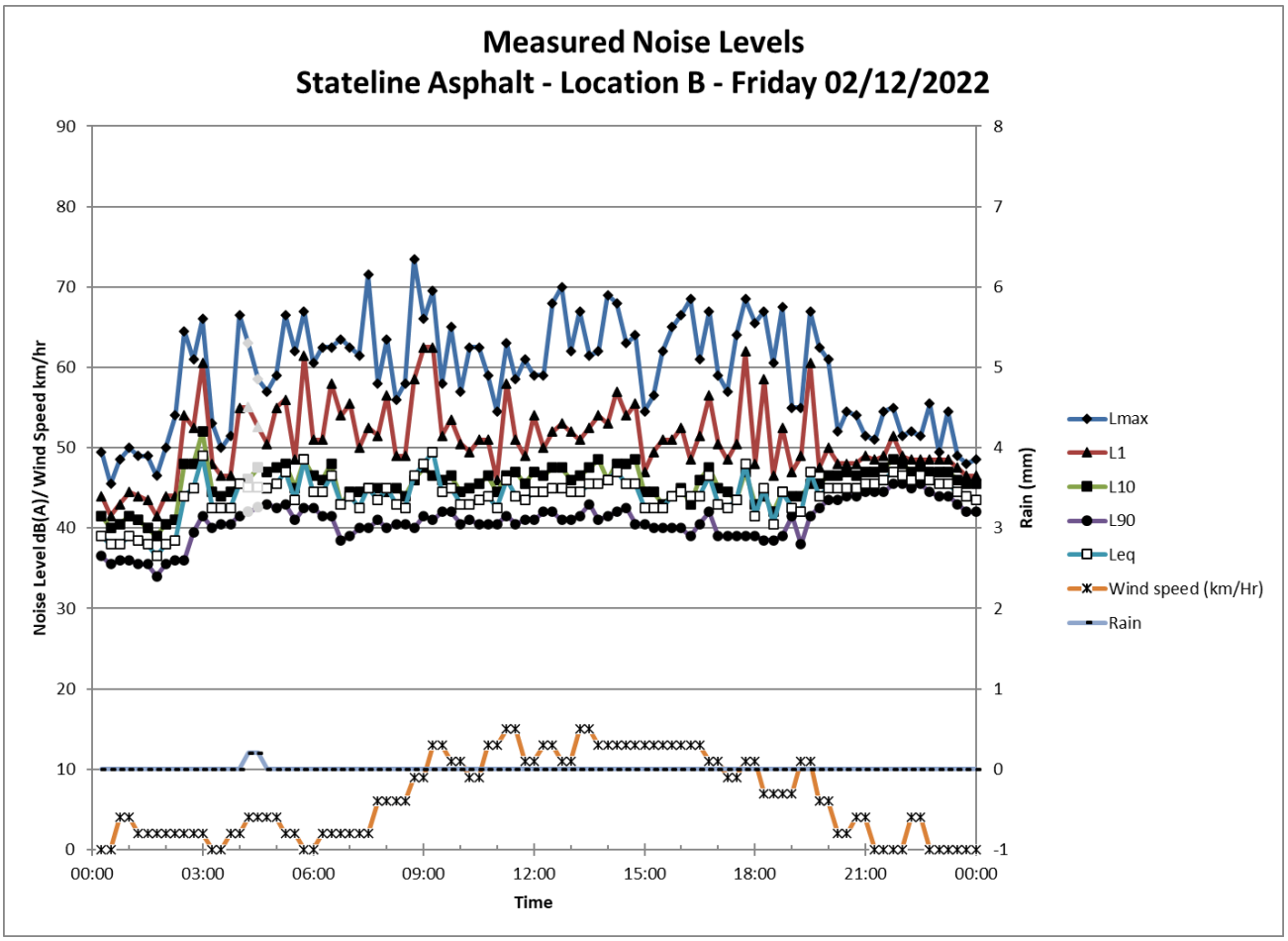
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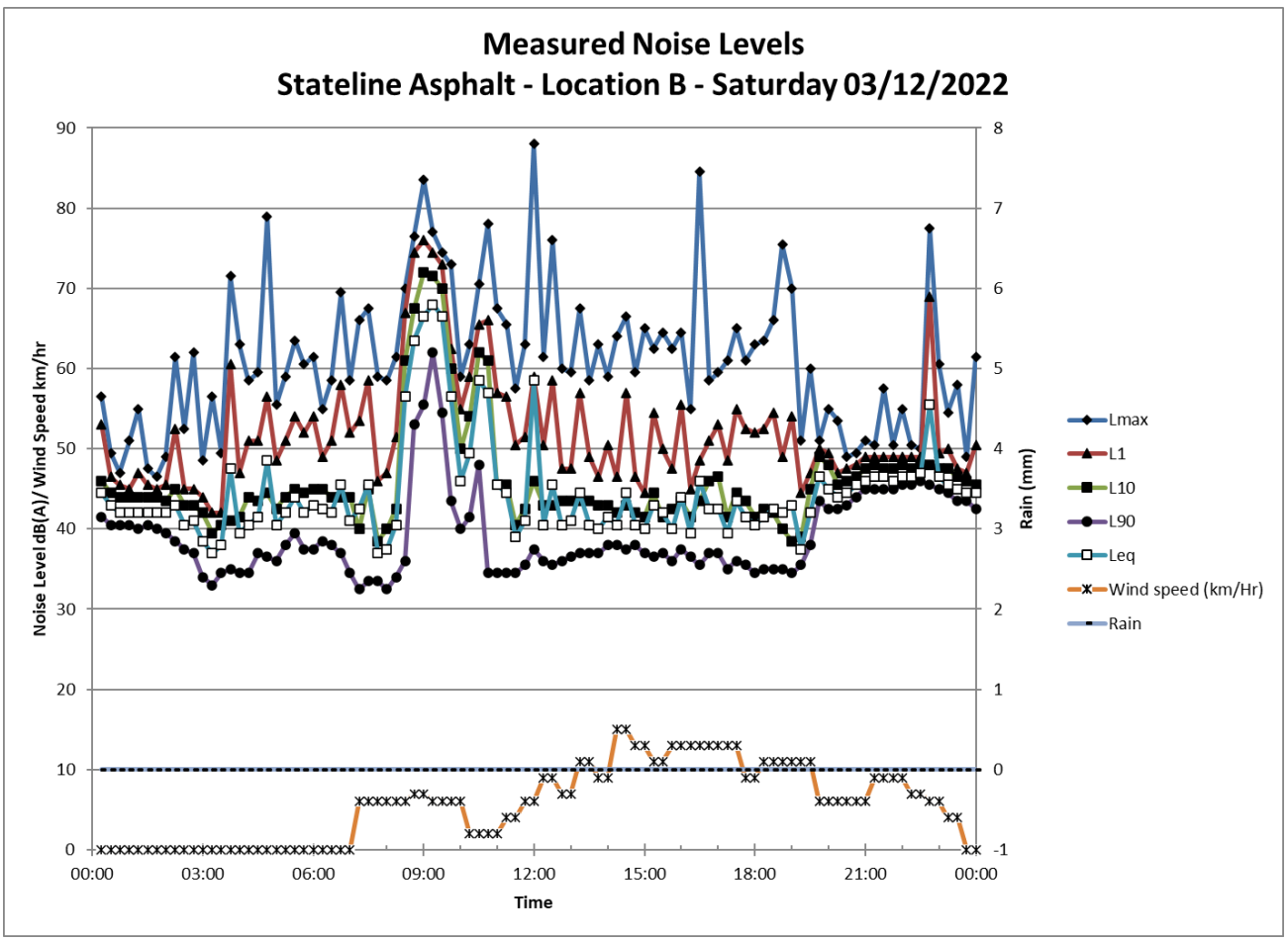
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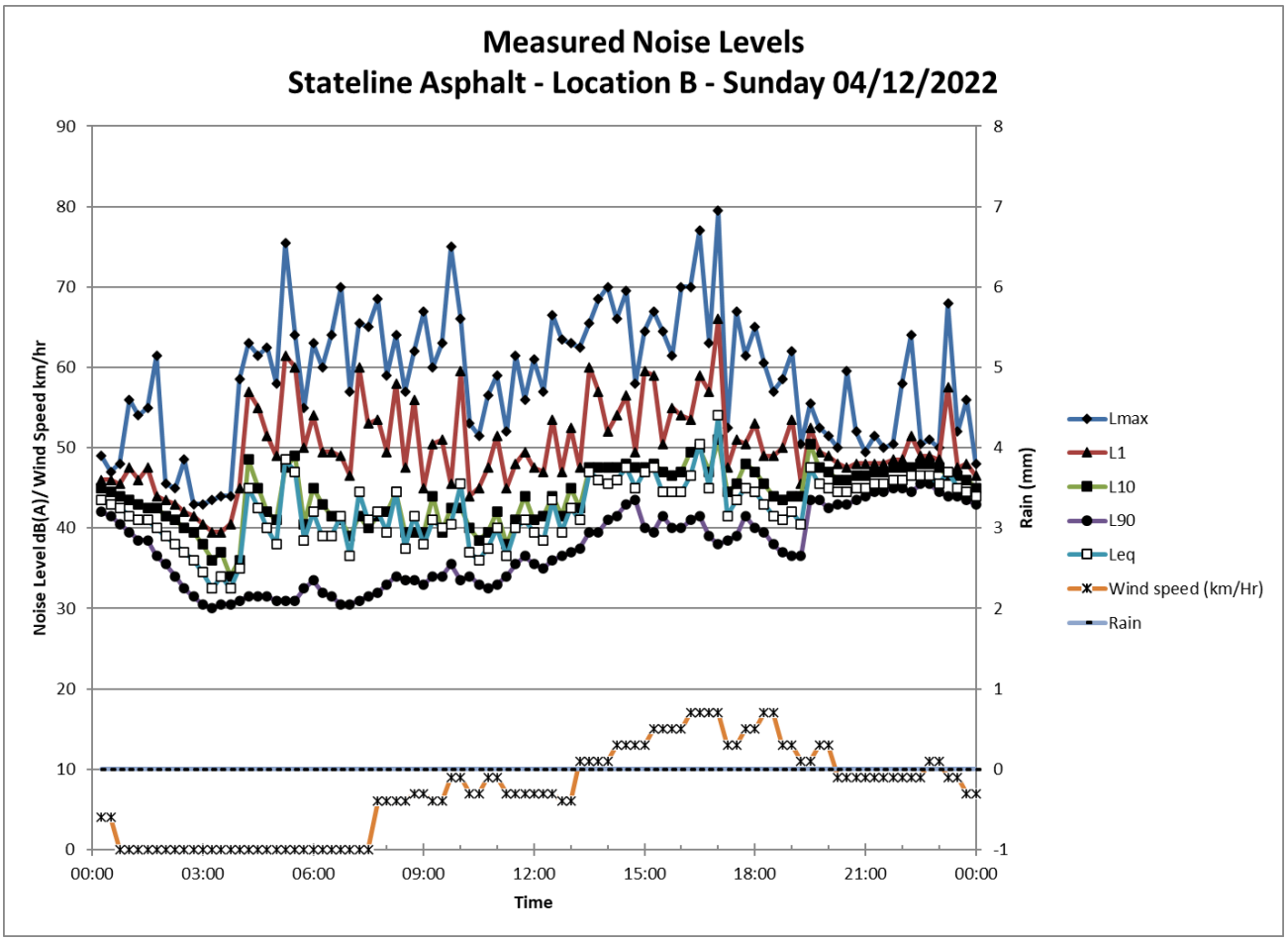
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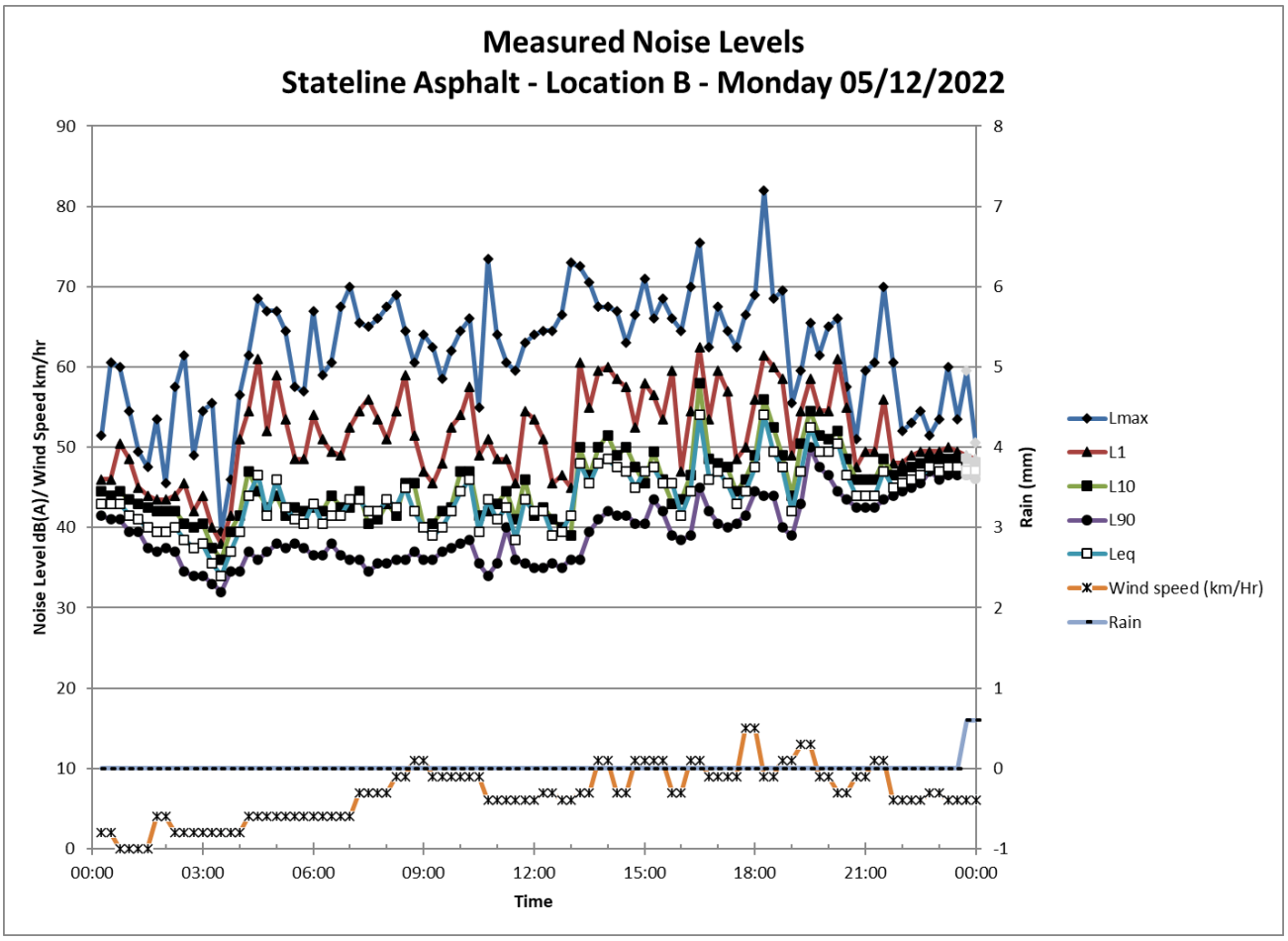
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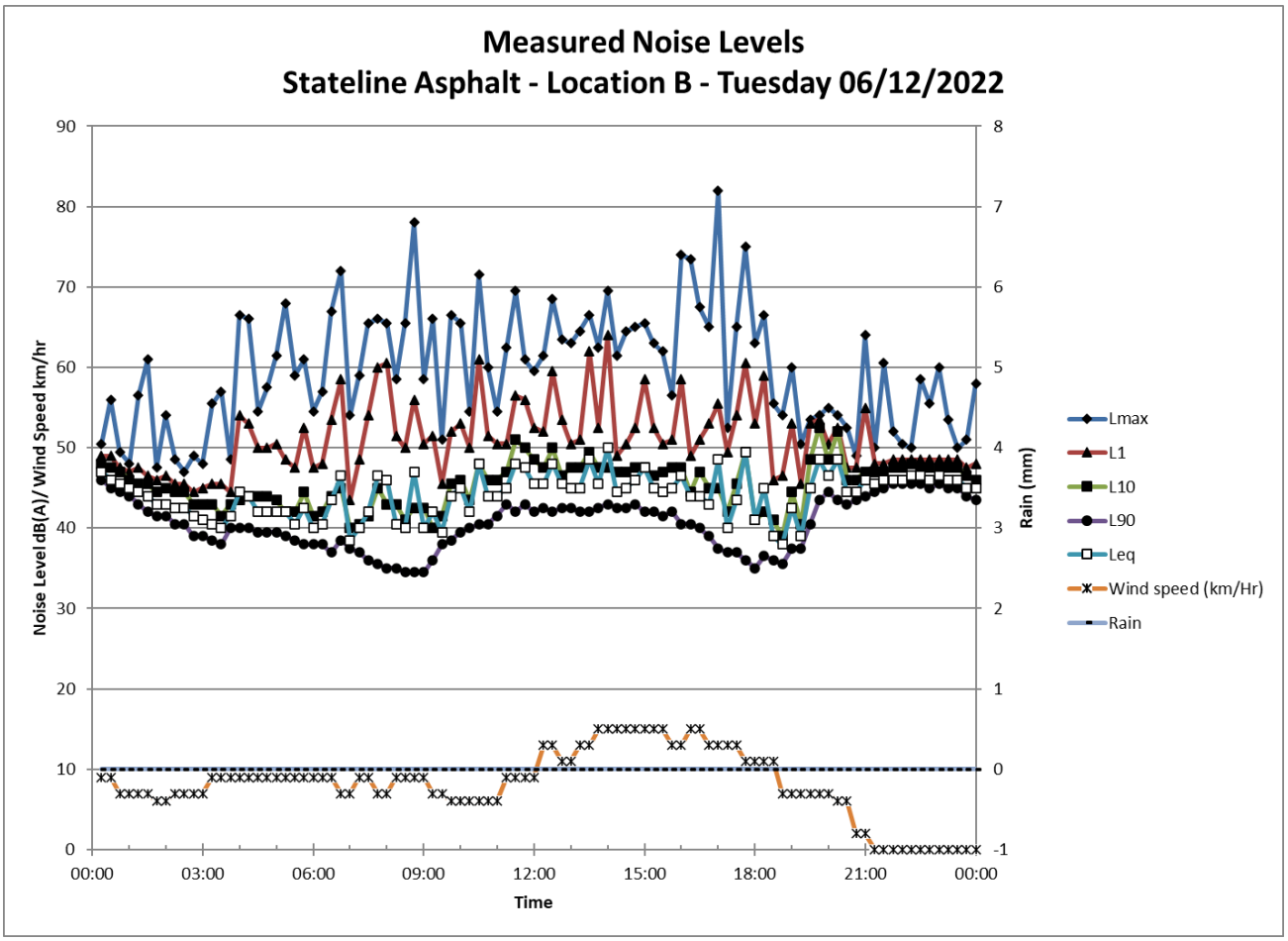
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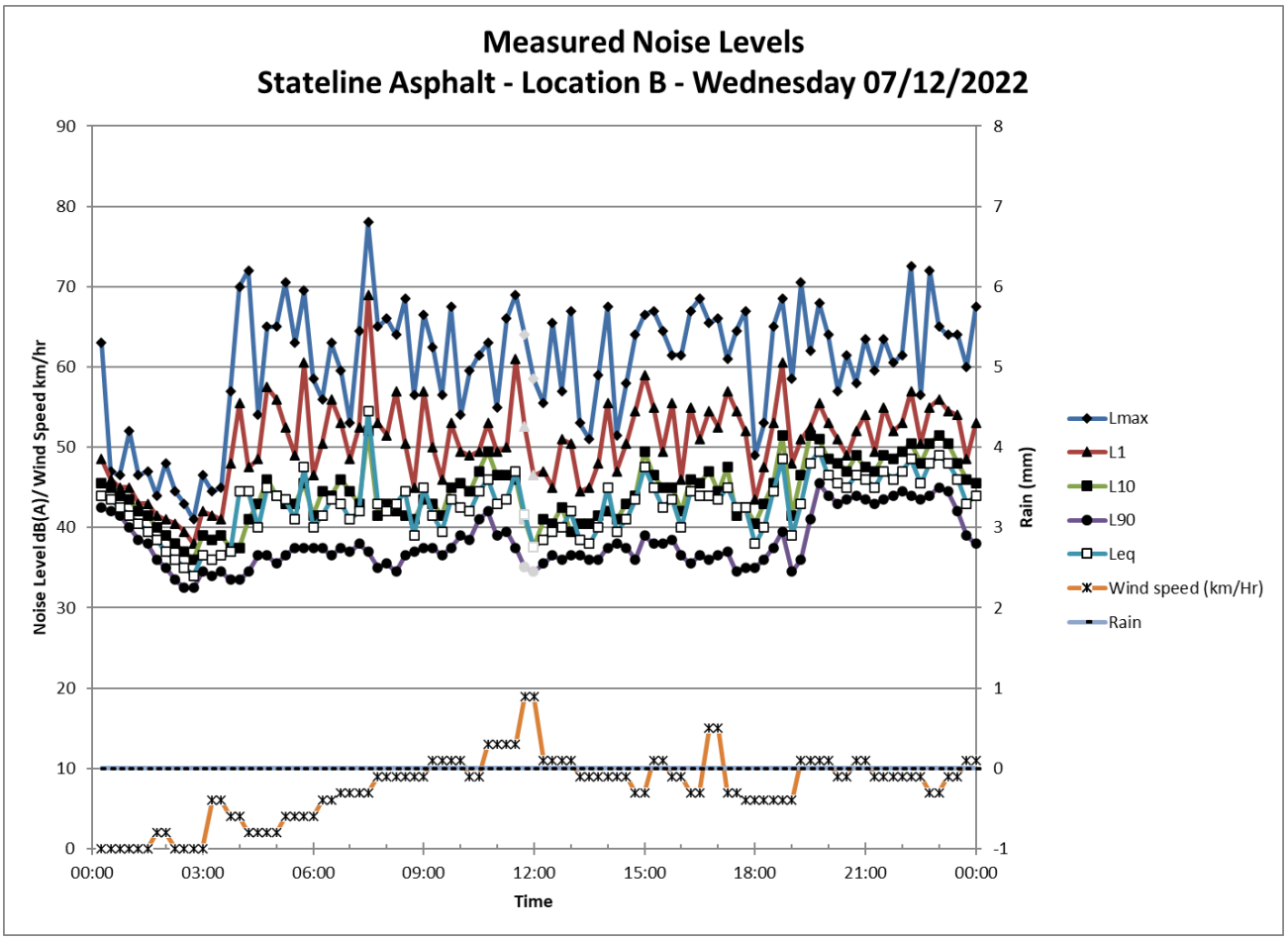
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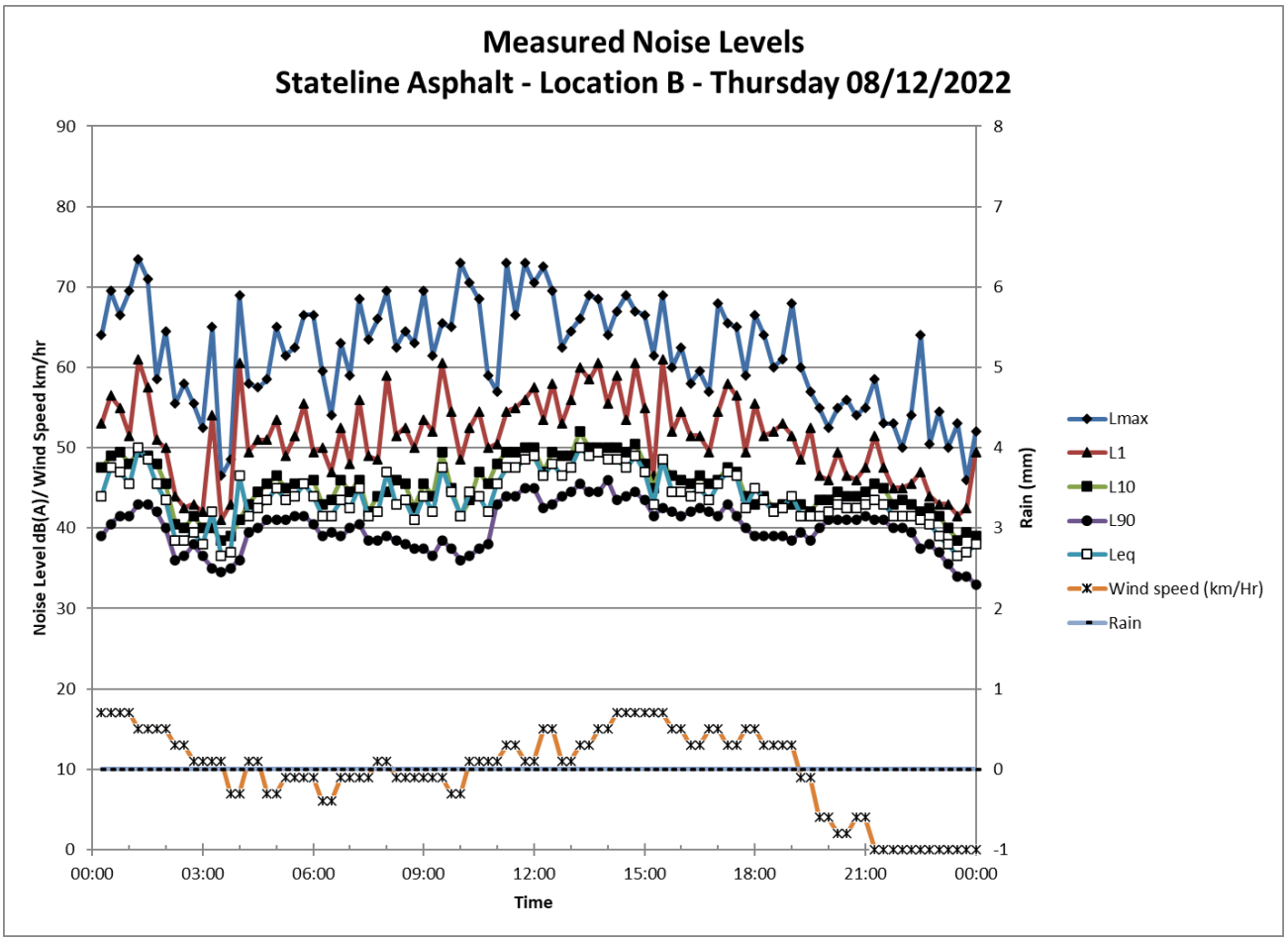
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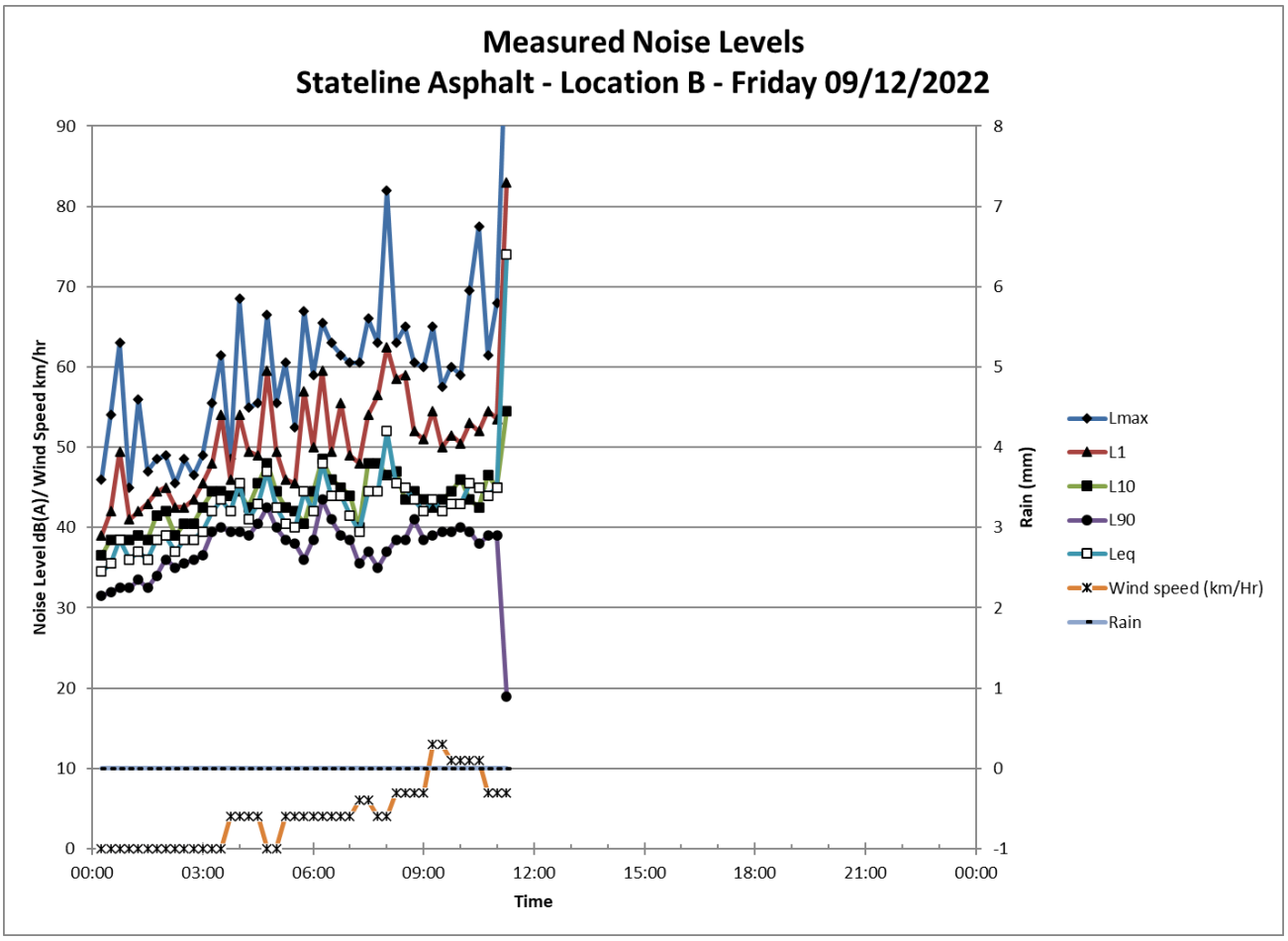
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Stateline Asphalt - Location B - Friday 09/12/2022
Noise Level dB(A)/ Wind Speed km/hr
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Wind speed (km/Hr)
Rain

**PRELIMINARY SITE INVESTIGATION**
**PREPARED FOR**
**STATELINE ASPHALT PTY LTD**
**133 SOMERSBY FALLS ROAD, SOMERSBY NSW 2250**

***Prepared for:*** Paul Anderson, PM Anderson Consulting Pty Ltd
Stateline Asphalt Pty Ltd
Central Coast Council
NSW Environment Protection Agency
NSW Department of Planning and Environment

***Prepared by:*** Damien Thomas Senior Environmental Scientist
R T Benbow, Principal Consultant

***Report No:*** 221145_PSI_Rev2
November 2023
(Released: 10 November 2023)

Benbow
ENVIRONMENTAL

*Engineering a Sustainable Future for Our Environment*

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# EXECUTIVE SUMMARY

Benbow Environmental (BE) was engaged by Stateline Asphalt Pty Ltd to prepare a Preliminary Site Investigation (PSI) report for 133 Somersby Falls Road, Somersby NSW 2250, (legally known as Lot Lot 3 DP1292653). This report has been prepared in accordance with the *Consultants Reporting on Contaminated Land; Contaminated Land Guidelines (NSW EPA 2020)* and *The National Environment Protection (Assessment of Site Contamination) Measure 1999* (the ASC NEPM) *amended 2013*. A review of all available relevant, current and historical documents has been carried out in order to gain a comprehensive understanding of the history of the site.

A conceptual site model has been developed for the site indicating the potential sources of contamination, contaminants of concern, potentially impacted media and exposure pathways for human and environmental receptors.

The findings of the PSI are summarised as follows:

- Based on the available documentation it was determined that no evidence was found in the site history of any site contaminating activities or contaminating activities from surrounding sites allowing contamination to migrate onto the subject site;
- The exposed soil at the site boundary on Somersby Falls Rd is believed to have likely originated from Council works from the adjoining grass verge;
- A Detailed Site Investigation is not considered warranted.

Damien Thomas
Senior Environmental Scientist

R T Benbow
Principal Consultant

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## Attachments


Attachment 1: Land Titles
Attachment 2: Historical Aerial Photographs
Attachment 3: Section 10.7 (2&5) Certificate
Attachment 4: Historical Land Title Search Documents
Attachment 5: Development Application Consent Documents

# 1. INTRODUCTION

Benbow Environmental (BE) was engaged by Stateline Asphalt Pty Ltd to prepare a Preliminary Site Investigation (PSI) report for 133 Somersby Falls Road, Somersby NSW 2250, (legally known as Lot Lot 3 DP1292653).

This report has been prepared in accordance with the *Consultants Reporting on Contaminated Land; Contaminated Land Guidelines (NSW EPA 2020)* and *The National Environment Protection (Assessment of Site Contamination) Measure 1999* (the ASC NEPM) *amended 2013*. A review of all available relevant, current and historical documents has been carried out in order to gain a comprehensive understanding of the history of the site.

## 1.1 SCOPE OF WORK

The scope of this Preliminary Site Investigation is as follows:

- Review site history including:
  - Land Titles search;
  - Obtain and examine Council records;
  - Examine historical aerial photographs of the site and surrounding area;
  - NSW EPA Records;
- Undertake a site inspection to identify any potential contaminants and areas impacted by contamination;
- Identify potential contamination and areas of potential contamination from an interpretation of the currently available information;
  - Determine the potential pathways contaminants may take to reach subsoil and groundwater;
- Identify if a Detailed Site Investigation is warranted; and
- Provide recommendations in relation to additional investigations if any are considered necessary.

## 1.2 RELEVANT LEGISLATION AND GUIDELINES

The Preliminary Site Investigation has been carried out in accordance with the following relevant NSW EPA or NSW EPA recognised guidelines:

- Consultants Reporting on Contaminated Land: Contaminated Land Guidelines (NSW EPA, April 2020);
- Guidelines for the NSW Site Auditor Scheme (3rd Edition) (NSW EPA, October 2017);
- Contaminated Land Management Act 1997; and
- NEPM Assessment of Site Contamination (NEPM, 1999) amended 2013.

## 1.3 ASSESSMENT OF ISSUES

This PSI provides an assessment of the following issues:

- Hazardous materials (asbestos, lead-based paints, radioactive materials, chemicals/fuels etc);
- Structures/storage areas;
- Air emissions of pollutants;

- Soil, surface water and/or groundwater pollution;
- Pesticide and herbicide usage and/or contamination;
- Electromagnetic fields;
- Wastewater treatment;
- Potable water sources;
- Waste disposal; and
- Dams/ponds.

# 2. SITE IDENTIFICATION

Site identification information and land use is summarised in Table 2-1.

Table 2-1: Site Identification

| | |
|---|---|
| Lot and DP Numbers | Lot 3 DP1292653 |
| Site Address | 133 Somersby Falls Road, Somersby NSW 2250 |
| Approximate Site Area (ha) | 1 ha |
| Local Government Area | Central Coast Council |
| Parish of | Narara |
| County of | Northumberland |
| Current Land Zoning | E4 – General Industrial |
| Nearest SCIMS Survey Mark ID | PM50277 |
| Latitude<br>Longitude | -33° 24' 35.54124" (-33.411198)<br>151° 16' 41.89422" (151.279636) |
| Altitude (AHD71) | 223.43 m (AHD71) |
| Geocentric Datum | GDA2020 |

The site location is presented below in Figure 2-1. An aerial image of the site displaying the lot boundary is shown in Figure 2-2. The area's land use zoning is presented in Figure 2-3.

The Survey Control Information Management System (SCIMS) is a database listing coordinates, heights and related attributes for Permanent Survey Marks (PSMs). It is maintained for the purposes of cadastral boundary definition, engineering surveys, mapping and other spatial applications. A report detailing the attributes of the closest survey point to the subject site, including a map of its location is included in Attachment 6.

## 2.1 CURRENT USE

The site is currently undeveloped and unoccupied and has been cleared of all large vegetation with only grass and weed species covering its surface. It contains no structures. The site is located towards the top of a ridge and slopes downwards from north to south, towards Ghikes Rd. Land immediately north and south of the lot is also cleared and unoccupied. Access to the Lot is from Somersby Falls Road. The adjacent receptors are industrial, rural and environmental.

An asphalt batching plant is proposed for the site to produce up to 200,000 tonnes per annum of asphalt, using a process that involves crushing raw materials and reclaimed asphalt.

Figure 2-1: The Site's Regional Setting

**Source:** Six Maps, image date 2018

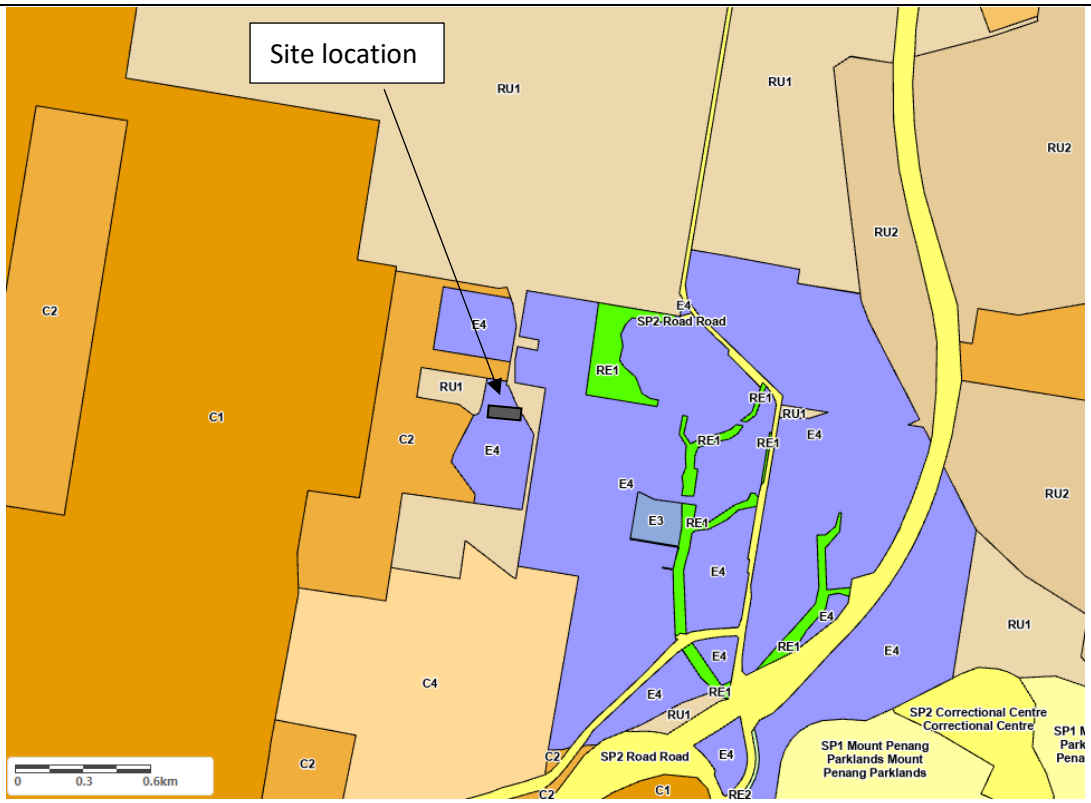
| | | |
|---|---|---|
| N<br>Not to scale | **LEGEND:**<br>Site boundary | Benbow Environmental<br>25-27 Sherwood Street,<br>Northmead NSW 2152 |

Figure 2-2: Aerial Image of the Site

**Source:** Six Maps, image date 2018

| | | |
|---|---|---|
| ↑N<br>Not to scale | **LEGEND:**<br>Site boundary | Benbow Environmental<br>25-27 Sherwood Street,<br>Northmead NSW 2152 |

Figure 2-3: The Site and Surrounding Land Zones




**Source:** Central Coast Council Online Mapping

**LEGEND:**

| Land zone | |
|---|---|
| C1 | National Parks and Nature Reserves |
| C2 | Environmental Conservation |
| C3 | Environmental Management |
| C4 | Environmental Living |
| E1 | Local Centre |
| E2 | Commercial Centre |
| E3 | Productivity Support |
| E4 | General Industrial |
| MU1 | Mixed Use |
| R1 | General Residential |
| R2 | Low Density Residential |
| R3 | Medium Density Residential |
| R5 | Large Lot Residential |
| RE1 | Public Recreation |
| RE2 | Private Recreation |
| RU1 | Primary production |
| RU2 | Rural Landscape |
| RU3 | Forestry |
| RU5 | Village |
| RU6 | Transition |
| SP1 | Special Activities |
| SP2 | Infrastructure |
| SP3 | Tourist |
| SP4 | Enterprise |
| UL | Unzoned Land |
| W1 | Natural Waterways |
| W2 | Recreational Waterways |
| W4 | Working Waterfront |
| DM | Deferred Matter |

↑N
Not to scale

Benbow Environmental
25-27 Sherwood Street,
Northmead NSW 2152

# 3. REGIONAL AND LOCAL GEOLOGY, HYDROLOGY AND CLIMATE

## 3.1 GEOLOGY AND SOIL CLASSIFICATION

The CSIRO eSpade interactive web portal provides the following information for the regional area's geology and soil landscape. (Reference: Kovac and Lawrie 1991) The soil landscape is described as "Sydney Town" with the dominant lithology coarse quartz sandstone.

*Geological Unit*: The area is underlain by Middle Triassic sandstone.

*Parent Rock*: Hawkesbury Sandstone, medium to very coarse grained quartz sandstone, minor laminated mudstone and siltstone lenses.

**Soil Landscape:** - *Undulating to rolling low hills and moderately inclined slopes on quartz sandstone (Hawkesbury Sandstone and Terrigal Formation: Narrabeen Group) along the edge of the Somersby Plateau and as ridges and crests in the Macdonald Ranges and Watagan Mountains. Local relief to 80 m. Slope gradients 5–25%. Ridges and crests are moderately broad, slopes moderately inclined and drainage lines narrow. Occasional rock benches are present. Extensively cleared low eucalypt open woodland.*

**Soils**: —*Shallow to deep (150 cm) Yellow Earths (Gn2.21, Gn2.24), Earthy Sands (Uc5.22) and some Siliceous Sands (Uc1.21) on crests and slopes; shallow to moderately deep (150 cm) Siliceous Sands (Uc1.21), Leached Sands (Uc2.23) and Grey Earths (Gn2.81) in poorly drained areas and drainage lines; moderately deep (100–150 cm) Yellow Podzolic Soils (Dy2.21, Dy5.21) and Gleyed Podzolic Soils (Dg4.53) associated with shale lenses*

**Limitations to Development**— *very high erosion hazard, permanent waterlogging (localised), highly permeable, strongly acid soils with very low fertility, high potential aluminium toxicity and strong sodicity .*

## 3.2 ACID SULFATE SOILS (ASS)

The site is highly unlikely to contain ASS therefore the risk from ASS is very low.

The CSIRO's Acid Sulfate Soil Risk Map, accessed through eSpade interactive web portal, shows the subject site is not located near land classified at risk from acid sulfate soil. This means ASS occurrence on the site is highly unlikely.

Acid Sulfate Soils (ASS) are naturally occurring soils and sediments that have primarily formed within the last 10,000 years. At the end of the last Ice Age, rising sea-levels caused the formation of new coastal and in-land landscapes through sedimentation. The waterlogged sediments were organically rich and contained bacteria that converted sulfate from tidal waters, and iron from the sediments, into iron disulfide (predominantly iron pyrite). When exposed to air, iron sulfides oxidise and produce sulfuric acid.

If left undisturbed ASS remain benign. However, if drained, excavated or exposed to air (such as by a lowering of the water table), oxygen reacts with the soil's pyrite to form sulfuric acid, sometimes

in very large quantities (for every 1 tonne of completely oxidised sulfidic material, 1.6 tonnes of pure sulfuric acid are produced). Within ASS are naturally occurring traces of metals such as iron, aluminium and arsenic. If acid forms, it can dissolve these metals and move them into the surrounding environment. Rainfall can aid this process moving acid and dissolved metals into adjoining land and nearby waterways. Accumulation of acids and metals becomes toxic to plants and animals, especially aquatic organisms (can cause massive fish kills). Human built structures are highly susceptible to ASS, as acid will slowly corrode timber, concrete, steel, roads and building foundations.

ASS can be divided into two categories:

- Actual Acid Sulfate Soil (AASS) – These are highly acidic soil layers (with a pH <4), that contain iron sulfides that have previously been exposed to oxygen. These soils can contain some acid-neutralising material that can reduce the acid-generating process until the soil is again exposed to oxygen. AASS is usually identified by the occurrence of bright yellow jarosite mottles (an oxidation by-product).

- Potential Acid Sulfate Soil (PASS) - These are typically water-logged soils containing high levels of iron sulfides that has not been exposed to air and oxidised but have the *potential* to do so. PASS layers may comprise of clay, sand or loamy mixtures. They are typically soft, very dark, blue grey or dark greenish-grey coloured.

ASS occur predominantly on coastal lowlands, with elevations generally below 5 m Australian Height Datum (AHD). The presence of ASS generally indicates potential risks to surface and or groundwater quality, soil strength, stability, habitat character and agricultural productivity on adjoining lands, as well as presenting challenges for the design and maintenance of infrastructure in acid sulfate environments.

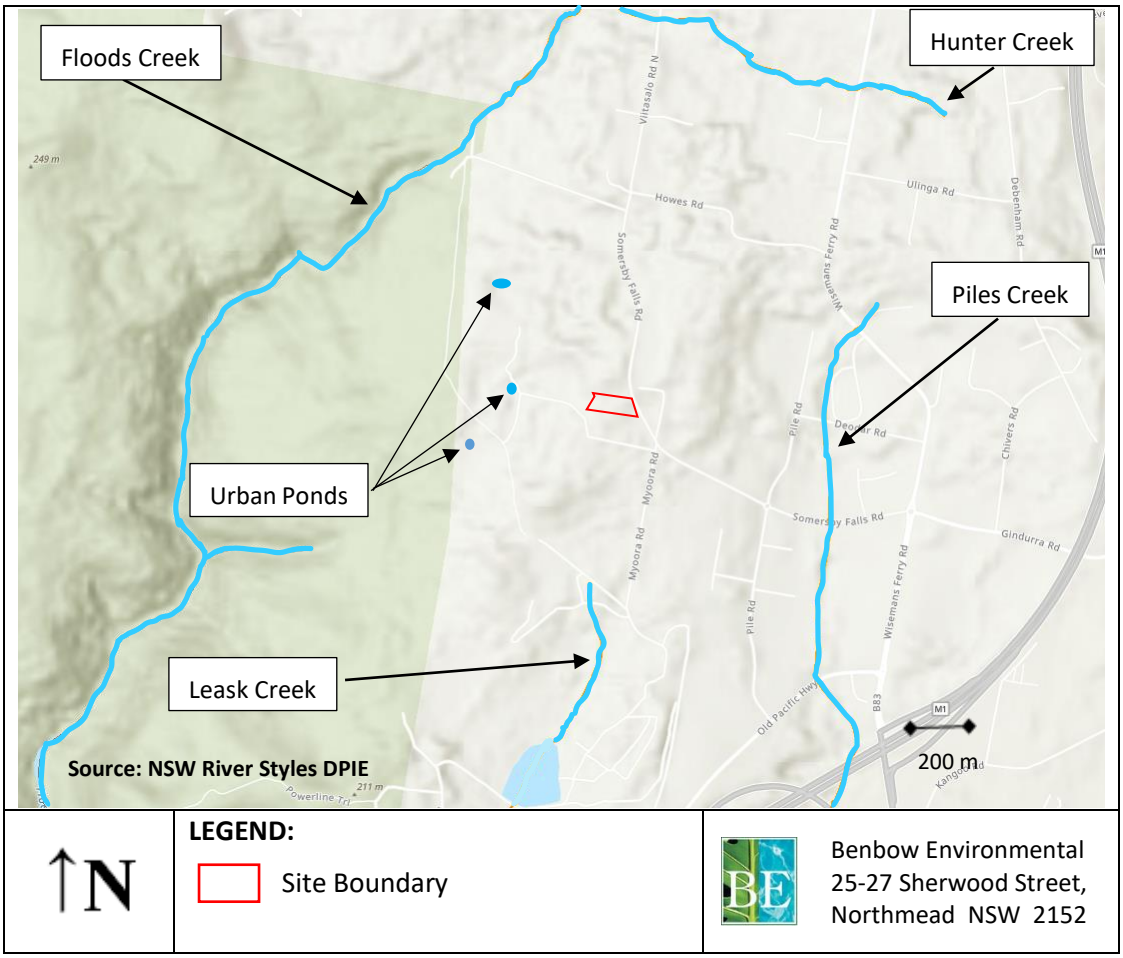
## 3.3 SURFACE AND LOCAL HYDROGEOLOGY

The Site does not contain any water bodies. Three small human constructed ponds exist to the west, northwest and southwest of the site and appear to be independent from the local waterways. A number of creeks are within a kilometre of the site, the closest, as measured from the site's boundaries, is Leask Ck approx. 670 m due south followed by Piles Ck approx. 680 m due east. Both creeks are headwaters.

A number of creeks are within a kilometre of the site, the closest as measured from the site's boundaries, is Leask Ck is approx. 670 m due south followed by Piles Ck approx. 680 m due east. Both creeks are headwaters see
Figure 3-1 below for locations of all waterways.

The site is on a slope and prone to water logging in areas due to shallow soil layers over the bedrock.

Figure 3-1: Location of the Nearest Waterbodies to the Site



### 3.3.1 Groundwater Bore Search

A search was undertaken to identify registered groundwater bores located within a 600 metre radius from the site's centre, using the Australian Groundwater Explorer by the Australian Bureau of Meteorology and the groundwater monitoring overview map by the NSW Office of Water.

According to these resources, there are five (5) groundwater monitoring bores within 600 m of the subject site. A summary of available information for each bore is provided below in Table 3-1.

Table 3-1: Available Data for Groundwater Bores Within 600 m of the Subject Site

| Bore ID | Bore depth (m) | Purpose | Date drilled | Standing water level (m) | Salinity | Latitude | Longitude | Distance from Site centre (m) |
|---|---|---|---|---|---|---|---|---|
| GW100931 | 97.5 | monitoring | 1989 | unknown | unknown | -33.406512 | 151.272856 | 550 |
| GW202161 | 102 | water supply | 2008 | unknown | unknown | -33.405523 | 151.273363 | 600 |
| GW073523 | 18.3 | water supply | 1954 | unknown | unknown | -33.405613 | 151.276911 | 483 |
| GW073409 | 76.5 | monitoring | 1995 | unknown | unknown | -33.410433 | 151.272845 | 395 |
| GW201052 | 174 | water supply | 2004 | unknown | unknown | -33.414267 | 151.276467 | 470 |

### 3.3.2 Flood Risk

As shown on the Central Coast Council's LEP 2022 Flood Risk map, the site is not at risk from flooding. Additionally, the 10.7 Planning Certificate states in section 9 (1);

*The land or part of the land **is not** within the flood planning area and is not subject to flood related development controls.*

## 3.4 Other Natural Risks

### 3.4.1 Bushfire

Section 146 of the Environmental Planning and Assessment Act 1979 (EP&A Act) requires councils, where a Bush Fire Risk Management Plan applies, to record a bush fire prone land map after consulting with the Commissioner of the NSW RFS. Complying development is permitted on bush fire prone land for the lower risk bush fire attack levels (Australian Standard 3959 BAL levels 12.5, 19, and 29). Such development is required to meet development standards complying with *Planning for Bush Fire Protection 2006*. Maps can be viewed on-line either through SEED or the NSW ePlanning Spatial viewer.

The online map from the NSW ePlanning spatial viewer identifies the site with Vegetation Category 3. This is considered to be a medium risk from bushfires.

### 3.4.2 Mass Movement

According to the CSIRO eSpade map for mass movement hazard, the site has the lowest risk rating of *Very slight to negligible limitations*. This is referring to limitations for development due to land slip.

However, the 10.7 Planning Certificate states in section 10;

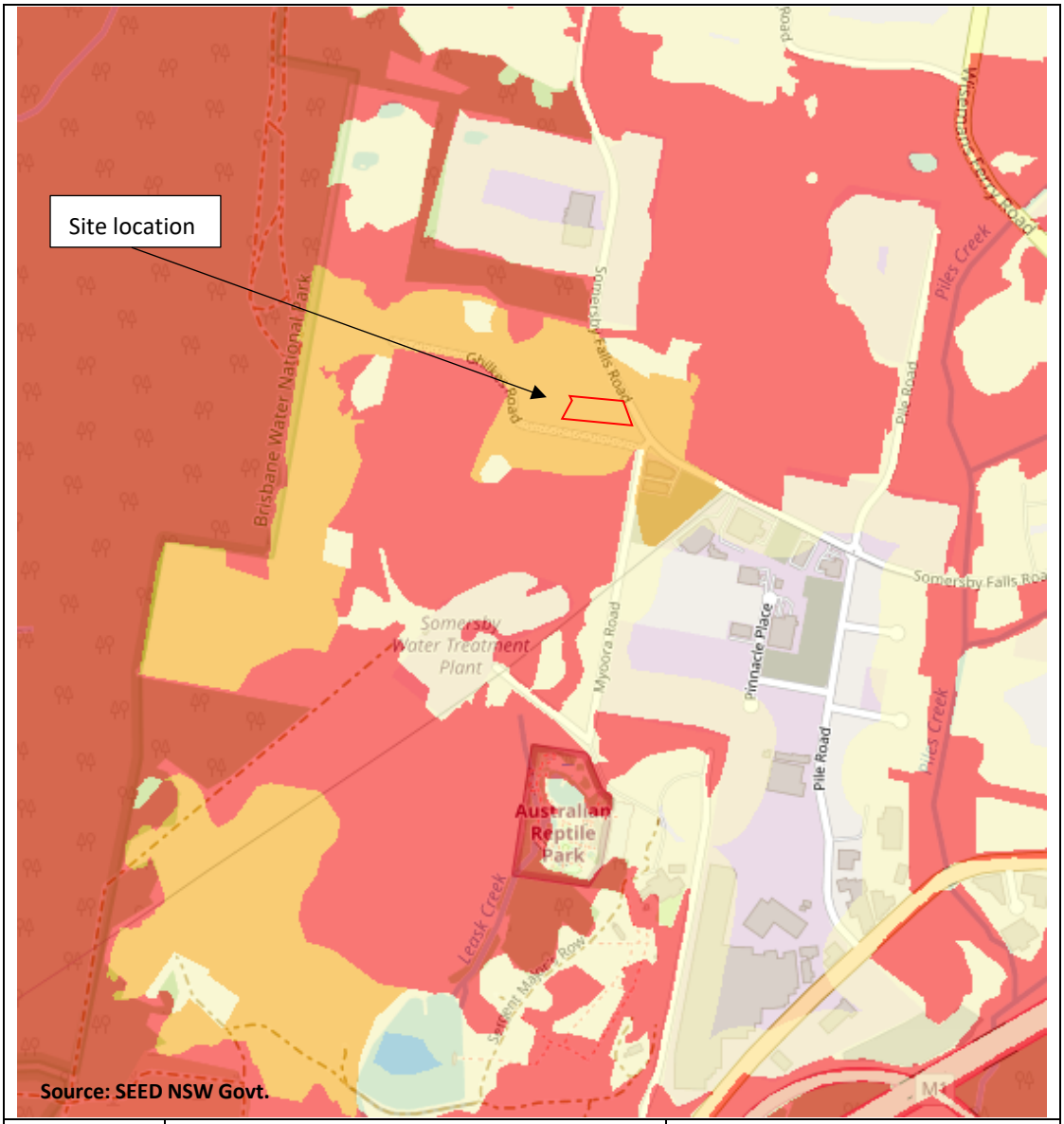
*This land **is** affected by a policy adopted by the council or other public authority that restricts the development of the land because of the likelihood of risk restrictions. This land **is** affected because:*

*Chapter 3.7 Geotechnical Requirements of Central Coast Development Control Plan 2022 applies to the land and the land may be subject to slip. When considering a development application, each circumstance will be considered, and development may be restricted.*

### 3.4.3 Salinity

The landscapes within this region are formed upon Triassic Period sandstone (Hawkesbury and Narrabeen Sandstone). Hawkesbury and Narrabeen Sandstones have a low salt store. Therefore the risk from salinity for this site is considered as very low.

Figure 3-2: Map of Bushfire Risk




| | | |
|---|---|---|
| N<br>Not to scale | **LEGEND:**<br>Site Boundary (approx.)<br>Vegetation Buffer 0<br>Vegetation category 1<br>Vegetation category 2<br>Vegetation category 3 | Benbow Environmental<br>25-27 Sherwood Street,<br>Northmead NSW 2152 |

### 3.4.4 Erosion and Water Logging

The site has a high risk from water erosion and water logging. Exposed soils would not be resistant to rain events. During construction, proper erosion controls are essential to prevent soil loss from rain events. The site also has a high risk from water logging with shallow soils underlain by bedrock being slow to drain.

These risks and limitations need to be considered when planning and constructing buildings at the site.

## 3.5 LOCAL CLIMATE

The closest BOM weather station to the Site is at Ourimbah (Dog Trap Road), #061093, which is approx. 6.8 km SW. However this station does not collect temp. data. The Peats Ridge station (#061351), although closed in 2015, was at a similar elevation to the subject site (280 m AHD) and has historical data available. This has also been accessed. See Table 2-1 below for a summary of the climate data. Data is taken from the year the station opened (1981) until 2012.

March has the highest average rainfall with 176.8 mm, with September the lowest at 65.4 mm. The yearly average is 1,383.2 mm with the monthly average 115.3 mm.

For the Peats Ridge station, January has the highest average temperature of $27.4^0$, with July having the coldest average temperature $6.1^0$. The yearly average is $22^0$. The dominate winds come from the SW and NW.

Table 3-2: Summary of the Climate Statistics

| | Ourimbah | Peats Ridge |
|---|---|---|
| Mean max. temp. (annual) | - | $21.9^0$ |
| Mean min. temp (annual) | - | $20.7^0$ |
| Highest average temp. | - | $23.0^0$ |
| Hottest month | - | January |
| Coldest month | - | July |
| Annual avg. rainfall | 1,383.2 mm | 1,248.6 mm |
| Dominate wind direction | - | SW (21%) and NW (20%) |

# 4. SITE HISTORY

The objective of the site history review is to ensure that there are no gaps in the information obtained which is relied upon to document the activities conducted at the site.

A review of the site history was carried out and comprised the following:

- Review of current and historical land title search;
- Review of historical aerial photographs;
- Review of NSW EPA records;
- Review of Singleton Council records; and
- Review of Section 10.7 planning certificate.
- A search of the Safe Work Hazardous Chemical Registry was unable to be performed.

## 4.1 TITLE SEARCH

A title search was undertaken on 16/03/2023 for the land holding at Lot 2 DP712515. These are presented in Attachment 1. For this land holding there are three (3) notifications:

1. Land excludes minerals and is subject to reservations and conditions in favour of the Crown - see Crown grant(s)
2. DP555439 right of carriageway appurtenant to the land above described (n170975)
3. AQ953627 caveat by blue op partner Pty limited, Eric Alpha
   Operator corporation 2 Pty limited, Eric Alpha
   Operator corporation 1 Pty Limited, Eric Alpha
   Operator corporation 4 Pty Limited & Eric Alpha
   Operator corporation 3 Pty Limited

   NOTATIONS

   UNREGISTERED DEALINGS: DP1292653.

## 4.2 HISTORICAL TITLE SEARCH

A Historical Land Title Search was conducted for the land holding Lot 3 DP129653. The findings are presented in Table 4-1 below. The Historical Land Title Search documents have been included in Attachment 4.

Table 4-1: Historical Land Title Findings

| Recorded | Number | Type of Instrument | C.T. Issue |
|---|---|---|---|
| 21/08/1985 | DP712505 | Deposited Plan | Folio Created<br>Edition 1 |
| 29/01/1987 | W722084<br>W722085 | Transfer<br>Mortgage | Edition 2 |
| 1/11/1990 | Z318292<br>Z318293 | Discharge of mortgage<br>Transfer | Edition 3 |
| 31/7/1991 | Z818019 | Mortgage | Edition 4 |

Table 4-1: Historical Land Title Findings

| Recorded | Number | Type of Instrument | C.T. Issue |
|---|---|---|---|
| 15/08/1994 | U525376<br>U525377<br>U525378 | Discharge of mortgage<br>Transfer<br>Mortgage | Edition 5 |
| 9/02/2003 | 6547874<br>6547875<br>6547876 | Discharge of mortgage<br>Transfer<br>Mortgage | Edition 6 |
| 11/02/2003 | 9366391<br>9366392 | Discharge of mortgage<br>Mortgage | Edition 7 |
| 09/09/2018 | AN695392 | Departmental dealing | Edition 8 |
| 13/04/2021 | AQ953627 | Caveat | |
| 15/03/2023 | AS925229 | Discharge of mortgage | Edition 9 |
| end of search | | | |

## 4.3 INDIGENOUS OR HERITAGE ARTEFACTS

Indigenous artefacts (also referred as Aboriginal objects) and places are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on the Aboriginal Heritage Information Management System (AHIMS). Heritage NSW hosts the web based AHIMS, which is a searchable database that lists known Aboriginal objects and places. A search of AHIMS is required when it is likely or known that Aboriginal objects and/or places are present within the area of a proposed activity.

The investigation and assessment of Aboriginal cultural heritage is undertaken to:

- identify whether Aboriginal cultural values and objects are present
- assess the nature and extent Aboriginal cultural values and objects
- assess the harm a proposed activity may cause to Aboriginal objects and declared Aboriginal Places.

This process provides a way to clearly identify the potential and or real harm that an activity may cause to Aboriginal heritage items and places.

A search was made of AHIMS on the 13/05/2023 for Lot 3, DP1292653 with an added 50 m buffer. No records were found of any Aboriginal artefacts, sites or heritage items. See Attachment_7 for the search results.

## 4.4 AERIAL PHOTOGRAPHS

Aerial photographs obtained from the NSW Department of Lands, Google Earth and Apple Maps for the following years, were reviewed to describe the site features and surrounding areas at various timelines:

- 1966;

- 1976;
- 1984;
- 1994;
- 2001;
- 2016; and
- 2022.

The historical aerial photographs have been included in Attachment 2. The approx. site boundaries are shown on the photographs. A summary of the review is presented in Table 4-2.

Table 4-2: Summary of Historical Aerial Photographs

| Year | Site | Surrounding Areas |
|---|---|---|
| 1966 | The site is part of a larger area that has been mostly cleared of vegetation. Some large trees are present in the site's middle. The site's western area borders a large, forested area. The cleared areas do not appear to be cultivated. | The surrounding area is predominantly rural, containing farms and agricultural plots possibly citrus plantations. Large areas are undeveloped and covered in (presumedly) native vegetation. Few buildings are visible. Immediately below and joining the site are two large buildings situated together (possibly a farmhouse and shed?) these are located close to Ghikes Rd. |
| 1976 | Tree canopy has increased. Somersby Falls Rd has been realigned to pass through the larger property thus marking the site's eastern boundary. | No change. |
| 1984 | Tree canopy and undergrowth has increased within the western half of the site. The remaining eastern area remains cleared. | The large dwelling has been removed with the other structure still visible. Possible building (?) debris appears to be scattered on the area above the remaining structure. Somersby's water treatment facility is now visible south of the site. |
| 1994 | Tree canopy has increased across the middle of the site but the undergrowth has been cleared on either side. | The region still contains largely agricultural plots but larger commercial structures are now visible to the East and South-east of the site. Additional roads have either been built or surfaces sealed. |
| 2006 | The site's undergrowth has been removed and trees thinned. The border along Somersby Rd now contains a long line of planted trees. | The site is now part of a larger developed block. A large structure is now located immediately NW. The forested area immediately west has been extensively thinned and cleared in most places. Development has increased with the addition of large commercial structures to the SE. The number of small dams has increased in the surrounding properties. |

Table 4-2: Summary of Historical Aerial Photographs

| Year | Site | Surrounding Areas |
|---|---|---|
| 2016 | The site has been completely cleared with only a solitary tree remaining | Above the site a large area of land has been cleared for a commercial facility. The established commercial area, SE of the site has expanded northwards with additional buildings. Agricultural areas still dominate the northern areas. Additional roads have been built. |
| 2022 | The last tree has been removed including the line of trees along the eastern boundary. Soil has been disturbed leading into the site from Somersby Rd from the NE corner. The grassed surface is marked with long lines possibly caused from the tracking of heavy vehicles. | The large, cleared area above the site now contains an established commercial business (concrete pipe manufacturer). Further development has continued in the eastern commercial zoned area. |

## 4.5 NSW EPA Records

### 4.5.1 CLM Act 1997

The NSW EPA publishes records of contaminated sites under Section 58 of the Contaminated Land Management (CLM) Act 1997. The notices relate to investigation and/or remediation of site contamination considered to pose a significant risk of harm under the definition in the CLM Act. However, it should be noted that the EPA record of Notices for Contaminated Land does not provide a record of all contaminated land in NSW.

A search of the EPA database was made on the 30/03/2023 which revealed that the subject site is not listed.

### 4.5.2 Notified Sites

The EPA publishes a list of contaminated land notified under section 60 of the Contaminated Land Management Act 1997 (CLM Act). These have been assessed by the EPA as being contaminated but may not always require regulation under the CLM Act. The EPA publishes an updated list most months. A search was made on the 30/03/2023 of the most recent listing (released 08/03/2023), which returned no results for the suburb of Somersby.

### 4.5.3 POEO Register

The NSW EPA publishes records under the Protection of the Environmental Operations (POEO) Act 1997 (as amended 2011). Records include licences, applications, notices served, and penalties issued. A search of the POEO Register conducted on the 30/03/2023 for the suburb of Somersby returned no results.

## 4.6 Hazardous Chemicals Registry

Business that store, handle or process Schedule 11 hazardous chemicals (dangerous goods) that exceed the quantities specified in NSW legislation, are required to be licenced for such use and storage and must notify Safe Work NSW. This information is held on file in Safe Works' *Stored Chemical Information Database* (SCID). The database also includes abandoned tanks (storage tanks no longer used or in service).

| |
|---|
| N/A |

## 4.7 Site Product Spill and Loss History

| |
|---|
| N/A |

## 4.8 Previous Site Investigations

| |
|---|
| No previous investigations were known to have been performed or are expected |

## 4.9 Council

### 4.9.1 Past Consents

Information acquired from the Central Coast Council regarding past, refused and approved development applications at the site is summarised below in Table 4-3.

Table 4-3: Past Consents (Development Applications)

| DA # | Address | Development Description | Determination Date | Determination |
|---|---|---|---|---|
| 51000/2016 Part 1 | 125 Somersby Falls Rd, Somersby | Subdivision Industrial One (1) Lot into Five (5) Lots | 9/03/2017 | Consented (lapsed 9/03/2022) |
| DA52504/2017 Part 1 and Part 2 | 125 Somersby Falls Rd, Somersby | Single story dwelling house | 11/08/2017 | Consented |
| DA52504/2017.2 | 125 Somersby Falls Rd, Somersby | Minor modification | 11/09/2017 | Consented |
| DA52504/2017.3 | 125 Somersby Falls Rd, Somersby | Amendment change floor construction from bears and joists to slab on ground | 02/04/2020 | Consented |
| DA52504/2017.4 | 125 Somersby Falls Rd, Somersby | Minor modifications | 09/09/2020 | Consented |

| | | | | |
|---|---|---|---|---|
| DA 10192/2000 | 341 Wisemans Ferry Rd Somersby | For lot 2 DP712505, erection of shed for machinery | 24/04/2001 | Consented |
| DA/51000/2016 DA/51000/2016/A | 125 Somersby Falls Rd, Somersby | Subdivision Industrial - Stage 1 Proposed Lots 1-5 | 02/03/2023 | Consented |

### 4.9.2 Section 10.7 (2 & 5) Planning Certificate

Planning certificates under section 10.7 (2) and (5) of the Environmental Planning and Assessment Act 1979 were obtained (Attachment 3) from the Central Coast Council on 21/04/2023 for the land holdings as detailed below:

- Address: 125 Somersby Falls Rd, Somersby NSW 2250
- Description: Lot 5 DP 1292653
- Receipt no.: 18635694
- Certificate No.: 61329
- Issue date: 21/04/2023

The Planning Certificate states that there are no matters arising under Section 59(2) of the *Contaminated Land Management Act 1997* as additional matters to be specified in a planning certificate:

(a) *The land to which the certificate relates is significantly contaminated land within the meaning of that Act - if the land (or part of the land) is significantly contaminated land at the date when the certificate is issued*,
**No**

(b) *The land to which the certificate relates is subject to a management order within the meaning of that Act - if it is subject to such an order at the date when the certificate is issued,*
**No**

(c) *The land to which the certificate relates is the subject of an approved voluntary management proposal within the meaning of that Act - if it is the subject of such an approved proposal at the date when the certificate is issued,*
**No**

(d) *The land to which the certificate relates is subject to an ongoing maintenance order within the meaning of that Act - if it is subject to such an order at the date when the certificate is issued*,
**No**

(e) *The land to which the certificate relates is the subject of a site audit statement within the meaning of that Act - if a copy of such a statement has been provided at any time to the local authority issuing the certificate*.
**No**

The planning certificates are included as Attachment 3.

## 4.10 LOCAL SITE HISTORY

The Somersby area was first inhabited by the Darkinjung people before settlement by Europeans. The 2021 Australian census reveals the population of Somersby was 1,087 people.

# 5. SITE CONDITION AND SURROUNDING ENVIRONMENT

## 5.1 SITE DESCRIPTION

The site is a small parcel of land of approx. 1 ha, legally described as Lot 3 DP1292653. It is located at 133 Somersby Falls Rd, Somersby NSW, 2250 and was recently part of a subdivision. Previously it was included in Lot 2 DP712505 that was sub-divided in five smaller lots. Lot 3 is located within a rural setting but sits just within a small industrial zoned area (E4 General Industrial) as per the Central Coast Local Environmental Plan 2022. Access for the Lot is from Somersby Falls Road.

The lot is undeveloped and contains no structures. All large vegetation has been removed with only grass and weed species covering the ground surface. The lot is situated close to the top of a ridge having an elevation of approx. 230 m AHD. It slopes downwards from its northern boundary to the south and southeast, falling some 2 – 4 m. The surface area is uneven with some spots subject to mild water logging.

## 5.2 DESCRIPTION OF SURROUNDING AREA

The areas surrounding Lot 3 contain multiple land zones, some being quite small. These include land immediately bordering Lot 3 east and west zoned as Primary Production (RU1). Land immediately above and below Lot 3 is zoned as General Industrial (E4). Further north is RU1, further east is E4, further south is a small area of RU1 followed by a larger area of Environmental Living (C4). Further west of Lot 3 is zoned as Environmental Conservation (C2) and National Parks and Nature Reserves (C1) to the west and to the south. The land zoning map is shown above in Figure 2-3.

A number of commercial properties are located near the Lot's vicinity, these include a concrete pipe manufacturer, north of the site, a large wholesale nursery to the site's NW, a manufacturer of concrete spacer products NE of the site on Somersby Falls Rd. Further north is a stainless steel tank manufacturer and supplier of welding and maintenance services for railway infrastructure. Other properties local to the site are agricultural in nature.

## 5.3 LOCAL TOPOGRAPHY

A three-dimensional view of the local topography surrounding the site has been provided in Figure 5-1 with the terrain/vertical axis exaggerated by a factor of 1. Figure 5-2 with the terrain/vertical axis exaggerated by a factor of 10. It should be noted that this figure approximates the actual terrain, based on information that has been digitised from local contour maps.

Figure 5-1: Local Topography with a Vertical Exaggeration Factor of 1

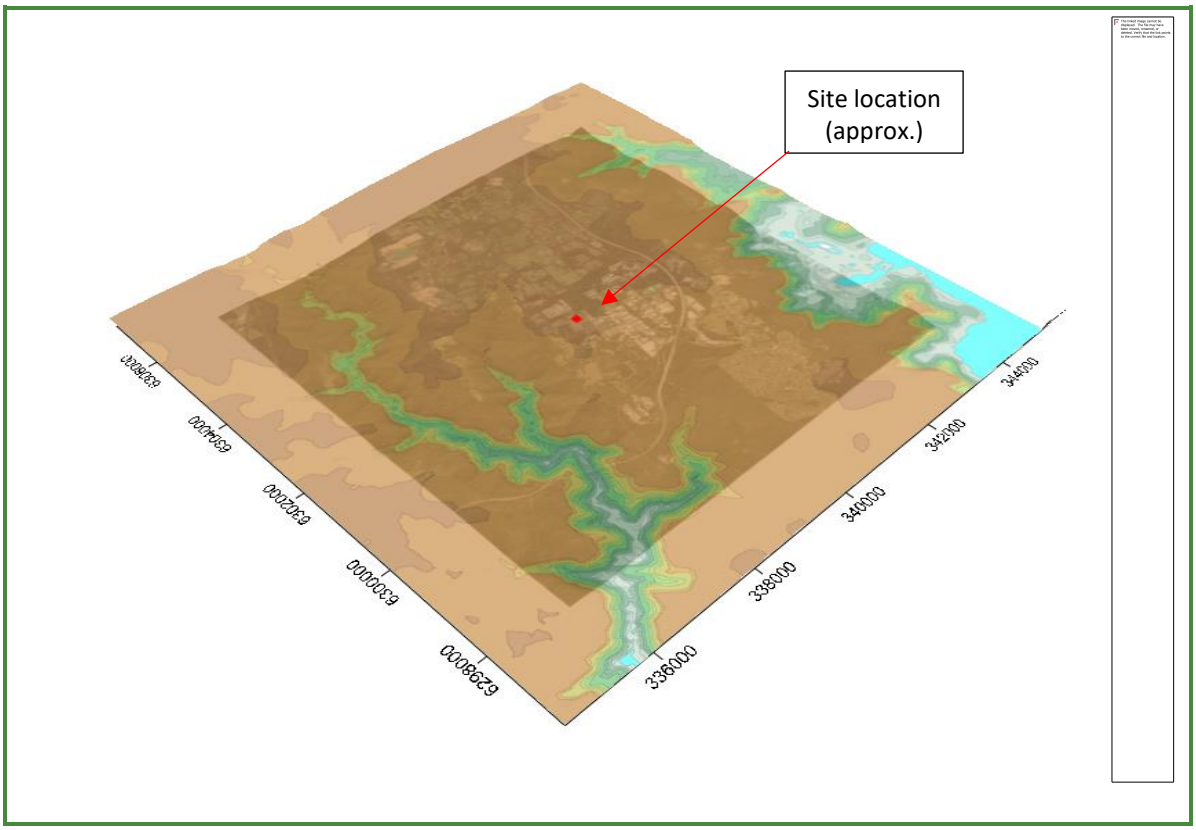
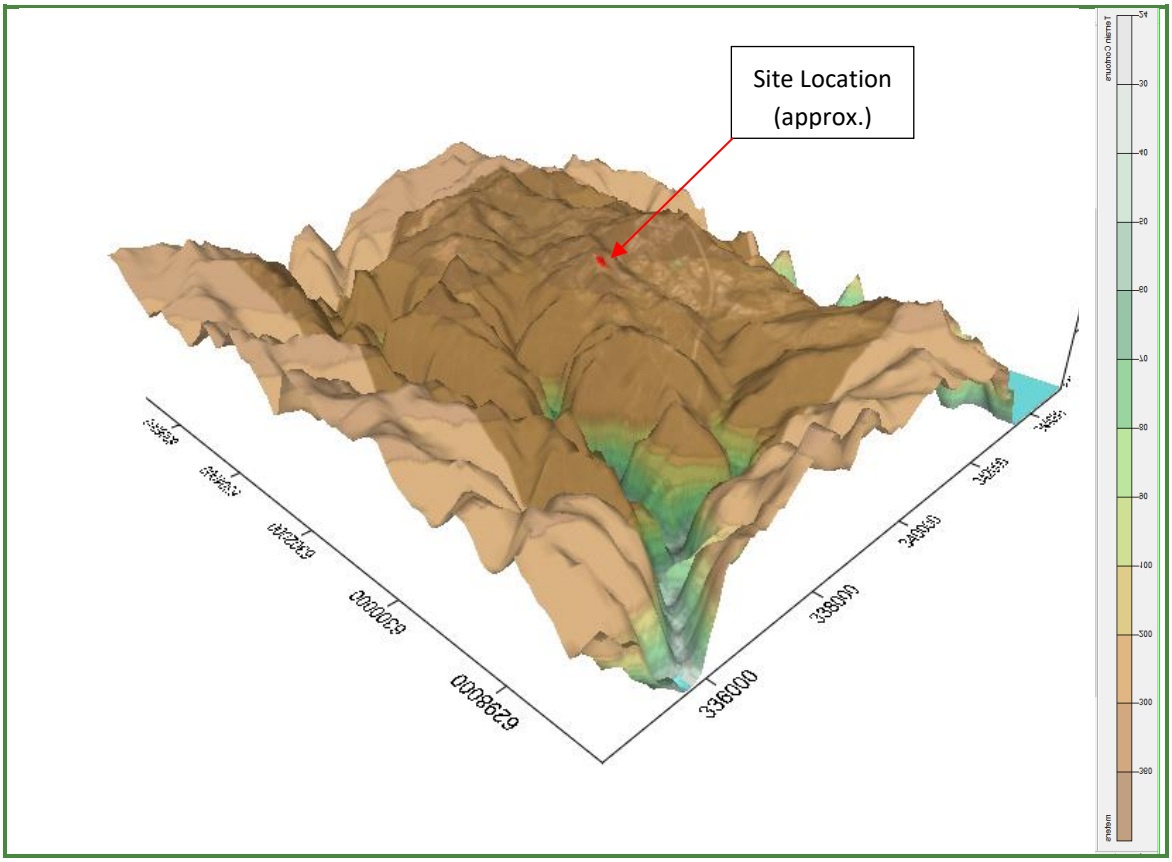



Figure 5-2: Local Topography with a Vertical Exaggeration Factor of 10



## 5.4 SITE WALKOVER – PHOTOGRAPHIC SECTION

A site walkover was carried out on Friday the 5th of May 2023 to verify the site's current condition, identify potential contamination sources, pathways and any discernible evidence of contamination. This section presents the findings of the walkover, accompanied by photographs taken during the site visit.

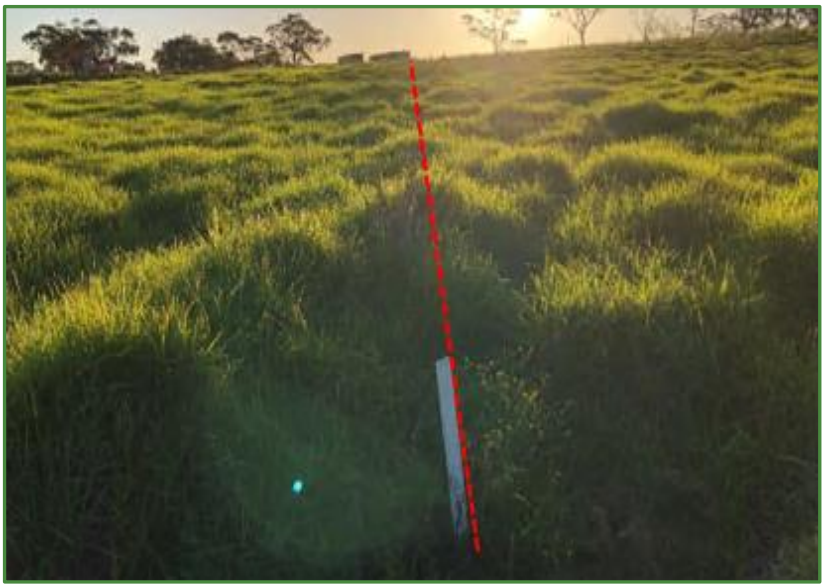
On the eastern side of the Lot is a short constructed pathway of approx. 28 m in length. Based on its surface appearance, the pathway has been laid down from crushed sandstone and white sands. The colours and texture are consistent with the surrounding geology. The material may well have come from excess excavated soil material taken from the recent Council earthworks in the adjacent grass verge during excavation for the installation of the underground utilities such as power, NBN and deep stormwater pipes and inlets. This was the only visible surface disturbance noted during the site walkover.

**Photograph 1:** Current Entry point from Somersby Falls Rd (Viewer is facing West)

**Photograph 2:** The Lot's SE corner on Somersby Falls Rd. Red lines marks the approx. lot boundaries.

**Photograph 3:** View of Lot 3 facing NE. The white peg marks the southern boundary line. Somersby Falls Rd is approx. 25 m to the right of the peg.

**Photograph 4:** View along Lot's 3 southern boundary (viewer facing NNW). The white peg marks the southern boundary. Land on RHS of red dotted line is Lot 3, Lot 4 is on LHS.



**Photograph 5:** Facing Northwards, the view across Lot's 3 centre. White peg in foreground marks the lot's southern boundary (marked in red).

**Photograph 6:** View of the lot from near the western boundary facing (East) towards Somersby Falls Rd. The red lines mark the approx. boundaries.

**Photograph 7:** View of the lot's SW corner (viewer facing SW). The red line approx. marks the southern boundary (the western end was not clearly pegged).

**Photograph 8:** The 'dog' trailer and shipping container were located just below the southern boundary (or possibly just within). The shipping container only contained two bags of an unknown material.

**Photograph 9:** The two bags of unknown material. The word Evergreen was visible on the outside packaging. Bags are approx. one metre in height.

**Photograph 10:** View of Lot 3 from the NW corner boundary peg, facing Somersby Falls Rd. The red line marks the (approx.) northern boundary.

**Photograph 11:** The red line marks Lot's 3 approx. northern boundary. Note the uneven ground surface. The height of the grasses, however, do not accurately mirror surface elevation.

**Photograph 12**: View towards Somersby Falls Rd. The constructed pathway is visible on the left.

**Photograph 13:** A close up of the soil material on the pathway. The plastic rubbish appears to be the remains of a bulga bag. The pathway was constructed from crushed sandstone and sand.

**Photographs 14**: The recent Council upgrade included all utilities be buried within the verge. This recently installed electrical transformer is located directly in front of the proposed development.

## 5.5 POTENTIAL CONTAMINATION ISSUES

A Preliminary Site Investigation involves obtaining a thorough understanding of the site history as best as possible with the available documents. Based on the available information collected for the site, an assessment of the Site's potential contamination issues has been carried out. Details are presented in the following sections. Legacy contamination issues remain for many older buildings constructed in NSW. These are assessed below.

### 5.5.1 Hazardous Materials

Depending on the history and use of a property, hazardous materials may be present in structures or stockpiled materials on site. Hazardous materials include asbestos containing materials (ACM), lead-based paints, radioactive materials, chemicals/fuels and other potentially contaminating materials that may pose a hazard to human health or the environment.

### 5.5.2 Asbestos Containing Materials (ACM)

Asbestos Containing Materials (ACM) were used extensively in NSW in all types of construction between the 1920s and late 1980s, when the ACM began to be phased out in favour of asbestos-free products. However, the total ban on ACM use did not come into force until 31st December 2003. Building constructed before 1985 almost certainty contain ACM, while those built between 1985 and 2003 may contain ACM. Areas within buildings where ACM is often found includes; the eaves, internal and external wall cladding, ceilings, downpipes and guttering and particularly in internal wet areas such as bathrooms, laundries and kitchens. Often the sheeting is hidden beneath wall tiles. This list is not exhaustive.

No evidence was found of any use of asbestos containing materials such as fibrocement used in structures, sheds or dwellings. No waste demolition material was encountered during the site visit (such as tiles, bricks, construction waste etc.).

Based on site aerials, two large structures were visible in aerial images dated 1976 on Lot 5 (DP1292653), the second land parcel below (south) of Lot 3. The structures appeared to be a farmhouse and shed and were removed during the late 70s early 80s. Based on known construction materials used during these time period, these structures were highly likely to have contained ACM. Poor demolition practises can leave ACM fragments in surface soils. The risk to the subject site from ACM tracked from Lot 5 onto Lot 3 seems unlikely and would be a very low risk. This is due to the distance between the area where the historical structures were once located, over 40 m from Lot's 3 boundary and the slope of the surrounding landscape that falls away from Lot 3, with all surface water flowing *southwards*. Any potential surface debris / ACM captured by stormwater on Lot 5, would be sent south towards Ghikes Rd well away from the northly located Lot 3.

The risk from asbestos material to the site is considered as low.

### 5.5.3 Lead Based Paints

Historically, paint containing lead was found to be very durable for protecting surfaces from the effects of weathering. Some paints in Australia *before* 1969 contained 50% lead (or more) by weight. In 1969 the Australian Uniform Paint Standard was amended with allowable lead levels reduced to 1%. This was due to the serious health risks lead poses. Over the subsequent 50 years, levels have been gradually reducing (0.25% in 1992, 0.01% in 1997 and 0.009% in 2021). The risk arises when weathered or old, lead-based paint flakes or crumbles, it releases lead dust into the air and onto the ground. External lead-painted surfaces can contaminate soils below, either from the paint crumbling or from when the paint was first applied with any drips or spills falling onto uncovered soils. Dust containing lead can accumulate in ceiling spaces, wall cavities or under carpet. Lead can enter the body if contaminated soil or dust is accidently inhaled or swallowed. Children are specifically at risk.

As there is no evidence of any structures ever being erected onsite, or storage of drums or historical equipment needing an application of lead-based paint, the risk from lead-based paints at the site is considered as very low to nil.

### 5.5.4 Polychlorinated Biphenyls (PCBs)

PCBs pose a risk to human health and the environment and are part of a broader group of banned chemicals termed POPs (Persistent Organic Pollutants). This group includes DDT and some PFAS chemicals. POPs are toxic to living organisms and do not readily break down in the environment. They accumulate within plants and animals and are found in higher concentrations up the food chain. Since POPs remain in the environment for very long periods of time, historical spillage on soils, for example, can still pose a health risk decades later. Historically, PCBs were used as coolants and lubricants in electrical components (such as transformers and capacitors), hydraulic fluids,

additives in paint, sealants and caulking compounds and other uses. Legacy equipment potentially containing PCBs today include old electrical transformers, old electrical equipment, and fluorescent lighting fixtures. Australia banned the importation of PCBs in 1975 and equipment containing PCBs in 1986.

There is no evidence of any use or storage of PCBs onsite or of any equipment or material likely to contain PCBs. Therefore the risk from PCBs is considered as very low to nil.

### 5.5.5 Structures / Storage Areas

There is no record or evidence of any structures ever having been erected onsite.

### 5.5.6 Air Emissions of Pollutants

The site does not produce any dust, air emissions or odours.

### 5.5.7 Soil, Surface Water and/or Groundwater Pollution

There are no known sources of soil or water pollution on site.

### 5.5.8 Pesticide and Herbicide Usage and/or Contamination

The site was once part of a larger block that was cleared of most vegetation from at least 1966. Aerial images did not reveal any agricultural use of the site either for cultivation of animal grazing. Potentially the land may have carried grazing activities before 1966 (the date of the earliest aerial image of the site. Potentially, some herbicides *may* have been applied to the land sometime in the past, no evidence could be found for the storage of chemicals in containers onsite.

The site's history is unknown prior to this and limited for a time afterwards. It is possible some agricultural chemicals may have been applied before this time. These chemicals were expensive and it would seem likely that if such chemicals were historically used, then evidence of agricultural use on the site would be apparent. As no evidence was found for such activities (based on aerial images), the present risk on site from historical chemicals is considered as low.

Historically, chlorohydrocarbon pesticides (DDT, dieldrin, chlordane, heptachlor, aldrin etc.) were used extensively in Australia during the 1960s and 1970s. Due to their harmful effects on human health and the environment, they were systematically banned from the 1970s with DDT totally banned in 1987. These historical compounds persist in the environment, often for decades since

they are slow to naturally degrade and can accumulate in the food chain. Historical contamination typically occurs with heavy and long-term pesticide use, leaks and spills during storage and handling, and improper disposal practises. Land-use changes can be an historical reason for urban sources of pesticide or herbicide contamination when former agricultural land, once located on a city fringe, becomes rezoned for residential or industrial use.

### 5.5.9 Electromagnetic Fields

| |
|---|
| N/A |

### 5.5.10 Wastewater Treatment System

| |
|---|
| N/A |

### 5.5.11 Potable Water Source

| |
|---|
| There is no water currently connected to the site |

### 5.5.12 Waste Disposal

| |
|---|
| The site does not produce waste materials |

### 5.5.13 Dams and Ponds

| |
|---|
| No streams or ponds are onsite. |

### 5.5.14 Discharges to Land, Water or Air

| |
|---|
| N/A |

### 5.5.15 Data Gaps

| |
|---|
| • There are gaps in the site occupancy history. |

### 5.5.16 Summary of Potential Contamination

| |
|---|
| No evidence for soil or water contamination was revealed from the desktop study. |

# 6. CONCEPTUAL SITE MODEL

A conceptual site model (CSM) has been prepared in accordance with the National Environment Protection (Assessment of Site Contamination) Measure as amended in 2013.

The CSM is a representation of site-related information regarding contamination sources, receptors and exposure pathways between those sources and receptors.

The CSM is presented in Table 6-1 below.

Table 6-1: Conceptual Site Model

| Potential Primary Sources of Contamination | Primary Release Mechanism | Potentially Impacted Media | Contaminants of Potential Concern | Potential Receptors | | Exposure Pathways | | Risk of Contamination |
|---|---|---|---|---|---|---|---|---|
| | | | | Human | Environment | Human | Environment | |
| Vehicles / machinery parked/stored onsite | spills/leaks | soil, ground and surface water | hydrocarbons, heavy metals | site personnel, neighbouring premises if contaminants migrate off-site | soil, waterways, native habitats | dermal contact, inhalation of dust and vapours, ingestion | surface and ground water | very low |
| Historical use of agricultural pesticides | disturbance of soils | soil, ground and surface water | heavy metals, organochlorine (op) and organophosphate (op) pesticides | site personnel, neighbouring premises if contaminants migrate off-site | soil, waterways, native habitats | dermal contact, dust inhalation, ingestion | soil, ground and surface water | low |
| Legacy contaminants (e.g. Lead-based paint, ACM, PCB) brought onsite | disturbance of soils | soil and surface water | Lead, ACM polychlorinated biphenyls | site personnel, neighbouring premises if lead migrates off-site | soil, waterways, native habitats | dermal contact, inhalation (dust or soil), ingestion | Soils, surface and ground water | very low |

# 7. CONCLUSION AND RECOMMENDATION

The findings of the Preliminary Site Investigation are summarised as follows:

Benbow Environmental (BE) was engaged by Stateline Asphalt Pty Ltd to prepare a Preliminary Site Investigation (PSI) report for 133 Somersby Falls Road, Somersby NSW 2250, (legally known as Lot Lot 3 DP1292653).

- Based on the available documentation it was determined that no evidence was found in the site history of any site contaminating activities or contaminating activities from surrounding sites allowing contamination to migrate onto the subject site;
- The exposed soil at the site boundary on Somersby Falls Rd is believed to have likely originated from Council works from the adjoining grass verge;
- A Detailed Site Investigation is not considered warranted.

This concludes the report.

Damien Thomas
Senior Environmental Scientist

R T Benbow
Principal Consultant

# 8. REFERENCES

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# 9. LIMITATIONS

Our services for this project are carried out in accordance with our current professional standards for site assessment investigations. No guarantees are either expressed or implied.

This report has been prepared solely for the use of Stateline Asphalt Pty Ltd, as per our agreement for providing environmental services. Only Stateline Asphalt Pty Ltd is entitled to rely upon the findings in the report within the scope of work described in this report. Otherwise, no responsibility is accepted for the use of any part of the report by another in any other context or for any other purpose.

Although all due care has been taken in the preparation of this study, no warranty is given, nor liability accepted (except that otherwise required by law) in relation to any of the information contained within this document. We accept no responsibility for the accuracy of any data or information provided to us by Stateline Asphalt Pty Ltd for the purposes of preparing this report.

Any opinions and judgements expressed herein, which are based on our understanding and interpretation of current regulatory standards, should not be construed as legal advice.

# ATTACHMENTS

Attachment 1:  Land Titles

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 2/712505

| SEARCH DATE | TIME | EDITION NO | DATE |
|---|---|---|---|
| 16/3/2023 | 2:12 PM | 9 | 15/3/2023 |

LAND

LOT 2 IN DEPOSITED PLAN 712505
AT SOMERSBY
LOCAL GOVERNMENT AREA CENTRAL COAST
PARISH OF NARARA COUNTY OF NORTHUMBERLAND
TITLE DIAGRAM DP712505

FIRST SCHEDULE

CRAIG ANTONY HUNTER
HEIDI JULIE HUNTER
AS JOINT TENANTS (T 6547875)

SECOND SCHEDULE (3 NOTIFICATIONS)

1 LAND EXCLUDES MINERALS AND IS SUBJECT TO RESERVATIONS AND CONDITIONS IN FAVOUR OF THE CROWN - SEE CROWN GRANT(S)
2 DP555439 RIGHT OF CARRIAGEWAY APPURTENANT TO THE LAND ABOVE DESCRIBED (N170975)
* 3 AQ953627 CAVEAT BY BLUE OP PARTNER PTY LIMITED, ERIC ALPHA OPERATOR CORPORATION 2 PTY LIMITED, ERIC ALPHA OPERATOR CORPORATION 1 PTY LIMITED, ERIC ALPHA OPERATOR CORPORATION 4 PTY LIMITED & ERIC ALPHA OPERATOR CORPORATION 3 PTY LIMITED

NOTATIONS

UNREGISTERED DEALINGS: DP1292653.

*** END OF SEARCH ***



* Any entries preceded by an asterisk do not appear on the current edition of the Certificate of Title. Warning: the information appearing under notations has not been formally recorded in the Register. InfoTrack an approved NSW Information Broker hereby certifies that the information contained in this document has been provided electronically by the Registrar General in accordance with Section 96B(2) of the Real Property Act 1900.

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Received: 16/03/2023 14:12:34

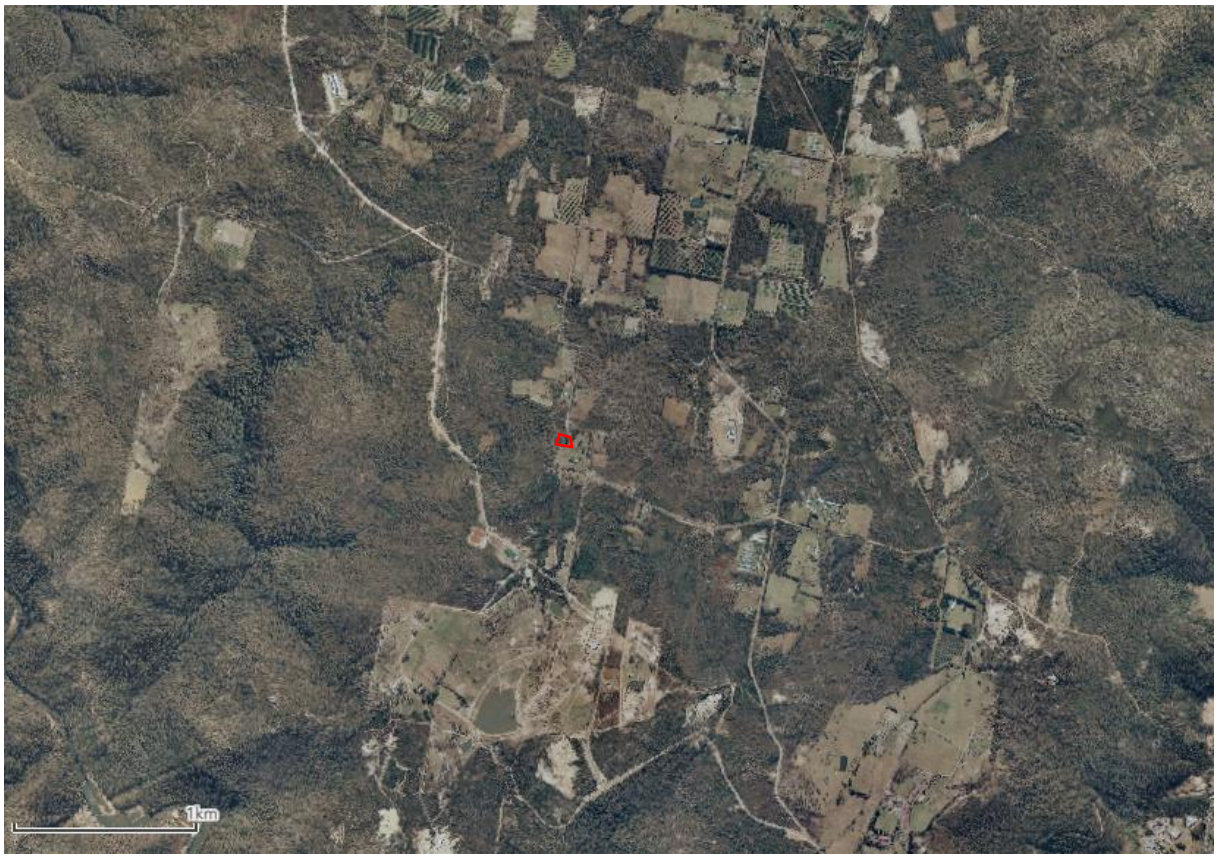
**Somersby Aerials**

**Close-up 1966**

**Regional 1966**

**Close-up 1976**

**Regional 1976**



**Close up 1984**

**Regional 1984**

**Close up 1994**

**Regional 1994**

**Close up 2006**

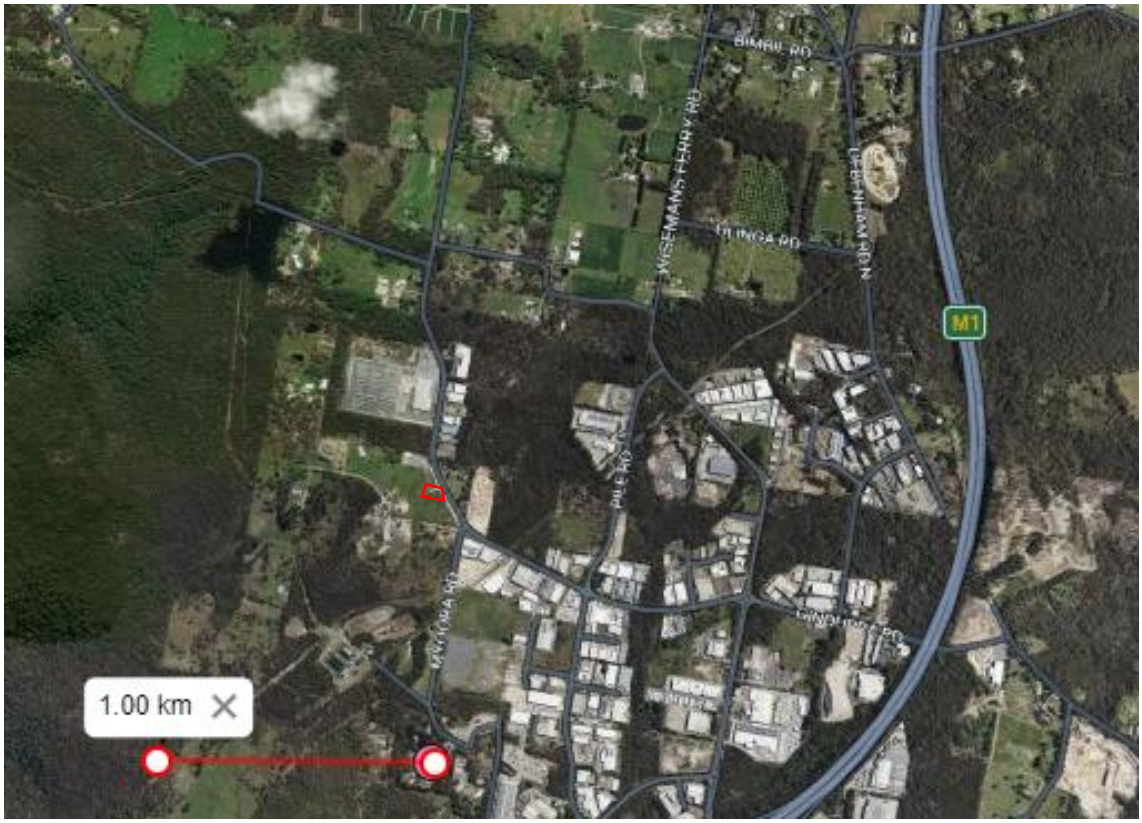
**Regional 2006**

**Close up 2016**

**Regional 2016**

**Close up 2022**

**Regional 2022**



Benbow Environmental
PO Box 687
PARRAMATTA NSW 2124

# SECTION 10.7(2) AND (5) PLANNING CERTIFICATE

*Under Section 10.7 of the Environmental Planning and Assessment Act, 1979*

| | |
|---|---|
| **Fee paid:** | $156.00 |
| **Receipt No:** | 18635694 |
| **Receipt Date:** | 21 April 2023 |
| **Property Address:** | 125 Somersby Falls Road, SOMERSBY NSW 2250 |
| **Property Description:** | Lot 5 DP 1292653 |
| **Property Owner** | C A Hunter and H J Hunter |
| **Certificate No:** | 61329 |
| **Reference No:** | 221145:240684 |
| **Date of issue:** | 21-Apr-2023 |

The information contained within this certificate relates to the land.

# ADVICE PROVIDED PURSUANT TO S.10.7(2) OF THE ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

| 1 | NAMES OF RELEVANT PLANNING INSTRUMENTS AND DEVELOPMENT CONTROL PLANS |
|---|---|

## (1) Environmental Planning Instruments and Development Control Plans which apply to the land

Central Coast Local Environmental Plan 2022

Central Coast Development Control Plan 2022

State Environment Planning Policy (Exempt and Complying Development Codes) 2008
State Environment Planning Policy (Building Sustainability Index: BASIX) 2004
State Environment Planning Policy No. 65 – Design Quality of Residential Apartment Development
State Environment Planning Policy (Primary Production) 2021
State Environment Planning Policy (Transport and Infrastructure) 2021
State Environment Planning Policy (Biodiversity and Conservation) 2021
State Environment Planning Policy (Resilience and Hazards) 2021
State Environment Planning Policy (Industry and Employment) 2021
State Environment Planning Policy (Resources and Energy) 2021
State Environment Planning Policy (Planning Systems) 2021
State Environmental Planning Policy (Housing) 2021

## (2) Proposed Environmental Planning Instruments and Draft Development Control Plans which will apply to the land and is or has been the subject of community consultation or public exhibition

Proposed State Environmental Planning Policy (Transport and Infrastructure) 2021
Proposed State Environment Planning Policy (Building Sustainability Index: BASIX) 2004
Standard Instrument (Local Environmental Plans) Order 2006
Proposed State Environmental Planning Policy (Housing) 2021
Proposed State Environment Planning Policy (Planning Systems) 2021

### Standard Instrument Amendment changing Central Coast Local Environmental Plan 2022

On 26 April 2023, Business and Industrial zones will be replaced by Employment zones within standard instrument local environmental plans. The Department of Planning and Environment exhibited in May 2022 details of how each Local Environmental Plan that includes a Business or Industrial zone will be amended to include Employment zones. The exhibition detail can be viewed on the Planning Portal.

| 2 | ZONING AND LAND USE UNDER RELEVANT PLANNING INSTRUMENTS |
|---|---|

**(a) Identity of the Zone**

Lot 5 DP 1292653

IN1 General Industrial

RU1 Primary Production

**(b) For each of the environmental planning instruments referred to in clause 1, please refer to the attached land use table to determine (i), (ii) and (iii) listed below:**

(i) development that may be carried out within the zone without the need for development consent,

(ii) development which may not be carried out within the zone except with development consent and

(iii) development which is prohibited within the zone.

**(c) Whether additional permitted uses apply to the land**

Additional Permitted Uses **do not** apply to this land.

**(d) Development Standards applying to the land that fix minimum land dimensions for the erection of a dwelling-house**

There are no development standards applying to the land that fix minimum land dimensions for the erection of a dwelling-house on the land. However there are minimum lot sizes applying to the subdivision of land, and in some zones the entitlement to erect a dwelling-house, or carry out other types of residential development, is linked to that minimum lot size.

**(e) Land includes or comprises critical habitat**

No

**(f) Land is in a conservation area**

No

**(g) Item of environmental heritage is situated on the land**

None

| 3 | CONTRIBUTION PLANS |
|---|---|

Central Coast Council Regional Section 7.12 Development Contributions Plan 2019.

| 4 | COMPLYING DEVELOPMENT |
|---|---|

**Whether or not the land is land on which complying development can be carried out under each of the codes for complying development because of the provisions of clause 1.17A(1)(c) to (e), (2), (3) and (4), 1.18(1)(c3) and 1.19 of *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008?***

**HOUSING CODE**

Complying Development under the Housing Code **may** be carried out on the land. This information needs to be read in conjunction with the whole of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

**RURAL HOUSING CODE**

Complying development under the Rural Housing Code **may** be carried out on the land. This information needs to be read in conjunction with the whole of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

**LOW RISE HOUSING DIVERSITY CODE**

Complying Development under the Low Rise Housing Diversity Code **may** be carried out on the land. This information needs to be read in conjunction with the whole of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

**GREENFIELD HOUSING CODE**

Greenfield Housing Code **is not** applicable to this land.

**HOUSING ALTERATIONS CODE**

Complying development under the Housing Alterations Code **may** be carried out on the land. This information needs to be read in conjunction with the whole of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

**GENERAL DEVELOPMENT CODE**

Complying development under the General Development Code **may** be carried out on the land. This information needs to be read in conjunction with the whole of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

**INDUSTRIAL AND BUSINESS ALTERATIONS CODE**

Complying development under the Industrial and Business Alterations Code **may** be carried out on the land. This information needs to be read in conjunction with the whole of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

**INDUSTRIAL AND BUSINESS BUILDINGS CODE**

Complying development under the Industrial and Business Buildings Code **may** be carried out on the land. This information needs to be read in conjunction with the whole of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

**CONTAINER RECYCLING FACILITIES CODE**

Complying Development under the Container Recycling Facilities Code **may** be carried out on the land. This information needs to be read in conjunction with the whole of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

**SUBDIVISIONS CODE**

Complying Development under the Housing Code **may** be carried out on the land. This information needs to be read in conjunction with the whole of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

**DEMOLITION CODE**

Complying development under the Demolition Code **may** be carried out on the land. This information needs to be read in conjunction with the whole of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

**FIRE SAFETY CODE**

Complying development under the Fire Safety Code **may** be carried out on the land. This information needs to be read in conjunction with the whole of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

**AGRITOURISM AND FARM STAY ACCOMMODATION CODE**

Complying development under the Agricultural and Farm Stay Accommodation Code **may** be carried out on the land. This information needs to be read in conjunction with the whole of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

| 5 | EXEMPT DEVELOPMENT |
|---|---|

**Whether or not the land is land on which exempt development may be carried out under each of the exempt development codes under *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008* because of that Policy, clause 1.16(1) (b1)–(d) or 1.16A.**

**GENERAL EXEMPT DEVELOPMENT CODE**

Exempt development under the General Exempt Development Code applies to this land. This information needs to be read in conjunction with the whole of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

**ADVERTISING AND SIGNAGE EXEMPT DEVELOPMENT CODE**

Exempt development under the Advertising and Signage Exempt Development Code applies to this land. This information needs to be read in conjunction with the whole of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

**TEMPORARY USES AND STRUCTURES EXEMPT DEVELOPMENT CODE**

Exempt development under the Temporary Uses and Structures Exempt Development Code applies to this land. This information needs to be read in conjunction with the whole of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

| 6 | AFFECTED BUILDING NOTICES AND BUILDING PRODUCT RECTIFICATION ORDERS (*BUILDING PRODUCT SAFETY ACT 2017*) |
|---|---|

1(a) Is there any affected building notice of which the council is aware that is in force in respect of the land?

No

1(b) Is there any building product rectification order of which the council is aware that is in force in respect of the land and has not been fully complied with?

No

1(c) Is there any notice of intention to make a building product rectification order of which the council is aware has been given in respect of the land and is outstanding?

No

In this section—

***affected building notice*** has the same meaning as in the *Building Products (Safety) Act 2017*, Part 4.

***building product rectification order*** has the same meaning as in the *Building Products (Safety) Act 2017*

| 7 | LAND RESERVED FOR ACQUISITION |
|---|---|

Whether an environmental planning instrument or proposed environmental planning instrument referred to in section 1 makes provision in relation to the acquisition of the land by an authority of the State, as referred to in the Act, section 3.15.

Nil

| 8 | ROAD WIDENING AND ROAD ALIGNMENT |
|---|---|

(a) DIVISION 2 OF PART 3 OF THE *ROADS ACT 1993*

The land is not affected by road realignment or road widening under the above.

(b) ENVIRONMENTAL PLANNING INSTRUMENT

The land is not affected by road realignment or road widening under the above.

(c) COUNCIL RESOLUTIONS

The land is not affected by road realignment or road widening under the above.

| 9 | FLOOD RELATED DEVELOPMENT CONTROLS |
|---|---|

(1) The land or part of the land **is not** within the flood planning area and **is not** subject to flood related development controls.

(2) The land or part of the land **is not** between the flood planning area and the probable maximum flood and **is not** subject to flood related development controls.

(3) In this section—

***flood planning area*** has the same meaning as in the Floodplain Development Manual.

***Floodplain Development Manual*** means the Floodplain Development Manual (ISBN 0 7347 5476 0) published by the NSW Government in April 2005.

***probable maximum flood*** has the same meaning as in the Floodplain Development Manual.

| 10 | COUNCIL AND OTHER PUBLIC AUTHORITY POLICIES ON HAZARD RISK RESTRICTIONS |
|---|---|

This land **is** affected by a policy adopted by the council or other public authority that restricts the development of the land because of the likelihood of risk restrictions. This land **is** affected because:

Chapter 3.7 Geotechnical Requirements of Central Coast Development Control Plan 2022 applies to the land and the land may be subject to slip. When considering a development application, each circumstance will be considered, and development may be restricted.

The information currently available to Council indicates that **all** of the land is bushfire prone land (as defined in the Act).

In this section—

***adopted policy*** means a policy adopted—

(a) by the council, or
(b) by another public authority, if the public authority has notified the council that the policy will be included in a planning certificate issued by the council.

## 11 BUSH FIRE PRONE LAND

The information currently available to Council indicates that **all** of the land is bushfire prone land (as defined in the Act).

## 12 LOOSE-FILL ASBESTOS INSULATION

This land does not include any residential premises (within the meaning of Division 1A of Part 8 of the *Home Building Act 1989*) that are listed on the register that is required to be maintained under that Division. That register lists residential premises that contain or have contained loose-fill asbestos insulation.

## 13 MINE SUBSIDENCE

The land **IS NOT WITHIN** a Mine Subsidence District declared under section 20 of the *Coal Mine Subsidence Compensation Act 2017*.

## 14 PAPER SUBDIVISION INFORMATION

(1) The name of any development plan adopted by a relevant authority that:
(a) applies to this land or
(b) that is proposed to be subject to a consent ballot.

Nil

(2) The date of any subdivision order that applies to this land.

Not applicable

Words and expressions used in this clause have the same meaning as they have in Part 10 of the *Environmental Planning and Assessment Regulation 2021* and Schedule 7 of the *Environmental Planning and Assessment Act 1979*.

## 15 PROPERTY VEGETATION PLANS

Council **has not** been notified by Local Land Services – Greater Sydney that the land is subject to a property vegetation plan approved under Part 4 of the Native Vegetation Act 2003.

| 16 | BIODIVERSITY STEWARDSHIP SITES |
|---|---|

Council **has not** been notified by the Director-General of the Department of Planning and Environment that the land is a biodiversity stewardship site under a biodiversity stewardship agreement under Part 5 of the Biodiversity Conservation Act, 2016.

Note: Biodiversity stewardship agreements include biobanking agreements under the *Threatened Species Conservation Act 1995,* Part 7A that are taken to be biodiversity stewardship agreements under the *Biodiversity Conservation Act 2016,* Part 5.

| 17 | BIODIVERSITY CERTIFIED LAND |
|---|---|

The land **is not** biodiversity certified land within the meaning of Part 8 of the *Biodiversity Conservation Act, 2016.*

Note: Biodiversity certified land includes land certified under the *Threatened Species Conservation Act 1995,* Part 7AA that is taken to be certified under the *Biodiversity Conservation Act 2016,* Part 8.

| 18 | ORDERS UNDER *TREES (DISPUTES BETWEEN NEIGHBOURS) ACT 2006* |
|---|---|

Council **has not** been notified of an Order issued under the Trees (Disputes between Neighbours) Act 2006.

NOTE: This advice is based on information provided by the Land and Environment Court

| 19 | ANNUAL CHARGES UNDER *LOCAL GOVERNMENT ACT 1993* FOR COASTAL PROTECTION SERVICES THAT RELATE TO EXISTING COASTAL PROTECTION WORKS |
|---|---|

The owner (or any previous owner) of the land has not consented in writing to the land being subject to annual charges under section 496B of the *Local Government Act 1993* for coastal protection services that relate to existing coastal protection works.

In this section—

***existing coastal protection works*** has the same meaning as in the *Local Government Act 1993*, section 553B.

**Note—**
Existing coastal protection works are works to reduce the impact of coastal hazards on land, such as seawalls, revetments, groynes and beach nourishment, that existed before 1 January 2011.

| 20 | WESTERN SYDNEY AEROTROPOLIS |
|---|---|

Not applicable to Central Coast Local Government Area

| 21 | DEVELOPMENT CONSENT CONDITIONS FOR SENIORS HOUSING |
|---|---|

Council **is not** aware of there being a current Site Compatibility Certificate (seniors housing) issued by the Director-General of the Department of Planning and Environment in respect of the land.

NOTE: This advice is based on information provided by the NSW Department of Planning and Environment.

| 22 | SITE COMPATIBILITY CERTIFICATES AND DEVELOPMENT CONSENT CONDITIONS FOR AFFORDABLE RENTAL HOUSING |
|---|---|

Council **is not** aware of there being a valid Site Compatibility Certificate (affordable rental housing) issued by the Director-General of the Department of Planning and Environment in respect of the land.

NOTE: This advice is based on information provided by the NSW Department of Planning and Environment.

**NOTE**

## CONTAMINATED LAND MANAGEMENT ACT 1997

The following matters are prescribed by section 59 (2) of the *Contaminated Land Management Act 1997* as additional matters to be specified in a planning certificate:

(a) The land to which the certificate relates is significantly contaminated land within the meaning of that Act - if the land (or part of the land) is significantly contaminated land at the date when the certificate is issued,

No

(b) The land to which the certificate relates is subject to a management order within the meaning of that Act - if it is subject to such an order at the date when the certificate is issued,

No

(c) The land to which the certificate relates is the subject of an approved voluntary management proposal within the meaning of that Act - if it is the subject of such an approved proposal at the date when the certificate is issued,

No

(d) The land to which the certificate relates is subject to an ongoing maintenance order within the meaning of that Act - if it is subject to such an order at the date when the certificate is issued,

No

(e) The land to which the certificate relates is the subject of a site audit statement within the meaning of that Act - if a copy of such a statement has been provided at any time to the local authority issuing the certificate.

No

## ADVICE PROVIDED PURSUANT TO S.10.7(5) OF THE ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

**NOTE:** SECTION 10.7(6) OF THE ACT STATES THAT A COUNCIL SHALL NOT INCUR ANY LIABILITY IN RESPECT OF ANY ADVICE PROVIDED IN GOOD FAITH PURSUANT TO SUBSECTION (5).

For any enquiries regarding this Certificate, please contact Council's Customer Contact Centre on 02 4306 7900.

Karen Hansen
**Signed on Behalf of Central Coast Council**

## LAND USE TABLE

### Zone IN1 General Industrial

Central Coast Local Environmental Plan 2022

1 Objectives of zone

- To provide a wide range of industrial and warehouse land uses.
- To encourage employment opportunities.
- To minimise any adverse effect of industry on other land uses.
- To support and protect industrial land for industrial uses.
- To enable other land uses that provide facilities or services to meet the day to day needs of workers in the area.
- To ensure retail, commercial or service land uses in industrial areas are of an ancillary nature.

2 Permitted without consent

Recreation areas

3 Permitted with consent

Depots; Food and drink premises; Freight transport facilities; Garden centres; General industries; Hardware and building supplies; Industrial training facilities; Kiosks; Landscaping material supplies; Light industries; Liquid fuel depots; Neighbourhood shops; Oyster aquaculture; Places of public worship; Plant nurseries; Roads; Rural supplies; Tank-based aquaculture; Timber yards; Vehicle sales or hire premises; Warehouse or distribution centres; Any other development not specified in item 2 or 4

4 Prohibited

Boat sheds; Camping grounds; Caravan parks; Cemeteries; Charter and tourism boating facilities; Commercial premises; Correctional centres; Eco-tourist facilities; Educational establishments; Entertainment facilities; Environmental facilities; Exhibition homes; Exhibition villages; Extractive industries; Farm buildings; Forestry; Heavy industrial storage establishments; Heavy industries; Home-based child care; Home businesses; Home occupations; Home occupations (sex services); Hospitals; Information and education facilities; Marinas; Mooring pens; Moorings; Open cut mining; Pond-based aquaculture; Public administration buildings; Residential accommodation; Tourist and visitor accommodation; Water recreation structures

## LAND USE TABLE

### Zone RU1 Primary Production

Central Coast Local Environmental Plan 2022

1 Objectives of zone

- To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.
- To encourage diversity in primary industry enterprises and systems appropriate for the area.
- To minimise the fragmentation and alienation of resource lands.
- To minimise conflict between land uses within this zone and land uses within adjoining zones.
- To protect high quality and productive agricultural land, water catchment areas and land comprising high ecological or biodiversity value from inappropriate development and land management practices.
- To provide for non-agricultural land uses that support the primary production purposes of the zone.

2 Permitted without consent

Extensive agriculture; Home occupations

3 Permitted with consent

Agriculture; Animal boarding or training establishments; Aquaculture; Bed and breakfast accommodation; Boat launching ramps; Building identification signs; Business identification signs; Cellar door premises; Community facilities; Dual occupancies; Dwelling houses; Environmental facilities; Environmental protection works; Extractive industries; Farm buildings; Farm stay accommodation; Flood mitigation works; Forestry; Helipads; Home-based child care; Home businesses; Home industries; Home occupations (sex services); Information and education facilities; Intensive livestock agriculture; Intensive plant agriculture; Landscaping material supplies; Open cut mining; Plant nurseries; Recreation areas; Recreation facilities (outdoor); Roads; Roadside stalls; Rural industries; Rural supplies; Rural workers' dwellings; Secondary dwellings; Sewage reticulation systems; Veterinary hospitals; Water recreation structures; Water recycling facilities; Water supply systems

4 Prohibited

Any development not specified in item 2 or 3

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE
16/3/2023 2:12PM

FOLIO: 2/712505

First Title(s): VOL 2702 FOL 222
Prior Title(s): VOL 12086 FOL 14

| Recorded | Number | Type of Instrument | C.T. Issue |
|---|---|---|---|
| 21/8/1985 | DP712505 | DEPOSITED PLAN | FOLIO CREATED EDITION 1 |
| 29/1/1987 | W722084 | TRANSFER | |
| 29/1/1987 | W722085 | MORTGAGE | EDITION 2 |
| 1/11/1990 | Z318292 | DISCHARGE OF MORTGAGE | |
| 1/11/1990 | Z318293 | TRANSFER | EDITION 3 |
| 31/7/1991 | Z818019 | MORTGAGE | EDITION 4 |
| 15/8/1994 | U525376 | DISCHARGE OF MORTGAGE | |
| 15/8/1994 | U525377 | TRANSFER | |
| 15/8/1994 | U525378 | MORTGAGE | EDITION 5 |
| 9/2/2000 | 6547874 | DISCHARGE OF MORTGAGE | |
| 9/2/2000 | 6547875 | TRANSFER | |
| 9/2/2000 | 6547876 | MORTGAGE | EDITION 6 |
| 11/2/2003 | 9366391 | DISCHARGE OF MORTGAGE | |
| 11/2/2003 | 9366392 | MORTGAGE | EDITION 7 |
| 9/9/2018 | AN695392 | DEPARTMENTAL DEALING | EDITION 8 CORD ISSUED |
| 13/4/2021 | AQ953627 | CAVEAT | |
| 15/3/2023 | AS925229 | DISCHARGE OF MORTGAGE | EDITION 9 |

*** END OF SEARCH ***

221145 PRINTED ON 16/3/2023

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Received: 16/03/2023 14:12:34

Our Ref: SC/186/2022
Luke Willcox
2 March 2023

Beveridge Williams
4/5 Colony Cl
TUGGERAH NSW 2259

# SUBDIVISION CERTIFICATE

*Pursuant to Part 6 Environmental Planning & Assessment Act 1979*

**CERTIFICATE DETAILS**

| | |
|---|---|
| **Certificate Number:** | SC/186/2022 |
| **Property Address:** | Lot 2 DP 712505, 125 Somersby Falls Road, SOMERSBY NSW 2250 |
| **Description of Development:** | Subdivision Industrial - Stage 1 Proposed Lots 1-5 |
| **Development Application No:** | DA/51000/2016 DA/51000/2016/A |
| **Determination:** | APPROVED |
| **Determination Date:** | 2 March 2023 |

Your application under Part 6 of the *Environmental Planning and Assessment Act 1979* for a Subdivision Certificate has been determined by approval.

Please find enclosed the original final plan of subdivision and two copies. These plans carry an original signature of a person authorised by Central Coast Council to sign these plans.

Yours faithfully

John Noakes
**Section Manager DEVELOPMENT ENGINEERING**

# Gosford City Council

PO Box 21
GOSFORD NSW 2250

Tel: 02 4325 8895/8147
Fax: 02 4324 8509

**NOTICE OF DETERMINATION OF A DEVELOPMENT APPLICATION**
issued under the
*Environmental Planning and Assessment Act 1979* Section 81(1) (a)

Please Quote: Assessment Team: 2:mab
Brant Sumner Phone No (02) 4325 8275

| | |
|---|---|
| **Development Application No** | 10192/2000 |
| **Applicant name** | C A HUNTER |
| **Applicant address** | 341 WISEMANS FERRY ROAD<br>SOMERSBY NSW 2250 |
| **Land to be developed: address** | LOT 2 DP712505 SOMERSBY FALLS ROAD SOMERSBY |
| **Proposed development** | SHED (MACHINERY) |
| **Building Code of Australia building classification** | 10a |
| **Determination**<br>*Made on* | 24 APR 2001 |
| **Consent to operate from** | 24 APR 2001<br>Consent granted subject to conditions described below |
| **Consent to lapse on** | Five (5) years from date of consent |
| **Details of conditions** | List of conditions commences on page 2 |
| **Reason for conditions** | To ensure that the development is carried out in the public interest in accordance with those matters referred to in Section 79C of the *Environmental Planning and Assessment Act 1979*. |
| **Right of Appeal** | If you are dissatisfied with this decision Section 97 of the *Environmental Planning and Assessment Act 1979* gives you the right to appeal to the Land and Environment Court within 12 months after the date on which you receive this notice. |
| **Signed**<br>*Signature*<br>*Date* | On behalf of the consent authority<br>Peter Wilson<br>**General Manager**<br>per:<br>24 APR 2001 |

(1) Any clearing of land, excavation, and/or earthworks, building works, and the delivery of building materials is to be carried out between the following **hours of work.**

Mondays to Fridays – 7.00am to 6.00pm
Saturdays – 8.00am to 4.00pm

(2) Development being generally in accordance with plan(s), one site plan unnumbered and undated and plans numbered 1 & 2, dated 9 & 15 November 2000, 3 sheets, submitted by Craig Hunter, as amended in red, or where modified by any conditions of this consent.

(3) Should any **aboriginal relics** or artefacts be uncovered during works on the site, all work is to cease and the Director of National Parks and Wildlife Service and Darkinjung Local Aboriginal Land Council shall be contacted immediately and any directions or requirements complied with.

(4) Should you nominate Gosford City Council as the Principal Certifying Authority, the following inspections and fees are required in respect to this approval:

a The steelwork when in position and before concrete is poured (footings, lintels, beams, columns, floors, walls, or the like).
b Final.

A fee of $132.00 for the above required building inspection(s) must be paid prior to the first inspection. The fee may be paid directly at the Customer Service Unit on the Ground Floor of the Administration Building or posted to Council.

**NB** Bookings should be made on 4325 8895/8147/8886. Work which is found to be defective **or** not ready at time of inspection will attract a **re-inspection fee of $66.00.** Please cancel bookings which will not be ready for inspection.

**Note:** Development Application reference number must be quoted when booking Inspections. Inspection bookings will ***not*** be accepted without a DA number.

(5) Erosion and Sedimentation Control in accordance with Council's Code of Practice for Erosion and Sedimentation Control must be in place prior to the commencement of work.

(6) All building work must be carried out in accordance with the provisions of the Building Code of Australia. In the event Council is nominated as the Principal Certifying Authority, additional information may be required to specifically address matters pertaining to the issue of a Construction Certificate.

(7) Prior to placement of any roofing material all guttering and downpipes must be installed and connected to Council's drainage system. If no Council drainage system is available, the guttering and downpipes must be discharged away form the building site onto a stable vegetated area.

(8) The shed is not to be used for occupation and commercial use without prior approval from Council.

(9) Any drainage works to be carried out in Area 2 shown in Appendix A of the Archaeological report (ref: 1025A), should have a representative from Darkinjung LALC present while these works are undertaken.

(10) Any future plumbing or sanitary works to the shed is subject to separate development consent.

Date: 9 March 2017

C A Hunter
341 Wisemans Ferry Road
SOMERSBY NSW 2250

admin@tinsurvey.com.au

# Notice of Determination of a Development Application

**issued under the *Environmental Planning and Assessment Act, 1979***
**section 81(1)(a)**

| | |
|---|---|
| **Development Application No:** | **51000/2016 Part 1** |
| **Applicant:** | **C A Hunter** |
| **Property:** | **LOT: 2 DP: 712505 No 125 Somersby Falls Road SOMERSBY** |
| **Proposal:** | **Subdivision Industrial One (1) Lot into Five (5) Lots** |

**Date from which this consent operates**

Subject to Section 83 of the Act this consent becomes effective and operates from 9 March 2017.

**Consent to Lapse on**

Five (5) Years from date of Consent.

**Imposition of Conditions**

Subject to the provisions of Section 80A of the Act this Consent has been granted subject to conditions annexed to this consent.

On behalf of the consent authority
Rob Noble
**Chief Executive Officer**

Per: *Robert Eyre*

Date: 9 March 2017

## 1. PARAMETERS OF THIS CONSENT

1.1. **Approved Plans and Supporting Documents**

Implement the development substantially in accordance with the plans and supporting documents listed below as submitted by the applicant and to which is affixed a Council stamp "*Development Consent*" unless modified by any following condition.

**Subdivision Plan by Trehy Ingold Neate**

| Drawing | Description | Sheets | Issue | Date |
|---|---|---|---|---|
| SD01 | Plan of Proposed Subdivision of lot 2 DP 712505 | 1 | C | 5/12/2016 |

**Supporting Documentation**

| Document | Title | Date |
|---|---|---|
| Trehy Ingold Neate | Statement of Environmental Effects | October 2016 |
| Trehy Ingold Neate | Water Cycle Management Plan Report | December 2016 |

## 2. PRIOR TO ISSUE OF ANY CONSTRUCTION CERTIFICATE

All conditions under this section must be met prior to the issue of any Construction Certificate

2.1. No activity is to be carried out on site until any Construction Certificate has been issued, other than:

a. Site investigation for the preparation of the construction, and / or

b. Implementation of environmental protection measures, such as erosion control etc that are required by this consent.

2.2. Submit an application to Council under Section 138 of the *Roads Act, 1993*, for the approval of required works to be carried out within the road reserve.

Submit to Council Engineering plans for the required works within a public road that have been designed by a suitably qualified professional in accordance with Council's Civil Works Specification and Gosford DCP 2013 Chapter 6.3 - Erosion Sedimentation Control. The Engineering plans must be included with the Roads Act application for approval by Council.

Design the required works as follows:

a. Footway formation graded at +2% from the top of kerb to the property boundary, across the full frontage of the site in Somersby Falls Road.

b. All redundant vehicular crossings are to be removed and footway formation reinstated.

c. The piping of stormwater from within the site to Council's drainage system located in Somersby Falls Road and Myoora Road.

d. Roadside furniture and safety devices as required e.g. fencing, signage, guide posts, chevrons, directional arrows, and/or guard rail in accordance with RMS and relevant Australian Standards.

e. Erosion and sedimentation control plan.

The Roads Act application must be approved by Council.

A fee for the approval of engineering plans under the *Roads Act 1993* applies. The amount of this fee can be obtained by contacting Council's Customer Services on (02) 4325 8222.

2.3. Submit a dilapidation report to Council with the Roads Act application and / or Construction Certificate application. The report must document and provide photographs that clearly depict any existing damage to the road, kerb, gutter, footpath, driveways, street trees, street signs or any other Council assets in the vicinity of the development.

2.4. Pay a security deposit of $9,450 into Council's trust fund. The payment of the security deposit is required to cover the cost of repairing damage to Council's assets that may be caused as a result of the development. The security deposit will be refunded upon the completion of the project if no damage was caused to Council's assets as a result of the development.

2.5. Submit engineering plans for the following subdivision works within the private property designed by a suitably qualified professional, in accordance with Council's Civil Works Specification and Gosford DCP 2013 Chapter 6.3 - Erosion Sedimentation Control.

a. Interallotment drainage where stormwater from individual allotments cannot be discharged directly into the street drainage system.

b. Piping of all stormwater from the proposed lots to Council's piped drainage system located in Somersby Falls Road &/or Myoora Road.

c. Site regrading generally in accordance with the "Concept Earthworks Cut & Fill Plan" prepared by Trehy Ingold Neate, Project No 21610, Drawing No EA01 Rev B dated 7.12.16.

d. Erosion and sedimentation controls.

The engineering plans and any associated reports for the above requirements must form part of the Construction Certificate.

2.6. Submit engineering / structural plans of any proposed retaining walls greater than 600mm in height. The plans must be designed by a practising Structural / Civil Engineer. The plans for the proposed retaining walls must form part of the Construction Certificate.

2.7. Submit a Geotechnical report prepared by a practising Geotechnical Engineer for all lots that are filled more than 0.4 metres above natural surface level. This report must be submitted with the engineering plans for the internal subdivision works.

2.8. Submit a Nest-box Replacement Strategy for approval by Council. The strategy must include:

a. The number, type and size of nest boxes including targeted species;

b. A plan showing location of proposed nest box including the corresponding tree numbers; and
c. Details on installation and maintenance techniques.

2.9. Submit to Council's Environment Officer for approval, a Soil and Water Management Plan in accordance with Section 6.3 of the Gosford Development Control Plan 2013 and the 'Blue Book' *(Managing Urban Stormwater: Soils and Construction, Landcom, 2004).*

The plan shall be prepared by a suitably qualified environmental/civil consultant to detail how erosion and sediment will be controlled during all stages of construction.

Section 9.3 of the Blue Book provides guidance on preparing a Soil and Water Management Plan for medium-density development. (Note: A Soil and Water Management Plan is a more comprehensive document than an Erosion and Sediment Control Plan).

2.10. The preparation of an Acid Sulphate Soil Management Plan.

## 3. PRIOR TO COMMENCEMENT OF ANY WORKS

All conditions under this section must be met prior to the commencement of any works

3.1. Appoint a Principal Certifying Authority after the construction certificate for the building work has been issued.

a. The Principal Certifying Authority (if not Council) is to notify Council of their appointment and notify the person having the benefit of the development consent of any critical stage inspections and other inspections that are to be carried out in respect of the building work no later than two (2) days before the building work commences.

b. Submit to Council a *Notice of Commencement of Building Works* or *Notice of Commencement of Subdivision Works* form giving at least two (2) days notice of the intention to commence building or subdivision work. The forms can be found on Council's website www.gosford.nsw.gov.au

3.2. Do not commence site works until the sediment control measures have been installed in accordance with the approved plans / Gosford DCP 2013 Chapter 6.3 - *Erosion Sedimentation and Control*.

3.3. Erect a sign in a prominent position on any work site on which building, subdivision or demolition work is being carried out. The sign must indicate:

a. The name, address and telephone number of the principal certifying authority for the work; and

b. The name of the principal contractor and a telephone number at which that person may be contacted outside of working hours; and

c. That unauthorised entry to the work site is prohibited.

Remove the sign when the work has been completed.

3.4. Obtain a Construction Certificate for the subdivision works within the private property.

3.5 Submit an application to the Water Authority for conditions of connection to the Council's water and sewer reticulation systems.

## 4. DURING WORKS

All conditions under this section must be met during works

4.1. Clearing of land, excavation, and / or earthworks, building works, and the delivery of building materials must only be carried out between the following hours:

Mondays to Fridays - 7:00am to 6:00pm
Saturdays - 8:00am to 4:00pm except as noted in Clause 'b'

a. No work is permitted on Sundays and Public Holidays
b. No work is permitted on:
   - Saturdays when a public holiday is adjacent to that weekend.
   - Construction industry awarded rostered days off.
   - Construction industry shutdown long weekends.

4.2. Undertake and maintain Erosion and Siltation control measures in respect to any part of the land where the natural surface is disturbed or earthworks are carried out. The controls must comply with Gosford DCP 2013 Chapter 6.3 - *Erosion and Sedimentation Control*.

4.3. Keep a copy of the stamped approved plans on site for the duration of site works and make the plans available upon request to either the Principal Certifying Authority or an officer of Council.

4.4. Construct the works within the road reserve that required approval under the Roads Act. The works must be constructed in accordance with Council's Civil Works Specification and Gosford DCP 2013 Chapter 6.3 - Erosion Sedimentation Control.

4.5. Construct the engineering works within private property that formed part of the Construction Certificate in accordance with Council's Civil Works Specification and Gosford DCP 2013 Chapter 6.3 - Erosion Sedimentation Control.

4.6. Arrange with the relevant service provider / Authority (e.g. Ausgrid, Jemena, communications provider) for the supply of services concurrent with the engineering work. Arrangements must include where required any relocation of existing mains and services and dedication of easements for mains and services.

4.7. Achieve a minimum of 95% standard compaction for all lots filled more than 400mm in accordance with AS1289: *Methods of testing soils for engineering purposes* under a practising Geotechnical engineer's supervision and certification.

4.8. Cease all works if any Aboriginal objects or artefacts are uncovered during works. Immediately contact the NSW Office of Environment & Heritage and comply with any directions or requirements.

4.9. Do not commence removal of hollow bearing trees until such time as a suitably qualified licensed fauna specialist (eg. Ecologist, WIRES Officer, Arborist) is on site to visually inspect any hollow bearing trees. Only trees up to 10 metres from the approved structure must be removed under the guidance of the specialist.

All branches comprising hollows must be bagged at the ends and tied first. The hollowed branch is then to be severed at the extreme end against the trunk and lowered down carefully on ropes. The hollowed sections must be stored on the portion of the site where vegetation will remain intact. At nightfall the bagging must be removed and any resident fauna captured must be cared for and relocated within the subject site in vegetated areas.

Deadwood or trunk hollows must be more carefully treated. The suitably qualified licensed fauna specialist (Ecologist, WIRES Officer, Aborist) must inspect these hollows visually and determine if any animals are present prior to lopping. If microbats are present, they are best left intact and removed wholly and lowered softly to the ground and left overnight with the trunk section cut into one metre lengths. The hollow section of the tree must be secured to an appropriate sized tree in an alternate location on the site. A constructed nesting box will replace any hollow that was destroyed.

Following the removal of hollow bearing trees the specialist must notify Council in writing of compliance with this condition within fourteen (14) days.

4.10. Remove trees and ground stumps in a manner so as to not damage trees to be retained.

4.11. A water cart must operate on-site during bulk earthworks to suppress dust generated by vehicles and equipment. Dust shall also be suppressed at all other stages of construction.

4.12. Fill material must only comprise of Virgin Excavated Natural Material (VENM) or Excavated Natural Material (ENM).

Virgin Excavated Natural Material (VENM) is defined under Schedule 1 of the *Protection of the Environment Operations (POEO) Act 1997* as follows:

> *"virgin excavated natural material"* means natural material (such as clay, gravel, sand, soil or rock fines):
>
> (a) that has been excavated or quarried from areas that are not contaminated with manufactured chemicals, or with process residues, as a result of industrial, commercial, mining or agricultural activities, and
>
> (b) that does not contain any sulfidic ores or soils or any other waste,
>
> Excavated Natural Material (ENM) that has been issued with an exemption under the *Protection of the Environment Operations (Waste) Regulation 2014* in accordance with the Excavated Natural Material exemption 2014.

The placement of any other type of fill material other than that defined under VENM or ENM is prohibited under this consent.

The applicant must provide Council with validation documents verifying and certifying that the material placed on the land complies with:

- the definition of VENM under Schedule 1 of the *POEO Act 1997,* or
- an exemption issued under the Excavated Natural Material Exemption 2014.

Any exposed soil surface areas must be grassed / landscaped to minimise soil erosion.

4.13. Undertake works in accordance with the approved Soil and Water Management Plan and update the plan as required during all stages of the construction or in accordance with direction from Council.

4.14. Any water that could potentially discharge from the site (e.g. wet-weather stormwater detention basin overflows) must meet the relevant water quality trigger values within the *"Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Australian and New Zealand Environment and Conservation Council (ANZECC Guidelines), October 2000"*. Water quality shall be monitored and the water suitably treated or lawfully disposed of to ensure water pollution does not occur.

Regularly monitor and maintain the stormwater detention basin on site. Maintenance shall include removal of rubbish and debris, control of algae and weeds as well as removal of built up sediment.

4.15. Comply with the commitments as detailed within the Waste Management Plan dated 31 October 2016 prepared by S. Houison.

4.16 Each industrial lot (proposed lots 1 to 5 inclusive) shall be connected to Council's water and sewer reticulation system.

## 5. PRIOR TO ISSUE OF ANY SUBDIVISION CERTIFICATE

All conditions under this section must be met prior to the issue of any Subdivision Certificate

5.1. Complete works within the road reserve that required approval under the Roads Act. The works must be completed in accordance with Council's Civil Works Specification and Gosford DCP 2013 Chapter 6.3 - Erosion Sedimentation Control, and documentary evidence for the acceptance of such works must be obtained from the Roads Authority.

5.2. Submit an application under Section 305 of the *Water Management Act 2000* for provision of a Section 307 Certificate of Compliance. A copy of the Certificate of Compliance must be obtained from Council (Water Authority). Conditions and contributions may be applicable to the Section 307 Certificate.

The 'Application for 307 Certificate under Section 305 *Water Management Act 2000*' form can be found on Council's website www.gosford.nsw.gov.au. Early application is recommended.

5.3. Apply to Council for a Subdivision Certificate and pay the required fees at lodgement. The application must include the final plan of subdivision and Section 88B Instrument (if relevant). The application must be approved by Council prior to the registration of the subdivision.

The fee may be obtained from Council's Customer Service Unit on 4325 8222 or from Council's website http://www.gosford.nsw.gov.au.

5.4. Submit with the application for the Subdivision Certificate, a letter of clearance from each service provider / Authority (e.g. Ausgrid, Jemena, relevant communications provider).

5.5. Complete the engineering works required within the development site in accordance with Council's Civil Works Specification and Gosford DCP 2013 Chapter 6.3 - Erosion Sedimentation Control.

5.6. Include on the Deposited Plan (DP) an Instrument under the *Conveyancing Act 1919* for the following restrictive covenants; with the Council having the benefit of these covenants and having sole authority to release and modify. Wherever possible, the extent of land affected by these covenants must be defined by bearings and distances shown on the plan.

a. Create an easement to drain water 2m wide as indicated on the approved plans.

b. Create classification and other recommendations contained within the geotechnical report over all lots filled more than 400mm in accordance with Australian Standard 2870 (Residential Slabs and Footings).

c. Prohibit direct vehicular access to and from Ghilkes Road for the purposes of industrial development in respect to proposed lot 5.

## 6. ADVICE

6.1. Consult with public authorities who may have separate requirements in the following aspects:

a. *Australia Post* for the positioning and dimensions of mail boxes in new commercial and residential developments;

b. *Jemena Asset Management* for any change or alteration to the gas line infrastructure;

c. *Ausgrid* for any change or alteration to electricity infrastructure or encroachment within transmission line easements;

d. *Telstra, Optus* or other telecommunication carriers for access to their telecommunications infrastructure.

e. *Central Coast Council* in respect to the location of water, sewerage and drainage services.

6.2. Carry out all work under this Consent in accordance with SafeWork NSW requirements including the *Workplace Health and Safety Act 2011 No 10* and subordinate regulations, codes of practice and guidelines that control and regulate the development industry.

6.3. Dial Before You Dig

Underground assets may exist in the area that is subject to your application. In the interests of health and safety and in order to protect damage to third party assets please contact Dial Before You Dig at www.1100.com.au or telephone on 1100 before excavating or erecting structures. (This is the law in NSW). If alterations are required to the configuration, size, form or design of the development upon contacting the Dial Before You Dig service, an amendment to the development consent (or a new development application) may be necessary. Individuals owe asset owners a duty of care that must be observed when working in the vicinity of plant or assets. It is the individual's responsibility to anticipate and request the nominal location of plant or assets on the relevant property via contacting the Dial Before You Dig service in advance of any construction or planning activities.

Telecommunications Act 1997 (Commonwealth)

Telstra (and its authorised contractors) are the only companies that are permitted to conduct works on Telstra's network and assets. Any person interfering with a facility or installation owned by Telstra is committing an offence under the *Criminal Code Act 1995 (Cth)* and is liable for prosecution. Furthermore, damage to Telstra's infrastructure may result in interruption to the provision of essential services and significant costs. If you are aware of any works or proposed works which may affect or impact on Telstra's assets in any way, you are required to contact: Telstra's Network Integrity Team on phone number 1800 810 443.

6.4. Separate application is required should the applicant require a new or upsized water supply connection to Council's water supply system.

6.5. The inspection fee for works associated with approvals under the Roads Act is calculated in accordance with Council's current fees and charges policy.

6.6. Payment of a maintenance bond may be required for civil engineering works associated with this development. This fee is calculated in accordance with Council's fees and charges.

6.7. In reference to Section 109E(2) of the Environmental Planning and Assessment Act, you are advised that Gosford Local Environment Plan, Gosford Planning Scheme Ordinance and Interim Development Order No 122 does not permit accredited certifiers to undertake the role of the principal certifying authority for subdivisions. Therefore, only Central Coast Council can be appointed as the Principal Certifying Authority (PCA).

6.8. It is an offence under the *National Parks and Wildlife Act 1974* to knowingly disturb an Aboriginal artefact without consent.

## 7. PENALTIES

Failure to comply with this development consent and any condition of this consent may be a ***criminal offence***. Failure to comply with other environmental laws may also be a ***criminal offence***.

Where there is any breach Council may without any further warning:

- Issue Penalty Infringement Notices (On-the-spot fines);
- Issue notices and orders;
- Prosecute any person breaching this consent, and/or
- Seek injunctions/orders before the courts to retain and remedy any breach.

**Warnings as to Potential Maximum Penalties**

Maximum Penalties under NSW Environmental Laws include fines up to $1.1 Million and/or custodial sentences for serious offences.

## 8. REVIEW OF DETERMINATION

8.1. Subject to provisions of Section 82A of the Act the applicant may make an application seeking a review of this determination, providing it is made in time for Council to determine the review within six (6) months of this determination.

## 9. RIGHT OF APPEAL

9.1. Section 97 of the Act confers on an applicant who is dissatisfied with the determination of a consent authority a right of appeal to the Land and Environment Court within six (6) months, from the date of determination.

9.2. To ascertain the date upon which the determination becomes effective refer to Section 83 of the Act.

Telephone: (02) 4325 8222 Please Quote: DA52504/2017

C A Hunter admin@tinsurvey.com.au
Trehy Ingold Neate
PO Box 3205 TUGGERAH NSW 2259

# Notice of Determination of a Development Application
issued under the *Environmental Planning and Assessment Act, 1979*
section 81(1)(a)

**Application Number:** **DA52504/2017 Part 1**
**Applicant:** **C A Hunter**
**Property:** **LOT: 2 DP: 712505 , 125 Somersby Falls Road SOMERSBY NSW 2250**
**Proposal:** **Single Storey Dwelling House**

**Date from which this consent operates**
In accordance with Section 83 of the Environmental Planning and Assessment Act 1979, this consent becomes effective and operates from the date of this notice.

**Consent to lapse on**
Five (5) years from date of consent

**Imposition of conditions**
In accordance with Section 80A of the Environmental Planning and Assessment Act 1979, this consent has been granted subject to conditions of this consent.

**Review of Determination**
In accordance with Section 82A of the Environmental Planning and Assessment Act 1979, the applicant may make an application seeking a review of this determination, providing it is made in time for Council to determine the review within six (6) months of this determination.

**Right of Appeal**
Section 97 of the Environmental Planning and Assessment Act 1979 confers on an applicant, who is dissatisfied with the determination of a consent authority, a right of appeal to the Land and Environment Court within six (6) months from the date of determination. To ascertain the date upon which the determination becomes effective refer to Section 83 of the Act.

For further information contact Central Coast Council Customer Service Unit on (02) 4325 8222.

On behalf of the consent authority
Rob Noble
**Chief Executive Officer**

Per: N. Skeates

Date: 11/08/2017

## Conditions

## 1. PARAMETERS OF THIS CONSENT

### 1.1 Approved Plans and Supporting Documents

Implement the development substantially in accordance with the plans and supporting documents listed below as submitted by the applicant and to which is affixed a Council stamp "*Development Consent*" unless modified by any following condition.

**Architectural Plans by: Design Harmony Mitchel Morgan**

| Drawing | Description | Sheets | Issue | Date |
|---|---|---|---|---|
| 17-303 | Plans | 4 | 01 | 29th-Mar-2017 |

**Supporting Documentation:**

| Title | Prepared by | Date |
|---|---|---|
| BASIX Certificate Number 809279S | Design Harmony | 06 April 2017 |
| Waste Management Plan | Craig Hunter | - |

**1.2** Carry out all building works in accordance with the Building Code of Australia.

## 2. PRIOR TO ISSUE OF ANY CONSTRUCTION CERTIFICATE

All conditions under this section must be met prior to the issue of any Construction Certificate

**2.1** Submit an application to Council under the provisions of Section 68 of the *Local Government Act 1993* for a permit to install an on-site sewage management system. The system must generally be designed in accordance with the geotechnical report / waste water report 17075-A, dated 24 May 2017 and prepared by Larry Cook Consulting Pty Ltd. The Section 68 application can be found on Council's website at www.gosford.nsw.gov.au

**2.2** No activity is to be carried out on site until the Construction Certificate has been issued, other than:

a. Site investigation for the preparation of the construction, and / or

b. Implementation of environmental protection measures, such as erosion control etc that are required by this consent.

**2.3** Provide details showing that the development complies with Bushfire Attack Level (BAL) 12.5 as prescribed by AS3959-2009: *Construction of buildings in bushfire prone areas*. Depending on the required BAL, the development must incorporate additional construction requirements that are contained in *subsection A3.7 - Additional Construction Requirements* of the document *Addendum: Appendix 3* to *Planning for bushfire protection 2010* produced by the NSW Rural Fire Service.

## 3. PRIOR TO COMMENCEMENT OF ANY WORKS

All conditions under this section must be met prior to the commencement of any works

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a. The Principal Certifying Authority (if not Council) is to notify Council of their appointment and notify the person having the benefit of the development consent of any critical stage inspections and other inspections that are to be carried out in respect of the building work no later than two (2) days before the building work commences.

b. Submit to Council a *Notice of Commencement of Building Works* or *Notice of Commencement of Subdivision Works* form giving at least two (2) days notice of the intention to commence building or subdivision work. The forms can be found on Council's website www.gosford.nsw.gov.au

**3.2** Do not commence site works until the sediment control measures have been installed in accordance with the approved plans / Gosford DCP 2013 Chapter 6.3 - *Erosion Sedimentation and Control*.

**3.3** Erect a sign in a prominent position on any work site on which building, subdivision or demolition work is being carried out. The sign must indicate:

a. The name, address and telephone number of the principal certifying authority for the work; and

b. The name of the principal contractor and a telephone number at which that person can be contacted outside of working hours; and

c. That unauthorised entry to the work site is prohibited.

Remove the sign when the work has been completed.

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Contact Council prior to submitting these forms to confirm the relevant fees.

**3.5** Provide toilet facilities at a ratio of one toilet plus one additional toilet for every 20 persons employed at the site. Each toilet must:

a. Be a standard flushing toilet connected to a public sewer, or

b. Have an on-site effluent disposal system approved under the *Local Government Act 1993*, or

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## 4. DURING WORKS

All conditions under this section must be met during works

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a. No work is permitted on Sundays and Public Holidays

b. No work is permitted on:
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- Construction industry awarded rostered days off.
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Clause b does not apply to works of a domestic residential nature as below:

i. Minor renovation or refurbishments to single dwelling construction.

ii. Owner occupied renovations or refurbishments to single dwelling construction.

iii. Owner builder construction of single dwelling construction; and / or

iv. Any cottage constructions, single dwellings or housing estates consisting of predominantly unoccupied single dwellings.

**4.2** Undertake and maintain Erosion and Siltation control measures in respect to any part of the land where the natural surface is disturbed or earthworks are carried out. The controls must comply with Gosford DCP 2013 Chapter 6.3 - *Erosion and Sedimentation Control.*

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**4.4** Notify Council when plumbing and drainage work will be ready for inspection(s) and make the work accessible for inspection in accordance with the *Plumbing and Drainage Act 2011*.

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**4.6** Implement the requirements of the Waste Management Plan listed as supporting documentation in this development consent.

**4.7** No fill other than as shown on the approved plans is permitted.

**4.8** Cease all works if any Aboriginal objects or artefacts are uncovered during works. Immediately contact the NSW Office of Environment & Heritage and comply with any directions or requirements.

## 5. PRIOR TO ISSUE OF ANY OCCUPATION CERTIFICATE

All conditions under this section must be met prior to the issue of any Occupation Certificate

**5.1** Submit an application for the Occupation Certificate to the Principal Certifying Authority for approval.

**5.2** Do not occupy the premises until the Occupation Certificate has been issued.

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**5.5** Drain all roof water by a piped drainage line to the street kerb outlet / an interallotment drainage line where available / an infiltration trench.

Note: infiltration trench details are to be designed by a practicing engineer experienced in hydraulics. The design details are to cater for a 1 in 20 year AEP storm event and are to allow for a minimum setback of three (3) metres from any sewer main and lot boundaries.

## 6. PRIOR TO OCCUPATION OF THE MANUFACTURED HOME

All conditions under this section must be met prior to Occupation of the Manufactured Home

**6.1** Obtain an Approval to Operate the on-site sewage management system from Council.

## 7. ONGOING OPERATION

**7.1** Do not let, adapt or use the dwelling for separate occupation in two or more parts.

**7.2** Use the garage for the housing of motor vehicles only and not for the purpose of any trade, industry, manufacture or habitable purpose.

**7.3** Do not install cooking facilities or sanitary fittings other than those indicated on the approved plans.

## 8. PENALTIES

**8.1** Failure to comply with this development consent and any condition of this consent may be a ***criminal offence***. Failure to comply with other environmental laws may also be a ***criminal offence.***

Where there is any breach Council may without any further warning:

- Issue Penalty Infringement Notices (On-the-spot fines);
- Issue notices and orders;
- Prosecute any person breaching this consent, and/or
- Seek injunctions/orders before the courts to retain and remedy any breach.

**Warnings as to Potential Maximum Penalties**

Maximum Penalties under NSW Environmental Laws include fines up to $1.1 Million and / or custodial sentences for serious offences.

## ADVISORY NOTES

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  a. *Australia Post* for the positioning and dimensions of mail boxes in new commercial and residential developments;
  b. *Jemena Asset Management* for any change or alteration to the gas line infrastructure;
  c. *Ausgrid* for any change or alteration to electricity infrastructure or encroachment within transmission line easements;
  d. *Telstra, Optus* or other telecommunication carriers for access to their telecommunications infrastructure.
  e. *Central Coast Council* in respect to the location of water, sewerage and drainage services.

- Carry out all work under this Consent in accordance with SafeWork NSW requirements including the *Workplace Health and Safety Act 2011 No 10* and subordinate regulations, codes of practice and guidelines that control and

regulate the development industry.

- Dial Before You Dig
  Underground assets may exist in the area that is subject to your application. In the interests of health and safety and in order to protect damage to third party assets please contact Dial Before You Dig at www.1100.com.au or telephone on 1100 before excavating or erecting structures. (This is the law in NSW). If alterations are required to the configuration, size, form or design of the development upon contacting the Dial Before You Dig service, an amendment to the development consent (or a new development application) may be necessary. Individuals owe asset owners a duty of care that must be observed when working in the vicinity of plant or assets. It is the individual's responsibility to anticipate and request the nominal location of plant or assets on the relevant property via contacting the Dial Before You Dig service in advance of any construction or planning activities.

- Telecommunications Act 1997 (Commonwealth)
  Telstra (and its authorised contractors) are the only companies that are permitted to conduct works on Telstra's network and assets. Any person interfering with a facility or installation owned by Telstra is committing an offence under the *Criminal Code Act 1995 (Cth)* and is liable for prosecution. Furthermore, damage to Telstra's infrastructure may result in interruption to the provision of essential services and significant costs. If you are aware of any works or proposed works which may affect or impact on Telstra's assets in any way, you are required to contact: Telstra's Network Integrity Team on phone number 1800 810 443.

- Separate application is required should the applicant require a new or upsized water supply connection to Council's water supply system.

- Install and maintain backflow prevention device(s) in accordance with Council's WS4.0 Backflow Prevention Containment Policy. This policy can be found on Council's website at: www.gosford.nsw.gov.au

Telephone: (02) 4325 8222 Please Quote: DA52504/2017

C A Hunter admin@tinsurvey.com.au
Trehy Ingold Neate
PO Box 3205 TUGGERAH NSW 2259

# Notice of Determination of a Development Application
issued under the *Environmental Planning and Assessment Act, 1979*
section 81(1)(a)

**Application Number:** **DA52504/2017 Part 1**
**Applicant:** **C A Hunter**
**Property:** **LOT: 2 DP: 712505 , 125 Somersby Falls Road SOMERSBY NSW 2250**
**Proposal:** **Single Storey Dwelling House**

**Date from which this consent operates**
In accordance with Section 83 of the Environmental Planning and Assessment Act 1979, this consent becomes effective and operates from the date of this notice.

**Consent to lapse on**
Five (5) years from date of consent

**Imposition of conditions**
In accordance with Section 80A of the Environmental Planning and Assessment Act 1979, this consent has been granted subject to conditions of this consent.

**Review of Determination**
In accordance with Section 82A of the Environmental Planning and Assessment Act 1979, the applicant may make an application seeking a review of this determination, providing it is made in time for Council to determine the review within six (6) months of this determination.

**Right of Appeal**
Section 97 of the Environmental Planning and Assessment Act 1979 confers on an applicant, who is dissatisfied with the determination of a consent authority, a right of appeal to the Land and Environment Court within six (6) months from the date of determination. To ascertain the date upon which the determination becomes effective refer to Section 83 of the Act.

For further information contact Central Coast Council Customer Service Unit on (02) 4325 8222.

On behalf of the consent authority
Rob Noble
**Chief Executive Officer**

Per: N. Skeates

Date: 11/08/2017

## Conditions

## 1. PARAMETERS OF THIS CONSENT

### 1.1 Approved Plans and Supporting Documents

Implement the development substantially in accordance with the plans and supporting documents listed below as submitted by the applicant and to which is affixed a Council stamp "*Development Consent*" unless modified by any following condition.

**Architectural Plans by: Design Harmony Mitchel Morgan**

| Drawing | Description | Sheets | Issue | Date |
|---|---|---|---|---|
| 17-303 | Plans | 4 | 01 | 29th-Mar-2017 |

**Supporting Documentation:**

| Title | Prepared by | Date |
|---|---|---|
| BASIX Certificate Number 809279S | Design Harmony | 06 April 2017 |
| Waste Management Plan | Craig Hunter | - |

**1.2** Carry out all building works in accordance with the Building Code of Australia.

## 2. PRIOR TO ISSUE OF ANY CONSTRUCTION CERTIFICATE

All conditions under this section must be met prior to the issue of any Construction Certificate

**2.1** Submit an application to Council under the provisions of Section 68 of the *Local Government Act 1993* for a permit to install an on-site sewage management system. The system must generally be designed in accordance with the geotechnical report / waste water report 17075-A, dated 24 May 2017 and prepared by Larry Cook Consulting Pty Ltd. The Section 68 application can be found on Council's website at www.gosford.nsw.gov.au

**2.2** No activity is to be carried out on site until the Construction Certificate has been issued, other than:

a. Site investigation for the preparation of the construction, and / or

b. Implementation of environmental protection measures, such as erosion control etc that are required by this consent.

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Note: infiltration trench details are to be designed by a practicing engineer experienced in hydraulics. The design details are to cater for a 1 in 20 year AEP storm event and are to allow for a minimum setback of three (3) metres from any sewer main and lot boundaries.

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All conditions under this section must be met prior to Occupation of the Manufactured Home

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## ADVISORY NOTES

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  e. *Central Coast Council* in respect to the location of water, sewerage and drainage services.

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regulate the development industry.

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Telephone: (02) 4325 8222

Please Quote: DA52504/2017.2
20 November 2017

Central Coast Council

C A Hunter
Trehy Ingold Neate
PO Box 3205 TUGGERAH NSW 2259

admin@tinsurvey.com.au

**APPLICATION NUMBER:** DA52504/2017.2
**PROPOSAL:** Amendment under Section 96 (1A) of the Environmental Planning and Assessment Act to the Approved Single Storey Dwelling House (Section 96 Amend Condition 2.2 ).
**PROPERTY:** LOT: 2 DP: 712505, 125 Somersby Falls Road SOMERSBY NSW 2250

Dear Sir/Madam

I refer to your application lodged 15 November 2017 for modification of consent 52504/2017

Having regard to the provisions of Section 96 (1A) of the Environmental Planning and Assessment Act, 1979, the Council is of the opinion that the amended proposal is a minor modification and is substantially the same development consented to by the Council.

Accordingly, the consent dated 11 August 2017 is modified in the following manner:

i. Amended condition number 2.2

Please note that the approved amendment does not extend the term of the original consent. Attached to this approval is the reproduced consent as amended.

The works (if any) that are associated with this amended development consent may require a modified Construction Certificate in accordance with Clause 148 of the Environmental Assessment Regulation 2000.

Your attention is drawn to your right of appeal against the conditions to the Land and Environment Court of NSW.

Yours faithfully

Per: N. Skeates

Brian Bell
**Chief Executive Officer**

## Conditions

## 1. PARAMETERS OF THIS CONSENT

### 1.1 Approved Plans and Supporting Documents

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**Supporting Documentation:**

| Title | Prepared by | Date |
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| BASIX Certificate Number 809279S | Design Harmony | 06 April 2017 |
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**1.2** Carry out all building works in accordance with the Building Code of Australia.

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**2.1** Submit an application to Council under the provisions of Section 68 of the *Local Government Act 1993* for a permit to install an on-site sewage management system. The system must generally be designed in accordance with the geotechnical report / waste water report 17075-A, dated 24 May 2017 and prepared by Larry Cook Consulting Pty Ltd. The Section 68 application can be found on Council's website at www.gosford.nsw.gov.au

**2.2** No activity is to be carried out on site until the Construction Certificate has been issued, other than:

a. Site investigation for the preparation of the construction, and / or

b. Implementation of environmental protection measures, such as erosion control etc that are required by this consent.

c. Placement of battered fill associated with the construction of the new dwelling house in the location of the approved part 1 plans (where no retaining wall is required)

**2.3** Provide details showing that the development complies with Bushfire Attack Level (BAL) 12.5 as prescribed by AS3959-2009: *Construction of buildings in bushfire prone areas*. Depending on the required BAL, the development must incorporate additional construction requirements that are contained in *subsection A3.7 - Additional Construction Requirements* of the document *Addendum: Appendix 3* to *Planning for bushfire protection 2010* produced by the NSW Rural Fire Service.

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c. That unauthorised entry to the work site is prohibited.

Remove the sign when the work has been completed.

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All conditions under this section must be met prior to the issue of any Occupation Certificate

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Note: infiltration trench details are to be designed by a practicing engineer experienced in hydraulics. The design details are to cater for a 1 in 20 year AEP storm event and are to allow for a minimum setback of three (3) metres from any sewer main and lot boundaries.

## 6. PRIOR TO OCCUPATION OF THE MANUFACTURED HOME

All conditions under this section must be met prior to Occupation of the Manufactured Home

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## 7. ONGOING OPERATION

**7.1** Do not let, adapt or use the dwelling for separate occupation in two or more parts.

**7.2** Use the garage for the housing of motor vehicles only and not for the purpose of any trade, industry, manufacture or habitable purpose.

**7.3** Do not install cooking facilities or sanitary fittings other than those indicated on the approved plans.

## 8. PENALTIES

**8.1** Failure to comply with this development consent and any condition of this consent may be a ***criminal offence***. Failure to comply with other environmental laws may also be a ***criminal offence.***

Where there is any breach Council may without any further warning:

- Issue Penalty Infringement Notices (On-the-spot fines);
- Issue notices and orders;
- Prosecute any person breaching this consent, and/or
- Seek injunctions/orders before the courts to retain and remedy any breach.

**Warnings as to Potential Maximum Penalties**

Maximum Penalties under NSW Environmental Laws include fines up to $1.1 Million and / or custodial sentences for serious offences.

## ADVISORY NOTES

- Consult with public authorities who may have separate requirements in the following aspects:
  a. *Australia Post* for the positioning and dimensions of mail boxes in new commercial and residential developments;
  b. *Jemena Asset Management* for any change or alteration to the gas line infrastructure;
  c. *Ausgrid* for any change or alteration to electricity infrastructure or encroachment within transmission line easements;
  d. *Telstra, Optus* or other telecommunication carriers for access to their telecommunications infrastructure.
  e. *Central Coast Council* in respect to the location of water, sewerage and drainage services.

- Carry out all work under this Consent in accordance with SafeWork NSW requirements including the *Workplace Health and Safety Act 2011 No 10* and subordinate regulations, codes of practice and guidelines that control and

regulate the development industry.

- Dial Before You Dig
  Underground assets may exist in the area that is subject to your application. In the interests of health and safety and in order to protect damage to third party assets please contact Dial Before You Dig at www.1100.com.au or telephone on 1100 before excavating or erecting structures. (This is the law in NSW). If alterations are required to the configuration, size, form or design of the development upon contacting the Dial Before You Dig service, an amendment to the development consent (or a new development application) may be necessary. Individuals owe asset owners a duty of care that must be observed when working in the vicinity of plant or assets. It is the individual's responsibility to anticipate and request the nominal location of plant or assets on the relevant property via contacting the Dial Before You Dig service in advance of any construction or planning activities.

- Telecommunications Act 1997 (Commonwealth)
  Telstra (and its authorised contractors) are the only companies that are permitted to conduct works on Telstra's network and assets. Any person interfering with a facility or installation owned by Telstra is committing an offence under the *Criminal Code Act 1995 (Cth)* and is liable for prosecution. Furthermore, damage to Telstra's infrastructure may result in interruption to the provision of essential services and significant costs. If you are aware of any works or proposed works which may affect or impact on Telstra's assets in any way, you are required to contact: Telstra's Network Integrity Team on phone number 1800 810 443.

- Separate application is required should the applicant require a new or upsized water supply connection to Council's water supply system.

- Install and maintain backflow prevention device(s) in accordance with Council's WS4.0 Backflow Prevention Containment Policy. This policy can be found on Council's website at: www.gosford.nsw.gov.au

Telephone: 1300 463 954

Reference: DA52504/2017.3
02 April 2020

craighunter1909@hotmail.com

C A Hunter
Mr Craig Hunter
341 Wisemans Ferry Road SOMERSBY NSW 2250

**APPLICATION NUMBER:** DA52504/2017.3
**PROPOSAL:** Amendment under Section 4.55 (1A) of the Environmental Planning and Assessment Act to the Approved
Single Storey Dwelling House
(Section 4.55 Amendment Change Floor Construction from Bearers and Joists to Slab on Ground ).
**PROPERTY:** LOT: 2 DP: 712505, 125 Somersby Falls Road SOMERSBY NSW 2250

Dear Sir/Madam

I refer to your application lodged 16 March 2020 for modification of consent 52504/2017

Having regard to the provisions of Section 4.55 (1A) of the Environmental Planning and Assessment Act 1979, the Council is of the opinion that the amended proposal is a minor modification and is substantially the same development consented to by the Council.

Accordingly, the consent dated 11 August 2017 is modified in the following manner:

Modify Condition 1.1 (plan set) to attach garage to dwelling house, change internal layout and change construction to slab on ground instead of bearers and joists.
Delete Condition 6.1.
Create Condition 5.6.
Please note that the approved amendment does not extend the term of the original consent. Attached to this approval is the reproduced consent as amended.

The works (if any) that are associated with this amended development consent may require a modified Construction Certificate in accordance with Clause 148 of the Environmental Assessment Regulation 2000.

Your attention is drawn to your right of appeal against the conditions to the Land and Environment Court of NSW.

Yours faithfully

Per:

Gary Murphy
**Chief Executive Officer**

## Conditions

### 1. PARAMETERS OF THIS CONSENT

**1.1 Approved Plans and Supporting Documents**

**Implement the development substantially in accordance with the plans and supporting documents listed below as submitted by the applicant and to which is affixed a Council stamp "*Development Consent*" unless modified by any following condition.**

**Architectural Plans by: Design Harmony Mitchel Morgan**

| Drawing | Description | Sheets | Issue | Date |
|---|---|---|---|---|
| 17-303 | Plans | 4 | 01 | 5/03/2020 |

**Supporting Documentation:**

| Title | Prepared by | Date |
|---|---|---|
| BASIX Certificate Number 1085677S_02 | Design Harmony | 10 March 2020 |
| Waste Management Plan | Craig Hunter | - |

~~**Approved Plans and Supporting Documents**~~

~~Implement the development substantially in accordance with the plans and supporting documents listed below as submitted by the applicant and to which is affixed a Council stamp "*Development Consent*" unless modified by any following condition.~~

~~**Architectural Plans by: Design Harmony Mitchel Morgan**~~

| ~~Drawing~~ | ~~Description~~ | ~~Sheets~~ | ~~Issue~~ | ~~Date~~ |
|---|---|---|---|---|
| ~~17-303~~ | ~~Plans~~ | ~~4~~ | ~~01~~ | ~~29th Mar 2017~~ |

~~**Supporting Documentation:**~~

| ~~Title~~ | ~~Prepared by~~ | ~~Date~~ |
|---|---|---|
| ~~BASIX Certificate Number 809279S~~ | ~~Design Harmony~~ | ~~06 April 2017~~ |
| ~~Waste Management Plan~~ | ~~Craig Hunter~~ | ~~-~~ |

**1.2** Carry out all building works in accordance with the Building Code of Australia.

### 2. PRIOR TO ISSUE OF ANY CONSTRUCTION CERTIFICATE

All conditions under this section must be met prior to the issue of any Construction Certificate

**2.1** Submit an application to Council under the provisions of Section 68 of the *Local Government Act 1993* for a permit to install an on-site sewage management system. The system must generally be designed in accordance with the geotechnical report / waste water report 17075-A, dated 24 May 2017 and prepared by Larry Cook Consulting Pty Ltd. The Section 68 application can be found on Council's website at www.gosford.nsw.gov.au

**2.2** No activity is to be carried out on site until the Construction Certificate has been issued, other than:

a. Site investigation for the preparation of the construction, and / or

b. Implementation of environmental protection measures, such as erosion control etc that are required by this consent.

c. Placement of battered fill associated with the construction of the new dwelling house in the location of the approved part 1 plans (where no retaining wall is required)

**2.3** Provide details showing that the development complies with Bushfire Attack Level (BAL) 12.5 as prescribed by AS3959-2009: *Construction of buildings in bushfire prone areas*. Depending on the required BAL, the development must incorporate additional construction requirements that are contained in *subsection A3.7 - Additional Construction Requirements* of the document *Addendum: Appendix 3* to *Planning for bushfire protection 2010* produced by the NSW Rural Fire Service.

## 3. PRIOR TO COMMENCEMENT OF ANY WORKS

All conditions under this section must be met prior to the commencement of any works

**3.1** Appoint a Principal Certifying Authority after the construction certificate for the building work has been issued.

a. The Principal Certifying Authority (if not Council) is to notify Council of their appointment and notify the person having the benefit of the development consent of any critical stage inspections and other inspections that are to be carried out in respect of the building work no later than two (2) days before the building work commences.

b. Submit to Council a *Notice of Commencement of Building Works* or *Notice of Commencement of Subdivision Works* form giving at least two (2) days notice of the intention to commence building or subdivision work. The forms can be found on Council's website www.gosford.nsw.gov.au

**3.2** Do not commence site works until the sediment control measures have been installed in accordance with the approved plans / Gosford DCP 2013 Chapter 6.3 - *Erosion Sedimentation and Control.*

**3.3** Erect a sign in a prominent position on any work site on which building, subdivision or demolition work is being carried out. The sign must indicate:

a. The name, address and telephone number of the principal certifying authority for the work; and

b. The name of the principal contractor and a telephone number at which that person can be contacted outside of working hours; and

c. That unauthorised entry to the work site is prohibited.

Remove the sign when the work has been completed.

**3.4** Submit both a Plumbing and Drainage Inspection Application, with the relevant fee, and a Plumbing and Drainage Notice of Work in accordance with the Plumbing and Drainage Act 2011 (to be provided by licensed plumber). These documents can be found on Council's website at: www.gosford.nsw.gov.au

Contact Council prior to submitting these forms to confirm the relevant fees.

**3.5** Provide toilet facilities at a ratio of one toilet plus one additional toilet for every 20 persons employed at the site. Each toilet must:

a. Be a standard flushing toilet connected to a public sewer, or

b. Have an on-site effluent disposal system approved under the *Local Government Act 1993*, or

c. Be a temporary closet approved under the *Local Government Act 1993*

**3.6** Submit to Council an application for a vehicular access crossing (fees apply). The form can be found on Council's web site www.gosford.nsw.gov.au

## 4. DURING WORKS

All conditions under this section must be met during works

**4.1** Clearing of land, excavation, and / or earthworks, building works, and the delivery of building materials must only be carried out between the following hours:

Mondays to Fridays - 7:00am to 6:00pm
Saturdays - 8:00am to 4:00pm except as noted in Clause 'b'

a. No work is permitted on Sundays and Public Holidays

b. No work is permitted on:
- Saturdays when a public holiday is adjacent to that weekend.
- Construction industry awarded rostered days off.
- Construction industry shutdown long weekends.

Clause b does not apply to works of a domestic residential nature as below:

i. Minor renovation or refurbishments to single dwelling construction.

ii. Owner occupied renovations or refurbishments to single dwelling construction.

iii. Owner builder construction of single dwelling construction; and / or

iv. Any cottage constructions, single dwellings or housing estates consisting of predominantly unoccupied single dwellings.

**4.2** Undertake and maintain Erosion and Siltation control measures in respect to any part of the land where the natural surface is disturbed or earthworks are carried out. The controls must comply with Gosford DCP 2013 Chapter 6.3 - *Erosion and Sedimentation Control.*

**4.3** Keep a copy of the stamped approved plans on site for the duration of site works and make the plans available upon request to either the Principal Certifying Authority or an officer of Council.

**4.4** Notify Council when plumbing and drainage work will be ready for inspection(s) and make the work accessible for inspection in accordance with the *Plumbing and Drainage Act 2011*.

**4.5** Do not carry out construction work or store building materials on the road reserve unless they are associated with a separate approval under the *Roads Act 1993.*

**4.6** Implement the requirements of the Waste Management Plan listed as supporting documentation in this development consent.

**4.7** No fill other than as shown on the approved plans is permitted.

**4.8** Cease all works if any Aboriginal objects or artefacts are uncovered during works. Immediately contact the NSW Office of Environment & Heritage and comply with any directions or requirements.

## 5. PRIOR TO ISSUE OF ANY OCCUPATION CERTIFICATE

All conditions under this section must be met prior to the issue of any Occupation Certificate

**5.1** Submit an application for the Occupation Certificate to the Principal Certifying Authority for approval.

**5.2** Do not occupy the premises until the Occupation Certificate has been issued.

**5.3** Submit a Certificate of Compliance for all plumbing and drainage work and a Sewer Service Diagram showing sanitary drainage work (to be provided by licensed plumber) in accordance with the *Plumbing and Drainage Act 2011.*

**5.4** Provide certification to the Principal Certifying Authority that the requirements of the BASIX certificate listed as supporting documentation in this development consent have been complied with.

**5.5** Drain all roof water by a piped drainage line to the street kerb outlet / an interallotment drainage line where available / an infiltration trench.

Note: infiltration trench details are to be designed by a practicing engineer experienced in hydraulics. The design details are to cater for a 1 in 20 year AEP storm event and are to allow for a minimum setback of three (3) metres from any sewer main and lot boundaries.

**5.6** Obtain an Approval to Operate the on-site sewage management system from Council.

## 6. PRIOR TO OCCUPATION OF THE MANUFACTURED HOME

All conditions under this section must be met prior to Occupation of the Manufactured Home

**6.1** ~~Obtain an Approval to Operate the on-site sewage management system from Council.~~

## 7. ONGOING OPERATION

**7.1** Do not let, adapt or use the dwelling for separate occupation in two or more parts.

**7.2** Use the garage for the housing of motor vehicles only and not for the purpose of any trade, industry, manufacture or habitable purpose.

**7.3** Do not install cooking facilities or sanitary fittings other than those indicated on the approved plans.

## 8. PENALTIES

**8.1** Failure to comply with this development consent and any condition of this consent may be a ***criminal offence***. Failure to comply with other environmental laws may also be a ***criminal offence.***

Where there is any breach Council may without any further warning:

- Issue Penalty Infringement Notices (On-the-spot fines);
- Issue notices and orders;
- Prosecute any person breaching this consent, and/or
- Seek injunctions/orders before the courts to retain and remedy any breach.

**Warnings as to Potential Maximum Penalties**

Maximum Penalties under NSW Environmental Laws include fines up to $1.1 Million and / or custodial sentences for serious offences.

## ADVISORY NOTES

- Consult with public authorities who may have separate requirements in the following aspects:
  a. *Australia Post* for the positioning and dimensions of mail boxes in new commercial and residential developments;
  b. *Jemena Asset Management* for any change or alteration to the gas line infrastructure;
  c. *Ausgrid* for any change or alteration to electricity infrastructure or encroachment within transmission line easements;
  d. *Telstra, Optus* or other telecommunication carriers for access to their telecommunications infrastructure.
  e. *Central Coast Council* in respect to the location of water, sewerage and drainage services.

- Carry out all work under this Consent in accordance with SafeWork NSW requirements including the *Workplace Health and Safety Act 2011 No 10* and subordinate regulations, codes of practice and guidelines that control and regulate the development industry.

- Dial Before You Dig
  Underground assets may exist in the area that is subject to your application. In the interests of health and safety and in order to protect damage to third party assets please contact Dial Before You Dig at www.1100.com.au or telephone on 1100 before excavating or erecting structures. (This is the law in NSW). If alterations are required to the configuration, size, form or design of the development upon contacting the Dial Before You Dig service, an amendment to the development consent (or a new development application) may be necessary. Individuals owe asset owners a duty of care that must be observed when working in the vicinity of plant or assets. It is the individual's responsibility to anticipate and request the nominal location of plant or assets on the relevant property via contacting the Dial Before You Dig service in advance of any construction or planning activities.

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  Telstra (and its authorised contractors) are the only companies that are permitted to conduct works on Telstra's network and assets. Any person interfering with a facility or installation owned by Telstra is committing an offence under the *Criminal Code Act 1995 (Cth)* and is liable for prosecution. Furthermore, damage to Telstra's infrastructure may result in interruption to the provision of essential services and significant costs. If you are aware of any works or proposed works which may affect or impact on Telstra's assets in any way, you are required to contact: Telstra's Network Integrity Team on phone number 1800 810 443.

- Separate application is required should the applicant require a new or upsized water supply connection to Council's water supply system.

- Install and maintain backflow prevention device(s) in accordance with Council's WS4.0 Backflow Prevention Containment Policy. This policy can be found on Council's website at: www.gosford.nsw.gov.au

Telephone: 1300 463 954

Reference: DA52504/2017.4
09 September 2020

M Morgan
993 Yarramalong Rd
WYONG CREEK NSW 2259

**APPLICATION NUMBER:** DA52504/2017.4
**PROPOSAL:** Amendment under Section 4.55 (1A) of the Environmental Planning and Assessment Act to the Approved Single Storey Dwelling House (Section 4.55 Amendment (1A) - Minor Modifications ).
**PROPERTY:** LOT: 2 DP: 712505, 125 Somersby Falls Road SOMERSBY NSW 2250

Dear Sir/Madam

I refer to your application lodged 03 September 2020 for modification of consent 52504/2017

Having regard to the provisions of Section 4.55 (1A) of the Environmental Planning and Assessment Act 1979, the Council is of the opinion that the amended proposal is a minor modification and is substantially the same development consented to by the Council.

Accordingly, the consent dated 11 August 2017 is modified in the following manner:

i. Amended condition number 1.1

Please note that the approved amendment does not extend the term of the original consent. Attached to this approval is the reproduced consent as amended.

The works (if any) that are associated with this amended development consent may require a modified Construction Certificate in accordance with Clause 148 of the Environmental Assessment Regulation 2000.

Your attention is drawn to your right of appeal against the conditions to the Land and Environment Court of NSW.

Yours faithfully

Per:

Gary Murphy
**Chief Executive Officer**

## Conditions

### 1. PARAMETERS OF THIS CONSENT

**1.1 Approved Plans and Supporting Documents**

**Implement the development substantially in accordance with the plans and supporting documents listed below as submitted by the applicant and to which is affixed a Council stamp "*Development Consent*" unless modified by any following condition.**

**Architectural Plans by: Design Harmony Mitchel Morgan**

| Drawing | Description | Sheets | Issue | Date |
|---|---|---|---|---|
| 17-303 | Plans | 4 | 03 | 3/07/2020 |

**Supporting Documentation:**

| Title | Prepared by | Date |
|---|---|---|
| BASIX Certificate Number 1085677S_04 | Design Harmony | 13 August 2020 |

~~**Architectural Plans by: Design Harmony Mitchel Morgan**~~

| ~~Drawing~~ | ~~Description~~ | ~~Sheets~~ | ~~Issue~~ | ~~Date~~ |
|---|---|---|---|---|
| ~~17-303~~ | ~~Plans~~ | ~~4~~ | ~~01~~ | ~~5/03/2020~~ |

~~**Supporting Documentation:**~~

| ~~Title~~ | ~~Prepared by~~ | ~~Date~~ |
|---|---|---|
| ~~BASIX Certificate Number 1085677S_02~~ | ~~Design Harmony~~ | ~~10 March 2020~~ |
| ~~Waste Management Plan~~ | ~~Craig Hunter~~ | ~~-~~ |

**1.2** Carry out all building works in accordance with the Building Code of Australia.

### 2. PRIOR TO ISSUE OF ANY CONSTRUCTION CERTIFICATE

All conditions under this section must be met prior to the issue of any Construction Certificate

**2.1** No activity is to be carried out on site until the Construction Certificate has been issued, other than:

a. Site investigation for the preparation of the construction, and / or

b. Implementation of environmental protection measures, such as erosion control etc that are required by this consent.

c. Placement of battered fill associated with the construction of the new dwelling house in the location of the approved part 1 plans (where no retaining wall is required)

**2.2** Provide details showing that the development complies with Bushfire Attack Level (BAL) 12.5 as prescribed by AS3959-2009: *Construction of buildings in bushfire prone areas*. Depending on the required BAL, the development must incorporate additional construction requirements that are contained in *subsection A3.7 - Additional Construction Requirements* of the document *Addendum: Appendix 3* to *Planning for bushfire protection 2010* produced by the NSW Rural Fire Service.

**2.3** Submit an application to Council under the provisions of Section 68 of the *Local Government Act 1993* for a permit to install an on-site sewage management system. The system must generally be designed in accordance with the geotechnical report / waste water report 17075-A, dated 24 May 2017 and prepared by Larry Cook Consulting Pty Ltd. The Section 68 application can be found on Council's website at www.gosford.nsw.gov.au

## 3. PRIOR TO COMMENCEMENT OF ANY WORKS

All conditions under this section must be met prior to the commencement of any works

**3.1** Appoint a Principal Certifying Authority after the construction certificate for the building work has been issued.

a. The Principal Certifying Authority (if not Council) is to notify Council of their appointment and notify the person having the benefit of the development consent of any critical stage inspections and other inspections that are to be carried out in respect of the building work no later than two (2) days before the building work commences.

b. Submit to Council a *Notice of Commencement of Building Works* or *Notice of Commencement of Subdivision Works* form giving at least two (2) days notice of the intention to commence building or subdivision work. The forms can be found on Council's website www.gosford.nsw.gov.au

**3.2** Do not commence site works until the sediment control measures have been installed in accordance with the approved plans / Gosford DCP 2013 Chapter 6.3 - *Erosion Sedimentation and Control.*

**3.3** Erect a sign in a prominent position on any work site on which building, subdivision or demolition work is being carried out. The sign must indicate:

a. The name, address and telephone number of the principal certifying authority for the work; and

b. The name of the principal contractor and a telephone number at which that person can be contacted outside of working hours; and

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Remove the sign when the work has been completed.

**3.4** Submit both a Plumbing and Drainage Inspection Application, with the relevant fee, and a Plumbing and Drainage Notice of Work in accordance with the Plumbing and Drainage Act 2011 (to be provided by licensed plumber). These documents can be found on Council's website at: www.gosford.nsw.gov.au

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## 4. DURING WORKS
All conditions under this section must be met during works

**4.1** Clearing of land, excavation, and / or earthworks, building works, and the delivery of building materials must only be carried out between the following hours:

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Clause b does not apply to works of a domestic residential nature as below:

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**4.6** Implement the requirements of the Waste Management Plan listed as supporting documentation in this development consent.

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Note: infiltration trench details are to be designed by a practicing engineer experienced in hydraulics. The design details are to cater for a 1 in 20 year AEP storm event and are to allow for a minimum setback of three (3) metres from any sewer main and lot boundaries.

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## 6. PRIOR TO OCCUPATION OF THE MANUFACTURED HOME

All conditions under this section must be met prior to Occupation of the Manufactured Home

**6.1** ~~Obtain an Approval to Operate the on-site sewage management system from Council.~~

## 7. ONGOING OPERATION

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- Issue notices and orders;
- Prosecute any person breaching this consent, and/or
- Seek injunctions/orders before the courts to retain and remedy any breach.

**Warnings as to Potential Maximum Penalties**
Maximum Penalties under NSW Environmental Laws include fines up to $1.1 Million and / or custodial sentences for serious offences.

## ADVISORY NOTES

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  a. *Australia Post* for the positioning and dimensions of mail boxes in new commercial and residential developments;
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c. *Ausgrid* for any change or alteration to electricity infrastructure or encroachment within transmission line easements;

d. *Telstra, Optus* or other telecommunication carriers for access to their telecommunications infrastructure.

e. *Central Coast Council* in respect to the location of water, sewerage and drainage services.

- Carry out all work under this Consent in accordance with SafeWork NSW requirements including the *Workplace Health and Safety Act 2011 No 10* and subordinate regulations, codes of practice and guidelines that control and regulate the development industry.

- Dial Before You Dig
  Underground assets may exist in the area that is subject to your application. In the interests of health and safety and in order to protect damage to third party assets please contact Dial Before You Dig at www.1100.com.au or telephone on 1100 before excavating or erecting structures. (This is the law in NSW). If alterations are required to the configuration, size, form or design of the development upon contacting the Dial Before You Dig service, an amendment to the development consent (or a new development application) may be necessary. Individuals owe asset owners a duty of care that must be observed when working in the vicinity of plant or assets. It is the individual's responsibility to anticipate and request the nominal location of plant or assets on the relevant property via contacting the Dial Before You Dig service in advance of any construction or planning activities.

- Telecommunications Act 1997 (Commonwealth)
  Telstra (and its authorised contractors) are the only companies that are permitted to conduct works on Telstra's network and assets. Any person interfering with a facility or installation owned by Telstra is committing an offence under the *Criminal Code Act 1995 (Cth)* and is liable for prosecution. Furthermore, damage to Telstra's infrastructure may result in interruption to the provision of essential services and significant costs. If you are aware of any works or proposed works which may affect or impact on Telstra's assets in any way, you are required to contact: Telstra's Network Integrity Team on phone number 1800 810 443.

- Separate application is required should the applicant require a new or upsized water supply connection to Council's water supply system.

- Install and maintain backflow prevention device(s) in accordance with Council's WS4.0 Backflow Prevention Containment Policy. This policy can be found on Council's website at: www.gosford.nsw.gov.au

Telephone: 1300 463 954
Please Quote: 51000/2016
Responsible Officer: R A Eyre

PM Anderson Consulting Pty Ltd
17 Currawong Road
WAMBERAL NSW 2260

paul@pmandersonconsulting.com.au

**APPLICATION NUMBER:** **51000/ 2016 Part 2**
**PROPOSAL:** **Amendment under section 4.55(2) of the *Environmental Planning and Assessment Act* to the Approved Subdivision Industrial - Stage 1 Proposed Lots 1-5 & Stage 2 Subdivision of Proposed Lot 5 into 2 Lots - Section 4.55 (2) - Amendment to Cut & Fill**
**PROPERTY:** **LOT: 2 DP: 712505 No. 125 Somersby Falls Road SOMERSBY**

Dear Sir/Madam

I refer to your application lodged 13 October 2021 for modification of consent 51000/2016.

Having regard to the provisions of section 4.55(2) of the *Environmental Planning and Assessment Act 1979*, the Council is of the opinion that the amended proposal is a minor modification and is substantially the same development consented to by the Council.

Accordingly, the consent dated 09 March 2017 is modified in the following manner:

i Amendment of conditions 1.1, 2.5c and 5.6b.
ii Deletion of conditions 2.6, 2.7, and 4.7.
iii Addition of conditions 2.2f, and 6.9.

The original development consent is therefore replicated incorporating amendment/s and/or deletion/s.

Please note that the approved amendment does not extend the term of the original consent. Attached to this approval is the reproduced consent as amended.

The works (if any) that are associated with this amended development consent may require a modified construction certificate in accordance with clause 148 of the *Environmental Planning and Assessment Regulation 2000.*

Subject to provisions of Division 8.2 of the *Environmental Planning and Assessment Act* the applicant may make an application seeking a review of this determination providing it is lodged

within twenty eight (28) days of notification.

Your attention is drawn to your right to appeal against the conditions to the Land and Environment Court of NSW.

Yours faithfully

David Farmer
**Chief Executive Officer**

Per: *R A Eyre*

Date: 10/11/2021

**AMENDED CONDITIONS OF CONSENT PART 2**

## 1.PARAMETERS OF THIS CONSENT

### 1.1. Approved Plans and Supporting Documents

Implement the development substantially in accordance with the plans and supporting documents listed below as submitted by the applicant and to which is affixed a Council stamp "*Development Consent*" unless modified by any following condition.

**Subdivision Plan by ~~Trehy Ingold Neate~~ Beveridge Williams**

| Drawing | Description | Sheets | Issue | Date |
|---|---|---|---|---|
| ~~SD01~~ | ~~Plan of Proposed Subdivision of lot 2 DP 712505~~ | ~~1~~ | ~~C~~ | ~~5/12/2016~~ |
| Project No 1801550 Beveridge Williams | Plan of proposed Subdivision | 1 | A | 04/02/2021 |

**Supporting Documentation**

| Document | Title | Date |
|---|---|---|
| Trehy Ingold Neate | Statement of Environmental Effects | October 2016 |
| P M Anderson Consulting | S4.55 Variation to approved subdivision | September 2021 |
| Trehy Ingold Neate | Water Cycle Management Plan Report | December 2016 |
| Beveridge Williams | Sewer/Water and Drainage Plans ED01-ED07 | 13/09/2021, 14/09/2021. 15/09/2021 and 21/10/2021 |

## 2.PRIOR TO ISSUE OF ANY CONSTRUCTION CERTIFICATE

All conditions under this section must be met prior to the issue of any Construction Certificate

2.1. No activity is to be carried out on site until any Construction Certificate has been issued, other than:

a. Site investigation for the preparation of the construction, and / or

b. Implementation of environmental protection measures, such as erosion control etc that are required by this consent.

2.2. Submit an application to Council under Section 138 of the *Roads Act, 1993*, for the approval of required works to be carried out within the road reserve.

Submit to Council Engineering plans for the required works within a public road that have been designed by a suitably qualified professional in accordance with Council's Civil Works Specification and Gosford DCP 2013 Chapter 6.3 - Erosion Sedimentation Control. The Engineering plans must be included with the Roads Act application for approval by Council.

Design the required works as follows:

a. Footway formation graded at +2% from the top of kerb to the property boundary, across the full frontage of the site in Somersby Falls Road.

b. All redundant vehicular crossings are to be removed and footway formation reinstated.

c. The piping of stormwater from within the site to Council's drainage system located in Somersby Falls Road and Myoora Road.

d. Roadside furniture and safety devices as required e.g. fencing, signage, guide posts, chevrons, directional arrows, and/or guard rail in accordance with RMS and relevant Australian Standards.

e. Erosion and sedimentation control plan.

f. Where (future) vehicular access crossings are in conflict with existing kerb inlet pits in Somersby Falls Road, the lintels on the kerb inlet pits shall be replaced with heavy duty double-V grates, and additional kerb inlet pits shall be constructed in Somersby Falls Road to compensate for the loss of inlet capacity of road water into the piped street drainage system.

The Roads Act application must be approved by Council.

A fee for the approval of engineering plans under the *Roads Act 1993* applies. The amount of this fee can be obtained by contacting Council's Customer Services on (02) 4325 8222.

2.3. Submit a dilapidation report to Council with the Roads Act application and / or Construction Certificate application. The report must document and provide photographs that clearly depict any existing damage to the road, kerb, gutter, footpath, driveways, street trees, street signs or any other Council assets in the vicinity of the development.

2.4. Pay a security deposit of $9,450 into Council's trust fund. The payment of the security deposit is required to cover the cost of repairing damage to Council's assets that may be caused as a result of the development. The security deposit will be refunded upon the completion of the project if no damage was caused to Council's assets as a result of the development.

2.5. Submit engineering plans for the following subdivision works within the private property designed by a suitably qualified professional, in accordance with Council's Civil Works Specification and Gosford DCP 2013 Chapter 6.3 - Erosion Sedimentation Control.

a. Interallotment drainage where stormwater from individual allotments cannot be discharged directly into the street drainage system.

b. Piping of all stormwater from the proposed lots to Council's piped drainage system located in Somersby Falls Road &/or Myoora Road.

~~c. Site regrading generally in accordance with the "Concept Earthworks Cut & Fill Plan" prepared by Trehy Ingold Neate, Project No 21610, Drawing No EA01 Rev B dated 7.12.16.~~

c. Site regrading generally in accordance with the plan prepared by Beveridge Williams (Ref: Project No 18015550, Drawing No ED05 Rev A dated 21.10.21).

d. Erosion and sedimentation controls.

The engineering plans and any associated reports for the above requirements must form part of the Construction Certificate.

2.6. ~~Submit engineering / structural plans of any proposed retaining walls greater than 600mm in height. The plans must be designed by a practising Structural / Civil Engineer. The plans for the proposed retaining walls must form part of the Construction Certificate.~~
DELETED

2.7. ~~Submit a Geotechnical report prepared by a practising Geotechnical Engineer for all lots that are filled more than 0.4 metres above natural surface level. This report must be submitted with the engineering plans for the internal subdivision works.~~
DELETED

2.8. Submit a Nest-box Replacement Strategy for approval by Council. The strategy must include:

a. The number, type and size of nest boxes including targeted species;
b. A plan showing location of proposed nest box including the corresponding tree numbers; and
c. Details on installation and maintenance techniques.

2.9. Submit to Council's Environment Officer for approval, a Soil and Water Management Plan in accordance with Section 6.3 of the Gosford Development Control Plan 2013 and the 'Blue Book' *(Managing Urban Stormwater: Soils and Construction, Landcom, 2004).*

The plan shall be prepared by a suitably qualified environmental/civil consultant to detail how erosion and sediment will be controlled during all stages of construction.

Section 9.3 of the Blue Book provides guidance on preparing a Soil and Water Management Plan for medium-density development. (Note: A Soil and Water Management Plan is a more

comprehensive document than an Erosion and Sediment Control Plan).

2.10. The preparation of an Acid Sulphate Soil Management Plan.

## 3.PRIOR TO COMMENCEMENT OF ANY WORKS

All conditions under this section must be met prior to the commencement of any works

3.1. Appoint a Principal Certifying Authority after the construction certificate for the building work has been issued.

a. The Principal Certifying Authority (if not Council) is to notify Council of their appointment and notify the person having the benefit of the development consent of any critical stage inspections and other inspections that are to be carried out in respect of the building work no later than two (2) days before the building work commences.

b. Submit to Council a *Notice of Commencement of Building Works* or *Notice of Commencement of Subdivision Works* form giving at least two (2) days notice of the intention to commence building or subdivision work. The forms can be found on Council's website www.gosford.nsw.gov.au

3.2. Do not commence site works until the sediment control measures have been installed in accordance with the approved plans / Gosford DCP 2013 Chapter 6.3 - *Erosion Sedimentation and Control.*

3.3. Erect a sign in a prominent position on any work site on which building, subdivision or demolition work is being carried out. The sign must indicate:

a. The name, address and telephone number of the principal certifying authority for the work; and

b. The name of the principal contractor and a telephone number at which that person may be contacted outside of working hours; and

c. That unauthorised entry to the work site is prohibited.

Remove the sign when the work has been completed.

3.4. Obtain a Construction Certificate for the subdivision works within the private property.

3.5 Submit an application to the Water Authority for conditions of connection to the Council's water and sewer reticulation systems.

## 4.DURING WORKS

All conditions under this section must be met during works

4.1. Clearing of land, excavation, and / or earthworks, building works, and the delivery of building materials must only be carried out between the following hours:

Mondays to Fridays - 7:00am to 6:00pm
Saturdays - 8:00am to 4:00pm except as noted in Clause 'b'

a. No work is permitted on Sundays and Public Holidays
b. No work is permitted on:
   - Saturdays when a public holiday is adjacent to that weekend.
   - Construction industry awarded rostered days off.
   - Construction industry shutdown long weekends.

4.2. Undertake and maintain Erosion and Siltation control measures in respect to any part of the land where the natural surface is disturbed or earthworks are carried out. The controls must comply with Gosford DCP 2013 Chapter 6.3 - *Erosion and Sedimentation Control.*

4.3. Keep a copy of the stamped approved plans on site for the duration of site works and make the plans available upon request to either the Principal Certifying Authority or an officer of Council.

4.4. Construct the works within the road reserve that required approval under the Roads Act. The works must be constructed in accordance with Council's Civil Works Specification and Gosford DCP 2013 Chapter 6.3 - Erosion Sedimentation Control.

4.5. Construct the engineering works within private property that formed part of the Construction Certificate in accordance with Council's Civil Works Specification and Gosford DCP 2013 Chapter 6.3 - Erosion Sedimentation Control.

4.6. Arrange with the relevant service provider / Authority (e.g. Ausgrid, Jemena, communications provider) for the supply of services concurrent with the engineering work. Arrangements must include where required any relocation of existing mains and services and dedication of easements for mains and services.

4.7. ~~Achieve a minimum of 95% standard compaction for all lots filled more than 400mm in accordance with AS1289: *Methods of testing soils for engineering purposes* under a practising Geotechnical engineer's supervision and certification.~~
DELETED

4.8. Cease all works if any Aboriginal objects or artefacts are uncovered during works. Immediately contact the NSW Office of Environment & Heritage and comply with any directions or requirements.

4.9. Do not commence removal of hollow bearing trees until such time as a suitably qualified licensed fauna specialist (eg. Ecologist, WIRES Officer, Arborist) is on site to visually inspect

any hollow bearing trees. Only trees up to 10 metres from the approved structure must be removed under the guidance of the specialist.

All branches comprising hollows must be bagged at the ends and tied first. The hollowed branch is then to be severed at the extreme end against the trunk and lowered down carefully on ropes. The hollowed sections must be stored on the portion of the site where vegetation will remain intact. At nightfall the bagging must be removed and any resident fauna captured must be cared for and relocated within the subject site in vegetated areas.

Deadwood or trunk hollows must be more carefully treated. The suitably qualified licensed fauna specialist (Ecologist, WIRES Officer, Aborist) must inspect these hollows visually and determine if any animals are present prior to lopping. If microbats are present, they are best left intact and removed wholly and lowered softly to the ground and left overnight with the trunk section cut into one metre lengths. The hollow section of the tree must be secured to an appropriate sized tree in an alternate location on the site. A constructed nesting box will replace any hollow that was destroyed.

Following the removal of hollow bearing trees the specialist must notify Council in writing of compliance with this condition within fourteen (14) days.

4.10. Remove trees and ground stumps in a manner so as to not damage trees to be retained.

4.11. A water cart must operate on-site during bulk earthworks to suppress dust generated by vehicles and equipment. Dust shall also be suppressed at all other stages of construction.

4.12. Fill material must only comprise of Virgin Excavated Natural Material (VENM) or Excavated Natural Material (ENM).

Virgin Excavated Natural Material (VENM) is defined under Schedule 1 of the *Protection of the Environment Operations (POEO) Act 1997* as follows:

> "*virgin excavated natural material*" means natural material (such as clay, gravel, sand, soil or rock fines):
>
> (a) that has been excavated or quarried from areas that are not contaminated with manufactured chemicals, or with process residues, as a result of industrial, commercial, mining or agricultural activities, and
>
> (b) that does not contain any sulfidic ores or soils or any other waste,
>
> Excavated Natural Material (ENM) that has been issued with an exemption under the *Protection of the Environment Operations (Waste) Regulation 2014* in accordance with the Excavated Natural Material exemption 2014.

The placement of any other type of fill material other than that defined under VENM or ENM is prohibited under this consent.

The applicant must provide Council with validation documents verifying and certifying that the material placed on the land complies with:

- the definition of VENM under Schedule 1 of the *POEO Act 1997*, or
- an exemption issued under the Excavated Natural Material Exemption 2014.

Any exposed soil surface areas must be grassed / landscaped to minimise soil erosion.

4.13. Undertake works in accordance with the approved Soil and Water Management Plan and update the plan as required during all stages of the construction or in accordance with direction from Council.

4.14. Any water that could potentially discharge from the site (e.g. wet-weather stormwater detention basin overflows) must meet the relevant water quality trigger values within the *"Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Australian and New Zealand Environment and Conservation Council (ANZECC Guidelines), October 2000"*. Water quality shall be monitored and the water suitably treated or lawfully disposed of to ensure water pollution does not occur.

Regularly monitor and maintain the stormwater detention basin on site. Maintenance shall include removal of rubbish and debris, control of algae and weeds as well as removal of built up sediment.

4.15. Comply with the commitments as detailed within the Waste Management Plan dated 31 October 2016 prepared by S. Houison.

4.16 Each industrial lot (proposed lots 1 to 5 inclusive) shall be connected to Council's water and sewer reticulation system.

## 5.PRIOR TO ISSUE OF ANY SUBDIVISION CERTIFICATE

All conditions under this section must be met prior to the issue of any Subdivision Certificate

5.1. Complete works within the road reserve that required approval under the Roads Act. The works must be completed in accordance with Council's Civil Works Specification and Gosford DCP 2013 Chapter 6.3 - Erosion Sedimentation Control, and documentary evidence for the acceptance of such works must be obtained from the Roads Authority.

5.2. Submit an application under Section 305 of the *Water Management Act 2000* for provision of a Section 307 Certificate of Compliance. A copy of the Certificate of Compliance must be obtained from Council (Water Authority). Conditions and contributions may be applicable to the Section 307 Certificate.

The 'Application for 307 Certificate under Section 305 *Water Management Act 2000*' form can be found on Council's website www.gosford.nsw.gov.au. Early application is recommended.

5.3. Apply to Council for a Subdivision Certificate and pay the required fees at lodgement. The application must include the final plan of subdivision and Section 88B Instrument (if relevant). The application must be approved by Council prior to the registration of the subdivision.

The fee may be obtained from Council's Customer Service Unit on 4325 8222 or from Council's website http://www.gosford.nsw.gov.au.

5.4. Submit with the application for the Subdivision Certificate, a letter of clearance from each service provider / Authority (e.g. Ausgrid, Jemena, relevant communications provider).

5.5. Complete the engineering works required within the development site in accordance with Council's Civil Works Specification and Gosford DCP 2013 Chapter 6.3 - Erosion Sedimentation Control.

5.6. Include on the Deposited Plan (DP) an Instrument under the *Conveyancing Act 1919* for the following restrictive covenants; with the Council having the benefit of these covenants and having sole authority to release and modify. Wherever possible, the extent of land affected by these covenants must be defined by bearings and distances shown on the plan.

a.. Create an easement to drain water 2m wide as indicated on the approved plans.

b. ~~Create classification and other recommendations contained within the geotechnical report over all lots filled more than 400mm in accordance with Australian Standard 2870 (Residential Slabs and Footings).~~
Include on the Deposited Plan (DP) an Instrument under the *Conveyancing Act 1919* for the following restrictive covenants; with the Council having the benefit of these covenants and having sole authority to release and modify. Wherever possible, the extent of land affected by these covenants must be defined by bearings and distances shown on the plan.

c. Prohibit direct vehicular access to and from Ghilkes Road for the purposes of industrial development in respect to proposed lot 5.

## 6.ADVICE

6.1. Consult with public authorities who may have separate requirements in the following aspects:

a. *Australia Post* for the positioning and dimensions of mail boxes in new commercial and residential developments;

b. *Jemena Asset Management* for any change or alteration to the gas line infrastructure;

c. *Ausgrid* for any change or alteration to electricity infrastructure or encroachment within transmission line easements;

d. *Telstra, Optus* or other telecommunication carriers for access to their telecommunications infrastructure.

e. *Central Coast Council* in respect to the location of water, sewerage and drainage services.

6.2. Carry out all work under this Consent in accordance with SafeWork NSW requirements including the *Workplace Health and Safety Act 2011 No 10* and subordinate regulations, codes of practice and guidelines that control and regulate the development industry.

6.3. Dial Before You Dig
Underground assets may exist in the area that is subject to your application. In the interests of health and safety and in order to protect damage to third party assets please contact Dial Before You Dig at www.1100.com.au or telephone on 1100 before excavating or erecting structures. (This is the law in NSW). If alterations are required to the configuration, size, form or design of the development upon contacting the Dial Before You Dig service, an amendment to the development consent (or a new development application) may be necessary. Individuals owe asset owners a duty of care that must be observed when working in the vicinity of plant or assets. It is the individual's responsibility to anticipate and request the nominal location of plant or assets on the relevant property via contacting the Dial Before You Dig service in advance of any construction or planning activities.

Telecommunications Act 1997 (Commonwealth)
Telstra (and its authorised contractors) are the only companies that are permitted to conduct works on Telstra's network and assets. Any person interfering with a facility or installation owned by Telstra is committing an offence under the *Criminal Code Act 1995 (Cth)* and is liable for prosecution. Furthermore, damage to Telstra's infrastructure may result in interruption to the provision of essential services and significant costs. If you are aware of any works or proposed works which may affect or impact on Telstra's assets in any way, you are required to contact: Telstra's Network Integrity Team on phone number 1800 810 443.

6.4. Separate application is required should the applicant require a new or upsized water supply connection to Council's water supply system.

6.5. The inspection fee for works associated with approvals under the Roads Act is calculated in accordance with Council's current fees and charges policy.

6.6. Payment of a maintenance bond may be required for civil engineering works associated with this development. This fee is calculated in accordance with Council's fees and charges.

6.7. In reference to Section 109E(2) of the Environmental Planning and Assessment Act, you are advised that Gosford Local Environment Plan, Gosford Planning Scheme Ordinance and Interim Development Order No 122 does not permit accredited certifiers to undertake the role of the principal certifying authority for subdivisions. Therefore, only Central Coast Council can be appointed as the Principal Certifying Authority (PCA).

6.8. It is an offence under the *National Parks and Wildlife Act 1974* to knowingly disturb an

Aboriginal artefact without consent.

6.9. The approval of the modification under DA51000/2016 Part 2 will require the approval of a new Subdivision Works Construction Certificate and Roads Act application to ensure the Subdivision Works Construction Certificate and Roads Act approvals reflect the works required under the modified consent.

## 7.PENALTIES

Failure to comply with this development consent and any condition of this consent may be a ***criminal offence***. Failure to comply with other environmental laws may also be a ***criminal offence***.

Where there is any breach Council may without any further warning:

- Issue Penalty Infringement Notices (On-the-spot fines);
- Issue notices and orders;
- Prosecute any person breaching this consent, and/or
- Seek injunctions/orders before the courts to retain and remedy any breach.

**Warnings as to Potential Maximum Penalties**

Maximum Penalties under NSW Environmental Laws include fines up to $1.1 Million and/or custodial sentences for serious offences.

## 8.REVIEW OF DETERMINATION

8.1. Subject to provisions of Section 82A of the Act the applicant may make an application seeking a review of this determination, providing it is made in time for Council to determine the review within six (6) months of this determination.

## 9.RIGHT OF APPEAL

9.1. Section 97 of the Act confers on an applicant who is dissatisfied with the determination of a consent authority a right of appeal to the Land and Environment Court within six (6) months, from the date of determination.

9.2. To ascertain the date upon which the determination becomes effective refer to Section 83 of the Act.

GDA 2020

# SCIMS SURVEY MARK REPORT AS AT: 30-MAR-2023

Your Reference: 221145-1 Search Number: 1054236

| MARK NAME STATUS | COORDINATES AND HEIGHTS | | | CLASS | PU | LU | SOURCE | CSF CONVERGENCE AUSGEOID2020 |
|---|---|---|---|---|---|---|---|---|
| PM 50277 | Horizontal coordinates are adjusted (or initialised) in GDA2020 | | | | | | | |
| | MGA2020 | 339904.529 | 6301948.347 56 | B | 0.02 | 0.03 | 301025 | 0.999877 |
| | GDA2020 | -33° 24' 35.54124" | 151° 16' 41.89422" | | | | | -0° 56' 53.56" |
| | GDA2020 | Ellipsoidal Height | 247.7 | E | 0.17 | | 300777 | |
| | AHD71 | Normal-Orthometric | 223.432 | LB | 0.03 | 0.01 | 300202 | 24.289 |

## Map Legend

SCIMS Mark types (Colour codes refer to the assigned accuracy "Class")

| SS | PM | TS | CR | MM | CP | GB | |
|---|---|---|---|---|---|---|---|
| ◉ | ▣ | △ | ▼ | ✚ | ⊕ | ★ | Established GDA2020 + Accurate AHD71 |
| ◉ | ▣ | △ | ▼ | ✚ | ⊕ | ★ | Established GDA2020 Only |
| ◉ | ▣ | △ | ▼ | ✚ | ⊕ | ★ | Accurate AHD71 Only |
| ◉ | ▣ | △ | ▼ | ✚ | ⊕ | ★ | Accurate AHD71 + Approx. GDA2020 |
| ◉ | ▣ | △ | ▼ | ✚ | ⊕ | ★ | Approx. GDA2020 Only |
| ◉ | ▣ | △ | ▼ | ✚ | ⊕ | ★ | Unknown |

Established GDA coordinates are assigned accuracy class 3A, 2A, A, B, C or D

Accurate AHD heights are assigned accuracy class L2A, LA, LB, LC, LD, 2A, A or B

**Mark Status***

**F** Found Intact
**N** Not Found
**D** Destroyed
**S** Subsidence Area
**U** Uncertain
**R** Restricted Access

* Where available, the Mark Status is appended to the Mark Number in the map

Note: SCIMS publishes coordinates, heights, Uncertainty and Class for NSW State control survey marks to an appropriate precision based on survey observations currently on public record. Positional Uncertainty and Local Uncertainty are only displayed where computed through a least-squares network adjustment. Refer to Surveyors-General's Directions: http://spatialservices.finance.nsw.gov.au/surveying/publications/surveyor_generals_directions

Disclaimer: This report has been generated by various sources and is provided for information purposes only. Spatial Services, a division of the NSW Department of Customer Service, does not warrant or represent that the information is free from errors or omission, or that it is exhaustive. Spatial Services accepts no liability for loss, damage, or costs that may incur relating to any use or reliance upon the information in this report. Spatial Services gives no warranty in relation to the information, especially material supplied by third parties.

## SURVEY MARK

| Mark | Name | Alias |
|---|---|---|
| PM 50277 | | |

| Status | Date | Comments |
|---|---|---|
| | | |

| Location | Monument | Date Placed | Placed By |
|---|---|---|---|
| GROUND LEVEL | UNKNOWN | | |

MGA2020/GDA2020

Horizontal coordinates are adjusted (or initialised) in GDA2020

| MGA2020 Easting | MGA2020 Northing | Zone | GDA2020 Latitude | GDA2020 Longitude |
|---|---|---|---|---|
| 339904.529 | 6301948.347 | 56 | -33° 24' 35.54124" | 151° 16' 41.89422" |

| Class | Positional Uncertainty | Local Uncertainty | GDA2020 Updated |
|---|---|---|---|
| B | 0.02 | 0.03 | 17-NOV-2022 |

| Source | Type | Method | Date issued | Issued By |
|---|---|---|---|---|
| 301025 | ADJUSTMENT | DYNADJUST | 7-NOV-2022 | NICHOLAS GOWANS |

| Previous Reference | Location | File Number |
|---|---|---|
| n/a | n/a | n/a |

| Comments |
|---|
| GDA2020 STATE ADJUSTMENT NOVEMBER 2022 |

| MGA2020 Combined Scale Factor | MGA2020 Convergence |
|---|---|
| 0.999877 | -0° 56' 53.56" |

| AusGeoid2020(N) |
|---|
| 24.289 |

GDA2020 Ellipsoidal Height

| Height |
|---|
| 247.7 |

| Class | Positional Uncertainty | Local Uncertainty | Ellipsoidal Height Updated |
|---|---|---|---|
| E | 0.17 | | 15-NOV-2021 |

| Source | Type | Method | Date issued | Issued By |
|---|---|---|---|---|
| 300777 | COMPUTATION | MANUAL | 15-NOV-2021 | JONATHON SMITH |

| Previous Reference | Location | File Number |
|---|---|---|
| n/a | n/a | n/a |

| Comments |
|---|
| GDA2020 ELLIPSOIDAL HEIGHTS DERIVED USING AUSGEOID2020 FROM AHD71 SPIRIT LEVELLING |

AHD71

| Height |
|---|
| 223.432 |

| Class | Positional Uncertainty | Local Uncertainty | AHD Updated |
|---|---|---|---|
| LB | 0.03 | 0.01 | 27-MAY-2020 |

| Source | Type | Method | Date issued | Issued By |
|---|---|---|---|---|
| 300202 | ADJUSTMENT | DYNADJUST | 19-MAY-2020 | NICHOLAS GOWANS |

| Previous Reference | Location | File Number |
|---|---|---|
| n/a | n/a | n/a |

| Comments |
|---|
| NSW LEVELLING NETWORK POSITIONAL AND LOCAL UNCERTAINTY UPDATE JUNE 2020 |

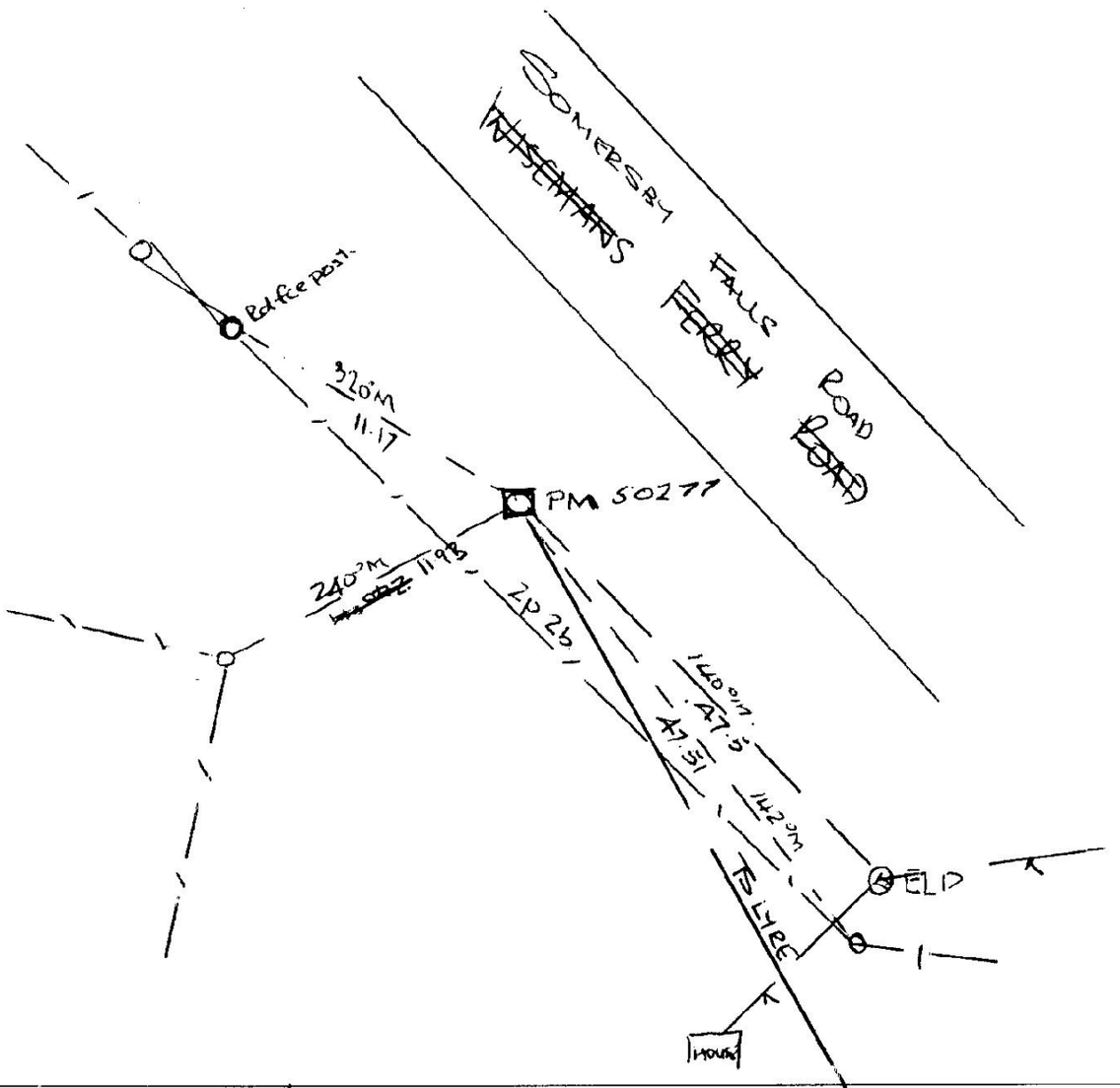
PM 50277
SSM
M;M

# LOCALITY SKETCH PLAN

Parish NARARA County NORTHUMBERLAND City or Town SOMERSBY

Municipality or Shire GOSFORD Control Survey Plan

Measurements are in metres Zone 56




Organization placing Marks ~~10006/16~~ 2827/16

LANDS DEPT

Aerial photo No. ..... Run .....

Plan registered / / 19

Mark last inspected / / 19

PM 50277
SSM
M;M

I certify that the Mark or Marks have been placed and numbered as detailed hereon.

Designation
AIR

36391 8.77 D. West, Government Printer

Attachment 7: Search Results for Aboriginal Artefacts or Heritage Items.

# AHIMS Web Services (AWS)
## Search Result

Your Ref/PO Number : 221145

Client Service ID : 781496

Benbow Environmental

Date: 13 May 2023

25-27 Sherwood Street
Northmead New South Wales 2152

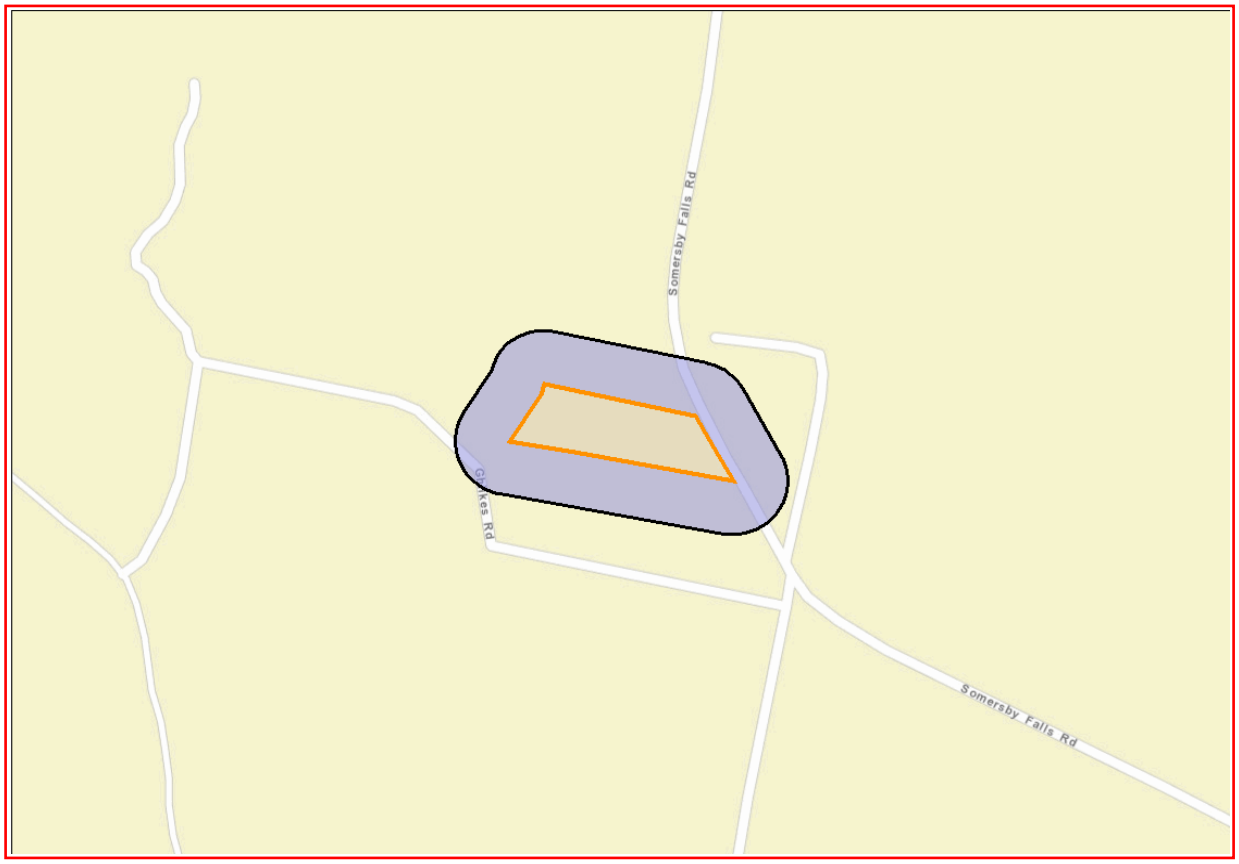
Attention: Damien Thomas

Email: damien@benbowenviro.com.au

Dear Sir or Madam:

**AHIMS Web Service search for the following area at Lot : 3, DP:DP1292653, Section : - with a Buffer of 50 meters, conducted by Damien Thomas on 13 May 2023.**

**The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.**




A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

| | |
|---|---|
| 0 | **Aboriginal sites are recorded in or near the above location.** |
| 0 | **Aboriginal places have been declared in or near the above location. *** |

**If your search shows Aboriginal sites or places what should you do?**

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the NSW Government Gazette (https://www.legislation.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW upon request

**Important information about your AHIMS search**

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Heritage NSW and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

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# SOIL AND WATER ASSESSMENT
# PREPARED FOR
# STATELINE ASPHALT
# 133 SOMERSBY FALLS ROAD, SOMERSBY NSW 2250

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***Report No:*** 221145_SoilWater_Rev3
November 2023
(Released: 10 November 2023)

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# Attachments

Attachment 1: MUSICX Model Report (Proposed Stormwater Infrastructure)

# 1. INTRODUCTION

Benbow Environmental (BE) has been engaged by Stateline Asphalt Pty Ltd for the preparation of an Environmental Impact Statement (EIS) for a proposed asphalt batching plant to be established at a vacant site located at 133 Somersby Falls Road, Somersby 2250, also known as Lot3 DP1292653. The assessment is a qualitative study that addresses the potential impacts to soil and water from site operations as an accompanying document to the Statement of Environmental Effects (SEE).

Construction and operation of an asphalt batching plant that will produce up to 200,000 tonnes per annum (tpa) of asphalt. The facility will also include a Reclaimed asphalt Pavement (RAP) yard, office and depot.

## 1.1 PRE-LODGEMENT REQUIREMENTS

Table 1-1: Pre-Lodgement Requirements

| Requirement | Comment |
|---|---|
| **Central Coast Development Control Plan (DCP) 2022** | |
| **Flood Plain Management and Water Cycle Management**<br>A Water Cycle Management Plan consisting of a written report and plans in accordance with Clause *3.1.10 Water Cycle Management Plan* must be submitted to address the following criteria:<br>**a.** Local overland drainage;<br>**b.** Stormwater quality. | Section 3.5.3; Section 3.5.4; and Section 3.6.6 |
| **On-Site Sewerage Management**<br>The applicant will need to submit an updated wastewater report prepared by a suitably qualified wastewater consultant. | Section 3.5.6 |
| **State Environmental Planning Policy Amendment (Water Catchments) 2022** | |
| **Water Catchment Areas**<br>The subject site is located within the Hawkesbury-Nepean Catchment Map. Therefore, the provisions of Part 6.2 , clause 6.6 are to be addressed in the SEE submitted with the DA. | Part 6.2 |

## 1.2 SCOPE OF WORKS

The is a quantitative assessment, with the scope detailed as follows:

- Review of relevant plans and documentation relating to the site and proposed development;
- Addressing the key issues for "soil and water" identified in the Central Coast Council Pre-Lodgement requirements including:
  - A description of local soils, topography, drainage and landscapes;
  - The details of stormwater, leachate and wastewater management;
  - The details of sediment and erosion controls;
  - A detailed site water balance;
  - The details of water usage including water supply and licenses;
  - An assessment of impacts to surface resources and flooding impacts;

- Identification of the probability of the occurrence of acid sulfate soils at the site and determination of whether an acid sulfate soil management plan in accordance with ASS MAC guidelines is required; and
- A description and appraisal of impact mitigation and monitoring measures.

The report has been prepared based on the information provided by the client.

No soil or water sampling or analysis was undertaken as part of this assessment. Recommendations for further studies to support the findings of this report are provided where considered necessary.

# 2. SITE DETAILS AND PROPOSED DEVELOPMENT

This section provides a description of the site, surroundings, and proposed development.

## 2.1 SITE LOCATION

The land is located at 133 Somersby Falls Road, Somersby NSW 2250, Somersby NSW 2250 (legally known as Lot 3 DP1292653). The site is located within the Central Coast Council Local Government Area.

The site is visualised through aerial photography in Figure 2-1 below.

Figure 2-1: Aerial Photograph of Site's Local Setting

**Source:** Six maps 2011

| | | |
|---|---|---|
| ↑N<br>Not to scale | | Benbow Environmental<br>25/27 Sherwood Street,<br>Northmead NSW 2152 |

## 2.2 DESCRIPTION OF THE SITE

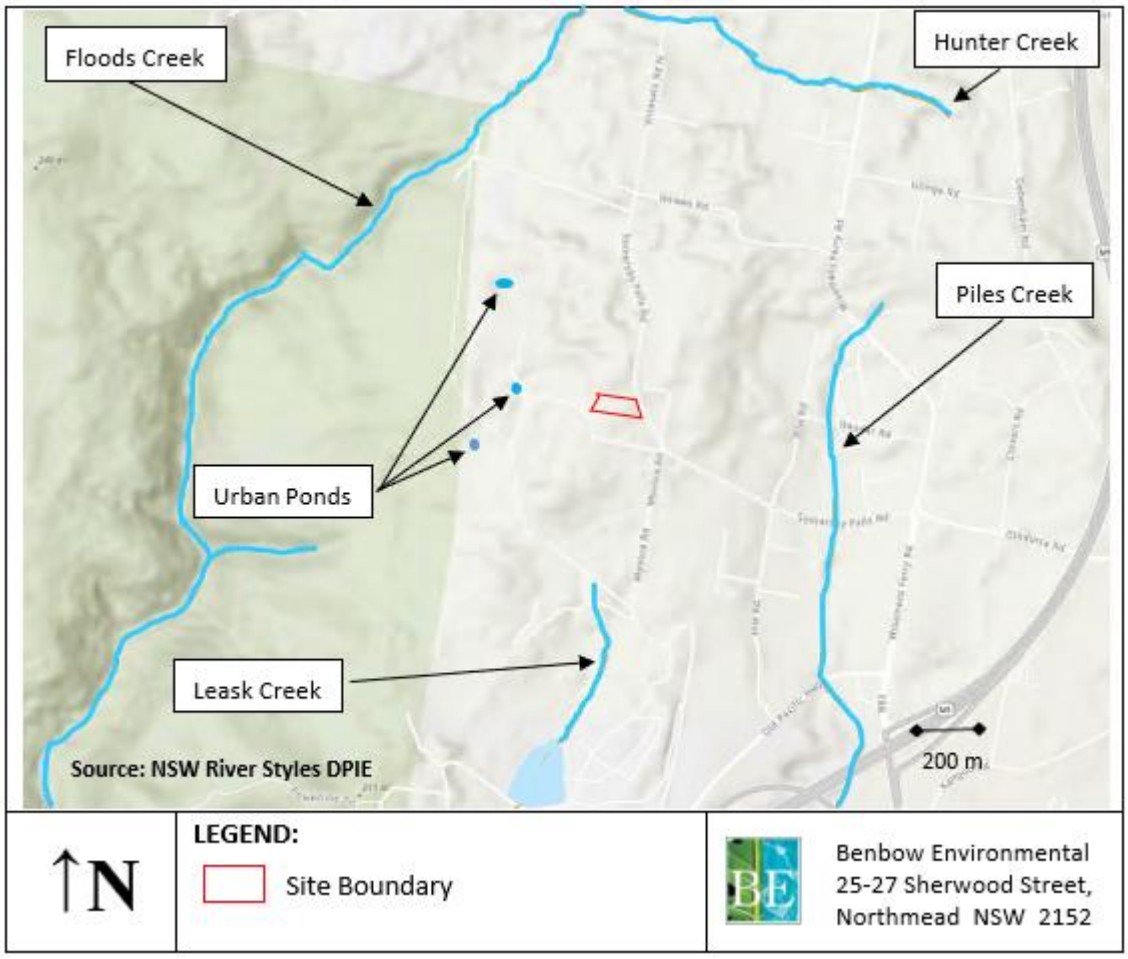
The site is a small parcel of land of approx. 1 ha, legally described as Lot 3 DP1292653. It is located at 133 Somersby Falls Rd, Somersby NSW, 2250 and was recently part of a subdivision. Previously, it was included in Lot 2 DP712505 that was sub-divided in five smaller lots. Lot 3 is located within a rural setting but sits just within a small industrial zoned area (E4 General Industrial) as per the Central Coast Local Environmental Plan 2022. Access for the Lot is from Somersby Falls Road.

The lot is undeveloped and contains no structures. All large vegetation has been removed with only grass and weed species covering the ground surface. The lot is situated close to the top of a ridge having an elevation of approx. 230 m AHD. It slopes downwards from its northern boundary to the south and southeast, falling some 2 – 4 m. The surface area is uneven with some spots subject to mild water logging.

## 2.3 NEAREST WATERWAYS

The Site does not contain any water bodies. Three small human constructed ponds exist to the west, northwest and southwest of the site and appear to be independent from the local waterways. A number of creeks are within a kilometre of the site, the closest, as measured from the site's boundaries, is Leask Creek approx. 670 m due south followed by Piles Creek approx. 680 m due east. Both creeks are headwaters and south flowing before they converge and later flow into Mooney Mooney which is a tributary of the Hawksbury River. Approx. one kilometre West of the site, is Floods Creek, a south-westerly flowing stream that is also a tributary of Mooney Mooney Creek. These waterbodies are visualised in Figure 2-2.

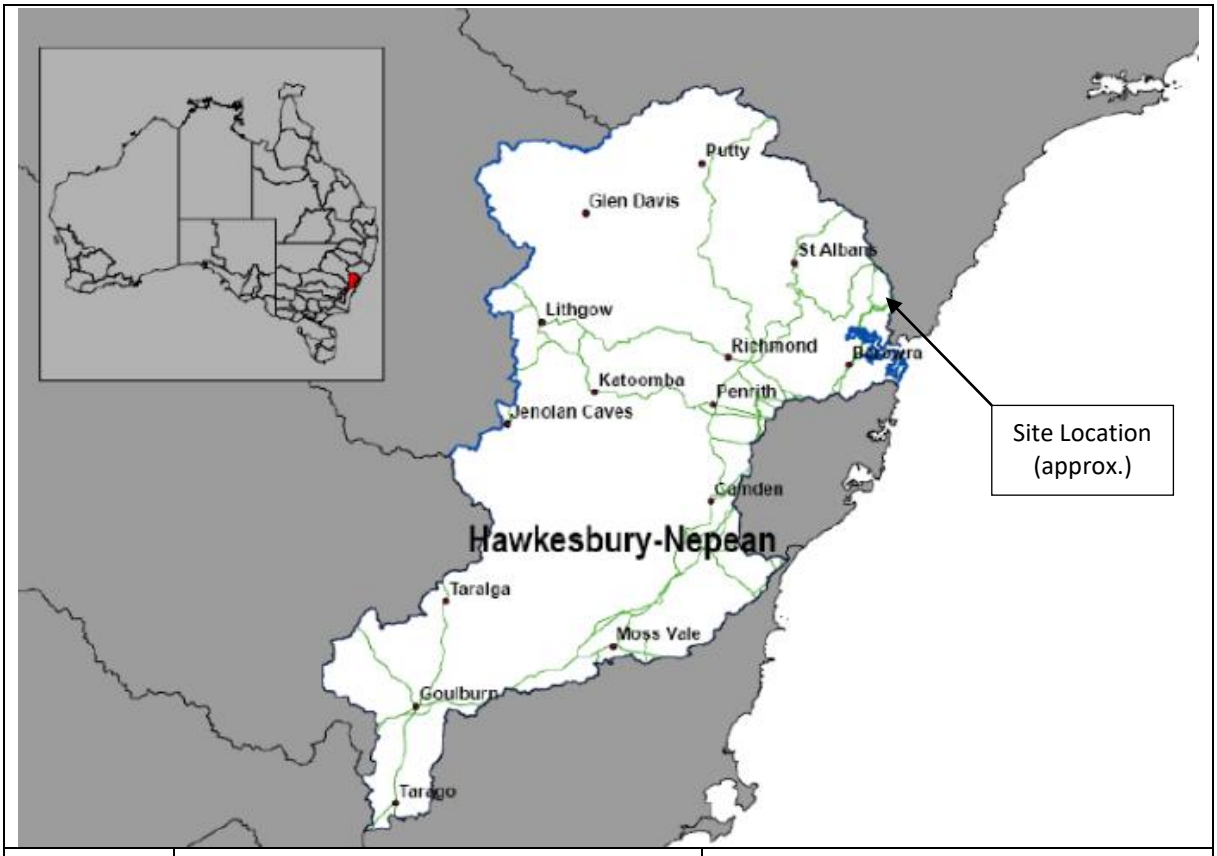
Figure 2-2: Location of the Nearest Waterbodies to the Site



## 2.4 CATCHMENT MANAGEMENT PLAN

The site is located within the Hawkesbury-Nepean Catchment. The site's approx. location can be seen below in Figure 3-1 .

Figure 3-1: Map showing the Hawkesbury-Nepean Catchment




↑N
Not to scale

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## 2.5 RAINFALL

The BoM IFD Design Rainfall Depth (mm) for the site area is provided in Table 2-1 below, based on the 2016 Rainfall IFD Data System.

Table 2-1: Annual Exceedance Probability (AEP) Depth -33.408964°, 151.276656°)

| Duration | 63.20% | 50% | 20% | 10% | 5% | 2% | 1% |
|---|---|---|---|---|---|---|---|
| **1 min** | 2.21 | 2.52 | 3.57 | 4.36 | 5.19 | 6.41 | 7.43 |
| **2 min** | 3.67 | 4.18 | 5.96 | 7.31 | 8.76 | 10.8 | 12.5 |
| **3 min** | 5.10 | 5.82 | 8.26 | 10.1 | 12.1 | 14.9 | 17.3 |
| **4 min** | 6.41 | 7.30 | 10.3 | 12.7 | 15.1 | 18.6 | 21.6 |
| **5 min** | 7.59 | 8.64 | 12.2 | 14.9 | 17.8 | 21.9 | 25.4 |
| **10 min** | 12.0 | 13.7 | 19.3 | 23.6 | 28.1 | 34.7 | 40.2 |
| **15 min** | 15.0 | 17.1 | 24.2 | 29.5 | 35.2 | 43.5 | 50.4 |
| **20 min** | 17.2 | 19.6 | 27.8 | 34.0 | 40.6 | 50.2 | 58.2 |
| **25 min** | 19.0 | 21.7 | 30.8 | 37.7 | 44.9 | 55.6 | 64.5 |
| **30 min** | 20.5 | 23.4 | 33.3 | 40.7 | 48.6 | 60.1 | 69.8 |
| **45 min** | 24.0 | 27.4 | 39.0 | 47.8 | 57.2 | 70.7 | 82.1 |
| **1 hour** | 26.7 | 30.5 | 43.4 | 53.2 | 63.7 | 78.8 | 91.5 |
| **1.5 hour** | 31.0 | 35.3 | 50.3 | 61.6 | 73.7 | 91.2 | 106 |
| **2 hour** | 34.5 | 39.3 | 55.9 | 68.4 | 81.8 | 101 | 117 |
| **3 hour** | 40.4 | 46.0 | 65.2 | 79.7 | 95.1 | 117 | 136 |
| **4.5 hour** | 47.8 | 54.4 | 76.8 | 93.6 | 112 | 137 | 159 |
| **6 hour** | 54.3 | 61.7 | 86.8 | 106 | 126 | 155 | 179 |
| **9 hour** | 65.3 | 74.1 | 104 | 126 | 150 | 184 | 212 |
| **12 hour** | 74.7 | 84.8 | 119 | 144 | 171 | 209 | 240 |
| **18 hour** | 90.1 | 102 | 144 | 174 | 207 | 251 | 288 |

## 2.6 DESCRIPTION OF THE PROPOSAL

The proposed project involves the construction and operation of an asphalt batching plant on an area of approximately 1 ha. The plant will produce up to 200,000 tonnes per annum (TPA) of asphalt.

The development area would be limited to approx. 2,800 $m^2$ of the total 9,890 $m^2$ area available and would be situated on vacant land. The facility would consist of several components including a control system, vibrating screens, dryers, burners, mixers, weighing equipment, aggregate storage and hot storage silos for bitumen with circulation and supply equipment. The plant would also be equipped with a dust collection system to capture any dust and fume generated by the process. The plant would be designed so that the individual components are concealed from public view to maintain visual amenity of the area. The company is currently in discussions with suppliers to determine the most effective options for plant design. The facility will aim to operate 24 hours per day, 7 days per week.

There are a number of benefits for the wider community from the proposed development. Asphalt is heavily relied upon for critical infrastructure needs, such as roads, highways and commercial applications such as pavement of external areas. The proposed plant will be positioned to provide high quality asphalt for local infrastructure needs thus reducing costs for local applications when such material is typically sourced from outside the LGA. Asphalt provided by the facility would be used in several sectors such as construction, transport, industry, and agriculture. The proposed development will add local economic benefits by providing employment opportunities for up to 50 workers.

Additionally, the plant will recycle old asphalt, thus reducing reliance on new raw materials and preventing old asphalt from ending up in landfill.

### 2.6.1 Proposed Operational Activities

The proposed development would involve the following:

- Construction and use of a world's best practice prefabricated asphalt batching plant and associated raw material storage silos with capacity to produce 200,000 tonnes per annum of new asphalt to supply the local market;

- Construction and use of an asphalt (road-profiling) recycling plant with the capacity to receive, stockpile, sort, screen and crush 100,000 tonnes of road profiling material for reuse as recycled road-base. This activity is ancillary to the main activity i.e. that of asphalt production;

- Construction and use of a hardstand area, office and staff amenities building and on-site car parking; and

- Construction and use of a weighbridge.

The proponent seeks approval for production of up to 200,000 tonnes per year of new asphalt and production of up to 100,000 tonnes per year of waste road-profiling material on site, with storage bunkers that have a capacity to store 3,000 tonnes of waste material (i.e. RAP) at any one time.

The raw materials required for production of the new asphalt would include:
- Bitumen;
- Aggregates including crushed stone, gravel, sand and crusher dust;
- Reclaimed Asphalt Pavement (RAP); and

Waste in the form of reclaimed asphalt pavement (RAP) would be brought onto the site for processing in the mobile crusher and then added during the manufacturing of the final product.

## 2.7 EXISTING SITE CONTAMINATION

A Preliminary Site Investigation undertaken by Benbow Environmental in March 2023 (Ref: 221145_PSI_Rev1) found, based on the available evidence, that the current risk of contamination of the site's soil and groundwater is considered as being very low. A Detailed Site Investigation was not considered warranted.

# 3. WATER ASSESSMENT

This section provides the water assessment for the proposed development.

## 3.1 LICENSING REQUIREMENTS

The two key pieces of legislation for the management of water in NSW are the *Water Act 1912* and the *Water Management Act 2000*.

### 3.1.1 Water Act 1912

Licences for water conservation, irrigation, water supply or drainage as well as changing the course of a river can be applied for under the *Water Act 1912*.

The proposed development does not involve works for water conservation, irrigation, water supply or drainage and does not involve works that would change the course of a river, therefore, the *Water Act 1912* does not apply.

### 3.1.2 Water Management Act 2000

The *Water Management Act 2000* provides requirements for the extraction of water, water use, floodplain and drainage management, the construction of works such as dams and weirs, and undertaking activities on or near water sources in NSW. Approvals for the extraction and use of water, construction of works relating to water use and controlled activities carried out on waterfront land can be obtained under the Act.

Clause 91(2) of the Water Management Act, 2000 (WMA Act) requires an activity approval to carry out a controlled activity in, on or under waterfront land. The following definitions apply:

> ***"controlled activity"*** *means:*
>
> *a) the erection of a building or the carrying out of a work (within the meaning of the Environmental Planning and Assessment Act 1979 ), or*
> *b) the removal of material (whether or not extractive material) or vegetation from land, whether by way of excavation or otherwise, or*
> *c) the deposition of material (whether or not extractive material) on land, whether by way of landfill operations or otherwise, or*
> *d) the carrying out of any other activity that affects the quantity or flow of water in a water source.*
>
> ***"waterfront land"*** *means:*
>
> *a) the bed of any river, together with any land lying between the bed of the river and a line drawn parallel to, and the prescribed distance inland of, the highest bank of the river, or*
> *(a1) the bed of any lake, together with any land lying between the bed of the lake and a line drawn parallel to, and the prescribed distance inland of, the shore of the lake, or*
> *(a2) the bed of any estuary, together with any land lying between the bed of the estuary and a line drawn parallel to, and the prescribed distance inland of, the mean high-water mark of the estuary, or*

*b) if the regulations so provide, the bed of the coastal waters of the State, and any land lying between the shoreline of the coastal waters and a line drawn parallel to, and the prescribed distance inland of, the mean high water mark of the coastal waters, where the prescribed distance is 40 metres or (if the regulations prescribe a lesser distance, either generally or in relation to a particular location or class of locations) that lesser distance. Land that falls into 2 or more of the categories referred to in paragraphs (a), (a1) and (a2) may be waterfront land by virtue of any of the paragraphs relevant to that land.*

The closest natural waterbody to the site is Leask Creek, over 650 m south of the site boundary. The site and its proposed activities are not within 40 metres of Leask Creek. Therefore, the proposed development does not require a controlled activity approval under the Water Management Act 2000.

### 3.1.3 Water Sharing Plans

One water sharing plan applies to the area where the subject site is located. This is the:

- Central Coast Unregulated and Alluvial Water Sources 2022;

This does not apply to the proposed development.

## 3.2 PROTECTION OF THE ENVIRONMENT OPERATIONS ACT 1997

Clause 120 of the *Protection of the Environment Operations Act 1997* states the following:

> ***120 Prohibition of pollution of waters***
> *(1) A person who pollutes any waters is guilty of an offence.*
> *Note. An offence against subsection (1) committed by a corporation is an offence attracting special executive liability for a director or other person involved in the management of the corporation—see section 169.*
> *(2) In this section:*
> *pollute waters includes cause or permit any waters to be polluted.*

The proposed development will not breach the above clause with regard given to the proposed mitigation measures and safeguards to be implemented as described throughout this report.

## 3.3 DRINKING WATER CATCHMENT

The proposed development site is located within the Hawkesbury-Nepean Water Catchment. Developments within this catchment are required to comply with the Central Coast Development Control Plan 2022 – Chapter 3.4: Water Catchment Areas and *State Environmental Planning Policy Amendment (Water Catchments) 2022* - chapter 6.6.

The objectives of Central Coast Development Control Plan 2022 chapter 3.4 are as follows:

- Provide further guidance for the implementation of Clause 7.2 Drinking Water Catchments of Central Coast Local Environmental Plan (LEP) 2022;

- Ensure that the adverse environmental, health and financial impacts of development are minimised by ensuring development has a neutral or beneficial effect on the water supply sources within the Drinking Water Catchments

The Central Coast Council LEP Clause 7.2 – Drinking Water Catchments is outlined below:

> ***7.2 Drinking water catchments***
>
> ***(1)*** *The objective of this clause is to protect drinking water catchments by minimising the adverse impacts of development on the quality and quantity of water entering drinking water storages.*
>
> ***(2)*** *This clause applies to land identified as "Drinking water catchment" on the Drinking Water Catchment Map.*
>
> ***(3)*** *In deciding whether to grant development consent for development on land to which this clause applies, the consent authority must consider the following—*
>
> ***(a)*** *whether or not the development is likely to have an adverse impact on the quality and quantity of water entering the drinking water storage, having regard to the following—*
>
> ***(i)*** *the distance between the development and any waterway that feeds into the drinking water storage,*
>
> ***(ii)*** *the on-site use, storage and disposal of chemicals on the land,*
>
> ***(iii)*** *the treatment, storage and disposal of wastewater and solid waste generated or used by the development,*
>
> ***(b)*** *appropriate measures proposed to avoid, minimise or mitigate the impacts of the development, if any.*
>
> ***(4)*** *Development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied—*
>
> ***(a)*** *the development is designed, sited and will be managed to avoid significant adverse impacts on water quality and flows, or*
>
> ***(b)*** *if an impact cannot be reasonably avoided—the development is designed, sited and will be managed to minimise the impact.*

The requirements for development within Hawkesbury-Nepean Catchment are as follows:

> ***Division 2 Controls on development generally***
>
> ***6.6 Water quality and quantity***
>
> *(1) In deciding whether to grant development consent to development on land in a regulated catchment, the consent authority must consider the following—*
>
> *(a) whether the development will have a neutral or beneficial effect on the quality of water entering a waterway,*
>
> *(b) whether the development will have an adverse impact on water flow in a natural waterbody,*

*(c) whether the development will increase the amount of stormwater run-off from a site,*

*(d) whether the development will incorporate on-site stormwater retention, infiltration or reuse,*

*(e) the impact of the development on the level and quality of the water table,*

*(f) the cumulative environmental impact of the development on the regulated catchment,*

*(g) whether the development makes adequate provision to protect the quality and quantity of ground water.*

*(2) Development consent must not be granted to development on land in a regulated catchment unless the consent authority is satisfied the development ensures—*

*(a) the effect on the quality of water entering a natural waterbody will be as close as possible to neutral or beneficial, and*

*(b) the impact on water flow in a natural waterbody will be minimised.*

*(3) Subsections (1)(a) and (2)(a) do not apply to development on land in the Sydney Drinking Water Catchment.*

Assessment of potential impacts on water is presented in Section 3.6 addressing the above Requirements for Development within the Hawkesbury-Nepean Catchment.

## 3.4 WATER USAGE & SUPPLY

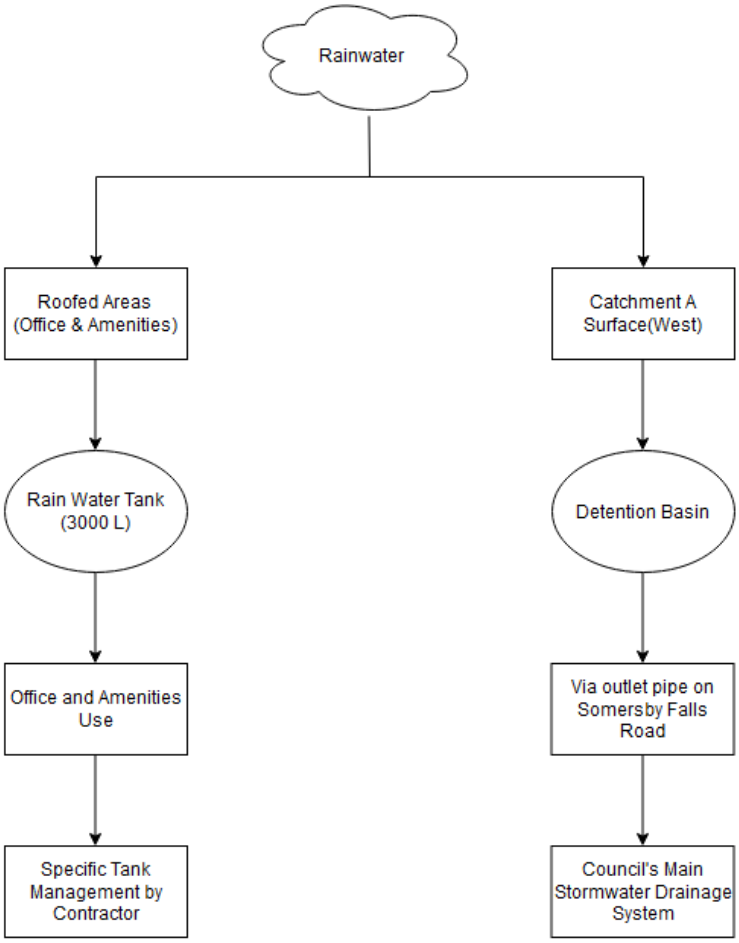
Water use will be limited to the office and amenities. No water is required for process or cleaning and no wastewater will be generated. Some water may be used, when required, for dust suppression.

A stormwater detention basin will be constructed on the eastern side of the site to collect the facility's stormwater. Additionally, a rainwater tank with a capacity of 3,000 L will be installed to collect rainwater from the office roof and can be used for different purposes.

### 3.4.1 Site Water Balance

The following Figure 3-1 shows the site's water balance.

Figure 3-1: Water Balance Diagram




## 3.5 STORMWATER & WASTEWATER MANAGEMENT

This section discusses the management of stormwater and wastewater that is undertaken as part of the proposed development. Details regarding conceptual design of the stormwater system and presentation of the results of the MUSICX modelling to confirm the treatment efficiency of the system are also included.

### 3.5.1 Stormwater System

A stormwater plan has been prepared by CUBO CONSULTING PTY LTD in which there will be a stormwater tank in the eastern side of the site which is designed to collect stormwater runoff from the site. This plan is part of water cycle management plan and more details can be found in Attachment 1. This tank will be connected to Council's main stormwater drainage system. The

tank has been placed to ensure efficient and effective drainage of stormwater from the site, while minimising any potential impact on the surrounding environment.

### 3.5.2 Sediment Basin

Sediment basins are commonly used in asphalt plants as a means of capturing and filtering sediment and other pollutants from stormwater runoff. It was determined that the size and scope of the operations do not warrant the construction of a sediment basin. Instead, the proposed development will have a 338 $m^3$ detention basin. This will ensure the Central Coast Council Water Retention Target is met.This will  be installed beneath the parking area which is believed to be sufficient for capturing and filtering stormwater runoff from the site.

### 3.5.3 Site Drainage

There are drains situated along the grass verge in Somersby Falls Road, western side of the site which will serve as the collection points for all stormwater from the site. Furthermore, there will be a detention basin located beneath the office structure to gather and contain stormwater runoff from the site.

### 3.5.4 Water Sensitive Urban Design (WSUD)

#### 3.5.4.1 Stormwater Quality - MUSICX Modelling

In order to determine the efficiency of the treatment method for pollutant reduction of the stormwater basin, MUSICX software has been utilised to model the basin's influence on the quality of the stormwater runoff. The modelling has been based on local rainfall data between the years of 1974 and 1994 (20 years) obtained through the MUSIC-link feature for Central Coast Upland developments. The modelling is conducted by CUBO CONSULTING PTY LTD as part of water cycle management plan which is attached as Attachment 1.

.

#### 3.5.4.2 Overland Drainage

Details on site drainage is summarised in Section 3.5.3.

### 3.5.5 Sewage and Wastewater

The site will be connected to the metropolitan sewerage system.

## 3.6 Assessment of Potential Impacts on Water

Assessment of potential impacts of the proposed development to surface water resources, and flooding is presented in this section.

### 3.6.1 Surface Water

Loose sediments from processing operation (clay/silt) make their way into the stormwater tank via stormwater flows and will reach the detention basin which is located at front of the site. During flood events, stormwater runoff can overwhelm drainage systems and cause water to overflow from the basin, leading to potential contamination of the main stormwater drainage system and nearby surface water bodies which are Leask Creek and Piles Creek.

### 3.6.2 Potential Pollutants

This section identifies potential surface water pollutants of concern at the site, the relevant source materials, the potential receptors and the potential exposure pathways.

The primary release mechanism expected on site is generation of debris from material movement, processing and sorting procedures. Surface water may provide an avenue for debris and potential pollutants to be transported off site to nearby waterbodies.

Potential contaminants and potential risks will be:

- A potential risk for surface soil contamination from chemical spillages surrounding the chemical storage area ( Diesel and Bitumen).
- Potential contamination risk (low) from air dispersal of CO, $PM_{2.5}$, $PM_{10}$;

A low risk exists for the ecological function of local waterways near the site from the sediment load within stormwater leaving the site.

A conceptual site model (CSM) has been prepared in accordance with the *National Environment Protection (Assessment of Site Contamination) Measure* as amened in 2013.

The CSM is a representation of site-related information regarding surface water contamination sources, receptors and exposure pathways between those sources and receptors.

The CSM is presented in Table 3-1.

Table 3-1: Conceptual Site Model

| Known and Potential Primary Sources of Contamination | Primary Release Mechanism | Potentially Impacted Media | Contaminants of Potential Concern | Potential Receptors | | Exposure Pathways | | Risk of Contamination |
|---|---|---|---|---|---|---|---|---|
| | | | | Human | Environment | Human | Environment | |
| Vehicles / machinery parked/stored onsite | spills/leaks | soil, ground and surface water | hydrocarbons, heavy metals | site personnel, neighbouring premises if contaminants migrate off-site | soil, waterways, native habitats | dermal contact, inhalation of dust and vapours, ingestion | surface and ground water | very low |
| Historical use of agricultural pesticides | disturbance of soils | soil, ground and surface water | heavy metals, organochlorine (op) and organophosphate (op) pesticides | site personnel, neighbouring premises if contaminants migrate off-site | soil, waterways, native habitats | dermal contact, dust inhalation, ingestion | soil, ground and surface water | low |
| Legacy contaminants (e.g. Lead-based paint, ACM, PCB) brought onsite | disturbance of soils | soil and surface water | Lead, ACM polychlorinated biphenyls | site personnel, neighbouring premises if lead migrates off-site | soil, waterways, native habitats | dermal contact, inhalation (dust or soil), ingestion | Soils, surface and ground water | very low |

### 3.6.3 Catchment Impacts

The major impacts to the catchment from the proposed development are associated with the surface water impacts. These are assessed in the following sections.

### 3.6.4 Surface Water Impacts

#### 3.6.4.1 Potential polluting Operations and mitigation measures

Based on the operations and infrastructure associated with the site, assessment of the potential impacts on surface water and measures is discussed as follows:

- Leaks or spills of diesel, lubricating oils or bitumen onto the hardstand area being captured by stormwater thus contaminating surface waters. Diesel fuel and Bitumen will be used in the facility's equipment and machinery. Vehicles and machinery will be fuelled via a pump connected to a secure and bunded diesel storage container set well away from site activities and drainage inlets. In addition, there will be spill kits on site next to chemical storage areas.

- Product/wastes releases entering and contaminating the site's stormwater.

- Runoff from pervious and impervious areas can carry pollutants such as sediment, oils, and chemicals into nearby surface water bodies. A stormwater detention basin with the purpose of reducing the amount of surface runoff entering nearby streams or other waterways during heavy rainfall events will be constructed in the east of the site. Implementing some practices such as regular inspections to ensure proper functioning of the basin and identify any maintenance issue. In addition, a regular monitoring should be conducted to ensure the size and design of the tank is handling the expected volume of stormwater run-off.

- Truck filling can result in the release of particulate matter and potentially harmful substances into the air, which may subsequently settle on nearby surface water bodies during precipitation. A cold aggregate feeder with multiple bins will be installed as part of the processing plant. The feeder works by using a conveyor belt or other mechanism to transport the cold aggregate materials from the aggregate stockpile to the mixing area. So, this will minimise releasing dust and harmful substances.

It is recommended that a water monitoring program be implemented to test water in the on-site detention system to ensure no pollutants are released offsite. This program would be detailed in the EMP.

### 3.6.5 Water Monitoring Program

Monitoring of surface water and detention basin will be undertaken in accordance with the latest Approved Methods for the Sampling and Analysis of Water Pollutants in NSW by a qualified environmental consultant.

### 3.6.6 Flooding

The site *does not* fall within a flood-risk area, being largely attributed to the site's high elevation (~233 m). The closest area at risk to the site is the naturally flowing Piles Creek, located

approximately 670 m east of the site. The area around the creek represents a *Precinct 2: Flood Planning Area* risk as the Central Coast Council's Online Mapping tool shows (Figure 3-2).

The definitions of Flood Mapping Precincts according to Central Coast Council are as follows:

> ***Precinct 1: Probable Maximum Flood*** *– the PMF is the area of land that is likely to be flooded during the largest flood that could conceivably occur at that particular location. It is also sometimes referred to as the extent of the Flood Prone Land.*
>
> ***Precinct 2: Flood Planning Level*** *– flood related development controls apply for residential development at or below the FPL. This is the area affected by a large flood that has a 1% chance of being reached or exceeded in any one year; it also includes an additional freeboard (normally 0.5 m), which is a factor of safety used is set minimum floor levels. The former Wyong Shire Council's planning allowance for sea level rise is included within the 0.5 m freeboard.*
>
> ***Precinct 3: Flood Storage*** *– those areas that are important for the temporary storage of floodwaters during the passage of a flood, but generally less than 1 m deep in a 1% AEP flood. Flood storage areas deeper than 1 m are included in the High Hazard Area.*
>
> ***Precinct 4: High Hazard*** *– areas where there is significant danger to personal safety in a 1% AEP flood; evacuation by trucks is difficult; able-bodied adults would have difficulty in wading to safety; potential for significant structural damage to buildings. This area includes floodways (areas where a significant discharge of water occurs) and deep flood storage areas.*

Figure 3-2: Flood Risk Map

**Source:** Central Coast Council Online Mapping - https://maps.centralcoast.nsw.gov.au/public/

↑N
Not to scale

LEGEND:
Site boundary
Precinct 4 : High Hazard
Precinct 3 : Flood Storage
Precinct 2 : Flood Planning Areas
Precinct 1 : Probable Maximum Flood

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### 3.6.7 Climate Change

Rising temperature and sea levels are expected to increase the frequency and severity of storm events. This inherently may increase the likelihood of wet weather events leading to off-site stormwater and associated contamination releases from the detention basin.

It was determined that the size and scope of the operations do not warrant the construction of a sediment basin. Instead, the proposed development will have a 338 $m^3$ detention basin.

## 3.7 EROSION & SEDIMENT CONTROLS

Sediment and erosion control measures are to be installed prior to the commencement of works in accordance with the Construction Certificate and compliance with the Protection of the Environmental Act 19997 (POEO) including Landcom's publication "Managing Urban Stormwater – Soils and Construction (2004) – alternatively known as "The Blue Book".

On-site construction for the proposed development will be minimal. The proposed development will have a 338 $m^3$ detention basin.

# 4. SOIL ASSESSMENT

This soil assessment addresses the following:

- A description of local soils, topography, drainage and landscapes; and
- Consideration of any contaminated soil, including acid sulfate soils.

Reference is made to the Preliminary Site Investigation report Ref: (221145_PSI_Rev1) throughout this soil assessment.

## 4.1 EXISTING SOIL CONDITIONS

### 4.1.1 Local Soils

*Geological Unit*: The area is underlain by Middle Triassic sandstone.

*Parent Rock*: Hawkesbury Sandstone, medium to very coarse grained quartz sandstone, minor laminated mudstone and siltstone lenses.

***Soil Landscape***: The soil landscape is described as "Sydney Town" with the dominant lithology coarse quartz sandstone.

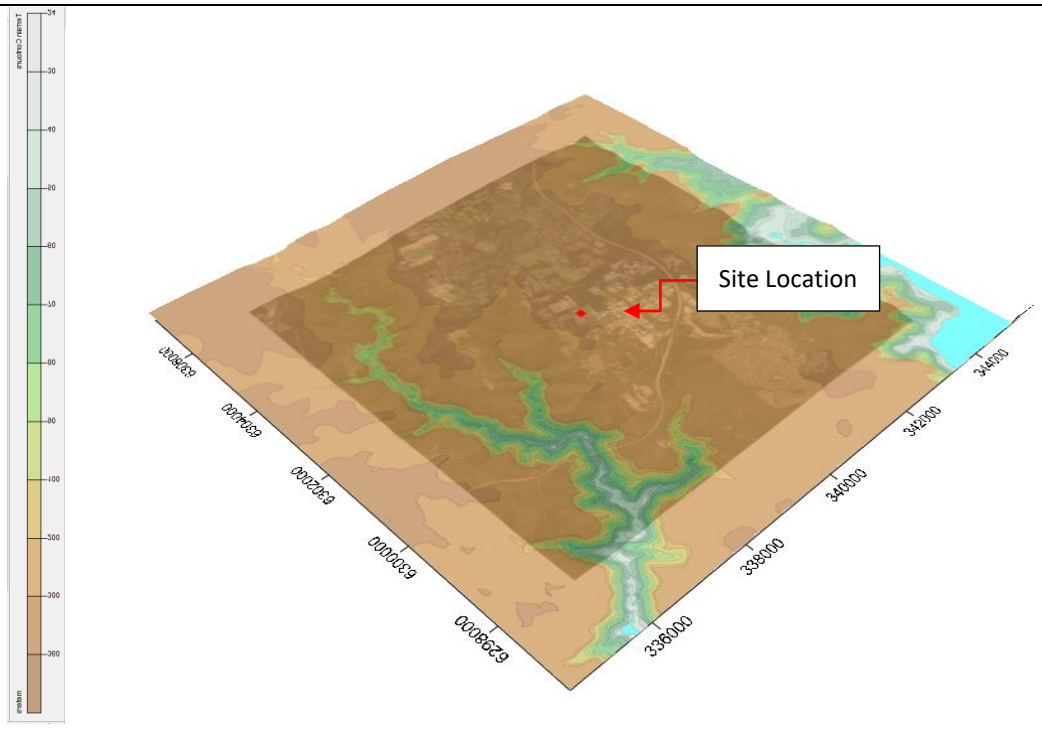
***Soils***:
*Shallow to deep (150 cm) Yellow Earths (Gn2.21, Gn2.24), Earthy Sands (Uc5.22) and some Siliceous Sands (Uc1.21) on crests and slopes; shallow to moderately deep (150 cm) Siliceous Sands (Uc1.21), Leached Sands (Uc2.23) and Grey Earths (Gn2.81) in poorly drained areas and drainage lines; moderately deep (100–150 cm) Yellow Podzolic Soils (Dy2.21, Dy5.21) and Gleyed Podzolic Soils (Dg4.53) associated with shale lenses.*

**Limitations to Development**— *very high erosion hazard, permanent waterlogging (localised), highly permeable, strongly acid soils with very low fertility, high potential aluminium toxicity and strong sodicity .*

### 4.1.2 Topography

A three-dimensional view of the local topography surrounding the site has been provided in Figure 4-1 with the terrain/vertical axis exaggerated by a factor of 1. Figure 4-2 visualises the terrain/vertical axis exaggerated by a factor of 10. It should be noted that this figure approximates the actual terrain based on information that has been digitised from local contour maps.

Figure 4-1: Local Topography with a Vertical Exaggeration Factor of 1




LEGEND:
**Site Boundary**:

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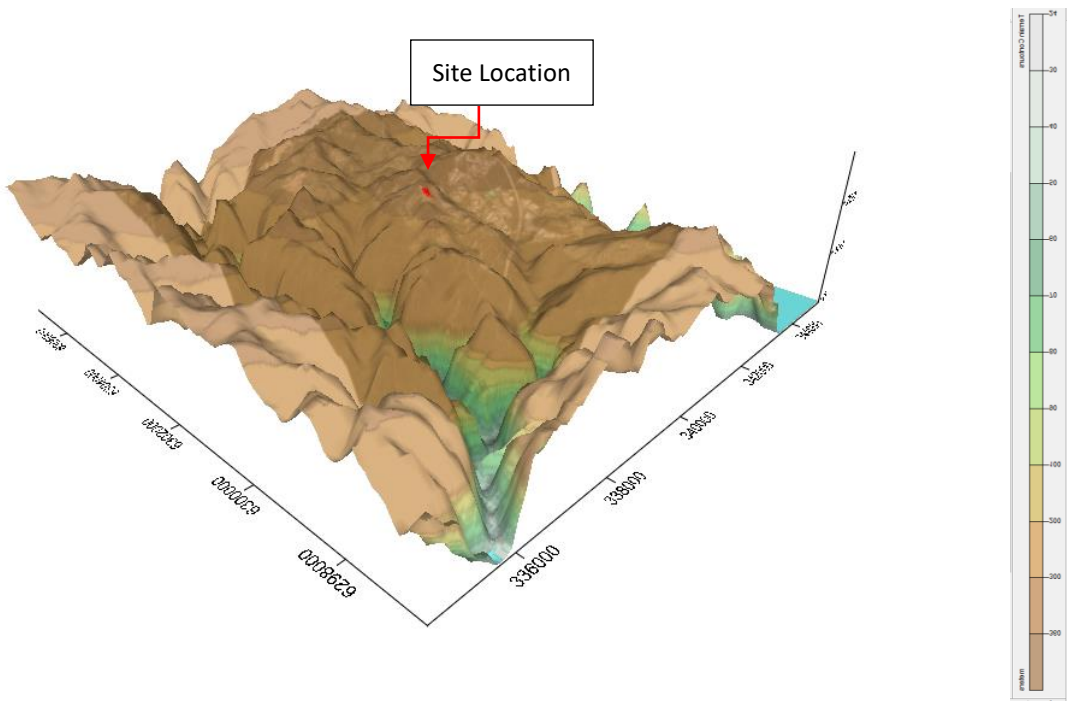
Figure 4-2: Local Topography with a Vertical Exaggeration Factor of 10




LEGEND:
**Site Boundary**:

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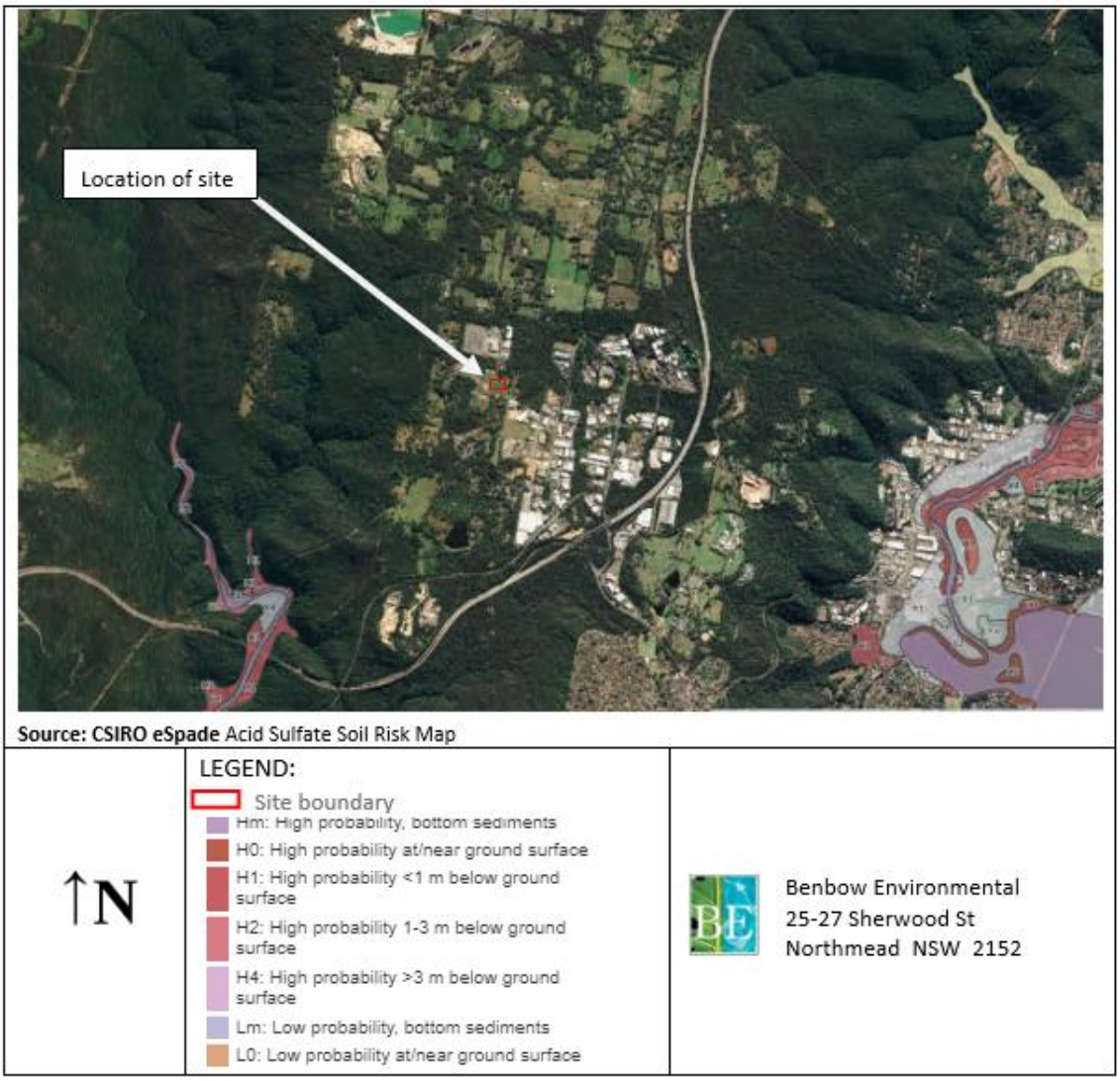
25-27 Sherwood Street,
Northmead NSW 2152

### 4.1.3 Acid Sulfate Soils

The CSIRO eSPADE ASS Risk mapping shows the subject site is not located on land that is at risk from acid sulfate soils (ASS) (see Figure 4-3 below). Therefore, ASS are not likely to be found onsite.

Figure 4-3: Acid Sulfate Soils Map




### 4.1.4 Erosion and Water Logging

The site has a high risk from water erosion and water logging. Exposed soils would not be resistant to rain events. During construction, proper erosion controls are essential to prevent soil loss from rain events. The site also has a high risk from water logging with shallow soils underlain by bedrock being slow to drain.

These risks and limitations need to be considered when planning and constructing buildings at the site.

It is recommended to install silt fence or sediment traps at appropriate locations to prevent sediment runoff and soil loss during construction. These measures will minimise exacerbation water logging.

### 4.1.5 Existing Contaminated Soil

The findings of the Preliminary Site Investigation pertaining to soil contamination shows it is highly unlikely that the soil at the site poses a significant risk of contamination. Therefore, conducting a Detailed Site Investigation was deemed unnecessary.

## 4.2 POTENTIAL IMPACTS ON SOIL

**Operation**

The potential sources of contamination from the proposed facility includes spills and leaks from fuels and oils from the operation of machinery and sediment created from product loss or spillages during production. These wastes have potential to contaminant stormwater falling on the site which could potentially migrate into the subsurface soils. Potential contaminants are outlined in Table 3-1.

- Potential spillages of diesel , lubricating oil and bitumen could occur during refuelling and equipment maintenance; this risk would be minimised through proper procedures and training in appropriate methods and signage showing how to avoid spills and the use of appropriately trained contractors.

- Good housekeeping practices are important to prevent contamination. These include inspection of the integrity of equipment and inspection, cleaning and sweeping of hardstand areas where wastes and spillages could come into contact with stormwater.

# 5. SAFEGUARDS AND MITIGATION MEASURES

A summary of the soil and water environmental safeguards are provided as follows:

- Maintenance of erosion and sediment controls;
- Water quality testing of surface water;
- Maintenance of all stormwater infrastructure including drainage swales and stormwater detention basin;
- Staff trained in spill response and emergency procedures, including flood emergency response and maintenance and EMP procedures; and
- Implementation of an Environmental Management Plan that includes regular workplace inspections to maintain a high standard of housekeeping.

## 5.1 MONITORING REGIME

It is recommended the onsite detention basin be monitored every 6 months for the first year and to be revised thereafter.

A water monitoring program would be detailed within the site's EMP and would include sampling methods, equipment, frequency, water quality indicators, laboratory testing requirements and methods. The monitoring regime should be revised after the first year of operations.

# 6. CONCLUDING REMARKS

Benbow Environmental has been engaged by Stateline Asphalt Pty Ltd to undertake a Soil and Water assessment to support a proposed development for an asphalt batching plant to be located at 133 Somersby Falls Road, Somersby NSW 2250 (legally known as Lot 3 DP1292653).

This assessment is a qualitative study that addresses the potential impacts to soil and water from the proposed operations. With the control measures and monitoring procedures recommended in this report, the potential impacts upon soil and water from the proposed development is considered low.

This concludes the report.

| | | |
|---|---|---|
| Vida Nodehi | Francesco Faustino | R T Benbow |
| Graduate Environmental Scientist | Graduate Environmental Scientist | Principal Consultant |

# 7. LIMITATIONS

Our services for this project are carried out in accordance with our current professional standards for site assessment investigations. No guarantees are either expressed or implied.

This report has been prepared solely for the use of Stateline Asphalt Pty Ltd, as per our agreement for providing environmental services. Only Stateline Asphalt Pty Ltd is entitled to rely upon the findings in the report within the scope of work described in this report. Otherwise, no responsibility is accepted for the use of any part of the report by another in any other context or for any other purpose.

Although all due care has been taken in the preparation of this study, no warranty is given, nor liability accepted (except that otherwise required by law) in relation to any of the information contained within this document. We accept no responsibility for the accuracy of any data or information provided to us by Stateline Asphalt Pty Ltd for the purposes of preparing this report.

Any opinions and judgements expressed herein, which are based on our understanding and interpretation of current regulatory standards, should not be construed as legal advice.

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# ATTACHMENTS

Attachment 1:  MUSICX Model Report (Proposed Stormwater Infrastructure)

# Water Cycle Management Plan to Support Development Application

## 133 Somersby Falls Rd, Somersby

Prepared for Stateline Asphalts Pty Ltd

Our Ref: 23053-WCMP-1.0

2 November 2023

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CONSULTING Cubo

ENGINEERING BUILDABLE SOLUTIONS

# Document Information

| | |
|---|---|
| Prepared for | Stateline Asphalts Pty Ltd |
| Project Name | Water Cycle Management Plan to Support Development Application |
| Job Reference | 23053 |
| Date | 2 November 2023 |

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| 1.0 | 02/11/23 | Ian Black | IB | Doug Black | DB |

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# 1 Executive Summary

Cubo Consulting Pty Ltd has been engaged by Sateline Asphalts Pty Ltd to prepare a water cycle management plan (WCMP) to support the development application (DA) submission to the Central Coast Council for the proposed industrial development at 133 Somersby Falls Rd, Somersby.

The report concludes that:

1. Peak post development flow rates can be kept near to or below pre-development flow rates in all storm events up to and including the 1% AEP storm with the proposed onsite detention system.
2. Water quality requirements can be met with the proposed treatment train.
3. The design generally satisfies the requirements of Central Coast Council DCP 2022, Chapter 3.1.

Supporting design drawings are contained at **Appendix A**.

Yours Faithfully,

Prepared by

Doug Black
**Design Engineer**

# 2 Background Information

This document presents the WCMP to support the complying development certification submission to the Central Coast Council for the proposed industrial development at Lot 3 DP712505, 125 Somersby Falls Road, Somersby.

# 3 Site Context

The proposed development site is bound to the east by Somersby Falls Rd and surrounded by vegetation from all other sides.

The proposed development site has an area of approximately 1.01 ha and is generally sloping, generally falling at a grade of approximately 6.5 percent from the northwest corner of the property to the southeast corner of the property frontage on Somersby Falls Rd. Based on soil samples from nearby sites, the underlying soils are predominantly sandy soils with low run off.

Aerial photography of the existing site is presented in Figure 3-1 below.

**Figure 3-1 Existing Site (Source – SIX Maps)**

# 4 Proposed Development

The proposed development is an asphalt processing facility with offices and parking.

Proposed plans for the site are contained at **Appendix A**.

# 5 Stormwater Plan

This WCMP has been developed to align with the objectives in Central Coast Council's Chapter 3.1 (Floodplain Management and Water Cycle Management) from DCP 2022. These include to:

1) Maintain and restore natural water balance whilst reducing the cost of providing and maintaining water infrastructure in a sustainable and efficient manner.
2) Reduce risk to life and damage to property by restricting and controlling building and other development so that it minimises risks to residents and those involved in rescue operations during floods.
3) Reduce nuisance and high-level flooding and the cost of providing and maintaining flood mitigation infrastructure whilst improving water quality in streams and groundwater.
4) Reduce potable water demand by using stormwater as a resource.
5) Protect and enhance natural water systems (creeks, rivers, wetlands, estuaries, lagoons and groundwater systems).
6) Protect and enhance the water quality, by improving the quality of stormwater runoff from the urban catchments.
7) Integrate stormwater management systems into the landscape in a manner that provides multiple benefits, including water quality protection, stormwater retention and detention, public open space and recreational and visual amenity.

## 5.1 Site Constraints

Site constraints include the following:

- The legal point of connection to discharge stormwater from the site is via an interalotment drainage pit in the south-east corner of the property.
- Stormwater runoff from properties to the north and west should be diverted by swales within the boundaries of the property.

## 5.2 Water Conservation Target

In accordance with DCP 2022, Section 3.1.11.1 the target for potable water reduction is 40%.

It is recommended that the additions and alterations incorporate the following WELS rated devices to meet the 40% reduction in potable water:

- 4-star dual-flush toilets
- 3-star showerheads
- 4-star taps (for all taps other than bath outlets and garden taps)
- Water efficient washing machines and dishwashers, wherever possible.

**Dual Plumbing**

As noted in Section 5.3.1 of this report, rainwater reuse is proposed for landscape irrigation and toilet flushing within the office facilities and caretaker's accommodation.

## 5.3 Water Retention Target

The minimum Stormwater Retention Volume (SRV) as required by DCP 2022, Section 3.1.11.2.4 is calculated from the following formula.

$SRV = 0.01A(0.02F)^2$ where: SRV = stormwater retention volume ($m^3$)

A = total site area ($m^2$) – 10,100 $m^2$

F = fraction impervious (%) – 93%

Developed site imperviousness is estimated to be 93%, thus the required stormwater retention volume is as follows:

***Stormwater Retention Volume (SRV) = 292 $m^3$***

The proposed development will have a 338$m^3$ detention basin. This will ensure the Central Coast Council Water Retention Target is met.

### 5.3.1 Rainwater Tank

DCP 2022 Section 3.1.11.2.4 recommends water usage for residential households to be 5 L/day per square metre of roof area. As the development includes a 280$m^2$ building containing an Office, Driver amenities and Caretaker Facilities, by using the gross floor area for the unit as a surrogate value for roof area, it provides a better estimate of potential water usage.

The roof area of the office and amenities building is 280 $m^2$. This equates to 1,400 L of water usage per day. Based on Table 3 of DCP 2022 Section 3.1.11.2.4, toilet flushing, and landscape irrigation are estimated to each account for 20% of the total water usage, 280 L/day each, 40% in total or 3,920L/week.

The total roof area of the proposed development directed to the rainwater tank is approximately 280 $m^2$. Based on an average annual rainfall at Somersby of 1,140 mm, the available daily rainwater supply is 874 L.

A 5kL rainwater tank will provide water for 7 days (from full). The rainwater tank will need to be installed with a mains water top up system and should include a first flush device. All downpipes should be connected to the rainwater tank.

## 5.4 Site Discharge Index (SID)

The Site Discharge Index (SID) as described in Section 6.7.7.3.3 of DCP 2013 is calculated from the following equation for:

$$SID = \frac{\text{Area of Impervious Site Directly Connected to Street} - (50\ m^2)}{\text{Total Site Area} - 10{,}100\ (m^2)}$$

The proposed development connects the almost entire paved area of the developed site to the proposed site treatment devices. Only the front portion of the vehicle access crossing within front boundary setback drains directly to the street, This portion of the driveway has a total area of approximately 50$m^2$.

The development's SID is therefore:

***Site Development Index (SID) = 0.5%***

DCP 2022, Section 3.1.11.3.3 requires the SID to be less than 10%. The development's SID is therefore in compliance with this requirement.

## 5.5 MUSIC Model

A MUSIC model (set up shown in Figure 5-1) was prepared for the development site to determine the pollutant reduction of the treatment train.

**Figure 5-1 MUSIC model arrangement**

Central Coast Council requires, as a minimum, the following reductions in total pollutant load, compared to untreated runoff from the predeveloped site.

**Table 5-1 Minimum pollutant reduction targets**

| Pollutant | Minimum Reduction |
|---|---|
| Total Suspended Solids (TSS) | 80% |
| Total Phosphorus (TP) | 45% |
| Total Nitrogen (TN) | 45% |
| Gross Pollutants | 80% |

### 5.5.1 Base Information

The MUSIC model was prepared in computer model Version 6.3.0.

MUSIC modelling parameters were adopted using the Central Coast Council Lowland MUSIC-link data. The model was run using Sydney rainfall data over a rainfall period of 20 years (January 1974 to December 1993) at a time-step of 6 minutes.

Areas for each input node were as follows:

- Carpark (Urban Sealed Roads) to treatment train – 650 $m^2$
- Paved Site (Urban Industrial) to treatment train – 8,360 $m^2$
- Landscaping (Revegetated Land) – 1,090 $m^2$

### 5.5.2 Treatment Nodes

The treatment nodes proposed as part of the water cycle treatment train include:

1. Pit Insert Baskets (Spel Stormsacks)
2. Detention Basin
3. GPT (Spel Vortceptor SV).096

### 5.5.3 Pit Insert Baskets

The model includes pit insert baskets in each pit in the paved areas, ATLAN (formerly SPEL) Stormsacks. The Stormsack collects litter, sediment, and bound oils at the pit. The product brochure has been included in Appendix D.

### 5.5.4 Detention Basin

A detention basin has been included in the MUSIC model as part of the rainwater tank with volume based on the information in Section 5.6.4.

### 5.5.5 GPT

A GPT has been modelled at the end of the treatment train, in this case an ATLAN (formerly SPEL) Vortceptor SVO.096. This unit collects various pollutants that make it through the stormsacks, and treats flows of up to 96L/s. The product Brochure has been included in Appendix D.

### 5.5.6 Results

Results of the MUSIC model are summarised in the table below. The full MUSIC-link report is contained at **Appendix B**.

**Table 5-2 Summary of MUSIC model results**

| Pollutant | Minimum Reduction | Achieved Reduction | Comments |
|---|---|---|---|
| Flow | | 0.01% | |
| Total Suspended Solids (TSS) | 80% | 87.7% | Treatment is greater than target |
| Total Phosphorus (TP) | 45% | 49.4% | Treatment is greater than target |
| Total Nitrogen (TN) | 45% | 43.0% | Treatment is close to target |
| Gross Pollutants | 80% | 100% | Treatment is greater than target |

The results show that the treatment train generally meets all the pollutant reduction targets for required by Central Coast Council.

## 5.6 DRAINS Model

A DRAINS model has been developed for the site based on the stormwater plan (see **Appendix A**) to ensure the development meets Central Coast Council site discharge requirements.

### 5.6.1 Model Parameters

The model was set up in DRAINS version 2023.06.8578.17142 based on the following parameters:

| Parameter | Value |
|---|---|
| Paved (impervious area depression storage | 1 mm |
| Supplementary area depression storage | 1 mm |
| Grassed (pervious) area depression storage | 5 mm |
| Soil Type | 2 |
| Rainfall | Specific to the site |
| Antecedent Moisture Condition | 3 |

### 5.6.2 Catchments

The existing site was modelled as pervious with a time of concentration estimated using the Kinematic Wave equation based on the following parameters:

$$t_c = \frac{6.94(L.n^*)^{0.6}}{I^{0.4}.S^{0.3}}$$

where: $t_c$ is the time of concentration
$L$ is the overland flow path length = 70 m of pervious and 30 m for impervious
$n^*$ is the surface roughness coefficient = 0.1 for grassed areas and 0.012 for impervious areas
$S$ is the site slope = variable between 1% and 30%
$I$ is the rainfall intensity in mm/hr, this is set during each run of the DRAINS model

The predeveloped site was estimated to be 0% impervious. The post-developed site used the following total impervious and pervious areas:

- Impervious area = 9,385 m$^2$
- Pervious area = 722 m$^2$

The full roof area of the developed site is assumed to drain to the rainwater tank then to the on-site detention system.

### 5.6.3 Results

Results of the DRAINS model are contained in **Appendix C**. The peak outflows from the DRAINS model are summarised in Table 5-3 below.

**Table 5-3 Summary of DRAINS peak outflows**

| Storm Event | Predeveloped Flows (L/s) | Developed Flows (L/s) | Comments |
|---|---|---|---|
| 1EY | 95 | 97 | Developed close predeveloped flows |
| 50% | 146 | 104 | Developed flows less than predeveloped flows |
| 20% | 250 | 127 | Developed flows less than predeveloped flows |
| 10% | 362 | 142 | Developed flows less than predeveloped flows |
| 5% | 445 | 159 | Developed flows less than predeveloped flows |
| 2% | 554 | 173 | Developed flows less than predeveloped flows |
| 1% | 666 | 207 | Developed flows less than predeveloped flows |

The results show that the proposed OSD meets the Central Coast Council requirements of restricting post-development flows to within pre-development flows.

These results comply with the DCP 2022 and achieve the intent of restricting peak flows.

### 5.6.4 On-Site Detention Tank

The proposed OSD volume will be provided by the detention basin. The proposed OSD will have the following:

- Invert level = 224.5 m AHD
- Top water level of 226.49 m AHD (1%AEP).

Outlet controls will be downstream of the detention basin at Pit ½, which will have:

- 155 mm diameter low level outlet at IL 222.65 m AHD directing low flows to the ATLAN Vortceptor
- 150mm orifice at invert level 224.5 m AHD allowing some flows in events greater than X to bypass the GPT
- An overflow weir at IL 226.2 for extreme events.

Details of the detention basin are contained in **Appendix A**.

## 5.7 Overland Drainage Target

### 5.7.1 Upstream Catchment

Topographical conditions suggest little of the upstream catchment will flow through the site. on street kerb and gutter will prevent flows from entering the site.

## 5.8 Flooding Target

the site is outside flood affected areas.

# 6 Operation and Maintenance Plan

Operations and maintenance of the polltuion control measures should be carried out to manufacturers specifications.

# 7 References

BMT WBM Pty Ltd. (August 2010). *Draft New South Wales MUSIC Modelling Guidelines*.

Central Coast Council. (2022). *Development Control Plan 2022*

# 8 Appendices

# APPENDIX A

**A. Cubo Drawings**

# APPENDIX B

**B. MUSIC Model Outputs**

# APPENDIX C

**C. DRAINS Model Outputs**

# APPENDIX D

**D. Third Part Product Brochures**

DEVICE NAME : _AUTOCAD PDF (GENERAL DOCUMENTATION).PC3

# PROPOSED ASPHALT PROCESSING PLANT
# For: STATELINE ASPHALT PTY LTD
# 133 SOMERSBY FALLS ROAD, SOMERSBY NSW

| DRAWING REGISTER - CIVIL WORKS | |
|---|---|
| 23053-CI-000 | COVER SHEET, DRAWING REGISTER & LOCALITY PLAN |
| 23053-CI-010 | CIVIL SITE PLAN |
| 23053-CI-050 | YARD CROSS SECTIONS |
| 23053-CI-051 | NORTH BOUNDARY CUT - LONG SECTION |
| 23053-CI-052 | SOUTH BOUNDARY CUT & FILL - LONG SECTION |
| 23053-CI-055 | STORMWATER DRAINAGE - LONG SECTIONS SHEET 1 |
| 23053-CI-056 | STORMWATER DRAINAGE - LONG SECTIONS SHEET 2 |
| 23053-CI-057 | ALTERNATIVE RETAINING WALL - OPTION |
| 23053-CI-150 | SWEPT PATHS - HEAVY RIGID DELIVERY VEHICLE |
| 23053-CI-152 | SWEPT PATHS - ARTICULATED DELIVERY VEHICLE |
| 23053-CI-154 | SWEPT PATHS - ASPHALT DELIVERY VEHICLE |
| 23053-CI-156 | SWEPT PATHS - TRUCK & DOG DELIVERY VEHICLE |
| 23053-CI-158 | SWEPT PATHS - PASSENGER VEHICLE ENTRY & EXIT |
| 23053-CI-200 | SEDIMENT AND EROSION CONTROL PLAN |
| 23053-CI-210 | SEDIMENT AND EROSION CONTROL DETAILS |
| 23053-CI-215 | BLUE BOOK CALCULATIONS |

LOCALITY PLAN
NTS

| REV | DATE | REVISIONS | DRN | CHK |
|---|---|---|---|---|
| 1 | 1/11/23 | PRELIMINARY | IB | DB |

DESIGNED: DB
DRAWN: IB
CHECKED: VC
RECOMMENDED: ..... PROJECT MANAGER DATE
DATUM: AHD A1
COORDINATE SYSTEM:
APPROVED: ..... PROJECT DIRECTOR DATE

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Phone: (02) 4326 0990 Email: admin@cubo.net.au

STATELINE ASPHALT PTY LTD
PROPOSED ASPHALT PROCESSING FACILITY
133 SOMERSBY FALLS ROAD
SOMERSBY
COVER SHEET, LOCALITY PLAN AND DRAWING REGISTER

DRAWING STATUS: FOR APPROVAL
FOR CONSTRUCTION PURPOSES WHEN STAMPED

DRAWING NUMBER: 23053-CI-000 REV 1

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm A1 ON ORIGINAL

DEVICE NAME : AUTOCAD PDF (GENERAL DOCUMENTATION).PC3
DATE PLOTTED: 01 November, 2023 - 9:36pm

ALL STORMWATER PITS TO BE FITTED WITH ATLAN STORMSACK WITH OIL BOOMS(TYP)

OSD BASIN
* IL 224.5mAHD
* STORAGE VOLUME = 244 $m^3$
* 1.5m DEEP.
* MAX.1:4 BATTERS.
* OVERFLOWS ALONG SOUTH BOUNDARY DRIVEWAY.

VEHICLE ACCESS CROSSING MODIFIED TO ASSIST WITH VEHICLE SWEPT PATHS - SEE DRAWINGS 23053-CI-150,152,154,156,158.

CONNECT Ø300 OUTLET PIPE FROM SITE STORMWATER SYSTEM INTO EXISTING IAD PIT AND MAKE GOOD

DRAINAGE CONTROL PIT WITH Ø150 SHARP EDGED ORIFICE IL 222.65. PIT TO BE INSTALLED WITH ATLAN 'VORTCEPTOR' MODEL SVO.096 - REFER MANUFACTURER'S DETAILS.

EXISTING IAD PIPE

PROPOSED PROCESSING FACILITY

FFL= 226.75

SOMERSBY FALLS RD

1/050

2/050

PIT 1/10 SL226.50 IL224.964
PIT 1/11 SL226.50 IL225.03
PIT 1/12 SL226.50 IL225.10
PIT 1/13 SL226.50 IL225.43
PIT 1/14 SL226.50 IL 225.75
Ø300 AT 1% GRADE
150.75m

PIT 3/2 OSD IL224.50
Ø450 AT 1% GRADE
PIT 3/1 SL226.30 IL224.44
Ø375 AT 1% GRADE
PIT 1/9 SL226.50 IL224.26
PIT 1/8 SL226.50 IL224.06
PIT 1/7 SL226.50 IL223.86
PIT 1/6 SL226.50 IL223.66
PIT 1/5 SL226.50 IL223.46
PIT 1/4 SL226.50 IL223.26
PIT 1/3 SL226.30 IL223.06
PIT 1/2 SL226.30 IL222.63
3.m SETBACK 214.80m

PIT 2/2 SL226.50 IL 225.80
Ø225 AT 1% GRADE
PIT 2/1 SL226.60 IL 225.58
68.58m
LANDSCAPE BUFFER

Ø300 AT 4.6% GRADE
EXISTING IAD PIT LL 222.57 INLET IL 221.71 OUTLET IL221.29

SL226.75
SL226.74
SL226.65

TRUCK PARKING BAY
AISLE WAY 1
AISLE WAY 2
AISLE WAY 3
AISLE WAY 4
AISLE WAY 5

RAP 40%
WASTE / RAW 60%
STORMWATER DETENTION BASIN
4.m SETBACK

SURFACE WATER FLOW DIRECTION

## CIVIL SITE PLAN
SCALE 1:400

0 10 20 30 40m
SCALE 1:400 @A1

| REV | DATE | REVISIONS | DRN | CHK |
|---|---|---|---|---|
| 1 | 1/11/23 | PRELIMINARY | IB | DB |

DESIGNED: IB
DRAWN: DB
CHECKED: VC
RECOMMENDED: PROJECT MANAGER DATE
DATUM: AHD
A1
COORDINATE SYSTEM:
APPROVED: PROJECT DIRECTOR DATE

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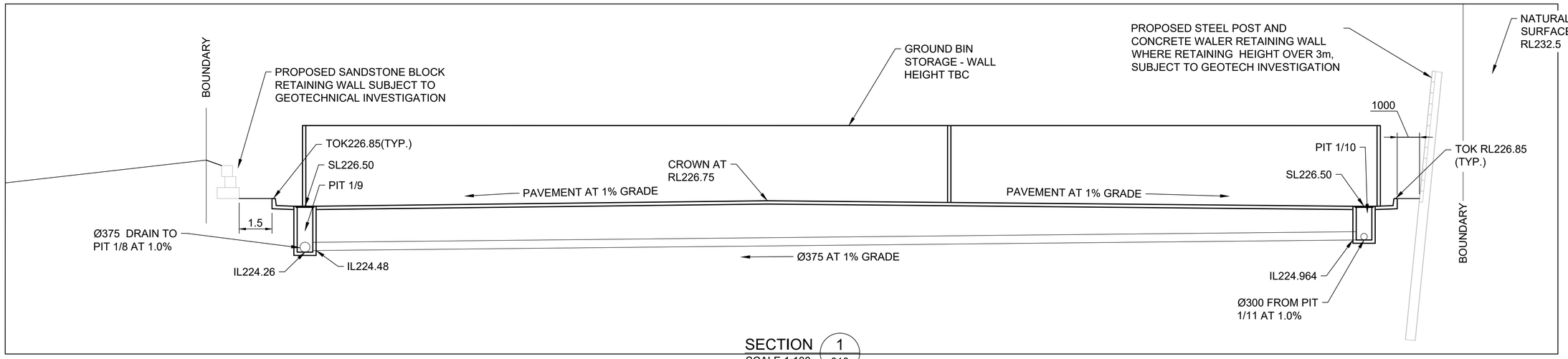
STATELINE ASPHALTS PTY LTD
PROPOSED ASPHALT PROCESSING FACILITY
133 SOMERSBY FALLS ROAD
SOMERSBY
CIVIL SITE PLAN

DRAWING STATUS: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES
DRAWING NUMBER: 23053-CI-010
REV 1

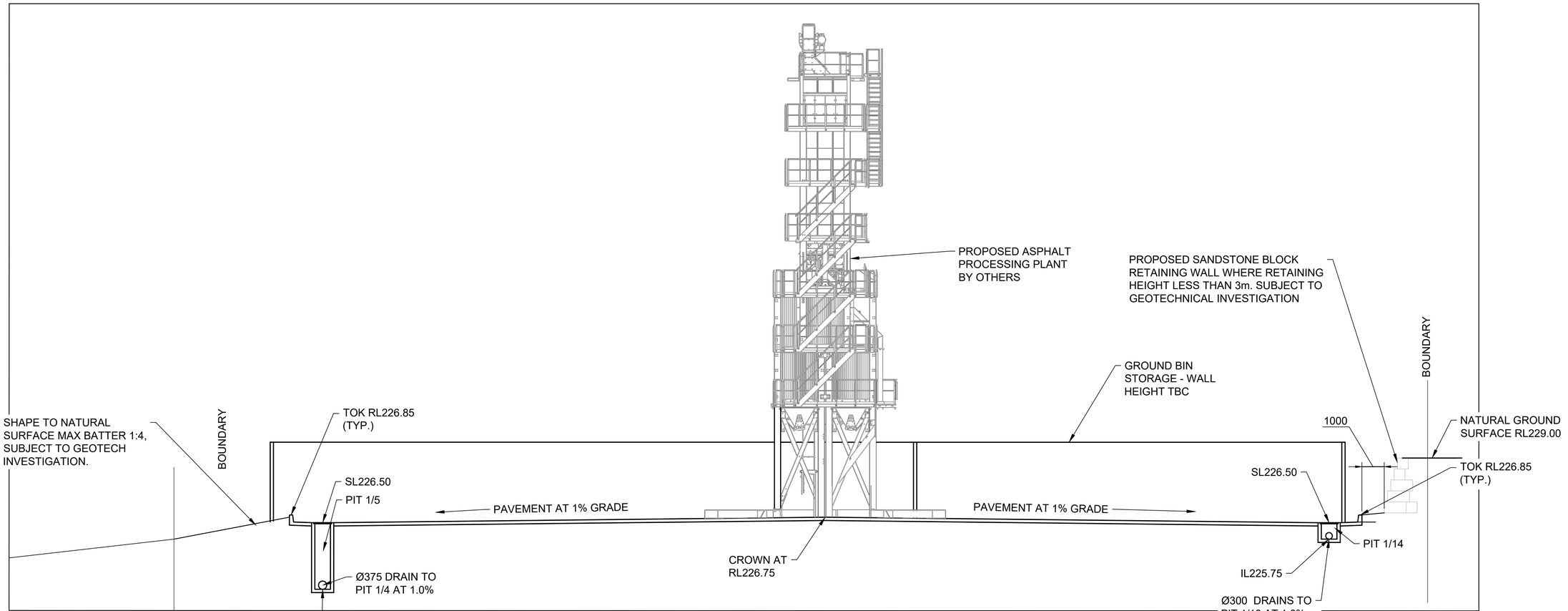
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm A1 ON ORIGINAL

XREFs: X:\2053\CIVIL_X\2053\SURVEY\
CAD FILE: G:\Projects\23 P\2053 133 Somersby Falls Rd Somersby\Drawings\Civil\23053-CI-010 Site Plan.dwg

DEVICE NAME : _AUTOCAD PDF (GENERAL DOCUMENTATION).PC3




SECTION 1
SCALE 1:100
010




SECTION 2
SCALE 1:100
010

| REV | DATE | REVISIONS | DRN | CHK |
|---|---|---|---|---|
| 1 | 1/11/23 | PRELIMINARY | IB | DB |

0 1 2 4 6 8 10m
SCALE 1:100 @A1

| | | | |
|---|---|---|---|
| DESIGNED: IB | DATUM: AHD | A1 | |
| DRAWN: DB | | | |
| CHECKED: VC | COORDINATE SYSTEM: | | |
| RECOMMENDED: | APPROVED: | | |
| PROJECT MANAGER DATE | PROJECT DIRECTOR DATE | | |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PROPOSED ASPHALT PROCESSING FACILITY
133 SOMERSBY FALLS ROAD
SOMERSBY
YARD CROSS SECTIONS

DRAWING STATUS: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

DRAWING NUMBER: 23053-CI-050 REV 1

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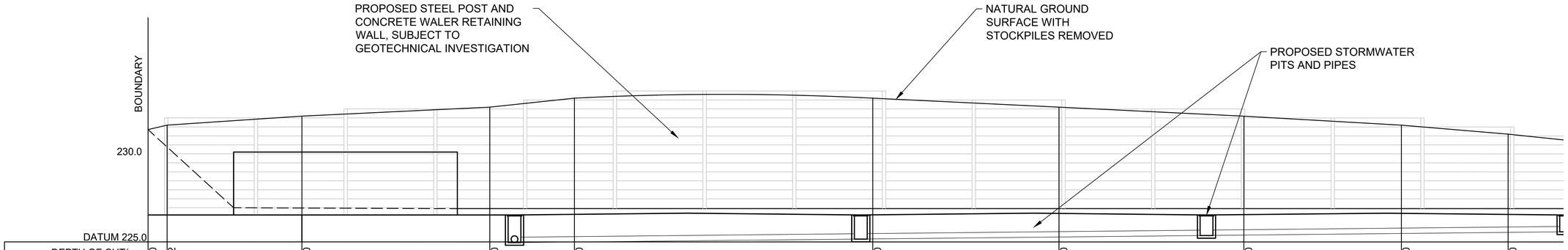
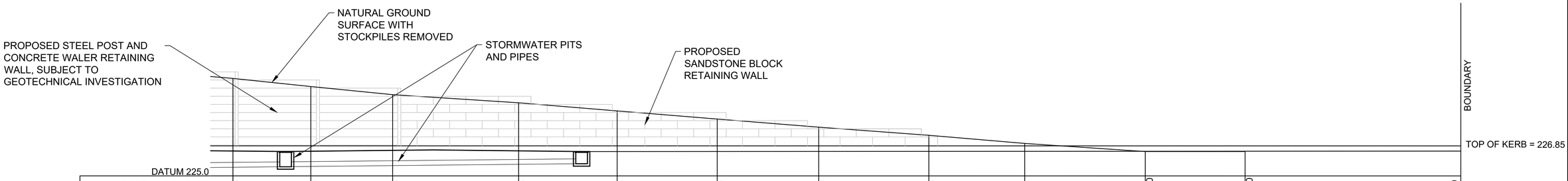
DEVICE NAME : _AUTOCAD PDF (GENERAL DOCUMENTATION).PC3




| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEPTH OF CUT/ RETAINING WALL HEIGHT | 0.000 | 1.062 | 5.100 | 5.600 | 6.100 | 6.100 | 5.600 | 5.100 | 4.600 | 4.100 | | |
| TOP OF WALL/ NATURAL SURFACE | 231.25 | 231.5 | 232.0 | 232.5 | 233.0 | 233.0 | 232.5 | 232.0 | 231.5 | 231.0 | | |
| DESIGN BASE OF WALL LEVEL | 231.25 | 226.90 | 226.90 | 226.90 | 226.90 | 226.90 | 226.90 | 226.90 | 226.90 | 226.90 | | |
| CHAINAGE ALONG NORTH BOUNDARY | 0.000 | 1.06 | 8.57 | 19.04 | 23.76 | 40.38 | 50.76 | 61.06 | 69.84 | 75.79 | | |

## NORTH BOUNDARY CUT - LONG SECTION

SCALE 1:125 AT A1




| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEPTH OF CUT/ RETAINING WALL HEIGHT | 4.100 | 3.600 | 3.100 | 2.600 | 2.100 | 1.600 | 1.100 | 0.600 | 0.100 | -0.400 | -0.400 | 0.000 |
| TOP OF WALL/ NATURAL SURFACE | 231.0 | 230.5 | 230.0 | 229.5 | 229.0 | 228.5 | 228.0 | 227.5 | 227.0 | 226.5 | 226.5 | 0.000 |
| DESIGN BASE OF WALL LEVEL | 226.90 | | 226.90 | 226.90 | 226.90 | 226.90 | 226.90 | 226.90 | 226.90 | 226.90 | 226.90 | 226.90 |
| CHAINAGE ALONG NORTH BOUNDARY | 75.79 | 80.57 | 85.60 | 93.35 | 99.40 | 105.56 | 111.80 | 118.57 | 124.46 | 131.87 | 138.01 | 151.27 |

## NORTH BOUNDARY CUT - LONG SECTION

SCALE 1:125 AT A1

PROPOSED RETAINING WALL SUMMARY - NORTHERN BOUNDARY:

1. CH 0.917 AND CH 86.107 - VARIABLE HEIGHT STEEL POST AND CONCRETE WALER WALL TO STRUCTURAL ENG DETAILS
2. CH 86.107 AND CH 119.107 - VARIABLE HEIGHT SANDSTONE BLOCK WALL TO STRUCTURAL ENG DETAILS
3. CH 119.107 AND CH 151.268 - MAX 1:4 BATTER TO NATURAL GROUND SURFACE

| REV | DATE | REVISIONS | DRN | CHK |
|---|---|---|---|---|
| 1 | 1/11/23 | PRELIMINARY | IB | DB |

0 2.5 5 7.5 10 12.5m
SCALE 1:125 @A1

DESIGNED: IB
DRAWN: DB
CHECKED: VC
RECOMMENDED: PROJECT MANAGER DATE

DATUM: AHD A1
COORDINATE SYSTEM:
APPROVED: PROJECT DIRECTOR DATE

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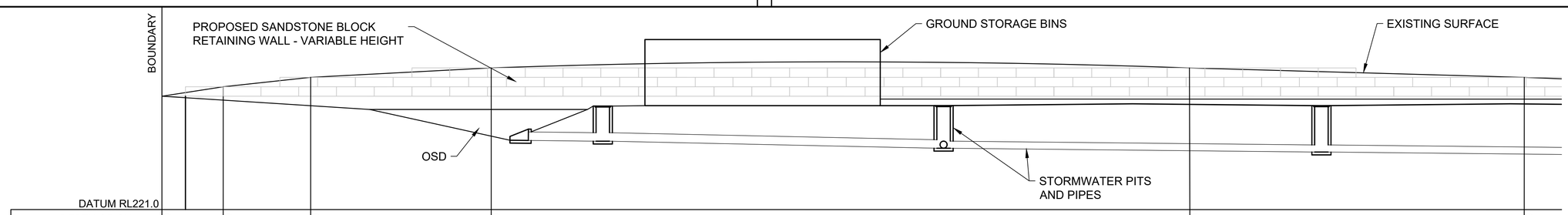
STATELINE ASPHALTS PTY LTD
PROPOSED ASPHALT PROCESSING FACILITY
133 SOMERSBY FALLS ROAD
SOMERSBY
NORTH BOUNDARY CUT - LONG SECTION

DRAWING STATUS: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

DRAWING NUMBER: 23053-CI-051 REV 1

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm A1 ON ORIGINAL

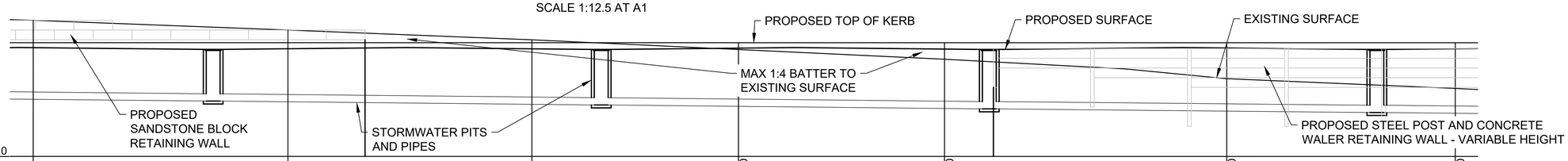
DEVICE NAME : _AUTOCAD PDF (GENERAL DOCUMENTATION).PC3




| DATUM RL221.0 | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEPTH OF CUT(+) HEIGHT OF FILL(-) | 0.000 | | 0.500 | | 1.000 | | 1.500 | | 1.600 | | 1.100 | | | |
| TOP OF WALL/ NATURAL SURFACE | 227.00 | | 227.50 | | 228.00 | | 228.50 | | 228.50 | | 228.00 | | | |
| DESIGN BASE OF WALL LEVEL | 227.00 | | 227.00 | | 227.00 | | 227.00 | | 226.90 | | 226.90 | | | |
| CHAINAGE ALONG SOUTH BOUNDARY | 0.000 | | 3.25 | | 7.88 | | 17.44 | | 54.47 | | 72.15 | | | |

## SOUTH BOUNDARY - LONG SECTION CH 0.00 TO 72.154

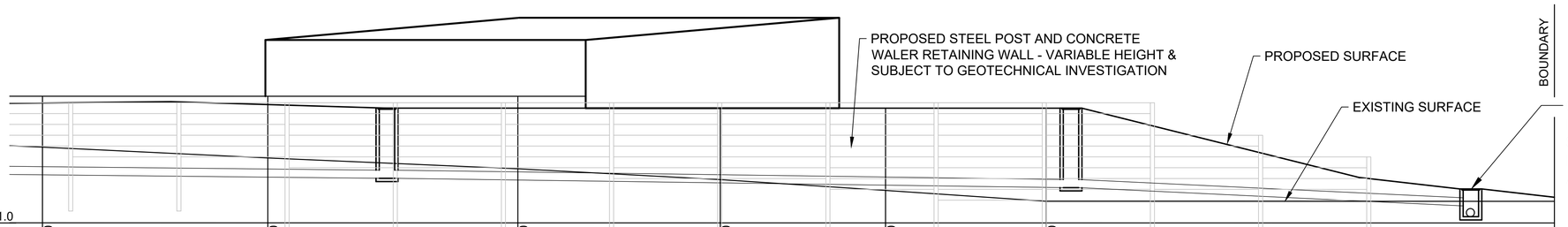
SCALE 1:12.5 AT A1




| DATUM RL221.0 | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEPTH OF CUT(+) HEIGHT OF FILL(-) | 1.100 | | 0.600 | | 0.100 | | -0.400 | | -0.900 | | -1.400 | | -1.900 | |
| TOP OF WALL/ NATURAL SURFACE | 228.00 | | 227.50 | | 227.00 | | 226.50 | | 226.00 | | 225.50 | | 225.00 | |
| DESIGN BASE OF WALL LEVEL | 226.90 | | 226.90 | | 226.90 | | 226.90 | | 226.90 | | 226.90 | | 226.90 | |
| CHAINAGE ALONG SOUTH BOUNDARY | 72.15 | | 85.28 | | 97.84 | | 108.48 | | 119.09 | | 133.63 | | 145.40 | |

## SOUTH BOUNDARY - LONG SECTION CH 72.154 TO 145.40

SCALE 1:125 AT A1




| DATUM RL221.0 | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEPTH OF CUT(+) HEIGHT OF FILL(-) | -1.900 | | -2.400 | | -2.900 | | -3.250 | | -3.750 | | -4.250 | | 0.000 | |
| TOP OF WALL/ NATURAL SURFACE | 225.00 | | 224.50 | | 224.00 | | 223.50 | | 223.00 | | 222.50 | | 222.40 | |
| DESIGN BASE OF WALL LEVEL | 226.90 | | 226.90 | | 226.90 | | 226.75 | | 226.75 | | 226.75 | | | |
| CHAINAGE ALONG SOUTH BOUNDARY | 145.40 | | 155.82 | | 167.38 | | 176.74 | | 184.37 | | 191.80 | | 215.38 | |

PROPOSED RETAINING WALL SUMMARY - SOUTHERN BOUNDARY:

1. CH1.246 AND CH89.246 - VARIABLE HEIGHT SANDSTONE BLOCK WALL
2. CH89.246 AND CH121.615 - MAX 1:4 BATTER TO NATURAL GROUND SURFACE
3. CH121.615 AND CH206.805 - VARIABLE HEIGHT STEEL POST AND CONCRETE WALER WALL TO STRUCTURAL ENG DETAILS

## SOUTH BOUNDARY - LONG SECTION CH 145.40 TO 349.03

SCALE 1:125 AT A1

ALL RETAINING WALLS SUBJECT TO GEOTECHNICAL ENGINEERS RECOMMENDATIONS

| REV | DATE | REVISIONS | DRN | CHK |
|---|---|---|---|---|
| 1 | 1/11/23 | PRELIMINARY | IB | DB |

0 2.5 5 7.5 10 12.5m
SCALE 1:125 @A1

DESIGNED: IB
DRAWN: DB
CHECKED: VC
RECOMMENDED: PROJECT MANAGER DATE

DATUM: AHD A1
COORDINATE SYSTEM:
APPROVED: PROJECT DIRECTOR DATE

CUBO CONSULTING PTY LTD
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STATELINE ASPHALTS PTY LTD

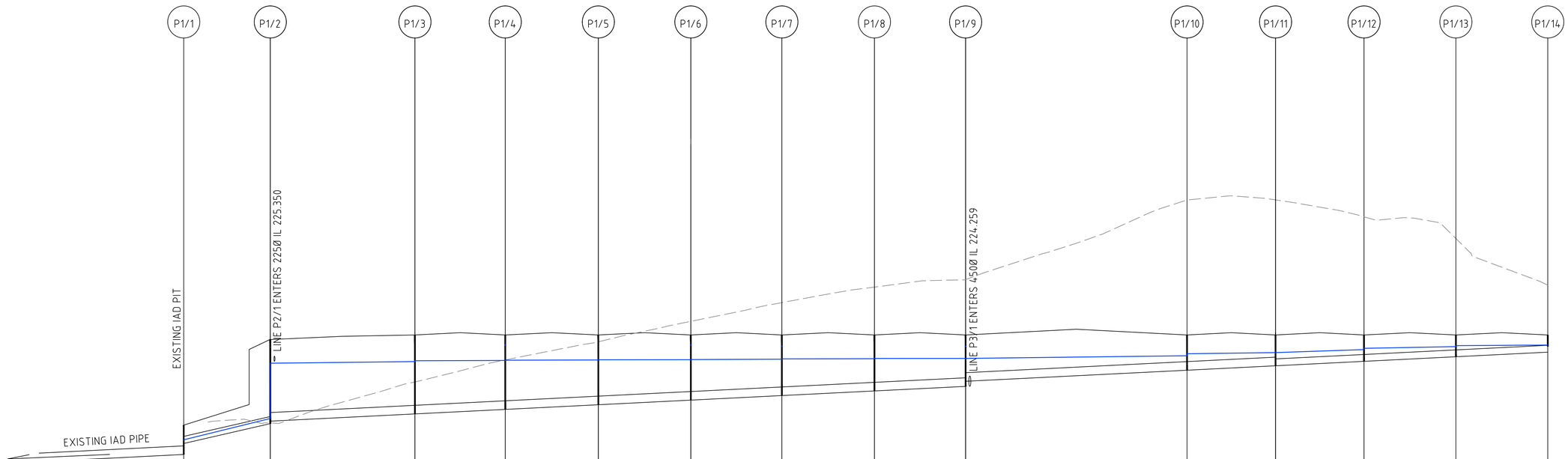
PROPOSED ASPHALT PROCESSING FACILITY
133 SOMERSBY FALLS ROAD
SOMERSBY
SOUTH BOUNDARY CUT & FILL - LONG SECTION

DRAWING STATUS: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

DRAWING NUMBER: 23053-CI-052 REV 1

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm A1 ON ORIGINAL

DEVICE NAME : _AUTOCAD PDF (GENERAL DOCUMENTATION).PC3




| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FLOW RATE 10%AEP (l/sec) VELOCITY (m/s) | 131 1.2 | 107 1.0 | 104 0.9 | 103 0.9 | 102 0.9 | 102 0.9 | 101 0.9 | 101 0.9 | 135 1.2 | 114 1.0 | 92 1.3 | 72 1.0 | 51 0.7 | |
| PIPE DETAILS SLOPE/GRADE | 300Ø PVC 4.6% | 375Ø PVC 1.0% | 375Ø PVC 1.0% | 375Ø PVC 1.0% | 375Ø PVC 1.0% | 375Ø PVC 1.0% | 375Ø PVC 1.0% | 375Ø PVC 1.0% | 375Ø PVC 1.0% | 375Ø PVC 1.0% | 300Ø PVC 1.0% | 300Ø PVC 1.0% | 300Ø PVC 1.0% | |
| DATUM RL 217.5 | | | | | | | | | | | | | | |
| HGL | 221.930 | 222.860<br>225.268 | 225.340<br>225.376 | 225.389<br>225.400 | 225.410<br>225.418 | 225.423<br>225.427 | 225.443<br>225.456 | 225.466<br>225.475 | 225.477<br>225.479 | 225.595<br>225.681 | 225.731<br>225.771 | 225.864<br>225.918 | 225.993<br>226.035 | 226.059 |
| DEPTH TO INVERT | 0.800 | 3.665<br>3.558 | 3.441 | 3.244 | 3.041 | 2.839 | 2.641 | 2.439 | 2.241<br>2.019 | 1.536 | 1.344 | 1.15 | 0.951 | 0.750 |
| INVERT LEVEL | 221.770 | 222.636<br>222.743 | 223.059 | 223.256 | 223.459 | 223.661 | 223.859 | 224.061 | 224.259<br>224.481 | 224.964 | 225.156 | 225.350 | 225.548 | 225.75 |
| FINISHED SURFACE | 222.57 | 226.301 | 226.500 | 226.500 | 226.500 | 226.500 | 226.500 | 226.500 | 226.500 | 226.500 | 226.500 | 226.500 | 226.500 | 226.500 |
| EXISTING SURFACE | 222.57 | 222.663 | 224.451 | 225.415 | 226.201 | 227.095 | 227.910 | 228.587 | 228.912 | 232.385 | 232.389 | 231.651 | 230.706 | 228.671 |
| CHAINAGE | 0.000 | 18.853<br>18.853 | 31.525<br>50.378 | 19.680<br>70.058 | 20.28<br>90.338 | 20.16<br>110.498 | 19.83<br>130.328 | 20.18<br>150.508 | 19.86<br>170.368 | 48.25<br>218.618 | 19.14<br>237.758 | 19.42<br>257.178 | 19.93<br>277.108 | 20.12<br>297.228 |

DRAINAGE LONGITUNDINAL SECTION FOR LINE 1
SCALES: HORIZONTAL 1:500 VERTICAL 1:100

| REV | DATE | REVISIONS | DRN | CHK |
|---|---|---|---|---|
| 1 | 1/11/23 | PRELIMINARY | IB | DB |

DESIGNED: IB
DRAWN: DB
CHECKED: VC
RECOMMENDED: PROJECT MANAGER DATE

DATUM: AHD
A1
COORDINATE SYSTEM:
APPROVED: PROJECT DIRECTOR DATE

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Suite 6, 220 The Entrance Road, Erina NSW
Phone: (02) 4326 0990 Email: admin@cubo.net.au

STATELINE ASPHALTS PTY LTD

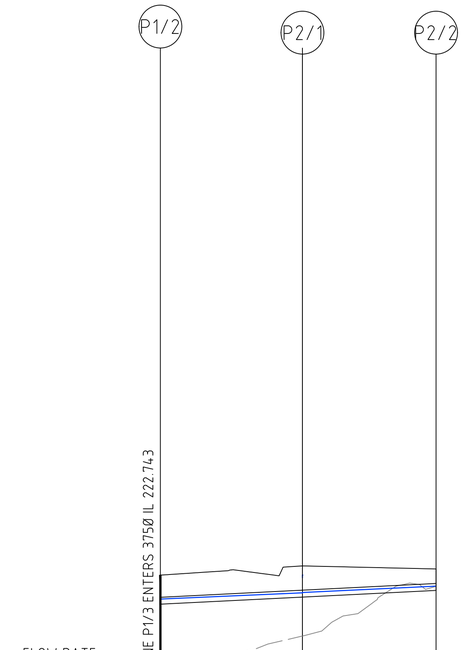
PROPOSED ASPHALT PROCESSING FACILITY
133 SOMERSBY FALLS ROAD
SOMERSBY
STORMWATER DRAINAGE - LONG SECTIONS SHEET 1

DRAWING STATUS: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

DRAWING NUMBER: 23053-CI-055
REV: 2

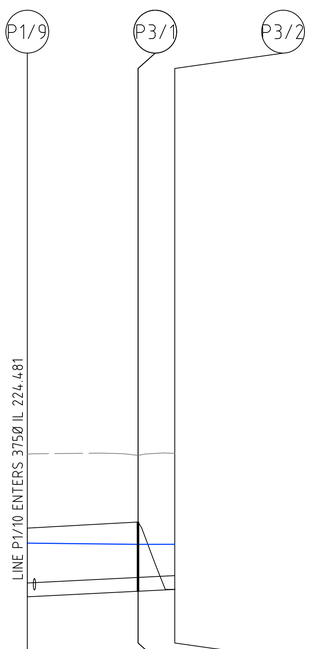
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm A1 ON ORIGINAL

DEVICE NAME : _AUTOCAD PDF (GENERAL DOCUMENTATION).PC3




| | | | |
|---|---|---|---|
| FLOW RATE 10%AEP (l/sec) | | 29 | 31 |
| VELOCITY (m/s) | | 0.72 | 0.78 |
| PIPE DETAILS | | 225Ø | 225Ø |
| SLOPE/GRADE | | 1.0% | 1.0% |
| DATUM RL 220.6 | | | |
| HGL | 225.518 | 225.720 | 225.731 / 225.938 |
| DEPTH TO INVERT | 0.951 | 1.018 | 0.700 |
| INVERT LEVEL | 225.350 | 225.582 | 225.800 |
| FINISHED SURFACE | 226.301 | 226.600 | 226.500 |
| EXISTING SURFACE | 222.663 | 224.310 | 225.933 |
| CHAINAGE | 0.000 | 23.189 | 45.000 |
| | | 23.189 | 21.811 |

DRAINAGE LONGITUNDINAL SECTION FOR LINE 2
SCALES: HORIZONTAL 1:500 VERTICAL 1:100




| | | | |
|---|---|---|---|
| FLOW RATE 10%AEP (l/sec) | | 90 | 90 |
| VELOCITY (m/s) | | 0.57 | 0.57 |
| PIPE DETAILS | | 450Ø | 450Ø |
| SLOPE/GRADE | | 1.0% | 1.0% |
| DATUM RL 219.3 | | | |
| HGL | 226.010 | 225.971 | 225.973 |
| DEPTH TO INVERT | 2.241 | 2.260 | 0.000 |
| INVERT LEVEL | 224.259 | 224.440 | 224.500 |
| FINISHED SURFACE | 226.500 | 226.700 | 224.500 |
| EXISTING SURFACE | 228.912 | 228.875 | 228.940 |
| CHAINAGE | 0.000 | 18.080 | 24.071 |
| | | 18.080 | 5.991 |

DRAINAGE LONGITUNDINAL SECTION FOR LINE 3
SCALES: HORIZONTAL 1:500 VERTICAL 1:100

| REV | DATE | REVISIONS | DRN | CHK |
|---|---|---|---|---|
| 1 | 1/11/23 | PRELIMINARY | IB | DB |

DESIGNED: IB
DRAWN: DB
CHECKED: VC
RECOMMENDED: PROJECT MANAGER DATE

DATUM: AHD
A1
COORDINATE SYSTEM:
APPROVED: PROJECT DIRECTOR DATE

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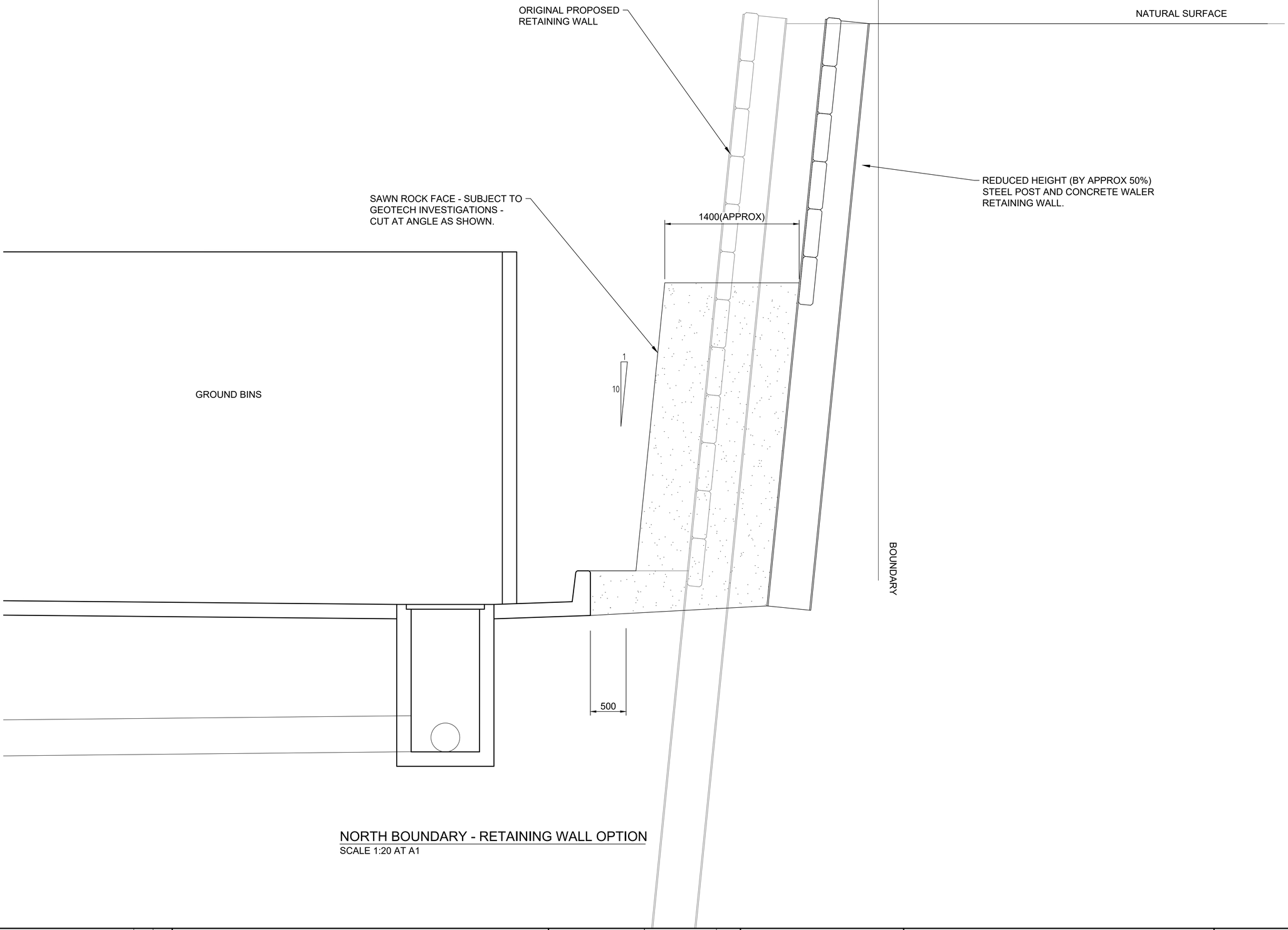
STATELINE ASPHALTS PTY LTD
PROPOSED ASPHALT PROCESSING FACILITY
133 SOMERSBY FALLS ROAD
SOMERSBY
STORMWATER DRAINAGE - LONG SECTIONS SHEET 2

DRAWING STATUS: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

DRAWING NUMBER: 23053-CI-056
REV: 1

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm A1 ON ORIGINAL

DEVICE NAME : _AUTOCAD PDF (GENERAL DOCUMENTATION).PC3




NORTH BOUNDARY - RETAINING WALL OPTION
SCALE 1:20 AT A1

| REV | DATE | REVISIONS | DRN | CHK |
|---|---|---|---|---|
| 1 | 1/11/23 | PRELIMINARY | IB | DB |

0 0.5 1 1.5 2m
SCALE 1:20 @A1

DESIGNED: IB
DRAWN: DB
CHECKED: VC
RECOMMENDED: PROJECT MANAGER DATE

DATUM: AHD A1
COORDINATE SYSTEM:
APPROVED: PROJECT DIRECTOR DATE

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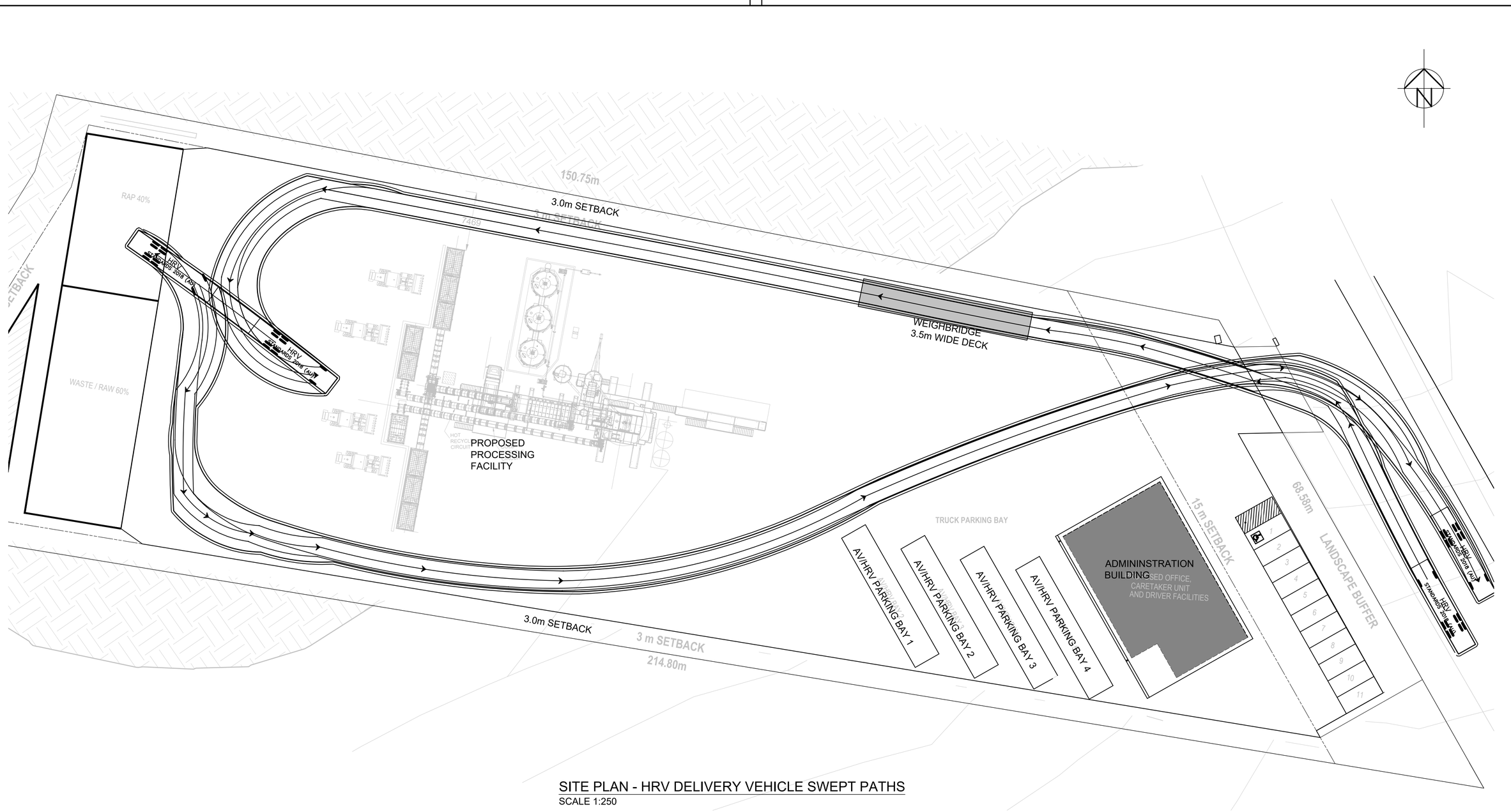
STATELINE ASPHALTS PTY LTD
PROPOSED ASPHALT PROCESSING FACILITY
133 SOMERSBY FALLS ROAD
SOMERSBY
ALTERNATIVE RETAINING WALL

DRAWING STATUS:
PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

DRAWING NUMBER: 23053-CI-057
REV: 1

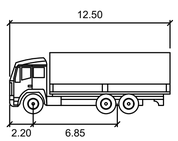
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm A1 ON ORIGINAL

DEVICE NAME : _AUTOCAD PDF (GENERAL DOCUMENTATION).PC3




## SITE PLAN - HRV DELIVERY VEHICLE SWEPT PATHS

SCALE 1:250




HRV

| | meters |
|---|---|
| Width | : 2.50 |
| Track | : 2.50 |
| Lock to Lock Time | : 6.0 |
| Steering Angle | : 36.7 |

| REV | DATE | REVISIONS | DRN | CHK |
|---|---|---|---|---|
| 1 | 1/11/23 | PRELIMINARY | IB | DB |

0 5 10 15 20 25m
SCALE 1:250 @A1

DESIGNED: IB
DRAWN: DB
CHECKED: VC
RECOMMENDED:
PROJECT MANAGER DATE

DATUM: AHD
A1
COORDINATE SYSTEM:
APPROVED:
PROJECT DIRECTOR DATE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STATELINE ASPHALTS PTY LTD

PROPOSED ASPHALT PROCESSING FACILITY
133 SOMERSBY FALLS ROAD
SOMERSBY
SWEPT PATHS - HEAVY RIGID DELIVERY VEHICLE

DRAWING STATUS:
PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

DRAWING NUMBER: 23053-CI-150
REV 1

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm A1 ON ORIGINAL

DEVICE NAME : _AUTOCAD PDF (GENERAL DOCUMENTATION).PC3

STORAGE BIN

STORAGE BIN

RAP 40%

WASTE / RAW 60%

3.0m SETBACK

150.75m

3.0m SETBACK

7469

WEIGHBRIDGE
3.5m WIDE DECK

PROPOSED PROCESSING FACILITY

HOT RECYCLE CIRCUIT

TRUCK PARKING BAY

AV/HRV PARKING BAY 1

AV/HRV PARKING BAY 2

AV/HRV PARKING BAY 3

AV/HRV PARKING BAY 4

ADMININSTRATION BUILDING
OFFICE, CARETAKER UNIT AND DRIVER FACILITIES

15 m SETBACK

68.58m

LANDSCAPE BUFFER

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.

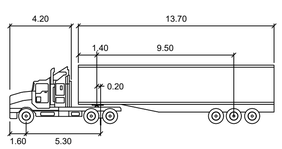
3 m SETBACK

214.80m

3.0m SETBACK

# SITE PLAN - ARTICULATED DELIVERY VEHICLE SWEPT PATHS

SCALE 1:250




S ARTICULATED 19M

meters

| | | | |
|---|---|---|---|
| Tractor Width | : 2.50 | Lock to Lock Time | : 6.0 |
| Trailer Width | : 2.50 | Steering Angle | : 27.7 |
| Tractor Track | : 2.50 | Articulating Angle | : 70.0 |
| Trailer Track | : 2.50 | | |

| REV | DATE | REVISIONS | DRN | CHK |
|---|---|---|---|---|
| 1 | 1/11/23 | PRELIMINARY | IB | DB |

0 5 10 15 20 25m

SCALE 1:250 @A1

DESIGNED: IB
DRAWN: DB
CHECKED: VC
RECOMMENDED:
PROJECT MANAGER DATE

DATUM: AHD
A1
COORDINATE SYSTEM:
APPROVED:
PROJECT DIRECTOR DATE

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STATELINE ASPHALTS PTY LTD

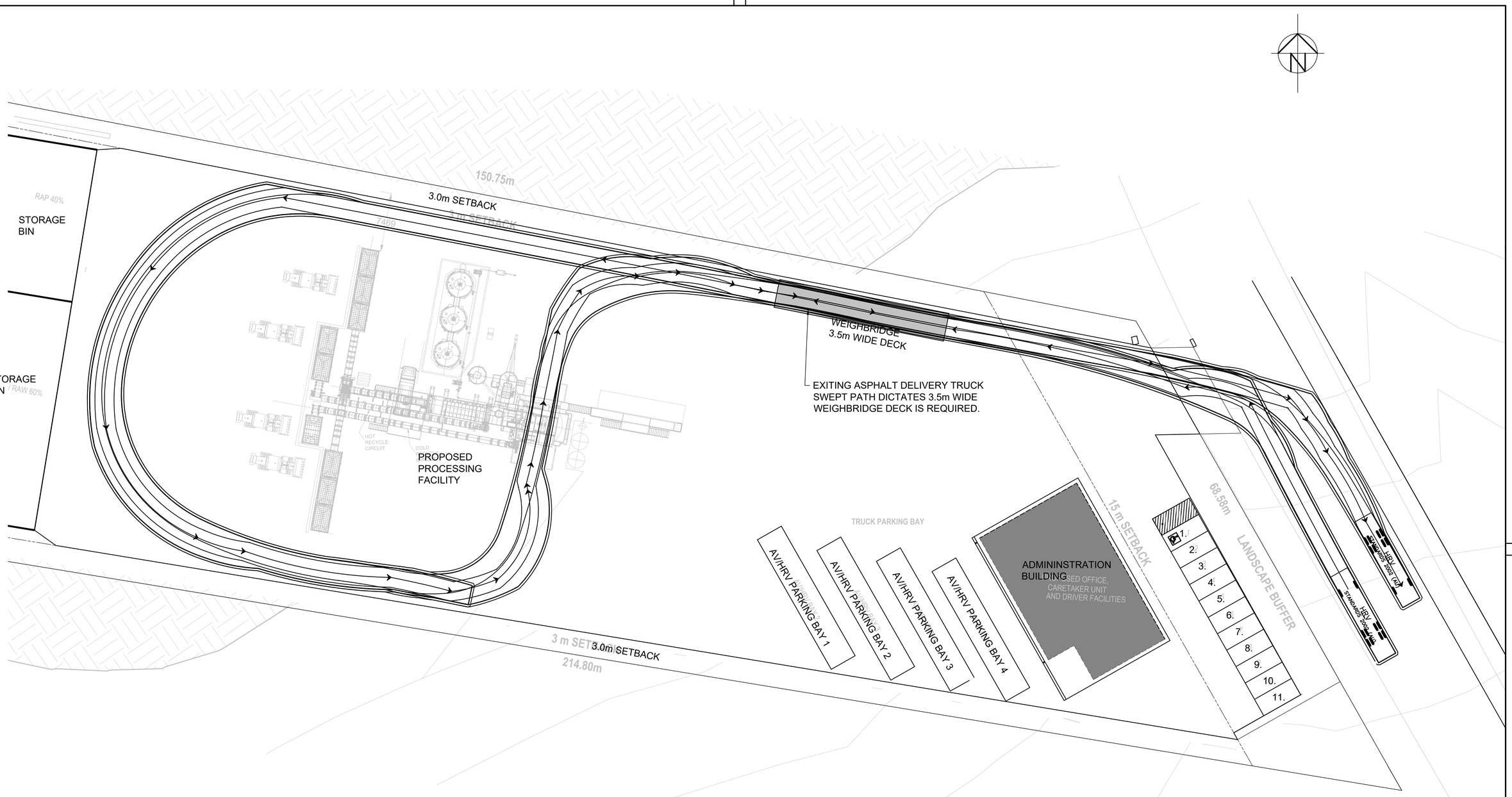
PROPOSED ASPHALT PROCESSING FACILITY
133 SOMERSBY FALLS ROAD
SOMERSBY
SWEPT PATHS - ARTICULATED DELIVERY VEHICLE

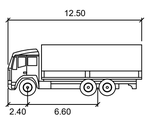
DRAWING STATUS: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

DRAWING NUMBER: 23053-CI-152
REV 1

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm A1 ON ORIGINAL

DEVICE NAME : _AUTOCAD PDF (GENERAL DOCUMENTATION).PC3




HRV

| | meters |
|---|---|
| Width | : 2.50 |
| Track | : 2.50 |
| Lock to Lock Time | : 6.0 |
| Steering Angle | : 35.2 |

## SITE PLAN - ASPHALT DELIVERY VEHICLE SWEPT PATHS

SCALE 1:250

| REV | DATE | REVISIONS | DRN | CHK |
|---|---|---|---|---|
| 1 | 1/11/23 | PRELIMINARY | IB | DB |

0 5 10 15 20 25m

SCALE 1:250 @A1

| | | | |
|---|---|---|---|
| DESIGNED: IB | DATUM: AHD | A1 | |
| DRAWN: DB | COORDINATE SYSTEM: | | |
| CHECKED: VC | | | |
| RECOMMENDED: | APPROVED: | | |
| PROJECT MANAGER DATE | PROJECT DIRECTOR DATE | | |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STATELINE ASPHALTS PTY LTD

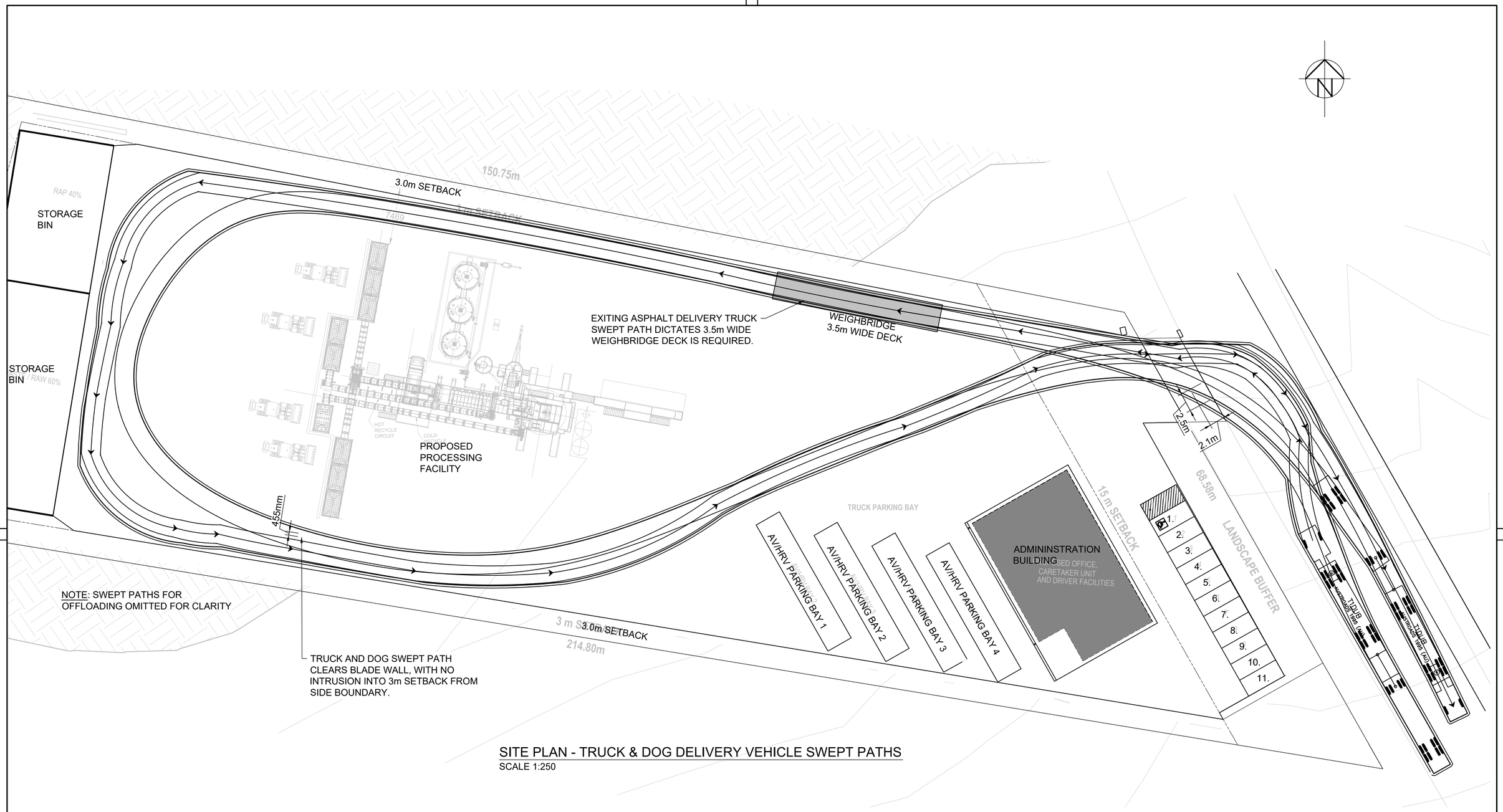
PROPOSED ASPHALT PROCESSING FACILITY
133 SOMERSBY FALLS ROAD
SOMERSBY
SWEPT PATHS - ASPHALT DELIVERY VEHICLE

DRAWING STATUS: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

DRAWING NUMBER: 23053-CI-154 REV 1

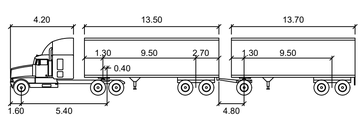
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm A1 ON ORIGINAL

DEVICE NAME : _AUTOCAD PDF (GENERAL DOCUMENTATION).PC3




## SITE PLAN - TRUCK & DOG DELIVERY VEHICLE SWEPT PATHS

SCALE 1:250




T1DUB

meters

| | | | |
|---|---|---|---|
| Tractor Width | : 2.50 | Lock to Lock Time | : 6.0 |
| Trailer Width | : 2.50 | Steering Angle | : 23.0 |
| Tractor Track | : 2.50 | Articulating Angle | : 70.0 |
| Trailer Track | : 2.50 | | |

| REV | DATE | REVISIONS | DRN | CHK |
|---|---|---|---|---|
| 1 | 1/11/23 | PRELIMINARY | IB | DB |

0 5 10 15 20 25m
SCALE 1:250 @A1

DESIGNED: IB
DRAWN: DB
CHECKED: VC
RECOMMENDED:
PROJECT MANAGER DATE

DATUM: AHD
A1
COORDINATE SYSTEM:
APPROVED:
PROJECT DIRECTOR DATE

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STATELINE ASPHALTS PTY LTD

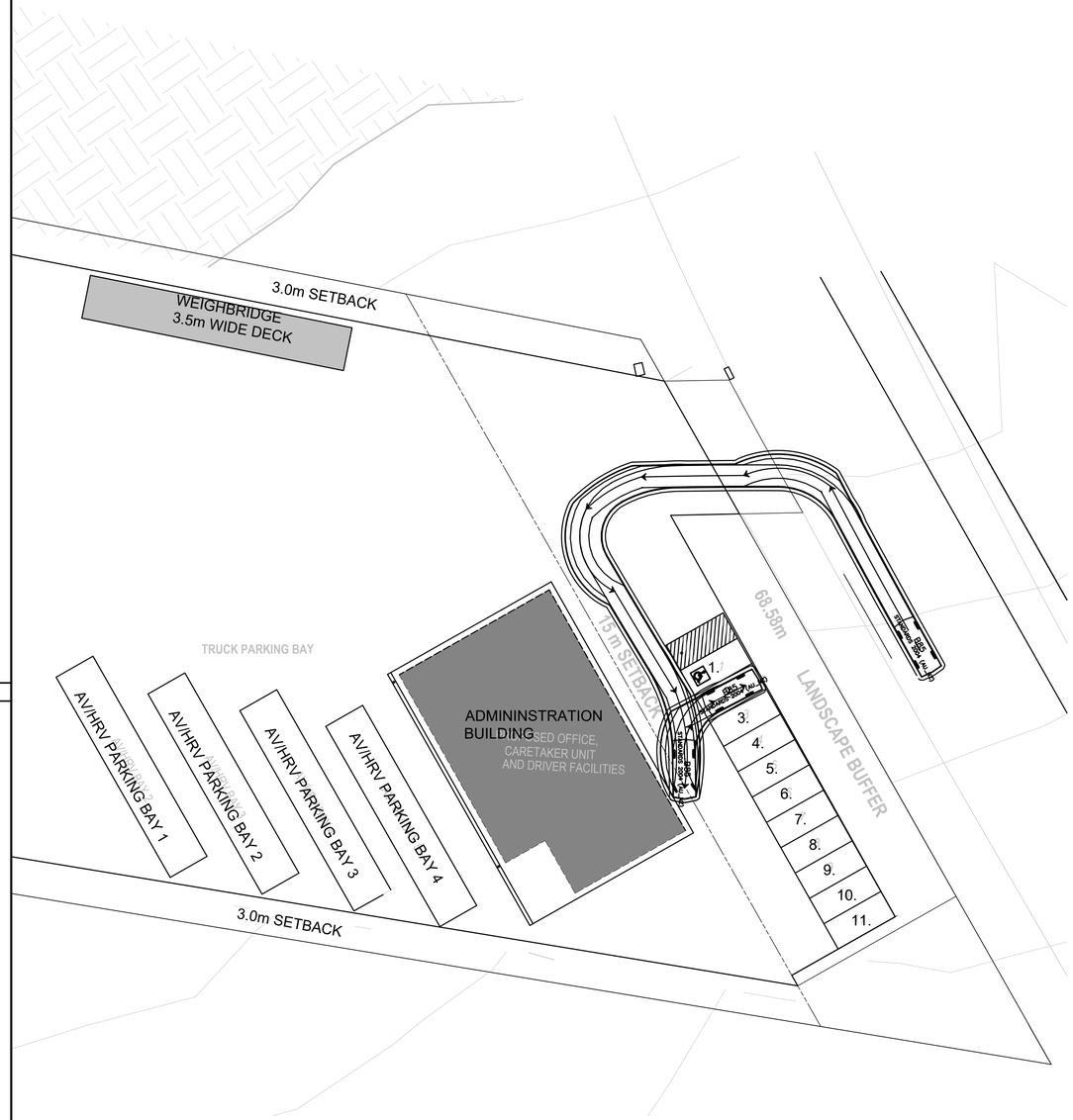
PROPOSED ASPHALT PROCESSING FACILITY
133 SOMERSBY FALLS ROAD
SOMERSBY
SWEPT PATHS - TRUCK & DOG DELIVERY VEHICLE

DRAWING STATUS:
PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

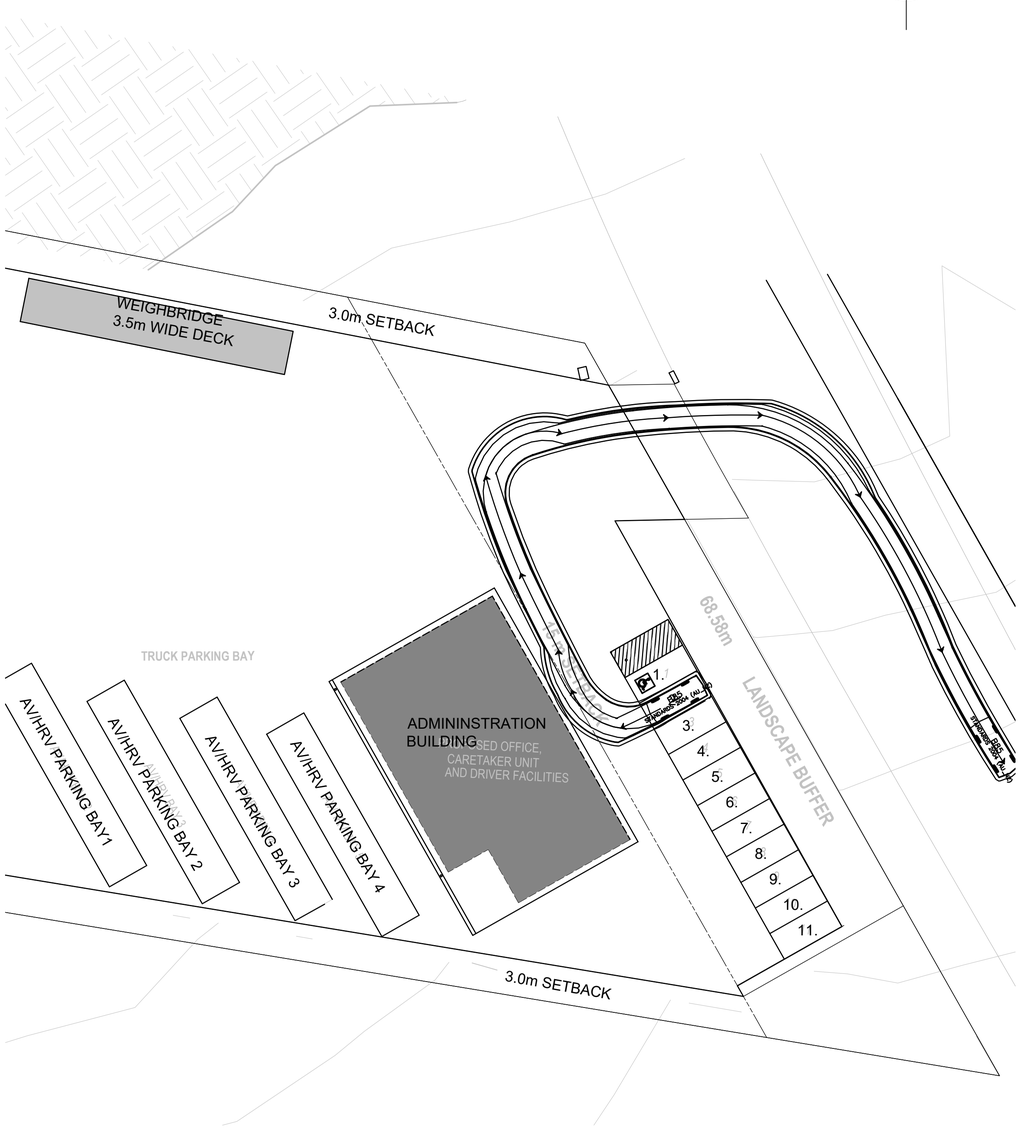
DRAWING NUMBER: 23053-CI-156
REV 1

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm A1 ON ORIGINAL

DEVICE NAME : _AUTOCAD PDF (GENERAL DOCUMENTATION).PC3




SITE PLAN - PASSENGER VEHICLE - DRIVING IN SWEPT PATH
SCALE 1:250




SITE PLAN - PASSENGER VEHICLE - DRIVING OUT SWEPT PATH
SCALE 1:250

B85

| | meters |
|---|---|
| Width | : 1.87 |
| Track | : 1.77 |
| Lock to Lock Time | : 6.0 |
| Steering Angle | : 34.1 |

| REV | DATE | REVISIONS | DRN | CHK |
|---|---|---|---|---|
| 1 | 1/11/23 | PRELIMINARY | IB | DB |

0 5 10 15 20 25m
SCALE 1:250 @A1

| | | | |
|---|---|---|---|
| DESIGNED: IB | | DATUM: AHD | A1 |
| DRAWN: DB | | COORDINATE SYSTEM: | |
| CHECKED: VC | | | |
| RECOMMENDED: | | APPROVED: | |
| PROJECT MANAGER | DATE | PROJECT DIRECTOR | DATE |

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STATELINE ASPHALTS PTY LTD
PROPOSED ASPHALT PROCESSING FACILITY
133 SOMERSBY FALLS ROAD
SOMERSBY
SWEPT PATHS - PASSENGER VEHICLE ENTRY & EXIT

DRAWING STATUS: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

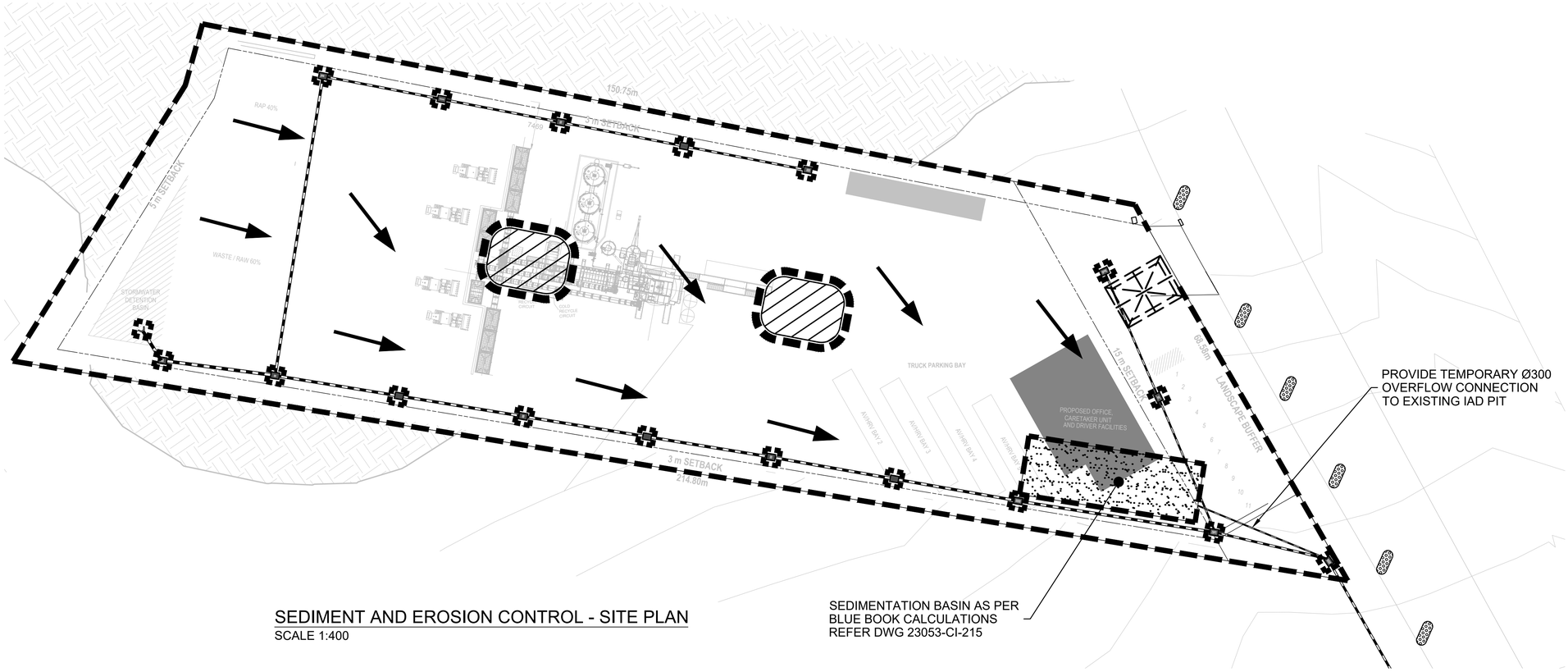
DRAWING NUMBER: 23053-CI-158 REV 1

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm A1 ON ORIGINAL

DEVICE NAME : _AUTOCAD PDF (GENERAL DOCUMENTATION).PC3

LEGEND :

- TEMPORARY SURFACE INLET SEDIMENT TRAP OR GROSS POLLUTANT TRAP TO BE PROVIDED
- SILT FENCE
- TEMPORARY CONSTRUCTION VEHICLE EXIT
- TEMPORARY STOCKPILE OF TOPSOIL SURROUNDED WITH SILT FENCE
- SURFACE RUNOFF
- DIVERSION BANK AND CHANNEL
- GRAVEL FILLED SAUSAGE




## SEDIMENT AND EROSION CONTROL - SITE PLAN

SCALE 1:400

| REV | DATE | REVISIONS | DRN | CHK |
|---|---|---|---|---|
| 1 | 1/11/23 | PRELIMINARY | IB | DB |

0 10 20 30 40m

SCALE 1:400 @A1

| | | | |
|---|---|---|---|
| DESIGNED: IB | DATUM: AHD | A1 | |
| DRAWN: DB | | | |
| CHECKED: VC | COORDINATE SYSTEM: | | |
| RECOMMENDED: | APPROVED: | | |
| PROJECT MANAGER DATE | PROJECT DIRECTOR DATE | | |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STATELINE ASPHALTS PTY LTD

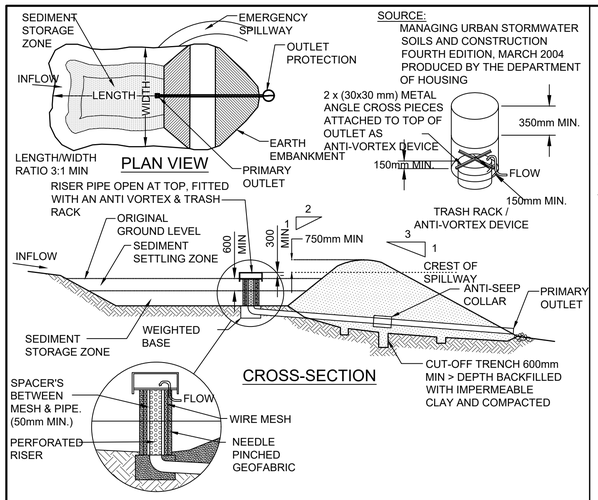
PROPOSED ASPHALT PROCESSING FACILITY
133 SOMERSBY FALLS ROAD
SOMERSBY
SEDIMENT AND EROSION CONTROL PLAN

DRAWING STATUS: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

DRAWING NUMBER: 23053-CI-200 REV 1

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm A1 ON ORIGINAL

DEVICE NAME : _AUTOCAD PDF (GENERAL DOCUMENTATION).PC3



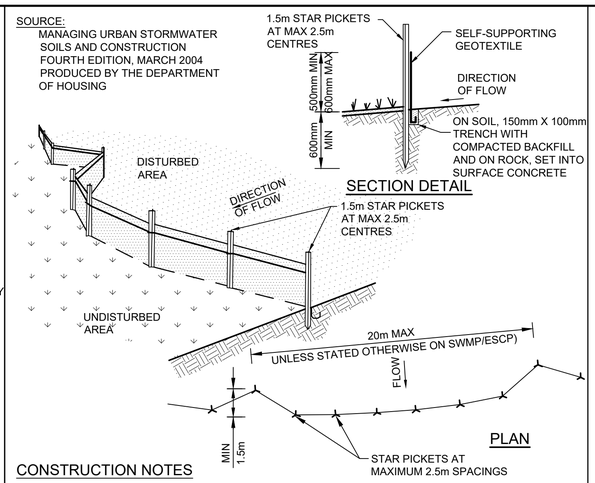

SOURCE:
MANAGING URBAN STORMWATER SOILS AND CONSTRUCTION FOURTH EDITION, MARCH 2004 PRODUCED BY THE DEPARTMENT OF HOUSING

## CONSTRUCTION NOTES:

1. REMOVE ALL VEGETATION AND TOPSOIL FROM UNDER THE DAM WALL AND FROM WITHIN THE STORAGE AREA.
2. FORM A CUT OFF TRENCH UNDER THE CENTRELINE OF THE EMBANKMENT 600mm DEEP & 1200mm WIDE, EXTENDING TO A POINT ON THE WATERCOURSE WALL ABOVE THE RISER SILL LEVEL.
3. MAINTAIN THE TRENCH FREE OF WATER AND RECOMPACT THE MATERIALS WITH EQUIPMENT AS SPECIFIED IN THE SWMP TO 95 PER CENT STANDARD PROCTOR DENSITY.
4. SELECT FILL ACCORDING TO THE SWMP THAT IS FREE FROM ROOTS, WOOD, ROCK, LARGE STONE OR FOREIGN MATERIAL.
5. PREPARE THE SITE UNDER THE EMBANKMENT BY RIPPING TO AT LEAST 100 MM TO HELP BOND COMPACTED FILL TO THE EXISTING SUBSTRATE.
6. SPREAD THE FILL IN 100 MM TO 150 MM LAYERS AND COMPACT IT AT OPTIMUM MOISTURE CONTENT FOLLOWING THE SWMP.
7. INSTALL THE PIPE OUTLET WITH SEEPAGE COLLARS AS SPECIFIED IN THE SWMP & STANDARD DRAWING 6-3b.
8. FORM BATTER GRADES AT 2(H):1(V) UPSTREAM & 3(H):1(V) DOWNSTREAM OR AS SPECIFIED IN THE SWMP.

# EARTH BASIN - DRY SD 6-3
(APPLIES TO TYPE 'C' SOILS ONLY)

SOURCE:
MANAGING URBAN STORMWATER SOILS AND CONSTRUCTION FOURTH EDITION, MARCH 2004 PRODUCED BY THE DEPARTMENT OF HOUSING

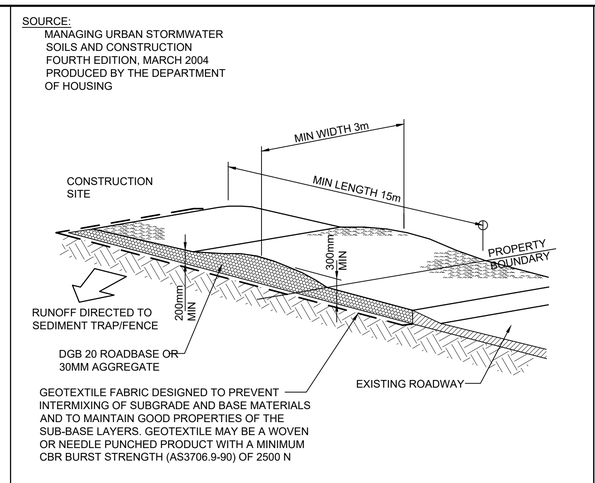



## CONSTRUCTION NOTES

1. CONSTRUCT SEDIMENT FENCES AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE, BUT WITH SMALL RETURNS AS SHOWN IN THE DRAWING TO LIMIT THE CATCHMENT AREA OF ANY ONE SECTION. THE CATCHMENT AREA SHOULD BE SMALL ENOUGH TO LIMIT WATER FLOW IF CONCENTRATED AT ONE POINT TO 50 LITRES PER SECOND IN THE DESIGN STORM EVENT, USUALL THE 10 YEAR EVENT.
2. CUT A 150 MM DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
3. DRIVE 1.5 METRE LONG STAR PICKETS INTO GROUNDAT 2.5 METRE INTERVALS (MAX) AT THE DOWNSLOPE EDGE OF THE TRENCH. ENSURE ANY STAR PICKETS ARE FITTED WITH SAFETY CAPS.
4. FIX SELF-SUPPORTING GEOTEXTILE TO THE UPSLOPE SIDE OF THE POSTS ENSURING IT GOES TO THE BASE OF THE TRENCH, FIX THE GEOTEXTILE WITH WIRE TIES OR AS RECOMMENDED BY THE MANUFACTURER. ONLY USE GEOTEXTILE SPECIFICALLY PRODUCED FOR SEDIMENT FENCING. THE USE OF SHADE CLOTH FOR THIS PURPOSE IS NOT SATISFACTORY.
5. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150 MM OVERLAP.
6. BACKFILL TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT THOROUGHLY OVER THE GEOTEXTILE

# SEDIMENT FENCE SD 6-8

SOURCE:
MANAGING URBAN STORMWATER SOILS AND CONSTRUCTION FOURTH EDITION, MARCH 2004 PRODUCED BY THE DEPARTMENT OF HOUSING

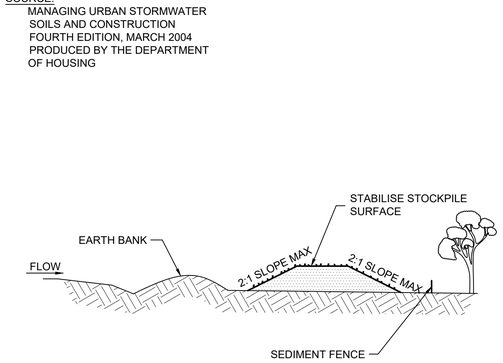



## CONSTRUCTION NOTES:

1. STRIP THE TOPSOIL, LEVEL THE SITE AND COMPACT THE SUBGRADE.
2. COVER THE AREA WITH NEEDLE-PUNCHED GEOTEXTILE.
3. CONSTRUCT A 200MM THICK PAD OVER THE GEOTEXTILE USING ROAD BASE OR 30MM AGREGATE.\
4. ENSURE THE STRUCTURE IS AT LEAST 15 METRES LONG OR TO BUILDING ALIGNMENT AND AT LEAST 3 METRES WIDE.
5. WHERE A SEDIMENT FENCE JOINS ONTO THE STABILISED ACCESS, CONSTRUCT A HUMP IN THE STABILISED ACCESS TO DIVERT WATER TO THE SEDIMENT FENCE

# STABILISED SITE ACCESS SD 6-14

SOURCE:
MANAGING URBAN STORMWATER SOILS AND CONSTRUCTION FOURTH EDITION, MARCH 2004 PRODUCED BY THE DEPARTMENT OF HOUSING

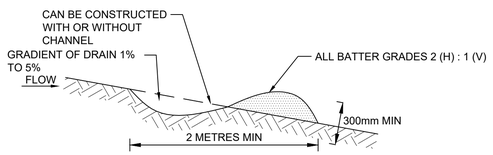



## CONSTRUCTION NOTES:

1. PLACE STOCKPILES MORE THAN 2 (PREFERABLY 5 ) METRES FROM EXISTING VEGETATION, CONCENTRATED WATER FLOW, ROADS AND HAZARD AREAS.
2. CONSTRUCT ON THE CONTOUR AS LOW, FLAT, ELONGATED MOUNDS.
3. WHERE THERE IS SUFFICIENT AREA, TOPSOIL STOCKPILES SHALL BE LESS THAN 2 METERS IN HEIGHT.
4. WHERE THEY ARE TO BE IN PLACE FOR MORE THAN 10 DAYS, STABILISE FOLLOWING THE APPROVED ESCP OR SWMP TO REDUCE THE C-FACTOR TO LESS THAN 0.10.
5. CONSTRUCT EARTH BANKS (STANDARD DRAWING 5-5) ON THE UPSLOPE SIDE TO DIVERT WATER AROUND STOCKPILES AND SEDIMENT FENCSE (STANDARD DRAWING 6-8) 1 TO 2 METRES DOWNSLOPE.

# STOCKPILES SD 4-1

SOURCE:
MANAGING URBAN STORMWATER SOILS AND CONSTRUCTION FOURTH EDITION, MARCH 2004 PRODUCED BY THE DEPARTMENT OF HOUSING



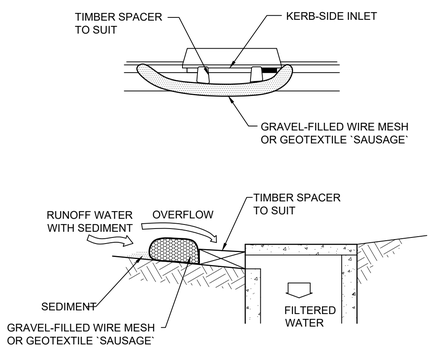

NOTE: ONLY TO BE USED AS A TEMPORARY BANK WHERE MAXIMUM UPSLOPE LENGTH IS 80 METRES.

## CONSTRUCTION NOTES:

1. BUILD WITH GRADIENTS BETWEEN 1% AND 5%.
2. AVOID REMOVING TREES AND SHRUBS IF POSSIBLE - WORK AROUND THEM
3. ENSURE THE STRUCTURES ARE FREE OF PROJECTIONS OR OTHER IRREGULARITIES THAT COULD IMPEDE WATER FLOW.
4. BUILD THE DRAINS WITH CIRCULAR, PARABOLIC OR TRAPEZOIDAL CROSS SECTIONS, NOT V SHAPED
5. ENSURE THE BANKS ARE PROPERLY COMPACTED TO PREVENT FAILURE
6. COMPLETE PERMANENT OR TEMPORARY STABILISATION WITHIN 10 DAYS OF CONSTRUCTION.

# EARTH BANK (LOW FLOW) SD 5-5

SOURCE:
MANAGING URBAN STORMWATER SOILS AND CONSTRUCTION FOURTH EDITION, MARCH 2004 PRODUCED BY THE DEPARTMENT OF HOUSING



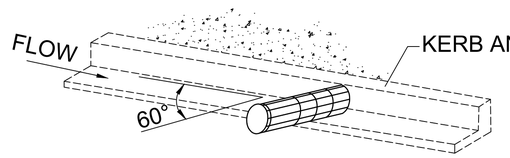

NOTE: THIS PRACTICE ONLY TO BE USED WHERE SPECIFIED IN AN APPROVED SWMP/ESCP.

## CONSTRUCTION NOTES:

1. INSTALL FILTERS TO KERB INLETS ONLY AT SAG POINTS.
2. FABRICATE A SLEEVE MADE FROM GEOTEXTILE OR WIRE MESH LONGER THAN THE LENGTH OF THE INLET PIT AND FILL IT WITH 25mm TO 50mm GRAVEL.
3. FORM AN ELLIPTICAL CROSS-SECTION ABOUT 150MM HIGH X 400MM WIDE.
4. PLACE THE FILTER AT THE OPENING LEAVING AT LEAST A 100mm SPACE BETWEEN IT AND THE KERB INLET. MAINTAIN THE OPENING WITH SPACER BLOCKS.
5. FORM A SEAL WITH THE KERB TO PREVENT SEDIMENT BYPASSING THE FILTER.
6. SANDBAGS FILLED WITH GRAVEL CAN SUBSTITUTE FOR THE MESH OR GEOTEXTILE PROVIDING THEY ARE PLACED SO THAT THEY FIRMLY ABUT EACH OTHER AND SEDIMENT - LADEN WATERS CANNOT PASS BETWEEN.

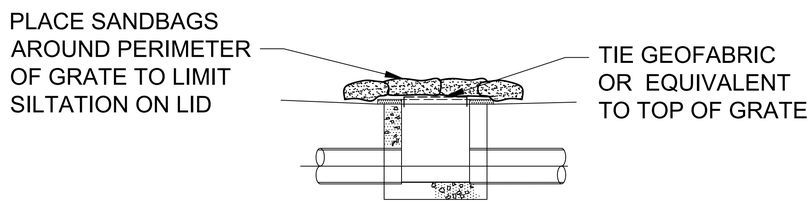
# MESH AND GRAVEL INLET FILTER SD 6-11

NOTE:
SEDIMENT BARRIERS TO BE USED ONLY WHERE ROAD WIDTHS PERMITS AND WHERE SAFETY TO PASSING TRAFFIC IS NOT AFFECTED




# GRAVEL FILLED SAUSAGE TEMPORARY GUTTER GROSS POLLUTANT/SEDIMENT TRAP

COARSE GRAVEL ROLLED IN NETTING MATERIAL TOTALING 200mm HIGH & PLACED HARD AGAINST FACE OF KERB




# TEMPORARY SURFACE INLET SEDIMENT TRAP OR GROSS POLLUTANT TRAP

WHEN USED AS A GROSS POLLUTANT TRAP STRUCTURE SHALL BE REGULARLY DESILTED

| REV | DATE | REVISIONS | DRN | CHK |
|---|---|---|---|---|
| 1 | 1/11/23 | PRELIMINARY | IB | DB |

0 10 20 30 40m
SCALE 1:400 @A1

DESIGNED: IB
DRAWN: DB
CHECKED: VC
RECOMMENDED: PROJECT MANAGER DATE
DATUM: AHD A1
COORDINATE SYSTEM:
APPROVED: PROJECT DIRECTOR DATE


CUBO CONSULTING PTY LTD
ABN: 46 610 277 462
Suite 6, 220 The Entrance Road, Erina NSW
Phone: (02) 4326 0990 Email: admin@cubo.net.au


STATELINE ASPHALTS PTY LTD
PROPOSED ASPHALT PROCESSING FACILITY
133 SOMERSBY FALLS ROAD
SOMERSBY
SEDIMENT AND EROSION CONTROL DETAILS

DRAWING STATUS: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES
DRAWING NUMBER: 23053-CI-210
REV 1

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm A1 ON ORIGINAL

DEVICE NAME : _AUTOCAD PDF (GENERAL DOCUMENTATION).PC3

| Site area | Sub-catch | Notes |
|---|---|---|
| | All | |
| Total catchment area (ha) | 1.01 | |
| Disturbed catchment area (ha) | 1.01 | |

## Soil analysis (enter sediment type if known, or laboratory particle size data)

| | | |
|---|---|---|
| Sediment Type (C, F or D) if known: | C | From Appendix C (if known) |
| % sand (fraction 0.02 to 2.00 mm) | | Enter the percentage of each soil fraction. E.g. enter 10 for 10% |
| % silt (fraction 0.002 to 0.02 mm) | | |
| % clay (fraction finer than 0.002 mm) | | |
| Dispersion percentage | | E.g. enter 10 for dispersion of 10% |
| % of whole soil dispersible | 0 | See Section 6.3.3(e). Auto-calculated |
| Soil Texture Group | C | Automatic calculation from above |

## Rainfall data

| | | |
|---|---|---|
| Design rainfall depth (no of days) | 5 | See Section 6.3.4 and, particularly, Table 6.3 on pages 6-24 and 6-25. |
| Design rainfall depth (percentile) | 75 | |
| x-day, y-percentile rainfall event (mm) | 27.9 | |
| Rainfall R-factor (if known) | | Only need to enter one or the other here |
| IFD: 2-year, 6-hour storm (if known) | 10.3 | |

## RUSLE Factors

| | | |
|---|---|---|
| Rainfall erosivity (*R*-factor) | 2330 | Auto-filled from above |
| Soil erodibility (*K*-factor) | 0.017 | RUSLE LS factor calculated for a high rill/interrill ratio. |
| Slope length (m) | 75 | |
| Slope gradient (%) | 5 | |
| Length/gradient (*LS*-factor) | 1.14 | |
| Erosion control practice (*P*-factor) | 1.3 | |
| Ground cover (*C*-factor) | 1 | |

## Structure Details

| | | |
|---|---|---|
| **Structure Name** | **All** | Auto-filled from Worksheet 1 |
| **Catchment Area (ha)** | 1.01 | Auto-filled from Worksheet 1 |
| **Time of concentration (tc)** | 4 | Auto-calculated assuming tc is halved |

## Rainfall Intensities (IFD Values)

| | | |
|---|---|---|
| **1 year, tc** | 72.1 | Enter the relevant rainfall intensities (in mm/hr) for each of the nominated rainfall events. |
| **2 year, tc** | 82.1 | The time of concentration (tc) determines the duration of the event to be used |
| **5 year, tc** | 116 | |
| **10 year, tc** | 142 | |
| **20 year, tc** | 169 | |
| **50 year, tc** | 208 | |
| **100 year, tc** | 241 | |

| | | |
|---|---|---|
| **$C_{10}$ runoff coefficient** | 0.8 | Use AR&R or Table F3, pg F-6 |

| | | |
|---|---|---|
| **Design ARI event (select):** | 1 | Select design ARI (years) from dropdown |
| **Frequency Factor** | 0.8 | Auto-filled based on selected ARI |
| **Flow Calculation** | 0.13 | Auto-calculated based on selected ARI |

## Type C Basin Design Criteria

| | | |
|---|---|---|
| **Structure Name** | **All** | Auto-filled from Worksheet 1 |
| **Catchment Area (ha)** | 1.01 | Auto-filled from Worksheet 1 |
| **Sediment type (C, F or D)** | C | Auto-filled from Worksheet 1 |
| **Design rainfall event** | 0.5 | Choose design event from dropdown |
| **Flow volume ($m^3/s$)** | 0.065 | Calculated from IFD values above |
| **Area Factor** | 4100 | Default is 4,100. See pg 6-12 |
| **Depth of settling (water zone) (m)** | 0.6 | Minimum is 0.6m (pg 6-12) |

## Type C Basin Volume Calculations

| | | |
|---|---|---|
| **Basin Surface Area ($m^2$)** | 266.5 | Auto-calculated |
| **Settling (water) zone volume ($m^3$)** | 159.9 | Auto-calculated |
| **Storage (soil) zone volume ($m^3$)** | 0 | Auto-calculated |
| **Total basin volume ($m^3$)** | 159.9 | Auto-calculated |

## Basin Shape

| | | |
|---|---|---|
| **Enter length:width ratio** | 3 | E.g. for 3:1 (L:W) enter 3. |
| **Length (m)** | 28.3 | These figures should be taken as a guide only. Detailed calcs might be required. |
| **Width (m)** | 9.4 | |

| REV | DATE | REVISIONS | DRN | CHK |
|---|---|---|---|---|
| 1 | 1/11/23 | PRELIMINARY | IB | DB |

0 10 20 30 40m
SCALE 1:400 @A1

DESIGNED: IB | DRAWN: DB | CHECKED: VC | RECOMMENDED: PROJECT MANAGER DATE
DATUM: AHD | A1 | COORDINATE SYSTEM: | APPROVED: PROJECT DIRECTOR DATE

CUBO CONSULTING PTY LTD
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Suite 6, 220 The Entrance Road, Erina NSW
Phone: (02) 4326 0990 Email: admin@cubo.net.au

STATELINE ASPHALTS PTY LTD
PROPOSED ASPHALT PROCESSING FACILITY
133 SOMERSBY FALLS ROAD
SOMERSBY
BLUE BOOK CALCULATIONS

DRAWING STATUS: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES
DRAWING NUMBER: 23053-CI-215 | REV 1

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm A1 ON ORIGINAL

# MUSIC-*link* Report

| Project Details | | Company Details | |
|---|---|---|---|
| **Project:** | 23053 - 133 Somersby Falls Rd | **Company:** | Cubo Consulting |
| **Report Export Date:** | 29/08/2023 | **Contact:** | Doug Black |
| **Catchment Name:** | 23053 v3 | **Address:** | |
| **Catchment Area:** | 1.01ha | **Phone:** | 4326 0990 |
| **Impervious Area*:** | 85.15% | **Email:** | doug.black@cubo.au |
| **Rainfall Station:** | 66062 SYDNEY | | |
| **Modelling Time-step:** | 6 Minutes | | |
| **Modelling Period:** | 1/01/1974 - 31/12/1993 11:54:00 PM | | |
| **Mean Annual Rainfall:** | 1297mm | | |
| **Evapotranspiration:** | 1261mm | | |
| **MUSIC Version:** | 6.3.0 | | |
| **MUSIC-link data Version:** | 6.34 | | |
| **Study Area:** | Upland | | |
| **Scenario:** | Central Coast Development | | |

* takes into account area from all source nodes that link to the chosen reporting node, excluding Import Data Nodes

| Treatment Train Effectiveness | | Treatment Nodes | | Source Nodes | |
|---|---|---|---|---|---|
| **Node: Receiving Node** | **Reduction** | **Node Type** | **Number** | **Node Type** | **Number** |
| **Flow** | 0.0103% | Detention Basin Node | 1 | Urban Source Node | 3 |
| **TSS** | 87.7% | GPT Node | 3 | | |
| **TP** | 49.4% | | | | |
| **TN** | 43% | | | | |
| **GP** | 100% | | | | |

## Comments

Results within assumed margin of error for modelling

## Passing Parameters

| Node Type | Node Name | Parameter | Min | Max | Actual |
|---|---|---|---|---|---|
| GPT | 14 x SPEL Stormsacks 600sq | Hi-flow bypass rate (cum/sec) | None | 99 | 0.154 |
| GPT | 2x SPEL Stormsacks 600sq | Hi-flow bypass rate (cum/sec) | None | 99 | 0.022 |
| GPT | SPEL Vortceptor SV0.096 | Hi-flow bypass rate (cum/sec) | None | 99 | 0.096 |
| Receiving | Receiving Node | % Load Reduction | None | None | 0.0103 |
| Receiving | Receiving Node | GP % Load Reduction | 90 | None | 100 |
| Receiving | Receiving Node | TP % Load Reduction | 45 | None | 49.4 |
| Receiving | Receiving Node | TSS % Load Reduction | 80 | None | 87.7 |
| Urban | Urban | Baseflow Total Nitrogen Mean (log mg/L) | 0.11 | 0.11 | 0.11 |
| Urban | Urban | Baseflow Total Nitrogen Mean (log mg/L) | -0.05 | -0.05 | -0.05 |
| Urban | Urban | Baseflow Total Nitrogen Mean (log mg/L) | 0.11 | 0.11 | 0.11 |
| Urban | Urban | Baseflow Total Phosphorus Mean (log mg/L) | -0.85 | -0.85 | -0.85 |
| Urban | Urban | Baseflow Total Phosphorus Mean (log mg/L) | -1.22 | -1.22 | -1.22 |
| Urban | Urban | Baseflow Total Phosphorus Mean (log mg/L) | -0.85 | -0.85 | -0.85 |
| Urban | Urban | Baseflow Total Suspended Solids Mean (log mg/L) | 1.2 | 1.2 | 1.2 |
| Urban | Urban | Baseflow Total Suspended Solids Mean (log mg/L) | 1.15 | 1.15 | 1.15 |
| Urban | Urban | Baseflow Total Suspended Solids Mean (log mg/L) | 1.2 | 1.2 | 1.2 |
| Urban | Urban | Stormflow Total Nitrogen Mean (log mg/L) | 0.3 | 0.3 | 0.3 |
| Urban | Urban | Stormflow Total Nitrogen Mean (log mg/L) | 0.3 | 0.3 | 0.3 |
| Urban | Urban | Stormflow Total Nitrogen Mean (log mg/L) | 0.34 | 0.34 | 0.34 |
| Urban | Urban | Stormflow Total Phosphorus Mean (log mg/L) | -0.6 | -0.6 | -0.6 |
| Urban | Urban | Stormflow Total Phosphorus Mean (log mg/L) | -0.66 | -0.66 | -0.66 |
| Urban | Urban | Stormflow Total Phosphorus Mean (log mg/L) | -0.3 | -0.3 | -0.3 |
| Urban | Urban | Stormflow Total Suspended Solids Mean (log mg/L) | 2.15 | 2.15 | 2.15 |
| Urban | Urban | Stormflow Total Suspended Solids Mean (log mg/L) | 1.95 | 1.95 | 1.95 |
| Urban | Urban | Stormflow Total Suspended Solids Mean (log mg/L) | 2.43 | 2.43 | 2.43 |

Only certain parameters are reported when they pass validation

## Failing Parameters

| Node Type | Node Name | Parameter | Min | Max | Actual |
|---|---|---|---|---|---|
| Receiving | Receiving Node | TN % Load Reduction | 45 | None | 43 |

Only certain parameters are reported when they pass validation

PIT / NODE DETAILS Version 15

| Name | Type | Family | Size | Ponding Volume (cu.m) | Pressure Change Coeff. Ku | Surface Elev (m) | Max Pond Depth (m) | Base Inflow (cu.m/s) | Blocking Factor | x | y | Bolt-down lid | id | Part Full Shock Loss | Inflow Hydrograph | Pit is | Internal Width (mm) | Inflow is Misaligned | Minor Safe Pond Dept (m) | Major Safe Pond Depth (m) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P1/14 | Sag | SIP | 600 mm Sc | 6 | 18 | 226.5 | 0.1 | 0 | 0 | 339834 | 6301986 | No | 1 | 1 x Ku | No | New | | | 0.05 | 0.25 |
| P1/13 | Sag | SIP | 600 mm Sc | 6 | 1 | 226.5 | 0.1 | 0 | 0 | 339814 | 6301990 | No | 8556883 | 1 x Ku | No | New | | | 0.05 | 0.1 |
| P1/12 | Sag | SIP | 600 mm Sc | 6 | 1 | 226.5 | 0.1 | 0 | 0 | 339794 | 6301994 | No | 3 | 1 x Ku | No | New | | | 0.05 | 0.15 |
| P1/11 | Sag | SIP | 600 mm Sc | 6 | 1 | 226.5 | 0.1 | 0 | 0 | 339775 | 6301997 | No | 8556885 | 1 x Ku | No | New | | | 0.05 | 0.15 |
| P1/10 | Sag | SIP | 600 mm Sc | 6 | 2.3 | 226.5 | 0.1 | 0 | 0 | 339756 | 6302001 | No | 5 | 1 x Ku | No | New | | | 0.05 | 0.15 |
| P1/9 | Sag | SIP | 600 mm Sc | 6 | 1 | 226.5 | 0.1 | 0 | 0 | 339749 | 6301953 | No | 6 | 1 x Ku | No | New | | | 0.05 | 0.15 |
| P1/8 | Sag | SIP | 600 mm Sc | 2 | 1 | 226.5 | 0.15 | 0 | 0 | 339768 | 6301950 | No | 8556886 | 1 x Ku | No | New | | | 0.15 | 0.2 |
| P1/7 | Sag | SIP | 600 mm Sc | 6 | 1 | 226.5 | 0.1 | 0 | 0 | 339788 | 6301947 | No | 7 | 1 x Ku | No | New | | | 0.05 | 0.15 |
| P1/6 | Sag | SIP | 600 mm Sc | 6 | 1 | 226.5 | 0.1 | 0 | 0 | 339808 | 6301944 | No | 8556887 | 1 x Ku | No | New | | | 0.05 | 0.15 |
| P1/5 | Sag | SIP | 600 mm Sc | 6 | 1 | 226.5 | 0.1 | 0 | 0 | 339828 | 6301940 | No | 9 | 1 x Ku | No | New | | | 0.05 | 0.15 |
| P1/4 | Sag | SIP | 600 mm Sc | 6 | 1 | 226.5 | 0.1 | 0 | 0 | 339848 | 6301937 | No | 8556888 | 1 x Ku | No | New | | | 0.05 | 0.15 |
| P1/3 | OnGrade | SIP | 1200 mm sqre | SIP | 1 | 226.5 | | 0 | 0 | 339867 | 6301934 | No | 11 | 1 x Ku | No | New | | | | |
| P1/2 | OnGrade | SIP | 1200 mm sqre | SIP | 1 | 226.301 | | 0 | 0 | 339898 | 6301928 | No | 1111 | 1 x Ku | No | New | | | | |
| P2/2 | Sag | SIP | 600 mm Sc | 4 | 18 | 226.6 | 0.1 | 0 | 0 | 339881 | 6301970 | No | 8 | 1 x Ku | No | New | | | 0.05 | 0.15 |
| P2/1 | Sag | SIP | 600 mm Sc | 4 | 1 | 226.5 | 0.1 | 0 | 0 | 339889 | 6301950 | No | 10 | 1 x Ku | No | New | | | 0.05 | 0.15 |
| P3/1 | OnGrade | SIP | 600 mm Sqre | SIP | 1 | 226.7 | | 0 | 0 | 339731 | 6301956 | No | 4 | 1 x Ku | No | New | | | | |
| N DS | Node | | | | | 222 | | 0 | | 339941 | 6301912 | | 50 | | No | | | | | |
| N PreDev | Node | | | | | 223 | | 0 | | 339940 | 6301959 | | 1207811 | | No | | | | | |
| N18 | Node | | | | | 227 | | 0 | | 339923 | 6301931 | | 48 | | No | | | | | |
| P1/1 | Node | | | | | 225.01 | | 0 | | 339936 | 6301927 | | 13 | | No | | | | | |

DETENTION BASIN DETAILS

| Name | Elev | Surf. Area | Not Used | Outlet Type | K | Dia(mm) | Centre RL | Pit Family | Pit Type | x | y | HED | Crest RL | Crest Lengt | id |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OSD | 224.5 | 75 | | Culvert | 0.5 | | | | | 339728 | 6301961 | No | | | 38 |
| | 226.5 | 286 | | | | | | | | | | | | | |
| | 226.6 | 429 | | | | | | | | | | | | | |
| | 226.75 | 7955 | | | | | | | | | | | | | |

SUB-CATCHMENT DETAILS

| Name | Pit or Node | Total Area (ha) | Paved Area % | Grass Area % | Supp Area % | Paved Time (min) | Grass Time (min) | Supp Time (min) | Paved Length (m) | Grass Length (m) | Supp Length (m) | Paved Slope(%) % | Grass Slope % | Supp Slope % | Paved Rough | Grass Rough | Supp Rough | Lag Time or Factor | Gutter Length (m) | Gutter Slope % | Gutter FlowFactor | Rainfall Multiplier |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C 1/14 | P1/14 | 0.1511 | 90 | 10 | 0 | 5 | 5 | 2 | | | | | | | | | | 0 | | | | 1 |
| C 1/13 | P1/13 | 0.0551 | 90 | 10 | 0 | 5 | 5 | 2 | | | | | | | | | | 0 | | | | 1 |
| C 1/12 | P1/12 | 0.0551 | 90 | 10 | 0 | 5 | 5 | 2 | | | | | | | | | | 0 | | | | 1 |
| C 1/11 | P1/11 | 0.0529 | 90 | 10 | 0 | 5 | 5 | 2 | | | | | | | | | | 0 | | | | 1 |
| C 1/10 | P1/10 | 0.0529 | 90 | 10 | 0 | 5 | 5 | 2 | | | | | | | | | | 0 | | | | 1 |
| C 1/9 | P1/9 | 0.0513 | 100 | 0 | 0 | 5 | 5 | 2 | | | | | | | | | | 0 | | | | 1 |
| C 1/8 | P1/8 | 0.0513 | 100 | 0 | 0 | 5 | 5 | 2 | | | | | | | | | | 0 | | | | 1 |
| C 1/7 | P1/7 | 0.0563 | 100 | 0 | 0 | 5 | 5 | 2 | | | | | | | | | | 0 | | | | 1 |
| C 1/6 | P1/6 | 0.0563 | 100 | 0 | 0 | 5 | 5 | 2 | | | | | | | | | | 0 | | | | 1 |
| C 1/5 | P1/5 | 0.0559 | 100 | 0 | 0 | 5 | 5 | 2 | | | | | | | | | | 0 | | | | 1 |
| C 1/4 | P1/4 | 0.0559 | 100 | 0 | 0 | 5 | 5 | 2 | | | | | | | | | | 0 | | | | 1 |
| C 1/3 | P1/3 | 0.1012 | 100 | 0 | 0 | 5 | 5 | 2 | | | | | | | | | | 0 | | | | 1 |
| C 1/2 | P1/2 | 0.0407 | 100 | 0 | 0 | 5 | 5 | 2 | | | | | | | | | | 0 | | | | 1 |
| C 2/2 | P2/2 | 0.0654 | 100 | 0 | 0 | 5 | 5 | 2 | | | | | | | | | | 0 | | | | 1 |
| C OSD | OSD | 0.0738 | 100 | 0 | 0 | 5 | 5 | 2 | | | | | | | | | | 0 | | | | 1 |
| C PreDev | N PreDev | 1.0107 | 0 | 100 | 0 | 5 | 5 | 2 | | | | | | | | | | 0 | | | | 1 |
| C 1/1 | P1/1 | 0.0357 | 0 | 100 | 0 | 5 | 5 | 2 | | | | | | | | | | 0 | | | | 1 |

PIPE DETAILS

| Name | From | To | Length (m) | U/S IL (m) | D/S IL (m) | Slope (%) | Type | Dia (mm) | I.D. (mm) | Rough | Pipe Is | No. Pipes | Chg From | At Chg | Chg (m) | Rl (m) | Chg (m) | RL (m) | etc (m) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pipe-14 | P1/14 | P1/13 | 20.121 | 226 | 225.799 | 1 | uPVC, und | 300 | 303 | 0.012 | New | 1 | P1/14 | 0 | 0.01118 | 226.5 | 0.99924 | 226.51 | 1.00747 | 226.51 | 1.99964 | 226.52 |
| Pipe-13 | P1/13 | P1/12 | 19.926 | 225.799 | 225.6 | 1 | uPVC, und | 300 | 303 | 0.012 | New | 1 | P1/13 | 0 | 0.01118 | 226.7 | 3.87902 | 226.661 | 9.87896 | 226.607 | 10.1641 | 226.609 |
| Pipe-16 | P1/12 | P1/11 | 19.42 | 225.6 | 225.406 | 1 | uPVC, und | 300 | 303 | 0.012 | New | 1 | P1/12 | 0 | 0.01118 | 226.603 | 1.85078 | 226.621 | 1.85981 | 226.591 | 5.87007 | 226.661 |
| Pipe-15 | P1/11 | P1/10 | 19.142 | 225.406 | 225.214 | 1 | uPVC, und | 375 | 386 | 0.012 | New | 1 | P1/11 | 0 | 0.01118 | 226.649 | 0.42676 | 226.645 | 0.53365 | 226.658 | 3.48958 | 226.613 |
| Pipe-3 | P1/10 | P1/9 | 48.248 | 225.214 | 224.731 | 1 | uPVC, und | 375 | 386 | 0.012 | New | 1 | P1/10 | 0 | 0.01118 | 226.5 | 0.39194 | 226.504 | 1.39151 | 226.514 | 2.39125 | 226.524 |
| Pipe-18 | P1/9 | P1/8 | 19.866 | 224.259 | 224.061 | 1 | uPVC, und | 375 | 386 | 0.012 | New | 1 | P1/9 | 0 | 0.01118 | 226.5 | 0.09026 | 226.501 | 0.91505 | 226.509 | 0.92015 | 226.509 |
| Pipe-17 | P1/8 | P1/7 | 20.176 | 224.061 | 223.859 | 1 | uPVC, und | 375 | 386 | 0.012 | New | 1 | P1/8 | 0 | 0.01118 | 226.7 | 0.04653 | 226.7 | 0.05376 | 226.7 | 0.18134 | 226.699 |
| Pipe-20 | P1/7 | P1/6 | 19.827 | 223.859 | 223.661 | 1 | uPVC, und | 375 | 386 | 0.012 | New | 1 | P1/7 | 0 | 0.01118 | 226.5 | 0.30101 | 226.503 | 0.87755 | 226.509 | 1.87576 | 226.519 |
| Pipe-19 | P1/6 | P1/5 | 20.164 | 223.661 | 223.459 | 1 | uPVC, und | 375 | 386 | 0.012 | New | 1 | P1/6 | 0 | 0.01118 | 226.7 | 0.04965 | 226.7 | 0.05064 | 226.7 | 0.07694 | 226.699 |
| Pipe-22 | P1/5 | P1/4 | 20.281 | 223.459 | 223.256 | 1 | uPVC, und | 375 | 386 | 0.012 | New | 1 | P1/5 | 0 | 0.01118 | 226.5 | 0.88705 | 226.509 | 1.88723 | 226.519 | 2.88658 | 226.529 |
| Pipe-21 | P1/4 | P1/3 | 19.681 | 223.256 | 223.059 | 1 | uPVC, und | 375 | 386 | 0.012 | New | 1 | P1/4 | 0 | 0.01118 | 226.693 | 0.60588 | 226.687 | 1.60605 | 226.667 | 1.60704 | 226.667 |
| Pipe-7 | P1/3 | P1/2 | 31.525 | 223.059 | 222.743 | 1 | uPVC, und | 375 | 386 | 0.012 | New | 1 | P1/3 | 0 | 0.01118 | 226.3 | 31.5143 | 226.301 | | | | |
| Pipe-11 | P2/2 | P2/1 | 21.811 | 225.8 | 225.582 | 1 | uPVC, und | 225 | 242 | 0.012 | New | 1 | P2/2 | 0 | 0.01077 | 226.5 | 0.99939 | 226.505 | 1.00031 | 226.505 | 1.9997 | 226.509 |
| Pipe-12 | P2/1 | P1/2 | 23.189 | 225.582 | 225.35 | 1 | uPVC, und | 225 | 242 | 0.012 | New | 1 | P2/1 | 0 | 0.01077 | 226.6 | 3.81424 | 226.276 | 11.3179 | 226.475 | 23.1777 | 226.301 |
| Pipe-9 | OSD | P3/1 | 5.991 | 224.5 | 224.44 | 1 | Concrete, u | 450 | 450 | 0.013 | New | 1 | OSD | 0 | 0.01079 | 224.5 | 0.06104 | 224.5 | 0.39995 | 224.5 | 0.79718 | 224.5 |
| Pipe-10 | P3/1 | P1/9 | 18.08 | 224.44 | 224.259 | 1 | Concrete, u | 450 | 450 | 0.013 | New | 1 | P3/1 | 0 | 0.01105 | 226.7 | 0.99876 | 226.689 | 0.99975 | 226.689 | 1.00074 | 226.689 |
| Pipe-8 | N18 | P1/1 | 13.566 | 222.636 | 222.5 | 1 | uPVC, und | 375 | 386 | 0.012 | New | 1 | N18 | 0 | | | | | | | | |

DETAILS of SERVICES CROSSING PIPES

| Pipe | Chg (m) | Bottom Elev (m) | Height of S (m) | Chg (m) | Bottom Elev (m) | Height of S (m) | Chg (m) | Bottom Elev (m) | Height of S (m) | etc etc |
|---|---|---|---|---|---|---|---|---|---|---|

CHANNEL DETAILS

| Name | From | To | Type | Length (m) | U/S IL (m) | D/S IL (m) | Slope (%) | Base Width (m) | L.B. Slope (1:?) | R.B. Slope (1:?) | Manning n | Depth (m) | Roofed |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

OVERFLOW ROUTE DETAILS

| Name | From | To | Travel Time (min) | Spill Level (m) | Crest Length (m) | Weir Coeff. C | Cross Section | Safe Depth Major Stor (m) | SafeDepth Minor Stor (m) | Safe DxV (sq.m/sec) | Bed Slope (%) | D/S Area Contributing % | id | U/S IL | D/S IL | Length (m) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OF47889 | P1/14 | P1/3 | 0.6 | | | | 4 m wide p | 0.3 | 0.15 | 0.4 | 0.49 | 0 | 8557015 | 226.6 | 226.55 | 61.7 |
| OF47887 | P1/13 | P1/14 | 0.3 | | | | 7.5 m road | 0.3 | 0.15 | 0.4 | 0.25 | 0 | 8557009 | 226.6 | 226.55 | 19.9 |
| OF47886 | P1/12 | P1/13 | 0.3 | | | | 7.5 m road | 0.3 | 0.15 | 0.4 | 0.25 | 0 | 8557008 | 226.6 | 226.55 | 19.9 |
| OF47885 | P1/11 | P1/12 | 0.3 | | | | 7.5 m road | 0.3 | 0.15 | 0.4 | 0.26 | 0 | 8557007 | 226.6 | 226.55 | 19.4 |
| OF47884 | P1/10 | P1/11 | 0.3 | | | | 7.5 m road | 0.3 | 0.15 | 0.4 | 0.26 | 0 | 8557006 | 226.6 | 226.55 | 19.2 |
| OF47883 | P1/9 | P1/8 | 0.3 | | | | 7.5 m road | 0.3 | 0.15 | 0.4 | 0.25 | 0 | 8557005 | 226.6 | 226.55 | 19.9 |
| B16-5 | P1/8 | P1/7 | 0.3 | | | | 7.5 m road | 0.3 | 0.15 | 0.4 | 0.25 | 0 | 8556901 | 226.6 | 226.55 | 20.176 |
| OF47881 | P1/7 | P1/6 | 0.3 | | | | 7.5 m road | 0.3 | 0.15 | 0.4 | 0.25 | 0 | 8557001 | 226.6 | 226.55 | 19.7 |
| B17-6 | P1/6 | P1/5 | 0.3 | | | | 7.5 m road | 0.3 | 0.15 | 0.4 | 0.25 | 0 | 8556900 | 226.6 | 226.55 | 20.164 |
| OF47880 | P1/5 | P1/4 | 0.3 | | | | 7.5 m road | 0.3 | 0.15 | 0.4 | 0.25 | 0 | 8557000 | 226.6 | 226.55 | 20 |
| B18-7 | P1/4 | P1/3 | 0.2 | | | | 7.5 m road | 0.3 | 0.15 | 0.4 | 1.52 | 0 | 8556899 | 226.6 | 226.55 | 19.681 |
| B7-8 | P1/3 | P1/2 | 0.6 | | | | 7.5 m road | 0.3 | 0.15 | 0.4 | 0.16 | 0 | 27 | 226.5 | 226.301 | 31.525 |
| B8-9 | P1/2 | P1/1 | 0.1 | | | | 4 m wide p | 0.3 | 0.15 | 0.4 | 0.89 | 0 | 26 | 226.301 | 225.01 | 13.566 |
| B12-13 | P2/2 | P2/1 | 0.3 | | | | 7.5 m road | 0.3 | 0.15 | 0.4 | 0.23 | 0 | 30 | 226.6 | 226.55 | 21.811 |
| B13-8 | P2/1 | P1/2 | 0.4 | | | | 7.5 m road | 0.3 | 0.15 | 0.4 | 0.22 | 0 | 28 | 226.5 | 226.301 | 23.189 |
| B10-11 | OSD | P1/9 | 0.1 | 226.7 | 2 | 2 | 7.5 m road | 0.3 | 0.15 | 0.4 | 7.14 | 0 | 36 | 226.6 | 226.5 | 5.991 |
| OF9325 | P3/1 | OSD | 0.1 | | | | Deep Swal | 1 | 0.5 | 0.6 | 4.84 | 0 | 2004956 | 226.7 | 226.5 | 6.2 |
| OF17 | P1/1 | N DS | 0.1 | | | | Deep Swal | 1 | 0.5 | 0.6 | 5 | 0 | 51 | 222.5 | 222 | 10 |

PIPE COVER DETAILS

| Name | Type | Dia (mm) | Safe Cover | Cover (m) | |
|---|---|---|---|---|---|
| Pipe-14 | uPVC, und | 303 | 0.5 | 0.19 | Unsafe |
| Pipe-13 | uPVC, und | 303 | 0.5 | 0.39 | Unsafe |
| Pipe-16 | uPVC, und | 303 | 0.5 | 0.59 | |
| Pipe-15 | uPVC, und | 386 | 0.5 | 0.7 | |
| Pipe-3 | uPVC, und | 386 | 0.5 | 0.89 | |
| Pipe-18 | uPVC, und | 386 | 0.5 | 1.85 | |
| Pipe-17 | uPVC, und | 386 | 0.5 | 2.05 | |
| Pipe-20 | uPVC, und | 386 | 0.5 | 2.25 | |
| Pipe-19 | uPVC, und | 386 | 0.5 | 2.45 | |
| Pipe-22 | uPVC, und | 386 | 0.5 | 2.65 | |
| Pipe-21 | uPVC, und | 386 | 0.5 | 2.85 | |
| Pipe-7 | uPVC, und | 386 | 0.5 | 2.85 | |
| Pipe-11 | uPVC, und | 242 | 0.5 | 0.45 | Unsafe |

| | | | | | |
|---|---|---|---|---|---|
| Pipe-12 | uPVC, undı | 242 | 0.5 | 0.49 | Unsafe |
| Pipe-9 | Concrete, ı | 450 | 0.6 | -0.49 | Unsafe |
| Pipe-10 | Concrete, ı | 450 | 0.6 | 1.75 | |
| Pipe-8 | uPVC, undı | 386 | 0.5 | 2.12 | |

This model has no pipes with non-return valves

DRAINS results prepared from Version 2023.06.8578.17142

PIT / NODE DETAILS Version 8

| Name | Max HGL | Max Pond HGL | Max Surfac Flow Arrivi (cu.m/s) | Max Pond Volume (cu.m) | Min Freeboard (m) | Overflow (cu.m/s) | Constraint |
|---|---|---|---|---|---|---|---|
| P1/14 | 226.55 | 226.6 | 0.085 | 5.1 | 0 | 0 | Outlet System |
| P1/13 | 226.29 | 226.53 | 0.031 | 1.2 | 0.21 | 0 | Inlet Capacity |
| P1/12 | 226.17 | 226.53 | 0.031 | 1.1 | 0.33 | 0 | Inlet Capacity |
| P1/11 | 226.02 | 226.53 | 0.03 | 1.1 | 0.48 | 0 | Inlet Capacity |
| P1/10 | 225.93 | 226.53 | 0.03 | 1.1 | 0.57 | 0 | Inlet Capacity |
| P1/9 | 225.73 | 226.53 | 0.029 | 1 | 0.77 | 0 | Inlet Capacity |
| P1/8 | 225.72 | 226.53 | 0.029 | 0.2 | 0.78 | 0 | Inlet Capacity |
| P1/7 | 225.71 | 226.53 | 0.032 | 1.1 | 0.79 | 0 | Inlet Capacity |
| P1/6 | 225.68 | 226.53 | 0.032 | 1.1 | 0.82 | 0 | Inlet Capacity |
| P1/5 | 225.67 | 226.53 | 0.032 | 1.1 | 0.83 | 0 | Inlet Capacity |
| P1/4 | 225.65 | 226.53 | 0.032 | 1.1 | 0.85 | 0 | Inlet Capacity |
| P1/3 | 225.63 | | 0.057 | | 0.87 | 0.001 | Inlet Capacity |
| P1/2 | 225.52 | | 0.024 | | 0.78 | 0.083 | Inlet Capacity |
| P2/2 | 226.14 | 226.64 | 0.037 | 0.9 | 0.46 | 0 | Inlet Capacity |
| P2/1 | 225.73 | 226.5 | 0 | 0 | 0.77 | 0 | None |
| P3/1 | 225.73 | | 0 | | 0.97 | 0 | None |
| N DS | 0 | | 0.165 | | | | |
| N PreDev | 0 | | 0.512 | | | | |
| N18 | 222.86 | | 0 | | | | |
| P1/1 | 222.58 | | 0.018 | | | | |

SUB-CATCHMENT DETAILS

| Name | Max Flow Q (cu.m/s) | Paved Max Q (cu.m/s) | Grassed Max Q (cu.m/s) | Paved Tc (min) | Grassed Tc (min) | Supp. Tc (min) | Due to Storm |
|---|---|---|---|---|---|---|---|
| C 1/14 | 0.067 | 0.063 | 0.004 | 5 | 5 | 2 | 10% AEP, 5 min burst, Storm 1 |
| C 1/13 | 0.024 | 0.023 | 0.001 | 5 | 5 | 2 | 10% AEP, 5 min burst, Storm 1 |
| C 1/12 | 0.024 | 0.023 | 0.001 | 5 | 5 | 2 | 10% AEP, 5 min burst, Storm 1 |
| C 1/11 | 0.023 | 0.022 | 0.001 | 5 | 5 | 2 | 10% AEP, 5 min burst, Storm 1 |
| C 1/10 | 0.023 | 0.022 | 0.001 | 5 | 5 | 2 | 10% AEP, 5 min burst, Storm 1 |
| C 1/9 | 0.024 | 0.024 | 0 | 5 | 5 | 2 | 10% AEP, 5 min burst, Storm 1 |
| C 1/8 | 0.024 | 0.024 | 0 | 5 | 5 | 2 | 10% AEP, 5 min burst, Storm 1 |
| C 1/7 | 0.026 | 0.026 | 0 | 5 | 5 | 2 | 10% AEP, 5 min burst, Storm 1 |
| C 1/6 | 0.026 | 0.026 | 0 | 5 | 5 | 2 | 10% AEP, 5 min burst, Storm 1 |
| C 1/5 | 0.026 | 0.026 | 0 | 5 | 5 | 2 | 10% AEP, 5 min burst, Storm 1 |
| C 1/4 | 0.026 | 0.026 | 0 | 5 | 5 | 2 | 10% AEP, 5 min burst, Storm 1 |
| C 1/3 | 0.047 | 0.047 | 0 | 5 | 5 | 2 | 10% AEP, 5 min burst, Storm 1 |
| C 1/2 | 0.019 | 0.019 | 0 | 5 | 5 | 2 | 10% AEP, 5 min burst, Storm 1 |
| C 2/2 | 0.03 | 0.03 | 0 | 5 | 5 | 2 | 10% AEP, 5 min burst, Storm 1 |
| C OSD | 0.034 | 0.034 | 0 | 5 | 5 | 2 | 10% AEP, 5 min burst, Storm 1 |
| C PreDev | 0.362 | 0 | 0.362 | 5 | 5 | 2 | 10% AEP, 15 min burst, Storm 5 |
| C 1/1 | 0.013 | 0 | 0.013 | 5 | 5 | 2 | 10% AEP, 15 min burst, Storm 5 |

PIPE DETAILS

| Name | Max Q (cu.m/s) | Max V (m/s) | Max U/S HGL (m) | Max D/S HGL (m) | Due to Storm |
|---|---|---|---|---|---|
| Pipe-14 | 0.051 | 0.7 | 226.309 | 226.285 | 10% AEP, 5 min burst, Storm 1 |
| Pipe-13 | 0.072 | 0.99 | 226.243 | 226.168 | 10% AEP, 5 min burst, Storm 1 |
| Pipe-16 | 0.092 | 1.27 | 226.114 | 226.021 | 10% AEP, 5 min burst, Storm 1 |
| Pipe-15 | 0.114 | 0.97 | 225.981 | 225.931 | 10% AEP, 5 min burst, Storm 1 |
| Pipe-3 | 0.135 | 1.15 | 225.845 | 225.729 | 10% AEP, 5 min burst, Storm 1 |
| Pipe-18 | 0.101 | 0.86 | 225.727 | 225.725 | 10% AEP, 5 min burst, Storm 1 |
| Pipe-17 | 0.101 | 0.86 | 225.716 | 225.706 | 10% AEP, 5 min burst, Storm 1 |
| Pipe-20 | 0.102 | 0.87 | 225.693 | 225.677 | 10% AEP, 5 min burst, Storm 1 |
| Pipe-19 | 0.102 | 0.87 | 225.673 | 225.668 | 10% AEP, 5 min burst, Storm 1 |
| Pipe-22 | 0.103 | 0.88 | 225.66 | 225.65 | 10% AEP, 5 min burst, Storm 1 |
| Pipe-21 | 0.104 | 0.89 | 225.639 | 225.626 | 10% AEP, 5 min burst, Storm 1 |
| Pipe-7 | 0.107 | 0.91 | 225.59 | 225.518 | 10% AEP, 5 min burst, Storm 1 |
| Pipe-11 | 0.029 | 1.06 | 225.938 | 225.731 | 10% AEP, 5 min burst, Storm 1 |
| Pipe-12 | 0.029 | 1.06 | 225.72 | 225.518 | 10% AEP, 5 min burst, Storm 1 |
| Pipe-9 | 0.09 | 0.56 | 225.736 | 225.735 | 10% AEP, 5 min burst, Storm 1 |
| Pipe-10 | 0.09 | 0.56 | 225.732 | 225.729 | 10% AEP, 5 min burst, Storm 1 |
| Pipe-8 | 0.131 | 1.89 | 222.86 | 222.721 | 10% AEP, 5 min burst, Storm 1 |

CHANNEL DETAILS

| Name | Max Q (cu.m/s) | Max V (m/s) | Due to Storm |
|---|---|---|---|

OVERFLOW ROUTE DETAILS

| Name | Max Q U/S | Max Q D/S | Safe Q | Max D | Max DxV | Max Width | Max V | Due to Storm |
|---|---|---|---|---|---|---|---|---|
| OF47889 | 0 | 0 | 0.636 | 0 | 0 | 0 | 0 | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| OF47887 | 0 | 0 | 0.154 | 0 | 0 | 0 | 0 | |
| OF47886 | 0 | 0 | 0.154 | 0 | 0 | 0 | 0 | |
| OF47885 | 0 | 0 | 0.157 | 0 | 0 | 0 | 0 | |
| OF47884 | 0 | 0 | 0.157 | 0 | 0 | 0 | 0 | |
| OF47883 | 0 | 0 | 0.154 | 0 | 0 | 0 | 0 | |
| B16-5 | 0 | 0 | 0.154 | 0 | 0 | 0 | 0 | |
| OF47881 | 0 | 0 | 0.154 | 0 | 0 | 0 | 0 | |
| B17-6 | 0 | 0 | 0.154 | 0 | 0 | 0 | 0 | |
| OF47880 | 0 | 0 | 0.154 | 0 | 0 | 0 | 0 | |
| B18-7 | 0 | 0 | 0.379 | 0 | 0 | 0 | 0 | |
| B7-8 | 0.001 | 0.001 | 0.123 | 0.014 | 0 | 0.17 | 0 | 10% AEP, 5 min burst, Storm 1 |
| SPEL Vorce | 0.083 | 0.083 | | | | | | 10% AEP, 5 min burst, Storm 1 |
| Weir | | | | | | | | |
| Ori ML | 0.048 | 0.048 | | | | | | 10% AEP, 5 min burst, Storm 1 |
| B8-9 | 0 | 0 | 0.857 | 0 | 0 | 0 | 0 | |
| B12-13 | 0 | 0 | 0.147 | 0 | 0 | 0 | 0 | |
| B13-8 | 0 | 0 | 0.144 | 0 | 0 | 0 | 0 | |
| B10-11 | 0 | 0 | 0.593 | 0 | 0 | 0 | 0 | |
| OF9325 | 0 | 0 | 1.162 | 0 | 0 | 0 | 0 | |
| OF17 | 0.142 | 0.142 | 1.161 | 0.078 | 0.11 | 1.62 | 1.41 | 10% AEP, 5 min burst, Storm 1 |

DETENTION BASIN DETAILS

| Name | Max WL | MaxVol | Max Q Total | Max Q Low Level | Max Q High Level |
|---|---|---|---|---|---|
| OSD | 225.74 | 158.2 | 0.09 | 0.09 | 0 |

Run Log for 23053 v4

{\colortbl;\red0\green0\blue0;\red192\green0\blue0;}Run Log for 23053 v4.drn - DRAINS run at 10:17:29 on 15/9/2023 using Watercom Drains v2023.06.8578.17142

No water upwelling from any pit.
Freeboard was less than 0.15m at P1/14
Flows were safe in all overflow routes.
These sag pits have unsafe water levels for minor storms: P1/14

DRAINS results prepared from Version 2023.06.8578.17142

PIT / NODE DETAILS Version 8

| Name | Max HGL | Max Pond HGL | Max Surfac Flow Arrivi (cu.m/s) | Max Pond Volume (cu.m) | Min Freeboard (m) | Overflow (cu.m/s) | Constraint |
|---|---|---|---|---|---|---|---|
| P1/14 | 226.64 | 226.66 | 0.135 | 5.1 | 0 | 0.043 | Outlet System |
| P1/13 | 226.61 | 226.63 | 0.055 | 5.1 | 0 | 0 | Outlet System |
| P1/12 | 226.59 | 226.61 | 0.055 | 5.1 | 0 | 0 | Outlet System |
| P1/11 | 226.56 | 226.58 | 0.052 | 5.1 | 0 | 0 | Outlet System |
| P1/10 | 226.55 | 226.57 | 0.052 | 3.4 | 0 | 0 | Outlet System |
| P1/9 | 226.48 | 226.54 | 0.051 | 1.7 | 0.02 | 0 | Inlet Capacity |
| P1/8 | 226.49 | 226.53 | 0.051 | 0.3 | 0.01 | 0 | Inlet Capacity |
| P1/7 | 226.49 | 226.54 | 0.056 | 3 | 0.01 | 0 | Inlet Capacity |
| P1/6 | 226.5 | 226.55 | 0.056 | 3.7 | 0 | 0 | Outlet System |
| P1/5 | 226.5 | 226.55 | 0.056 | 3.6 | 0 | 0 | Outlet System |
| P1/4 | 226.5 | 226.55 | 0.056 | 3.2 | 0 | 0 | Inlet Capacity |
| P1/3 | 226.47 | | 0.117 | | 0.03 | 0.002 | Inlet Capacity |
| P1/2 | 226.26 | | 0.042 | | 0.04 | 0.093 | Inlet Capacity |
| P2/2 | 226.68 | 226.72 | 0.065 | 3.4 | 0 | 0.002 | Outlet System |
| P2/1 | 226.32 | 226.5 | 0.008 | 0.3 | 0.18 | 0 | Inlet Capacity |
| P3/1 | 226.49 | | 0 | | 0.21 | 0 | None |
| N18 | 222.93 | | 0 | | | | |
| P1/1 | 222.6 | | 0.034 | | | | |

SUB-CATCHMENT DETAILS

| Name | Max Flow Q (cu.m/s) | Paved Max Q (cu.m/s) | Grassed Max Q (cu.m/s) | Paved Tc (min) | Grassed Tc (min) | Supp. Tc (min) | Due to Storm |
|---|---|---|---|---|---|---|---|
| C 1/14 | 0.12 | 0.111 | 0.009 | 5 | 5 | 2 | 1% AEP, 5 min burst, Storm 1 |
| C 1/13 | 0.044 | 0.04 | 0.003 | 5 | 5 | 2 | 1% AEP, 5 min burst, Storm 1 |
| C 1/12 | 0.044 | 0.04 | 0.003 | 5 | 5 | 2 | 1% AEP, 5 min burst, Storm 1 |
| C 1/11 | 0.042 | 0.039 | 0.003 | 5 | 5 | 2 | 1% AEP, 5 min burst, Storm 1 |
| C 1/10 | 0.042 | 0.039 | 0.003 | 5 | 5 | 2 | 1% AEP, 5 min burst, Storm 1 |
| C 1/9 | 0.042 | 0.042 | 0 | 5 | 5 | 2 | 1% AEP, 5 min burst, Storm 1 |
| C 1/8 | 0.042 | 0.042 | 0 | 5 | 5 | 2 | 1% AEP, 5 min burst, Storm 1 |
| C 1/7 | 0.046 | 0.046 | 0 | 5 | 5 | 2 | 1% AEP, 5 min burst, Storm 1 |
| C 1/6 | 0.046 | 0.046 | 0 | 5 | 5 | 2 | 1% AEP, 5 min burst, Storm 1 |
| C 1/5 | 0.045 | 0.045 | 0 | 5 | 5 | 2 | 1% AEP, 5 min burst, Storm 1 |
| C 1/4 | 0.045 | 0.045 | 0 | 5 | 5 | 2 | 1% AEP, 5 min burst, Storm 1 |
| C 1/3 | 0.082 | 0.082 | 0 | 5 | 5 | 2 | 1% AEP, 5 min burst, Storm 1 |
| C 1/2 | 0.033 | 0.033 | 0 | 5 | 5 | 2 | 1% AEP, 5 min burst, Storm 1 |
| C 2/2 | 0.053 | 0.053 | 0 | 5 | 5 | 2 | 1% AEP, 5 min burst, Storm 1 |
| C OSD | 0.06 | 0.06 | 0 | 5 | 5 | 2 | 1% AEP, 5 min burst, Storm 1 |
| C PreDev | 0.666 | 0 | 0.666 | 5 | 5 | 2 | 1% AEP, 10 min burst, Storm 1 |
| C 1/1 | 0.024 | 0 | 0.024 | 5 | 5 | 2 | 1% AEP, 10 min burst, Storm 1 |

PIPE DETAILS

| Name | Max Q (cu.m/s) | Max V (m/s) | Max U/S HGL (m) | Max D/S HGL (m) | Due to Storm |
|---|---|---|---|---|---|
| Pipe-14 | 0.052 | 0.73 | 226.612 | 226.609 | 1% AEP, 5 min burst, Storm 1 |
| Pipe-13 | 0.089 | 1.23 | 226.602 | 226.59 | 1% AEP, 5 min burst, Storm 1 |
| Pipe-16 | 0.104 | 1.45 | 226.579 | 226.562 | 1% AEP, 5 min burst, Storm 1 |
| Pipe-15 | 0.125 | 1.07 | 226.555 | 226.548 | 1% AEP, 5 min burst, Storm 1 |
| Pipe-3 | 0.146 | 1.25 | 226.521 | 226.485 | 1% AEP, 10 min burst, Storm 6 |
| Pipe-18 | 0.12 | 1.02 | 226.485 | 226.485 | 1% AEP, 45 min burst, Storm 3 |
| Pipe-17 | 0.12 | 1.02 | 226.485 | 226.494 | 1% AEP, 45 min burst, Storm 3 |
| Pipe-20 | 0.12 | 1.02 | 226.494 | 226.505 | 1% AEP, 45 min burst, Storm 3 |
| Pipe-19 | 0.12 | 1.03 | 226.504 | 226.502 | 1% AEP, 45 min burst, Storm 3 |
| Pipe-22 | 0.12 | 1.03 | 226.5 | 226.498 | 1% AEP, 45 min burst, Storm 3 |
| Pipe-21 | 0.12 | 1.03 | 226.487 | 226.473 | 1% AEP, 45 min burst, Storm 3 |
| Pipe-7 | 0.137 | 1.17 | 226.402 | 226.259 | 1% AEP, 20 min burst, Storm 2 |
| Pipe-11 | 0.041 | 0.9 | 226.363 | 226.317 | 1% AEP, 5 min burst, Storm 1 |
| Pipe-12 | 0.047 | 1.03 | 226.302 | 226.259 | 1% AEP, 5 min burst, Storm 1 |
| Pipe-9 | 0.114 | 0.72 | 226.487 | 226.487 | 1% AEP, 1 hour burst, Storm 4 |
| Pipe-10 | 0.114 | 0.72 | 226.486 | 226.485 | 1% AEP, 1 hour burst, Storm 5 |
| Pipe-8 | 0.187 | 1.99 | 222.925 | 222.793 | 1% AEP, 20 min burst, Storm 3 |

CHANNEL DETAILS

| Name | Max Q (cu.m/s) | Max V (m/s) | Due to Storm |
|---|---|---|---|

OVERFLOW ROUTE DETAILS

| Name | Max Q U/S | Max Q D/S | Safe Q | Max D | Max DxV | Max Width | Max V | Due to Storm |
|---|---|---|---|---|---|---|---|---|
| OF47889 | 0.043 | 0.034 | 1.506 | 0.055 | 0.02 | 4 | 0.44 | 1% AEP, 10 min burst, Storm 7 |
| OF47887 | 0 | 0 | 1.315 | 0 | 0 | 0 | 0 | |
| OF47886 | 0 | 0 | 1.315 | 0 | 0 | 0 | 0 | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| OF47885 | 0 | 0 | 1.341 | 0 | 0 | 0 | 0 | |
| OF47884 | 0 | 0 | 1.341 | 0 | 0 | 0 | 0 | |
| OF47883 | 0 | 0 | 1.315 | 0 | 0 | 0 | 0 | |
| B16-5 | 0 | 0 | 1.315 | 0 | 0 | 0 | 0 | |
| OF47881 | 0 | 0 | 1.315 | 0 | 0 | 0 | 0 | |
| B17-6 | 0 | 0 | 1.315 | 0 | 0 | 0 | 0 | |
| OF47880 | 0 | 0 | 1.315 | 0 | 0 | 0 | 0 | |
| B18-7 | 0 | 0 | 1.076 | 0 | 0 | 0 | 0 | |
| B7-8 | 0.002 | 0.002 | 1.052 | 0.033 | 0.01 | 0.38 | 0.28 | 1% AEP, 15 min burst, Storm 2 |
| SPEL Vorce | 0.093 | 0.093 | | | | | | 1% AEP, 5 min burst, Storm 1 |
| Weir | 0.031 | 0.031 | | | | | | 1% AEP, 20 min burst, Storm 3 |
| Ori ML | 0.063 | 0.063 | | | | | | 1% AEP, 20 min burst, Storm 3 |
| B8-9 | 0 | 0 | 1.482 | 0 | 0 | 0 | 0 | |
| B12-13 | 0.002 | 0.002 | 1.261 | 0.036 | 0.01 | 0.42 | 0.25 | 1% AEP, 10 min burst, Storm 6 |
| B13-8 | 0 | 0 | 1.233 | 0 | 0 | 0 | 0 | |
| B10-11 | 0 | 0 | 0.593 | 0 | 0 | 0 | 0 | |
| OF9325 | 0 | 0 | 1.162 | 0 | 0 | 0 | 0 | |
| OF17 | 0.207 | 0.207 | 1.161 | 0.096 | 0.15 | 1.77 | 1.6 | 1% AEP, 20 min burst, Storm 3 |

DETENTION BASIN DETAILS

| Name | Max WL | MaxVol | Max Q Total | Max Q Low Level | Max Q High Level |
|---|---|---|---|---|---|
| OSD | 226.49 | 334.6 | 0.114 | 0.114 | 0 |

Run Log for 23053 v4

{\colortbl;\red0\green0\blue0;\red192\green0\blue0;}Run Log for 23053 v4.drn - DRAINS run at 07:21:10 on 2/11/2023 using Watercom Drains v2023.06.8578.17142

No water upwelling from any pit.
Freeboard was less than 0.15m at P1/4, P1/6, P1/8, P1/11, P1/13, P1/2, P1/3, P1/5, P2/2, P1/7, P1/9, P1/10, P1/12, P1/14
The maximum pond depth in these sag pits is unsafe: P1/13\line
Flows were safe in all overflow routes.

# StormSack

**At-Source Gross Pollutant Trap**

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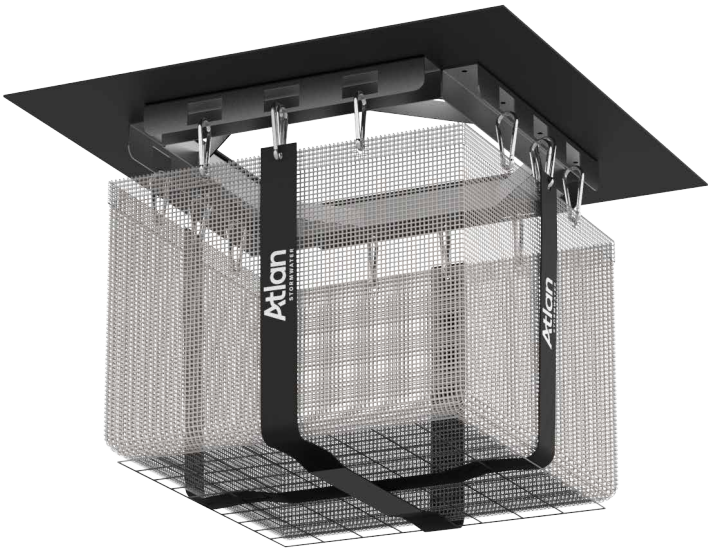


The Atlan StormSack is specifically designed for the capture of gross pollutants, sediment, litter, and oil and grease. Ideally suited for storm drain retrofits, the StormSack's unique design allows maintenance to be performed using conventional vacuum suction equipment.

StormSack filtration solutions are highly engineered water quality devices that are deployed directly in the stormwater system to capture contaminants close the surface for ease of maintenance. Easily retrofitted into new or existing structures, StormSack filtration technology is a decentralized approach to stormwater treatment that essentially repurposes traditional site infrastructure and customizes it to meet specific site water quality goals. In this way, it satisfies important objectives of today's LID (Low Impact Development) criteria.

From an operations perspective, catch basins with StormSack filters are also easier and quicker to clean out because pollutants are trapped just under the grate.

# APPLICATIONS

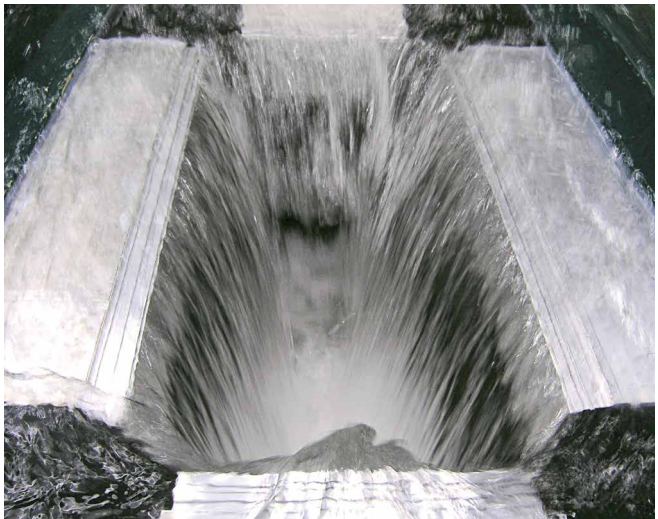
- Council storm drain retrofits
- Commercial / retail / residential
- Litter prone urban areas
- Scrap metal / solid waste / oil storage
- Part of treatment train
- Construction sediment / erosion

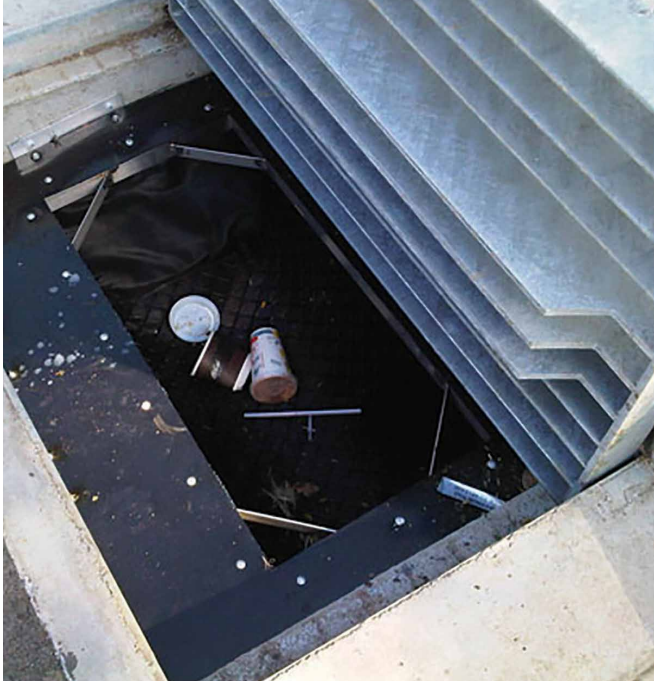
# BENEFITS

- Can be modelled in MUSIC in conjunction with bio-retention
- Low cost gross pollutant capture
- Quick & easy installation
- Simple maintenance
- At-source capture
- Adjusts to custom pit sizes

The StormSack was introduced to the Australian market in 2012 and field testing is underway at several locations in South-east Queensland. Laboratory testing has shown capture of 99.99% of gross pollutants up to the bypass flow rate. Further results will be provided as they become available.

Recommended minimum clearance from bottom of StormSack to inside bottom of vault is 50mm. Typical frame adjustability range of 127mm in each direction.





# HOW IT WORKS

This technology is a post developed stormwater treatment system. The StormSack provides effective filtration of solid pollutants and debris typical of urban runoff, while utilising existing or new storm drain infrastructure. The StormSack is designed to rest on the flanges of conventional catch basin frames and is engineered for most hydraulic and cold climate conditions.

Installation procedures shall include removing the storm grate, cleaning the ledge of debris and solids, measuring catch basin clear opening and adjusting flanges to rest on the grate support ledge. Install StormSack with splash guard under curb opening so the adjustable flanges are resting on the grate support ledge. Install corner filler pieces. Reinstall storm grate directly on support flanges rise shall be no more than 3mm.

# FEATURES

| POLLUTANT | EFFICIENCY |
|---|---|
| Gross Pollutants (GP) | 100% |
| Total Suspended Solids (TSS) | 61% |
| Total Phosphorus (TP) | 28% |
| Total Nitrogen (TN) | 45% |

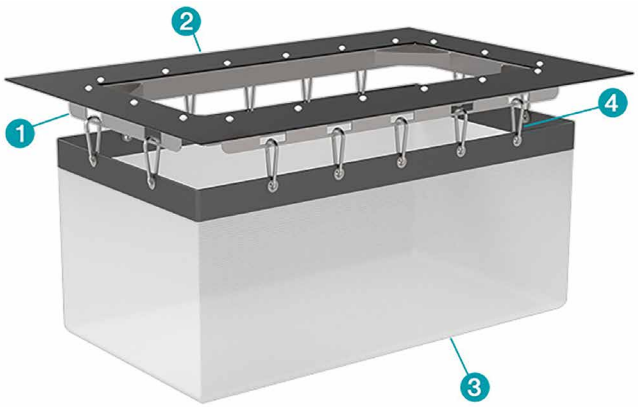
*Contact Atlan to confirm approved performance for the project LGA

# MAINTENANCE

Typically the StormSack is serviceable from the street level, and therefore maintenance does not require confined space entry into the catch basin structure. The unit is designed to be maintained in place with a vacuum hose attached to a sweeper or a vactor truck. Use only Atlan replaceable parts.

| Application | Regulatory Issue | Target Pollutants |
|---|---|---|
| Council Storm Drain Retrofits | At-source litter capture | Sediment, Litter, O&G |
| Commercial/Retail/Residential | Stormwater Compliance | Sediment, Litter, O&G |
| Litter Prone Urban Areas | Cost effective litter control | Litter ≥ 5 mm |
| Scrap Metal/Solid Waste/Oil Storage/Etc | Industrial Multi-Sector General Permit | Gross Pollutants, O&G |
| Part of Treatment Train | Council Stormwater Quality Improvement Targets | Sediment, Litter, O&G |
| Construction Sediment/Erosion | Sediment Control Plan | Sediment/Erosion Control |

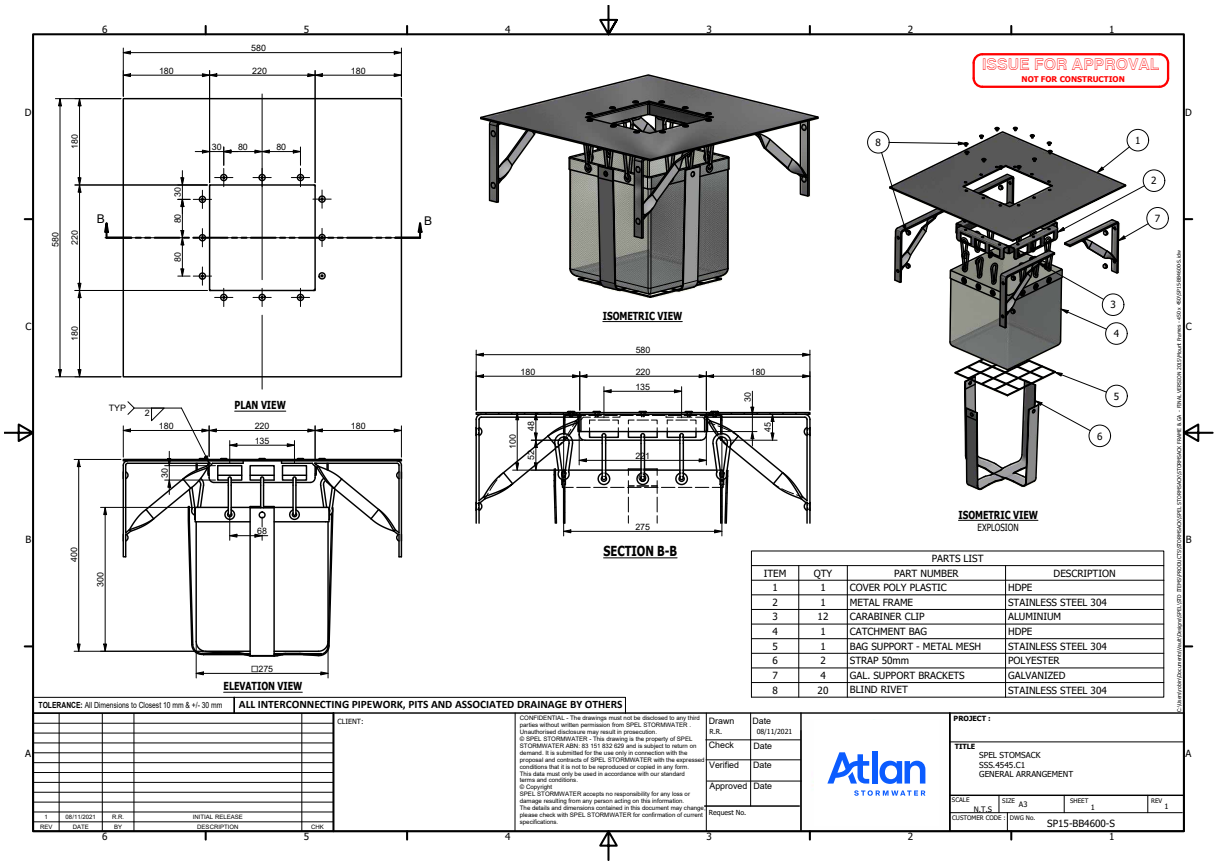
| Features | |
|---|---|
| 1. | 1. Ultra-Durable Aluminium Frame<br>• Available in 450x450mm, 600x600mm, 600x900mm and 900x900mm sizes<br>• Custom pit arrangements upon request |
| 2. | Black Poly Surround riveted to Frame<br>• Can be cut to suit on site |
| 3. | Reinforced Stormsack Bag<br>• Bag has sewed eyelets<br>• Square bottom design for even distribution |
| 4. | Karabiners attach Bag to Frame for easy service & replacement |
| 5. | 5. Aluminium Support Angles & Fixings |

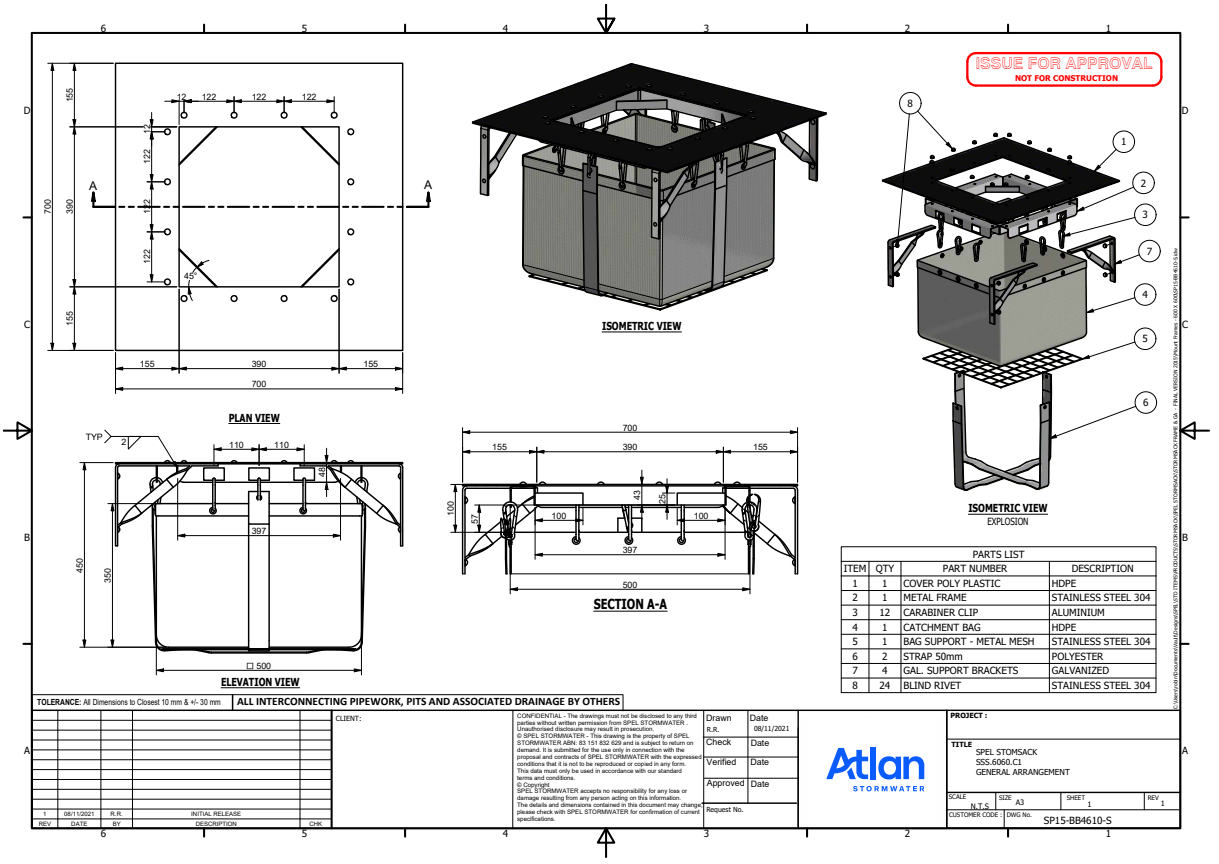



| Standard StormSack to suit Pit Sizes |
|---|
| 450x450mm |
| 600x600mm |
| 900x600mm |
| 900x900mm |

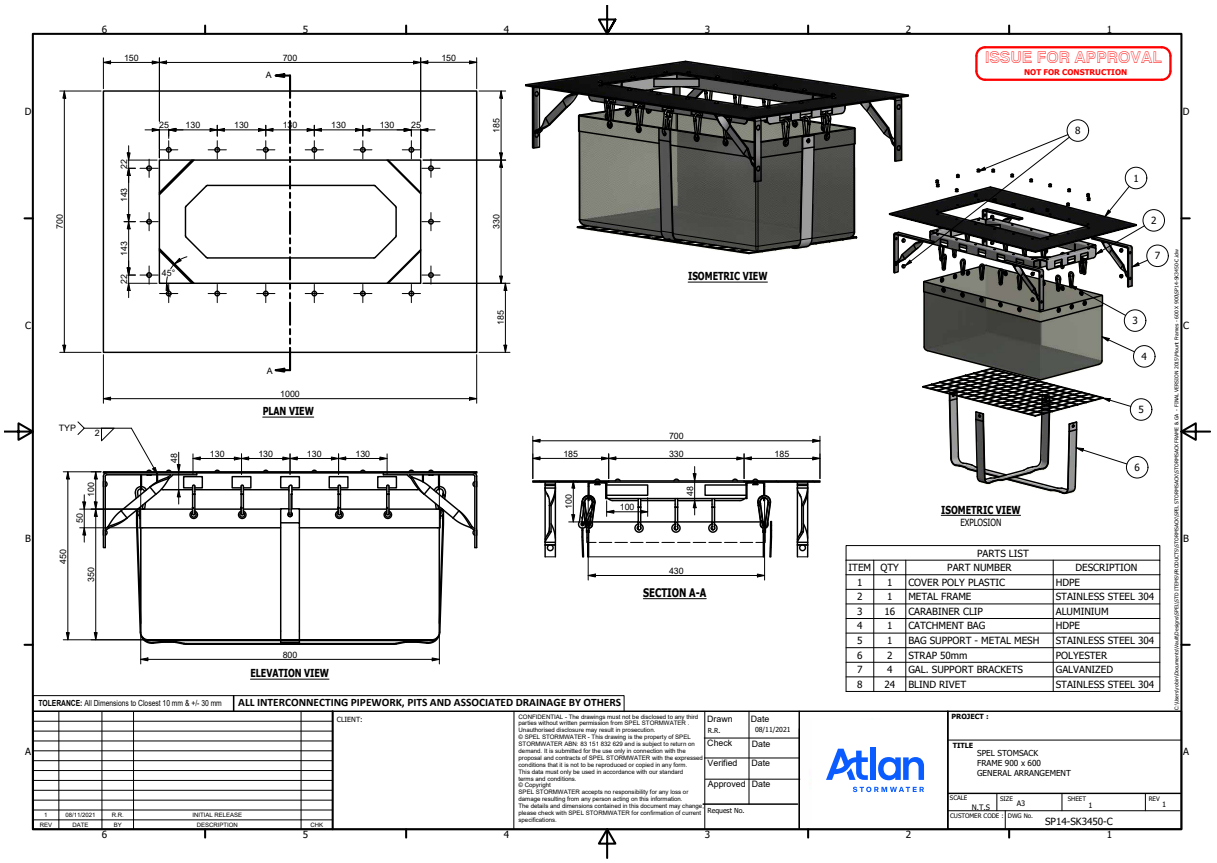
Custom sizes (i.e. 1200x900mm) can be manufactured on short lead times

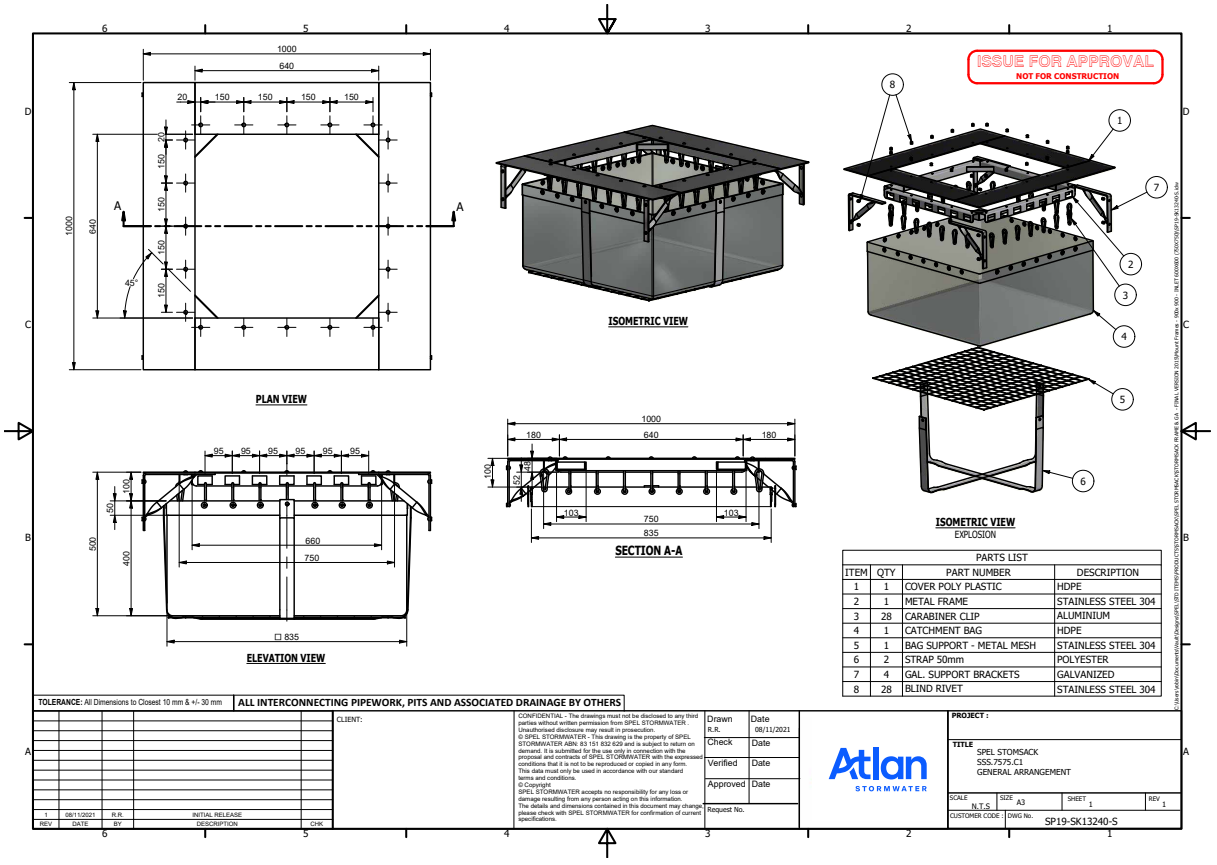
# TECHNICAL DRAWINGS



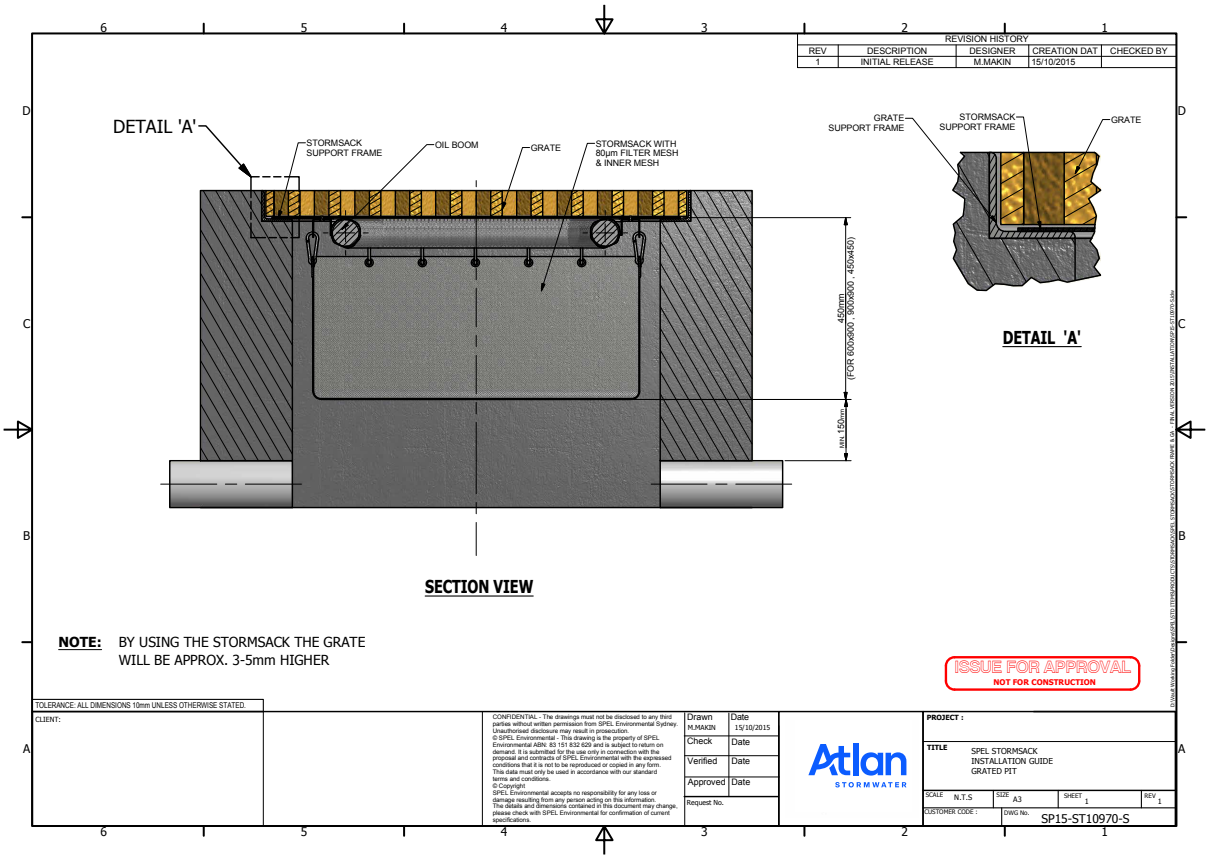



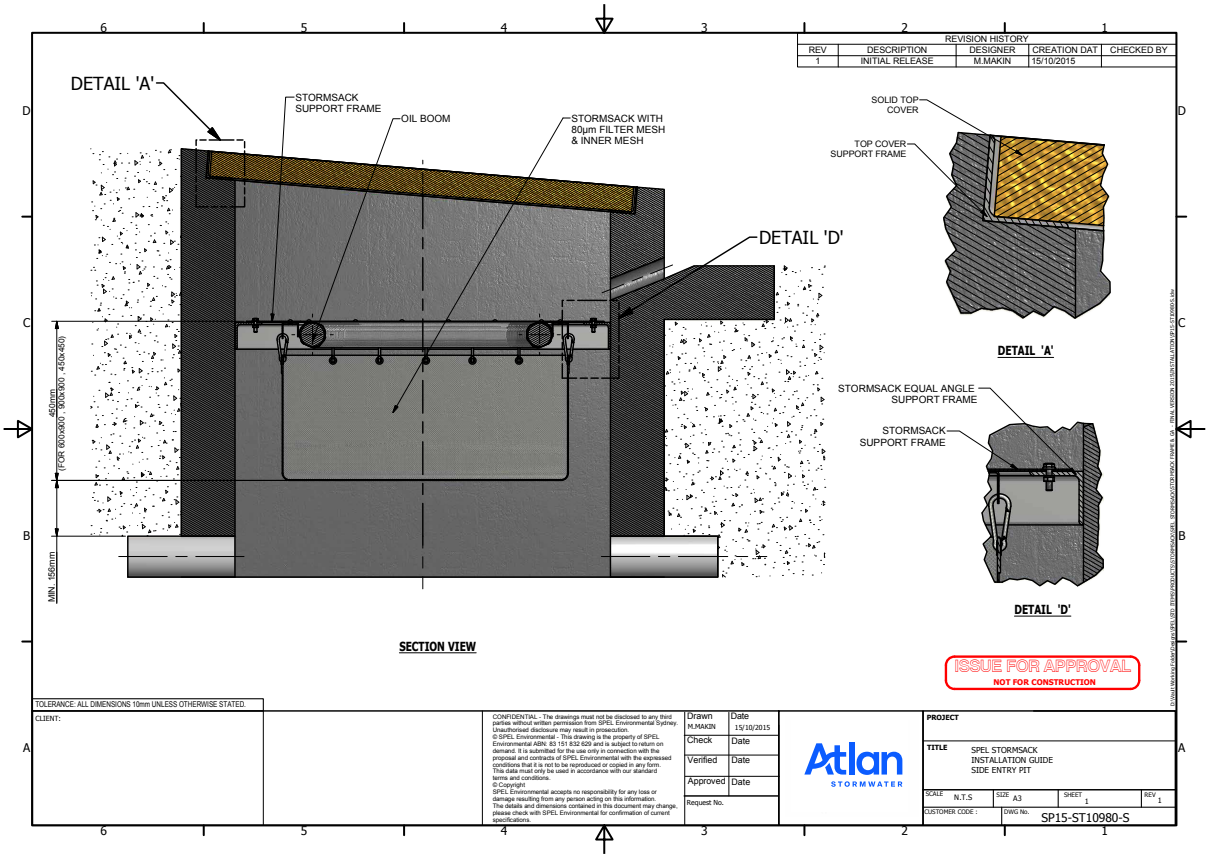
# TECHNICAL DRAWINGS



# INSTALLATION DETAILS



# StormSack

## At-Source Gross Pollutant Trap

| | | |
|---|---|---|
| **NSW HEAD OFFICE**<br>100 Silverwater Rd, Silverwater NSW 2128<br>PO Box 7138, Silverwater NSW 1811<br>P: +61 2 8705 0255<br>P: 1300 773 500<br>nsw.sales@atlan.com.au | **QLD MAIN OFFICE**<br>130 Sandstone Pl, Parkinson QLD 4115<br>P: +61 7 3271 6960<br>P: 1300 773 500<br>qld.sales@atlan.com.au | **VIC & TAS OFFICE**<br>897 Wellington Rd Rowville VIC 3178<br>P: +61 3 5274 1336<br>P: 1800 810 139<br>sales@atlan.com.au<br><br>**VIC GEELONG BRANCH**<br>70 Technology Close, Corio VIC |
| **SA OFFICE**<br>9 Hampden Road, Mount Barker SA 5251<br>P: 1300 773 500<br>sales@atlan.com.au | **QLD SUNSHINE COAST BRANCH**<br>19-27 Fred Chaplin Cct, Bells Creek, QLD 4551<br>P: 1300 773 500<br>qld.sales@atlan.com.au | **WA OFFICE**<br>2 Modal Cres Canning Vale WA 6155<br>P: +61 8 9350 1000<br>P: 1800 335 550<br>sales@atlan.com.au |
| **NZ OFFICE WANGANUI**<br>43 Heads Road Wanganu New Zealand<br>P: +64 6 349 0088<br>sales@atlan.com.au<br>atlan.co.nz | **NZ OFFICE WELLINGTON**<br>41 Raiha St Porirua Wellington New Zealand<br>P: +64 4 239 6006<br>sales@atlan.com.au<br>atlan.co.nz | **NZ OFFICE AUCKLAND**<br>100 Montgomerie Road Airport Oaks<br>P: +64 9 276 9045<br>sales@atlan.com.au<br>atlan.co.nz |

*Joy in water*

'We believe clean waterways are a right not a privilege and we work to ensure a joy in water experience for you and future generations.'

**Andy Hornbuckle**

Atlan STORMWATER

**P** 02 8705 0255 | sales@atlan.com.au
100 Silverwater Rd, Silverwater NSW 2128 Australia
**atlan.com.au**

# Vortceptor

**Hydrodynamic GPT**

atlan.com.au

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STORMWATER

## Overview

The Vortceptor Gross Pollutant Trap (GPT) is a non-blocking vortex style separator that has a unique screen and treatment action producing low vortex conditions resulting in excellent pollution removal performance and resulting high water quality outcomes.

It separates and captures gross pollutants, sediments, silt, total suspended solids, some nutrients and oil and grease.

The one piece Vortceptor GPT is delivered to site fully assembled saving on installation time and crane costs. The fibreglass design can be installed in all types of trafficable zones, including vehicular truck (Class D).^

## TESTED TREATMENT EFFICIENCIES*

| POLLUTANT | EFFICIENCY |
|---|---|
| Gross Pollutants (GP) | 99% |
| Total Suspended Solids (TSS) | 70% |
| Total Phosphorus (TP) | 30% |
| Total Nitrogen (TN)* | 0% |
| Petroleum Hydrocarbon* | 94% |

*Contact Atlan to confirm approved performance for the project LGA
Organic/particulate component of the nutrient only.

^ Subject to the installation of an engineered cast in situ concrete slab.

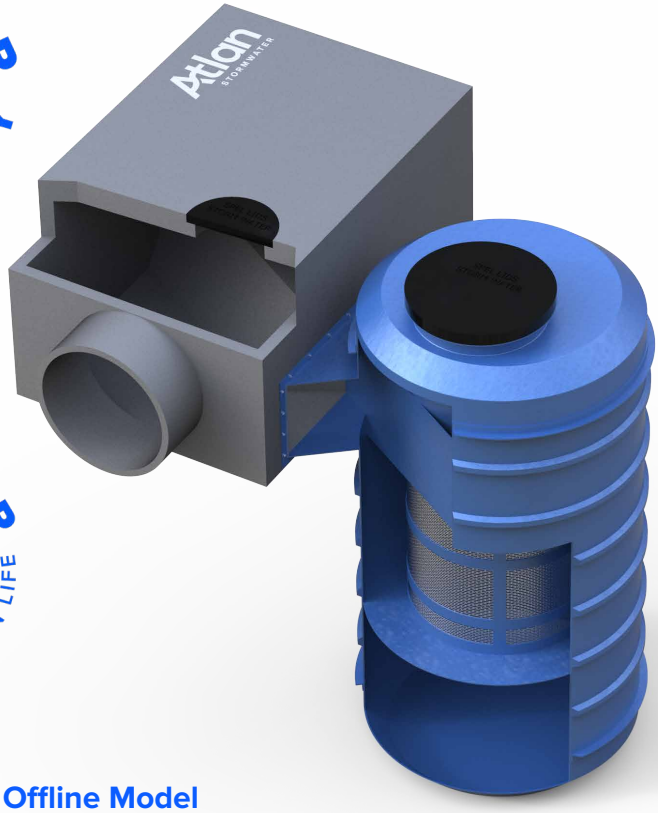
The Vortceptor is designed to meet requirements for a diverse range of applications. Designed with versatility in mind, these fibreglass reinforced polymer (FRP) GPTs are available in inline and offline configurations to meet your project specifications.

An offline configuration places the separation chamber adjacent to the diversion chamber. This allows bypass to occur and is beneficial in high flow rate applications.

In an inline treatment configuration, the diversion chamber and separation chamber are integrated – with the device situated ‘inline’ with incoming and outgoing flows. This is often beneficial for retrofit applications in existing drainage systems.

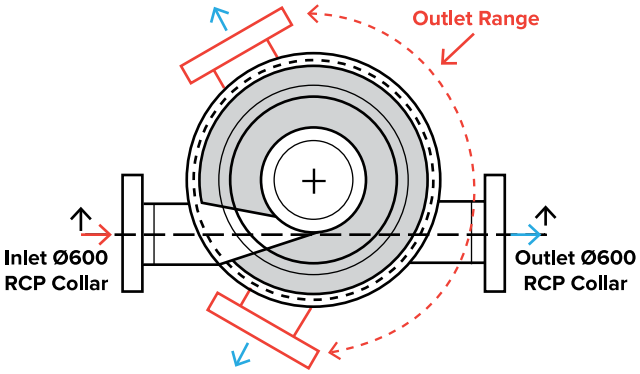
## Applications

- Shopping Precinct
- Commercial Zones
- Recreational Grounds
- Industrial Areas
- Beaches & Park
- Residential Development



## Inline Model

The Vortceptor Inline series is useful for constrained sites with a treatment flow rate that is relative to the bypass flow rates. The Inline Vortceptor has a flexible pipe configuration with the outlet pipe being able to rotate in excess of 180° around the system. The Inline Vortceptor is available with or without internal bypass to suit installation on low flow diversions.

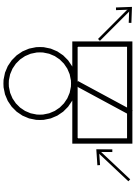



## Offline Model

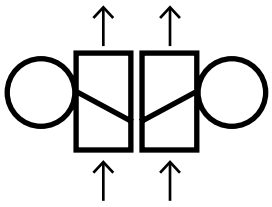
The Vortceptor Offline series is used when the bypass flows are high, or greater than the flows required to pass through the Inline range. There are various advantages of the Offline series including the ability to divert treated flow water to a tertiary asset independently to the bypassed stormwater and the ability to adjust the system to cater for trailwater and external catchments.

You can also include:

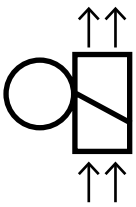
1. Angled inlet/outlet connections
2. Multiple pipes or culverts
3. Back to back twin units - for greater treatment flow requirements
4. Bifurcation or splitting of flows



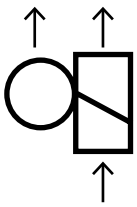
**1 / Angled up to 45°**



**3 / Back to back units**



**2 / Multiple pipes or culverts**



**4 / Split treated / bypass flow**

# Vortex Style GPT Inline Series

The Inline series is manufactured from the standard single tank dia below. Custom systems are also available.

| Models | Dimensions (mm) | | | | | Capacities | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Internal Diameter | Overall Width | Depth Below Invert | Manhole Size (mm) | Max Pipe Size (mm) | Sump Capacity ($m^3$) | Floatables Volume ($m^3$) | Treatable Flow Rate (L/s) | Max Flow Rate (L/s) |
| INLINE SERIES | | | | | | | | | |
| SVI.025 (L/R) | 1200 | 1370 | 1400 | 600x 600 | 450 | 1.2 | 0.06 | 26 | 280 |
| SVI.055 (L/R) | 1800 | 1970 | 1650 | 900x 900 | 525 | 2.7 | 0.22 | 55 | 380 |
| SVI.055.M (L/R) | 2200 | 2370 | 1585 | | 525 | 3.2 | 0.22 | 55 | 750 |
| SVI.100/15 (L/R) | 1500 | 1670 | 1900 | 1000 DIA<br><br>Internal 600x 600 | 600 | 3.1 | 0.20 | 100 | 700 |
| SVI.160/22 (L/R) | 2200 | 2370 | 2400 | | 750 | 3.4 | 0.39 | 160 | 940 |
| SVI.200/22 (L/R) | 2200 | 2370 | 2900 | | 750 | 3.1 | 0.39 | 200 | 990 |
| SVI.300/22 (L/R) | 2200 | 2370 | 3100 | | 750 | 4.5 | 0.83 | 300 | 1050 |
| SVI.400/22 (L/R) | 2200 | 2370 | 3000 | | 750 | 3.4 | 0.83 | 400 | 1180 |
| SVI.400/25 (L/R) | 2500 | 2670 | 2900 | | 900 | 5.5 | 0.83 | 400 | 1650 |
| SVI.400/30 (L/R) | 3000 | 3170 | 3500 | | 900 | 10 | 1.5 | 400 | 2500 |
| SVI.500/30 (L/R) | 3000 | 3170 | 3500 | | 1050 | 10 | 1.5 | 500 | 1650 |
| SVI.500/35 (L/R) | 3500 | 3670 | 4000 | | 1050 | 10 | 1.5 | 500 | 1900 |

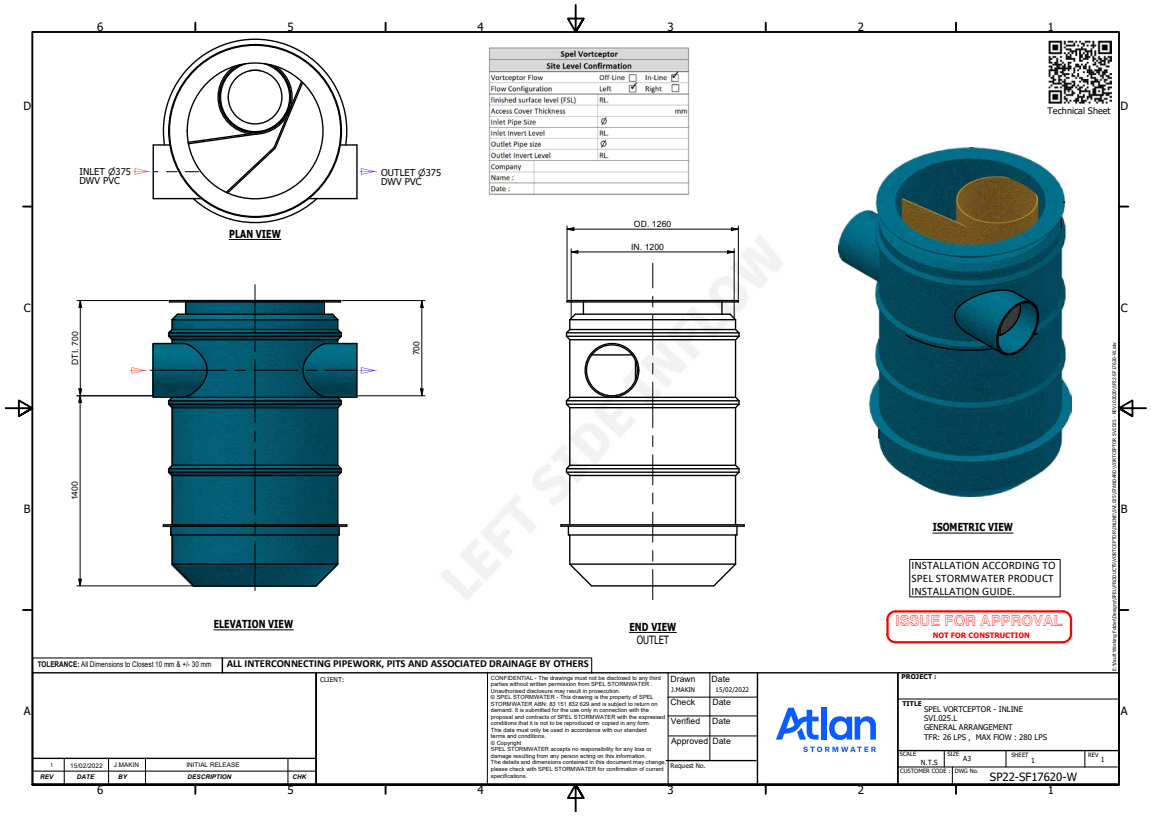
# Vortex Style GPT Offline Series

The Offline series is manufactured from the standard single tank dia below. Custom systems are also available.

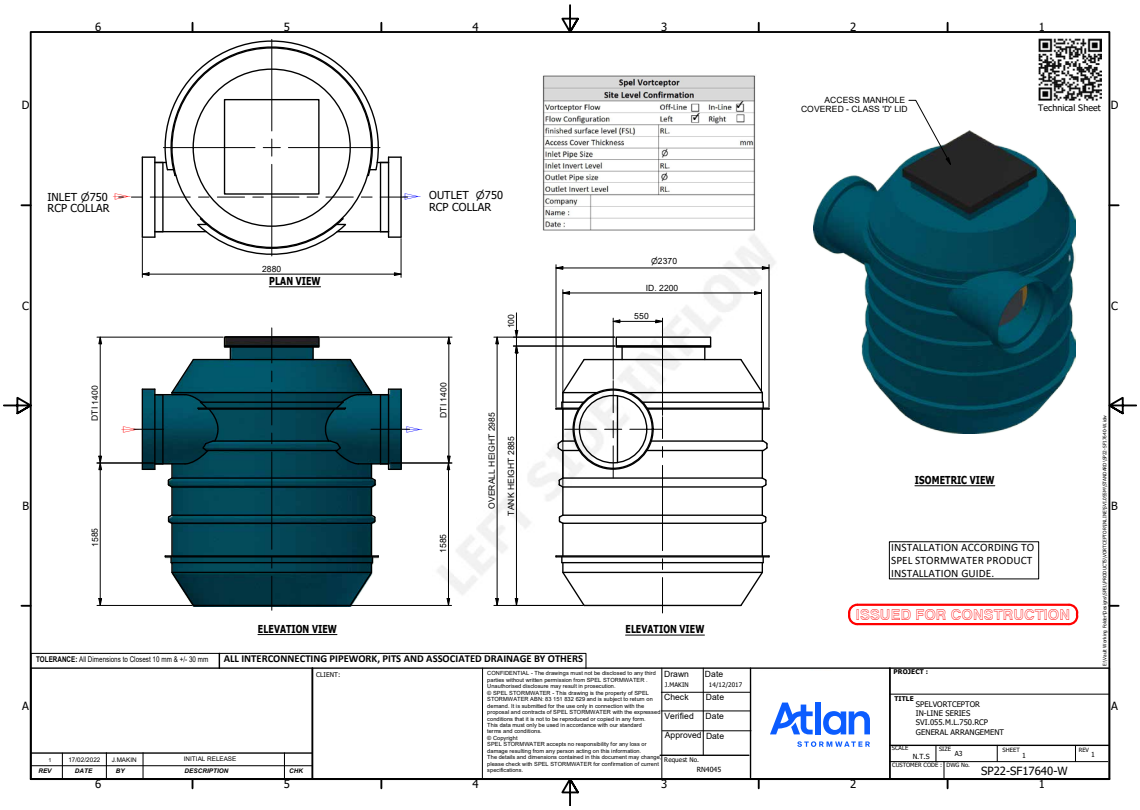
| Models | Dimensions (mm) | | | | Capacities | | | |
|---|---|---|---|---|---|---|---|---|
| | Internal Diameter | Overall Width | Depth below invert | Manhole Size (mm) | Sump Capacity ($m^3$) | Floatables Volume ($m^3$) | Treatable Flow Rate (L/s) | Bypass Flow Rate (L/s) |
| OFFLINE SERIES | | | | | | | | |
| SVO.096 (L/R) | 1500 | 1670 | 1725 | 1000 DIA<br>Internal 600x600 | 2.0 | 0.35 | 96 | PROJECT SPECIFIC DESIGN |
| SVO.140 (L/R) | 1500 | 1670 | 2025 | | 2.3 | 0.35 | 140 | |
| SVO.180 (L/R) | 1500 | 1670 | 2325 | | 3.0 | 0.35 | 180 | |
| SVO.220 (L/R) | 2200 | 2350 | 2800 | | 4.5 | 1.1 | 220 | |
| SVO.360 (L/R) | 2200 | 2350 | 3080 | | 6.0 | 1.1 | 360 | |
| SVO.530 (L/R) | 3000 | 3150 | 3200 | | 8.5 | 2.8 | 530 | |
| SVO.800 (L/R) | 3000 | 3150 | 4200 | | 8.5 | 2.8 | 800 | |
| SVO.810 (L/R) | 4000 | 4150 | 3400 | | 19.3 | 5.65 | 800 | |
| SVO.1200 (L/R) | 4000 | 4150 | 4000 | | 19.3 | 5.65 | 1200 | |
| SVO.1600 (L/R) | 4000 | 4150 | 4600 | | 19.3 | 5.65 | 1600 | |

# INLINE DRAWINGS

## Inline Model SVI.025

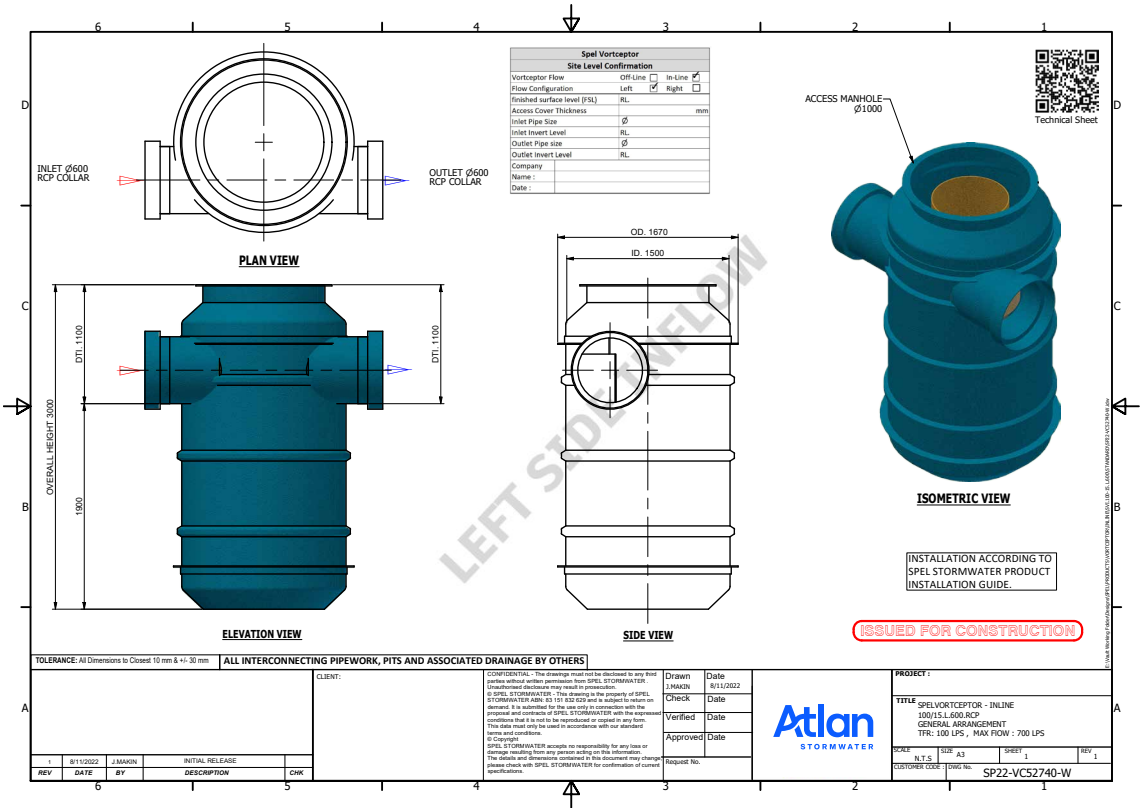



## Inline Model SVI.055

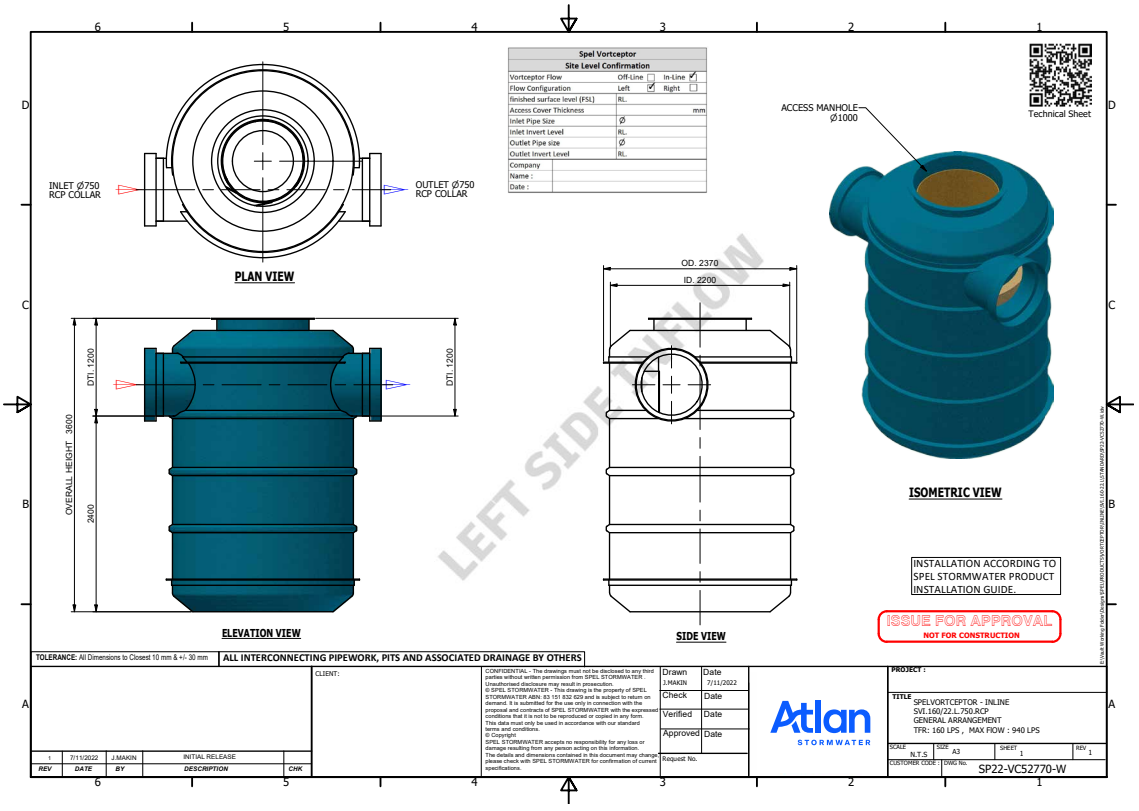


# INLINE DRAWINGS

## Inline Model SVI.100/15

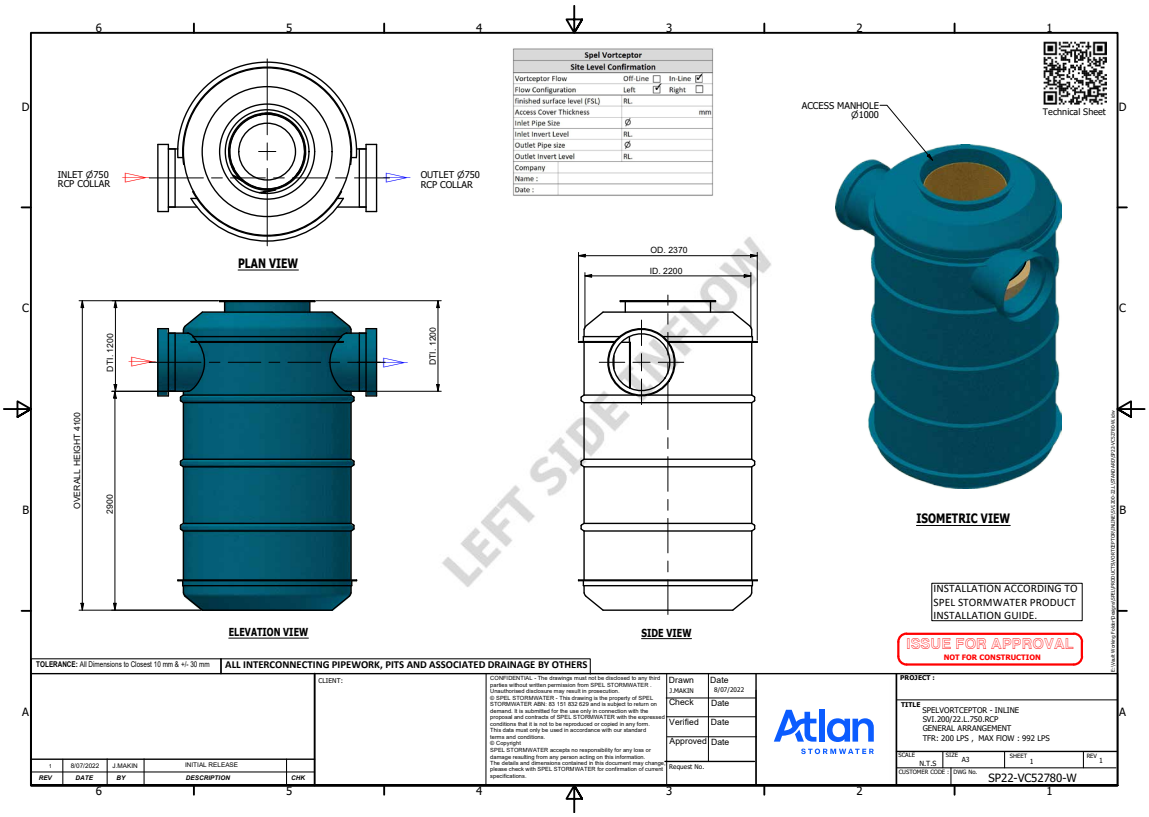



## Inline Model SVI.160/22

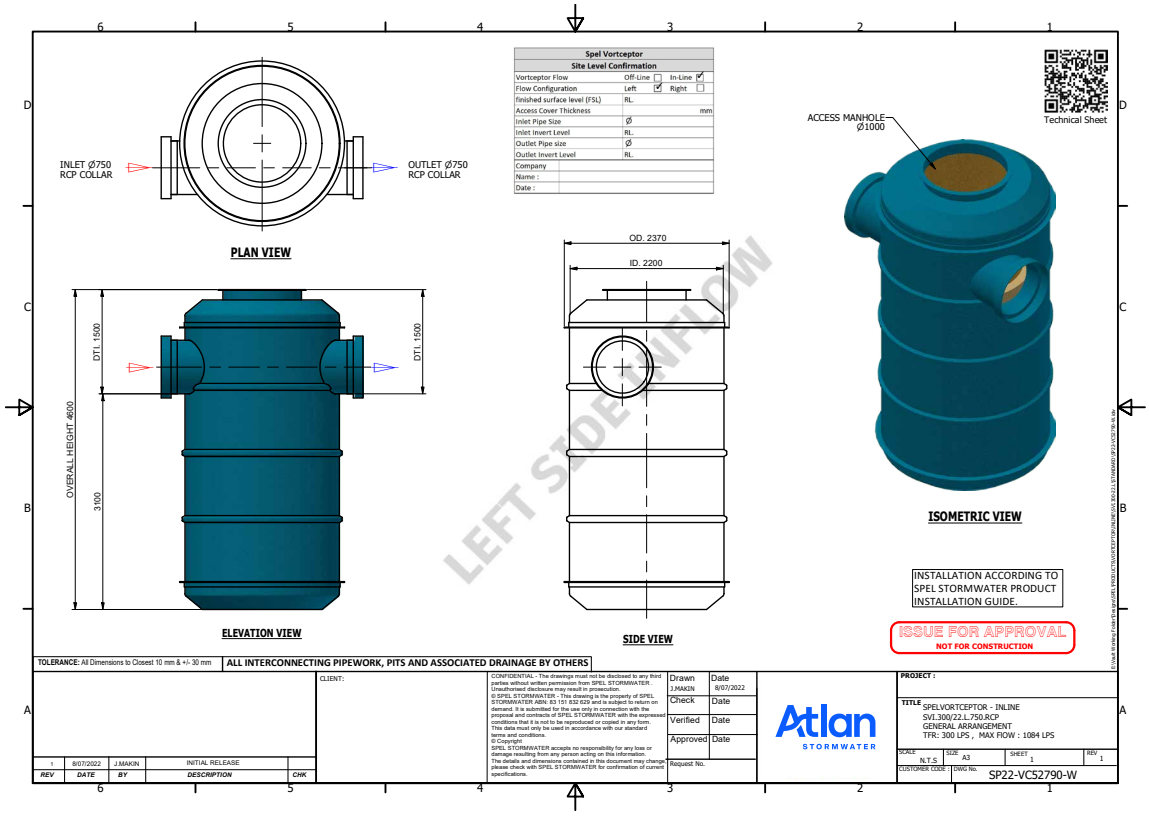


# INLINE DRAWINGS

## Inline Model SVI.200/22

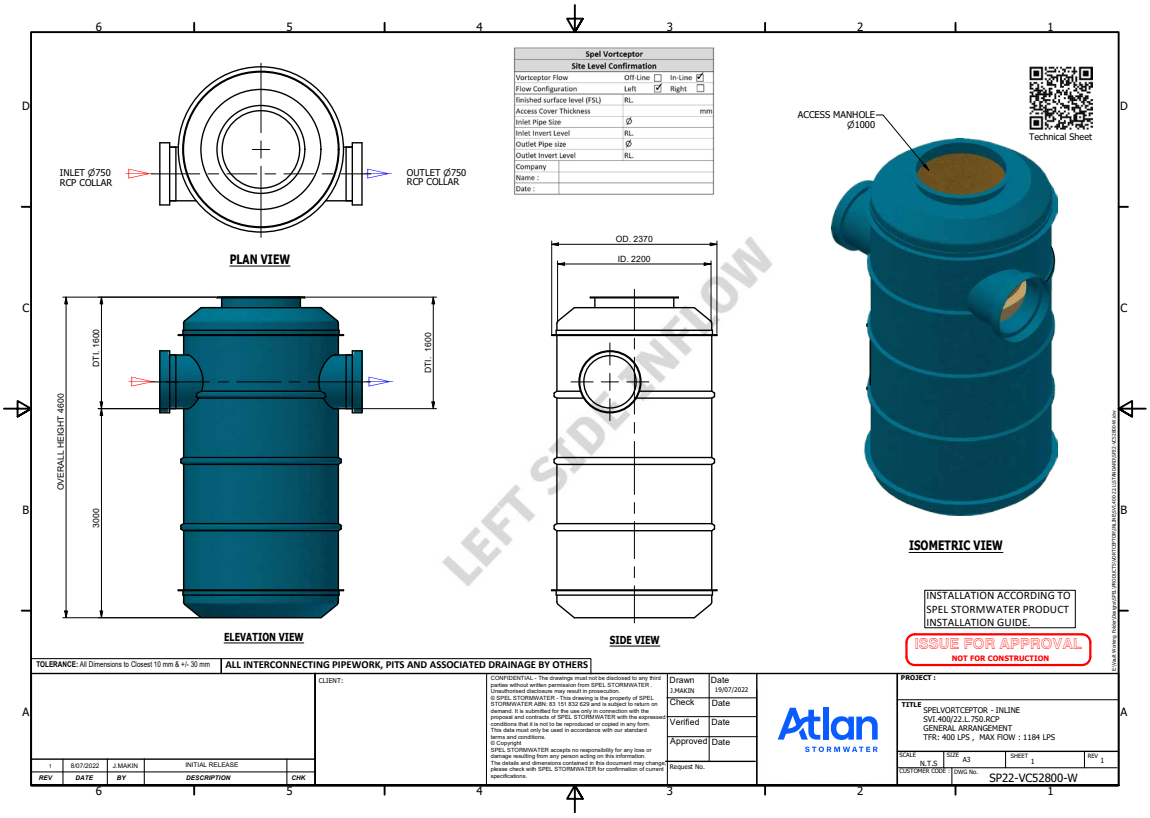



## Inline Model SVI.300/22

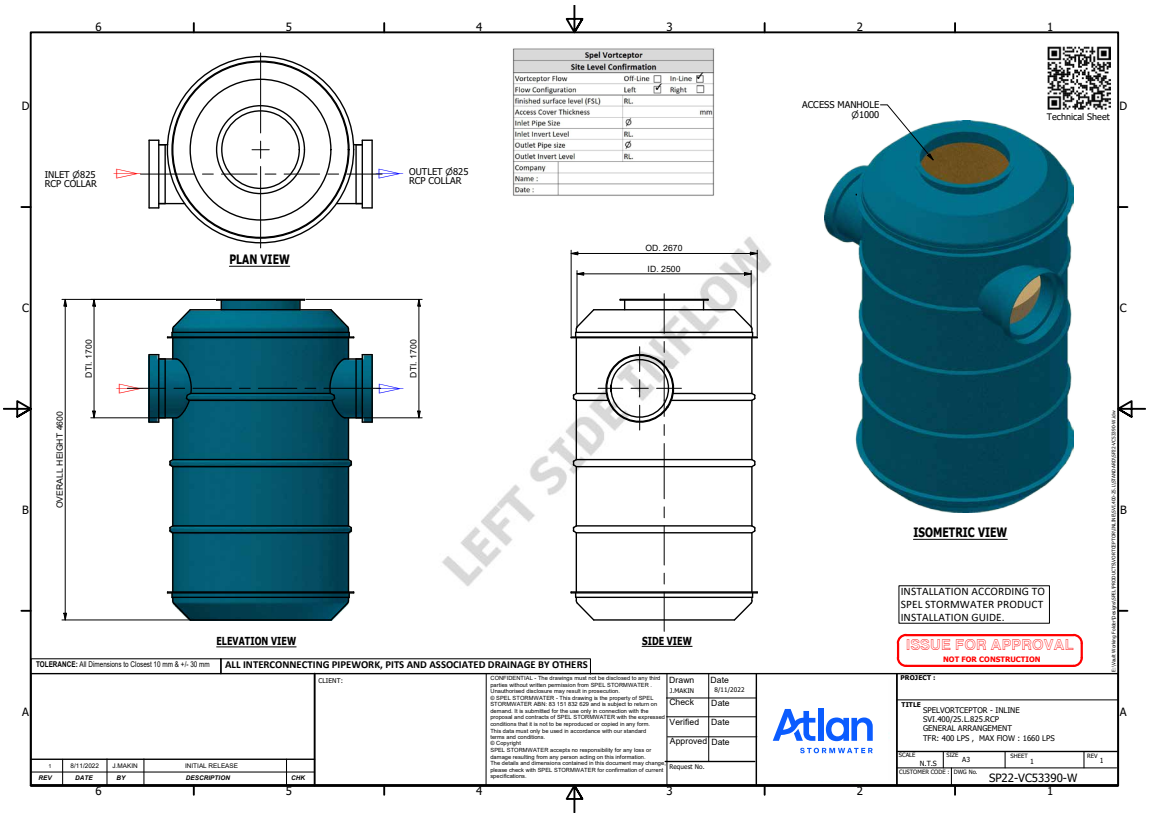


# INLINE DRAWINGS

## Inline Model SVI.400/22

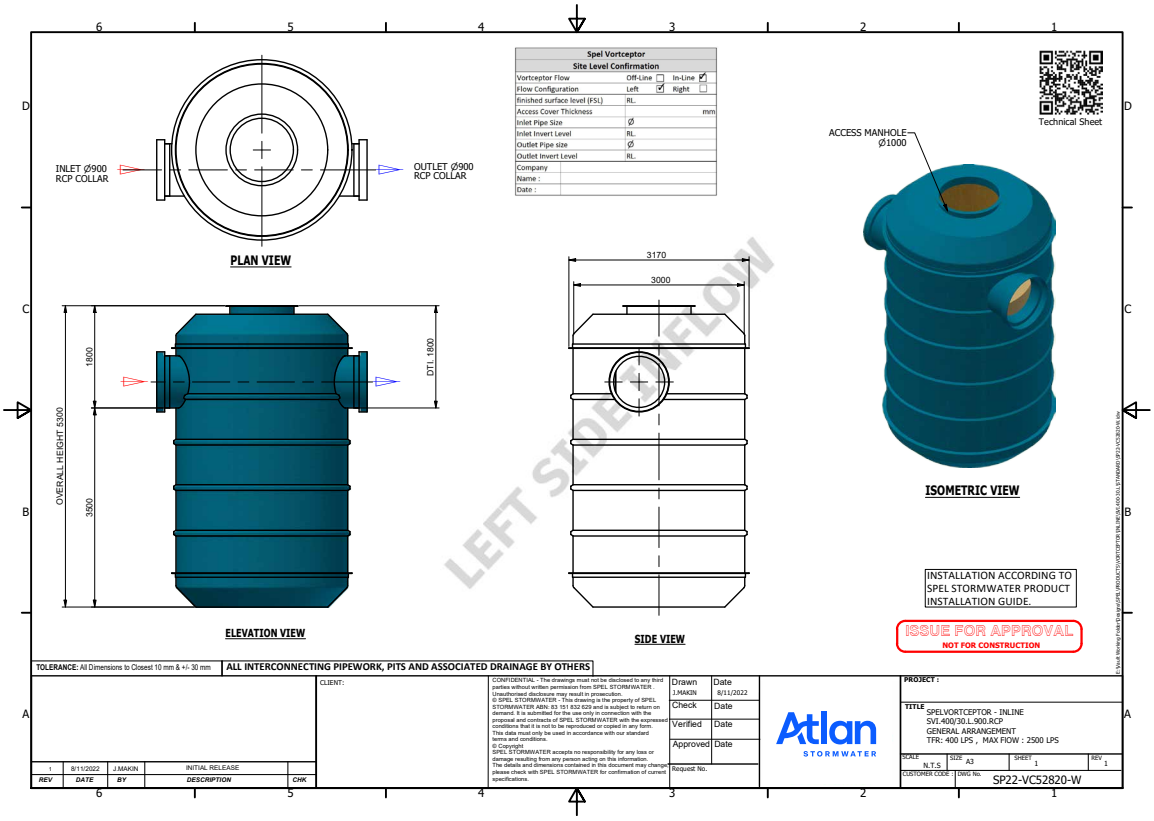



## Inline Model SVI.400/25



# INLINE DRAWINGS

## Inline Model SVI.400/30

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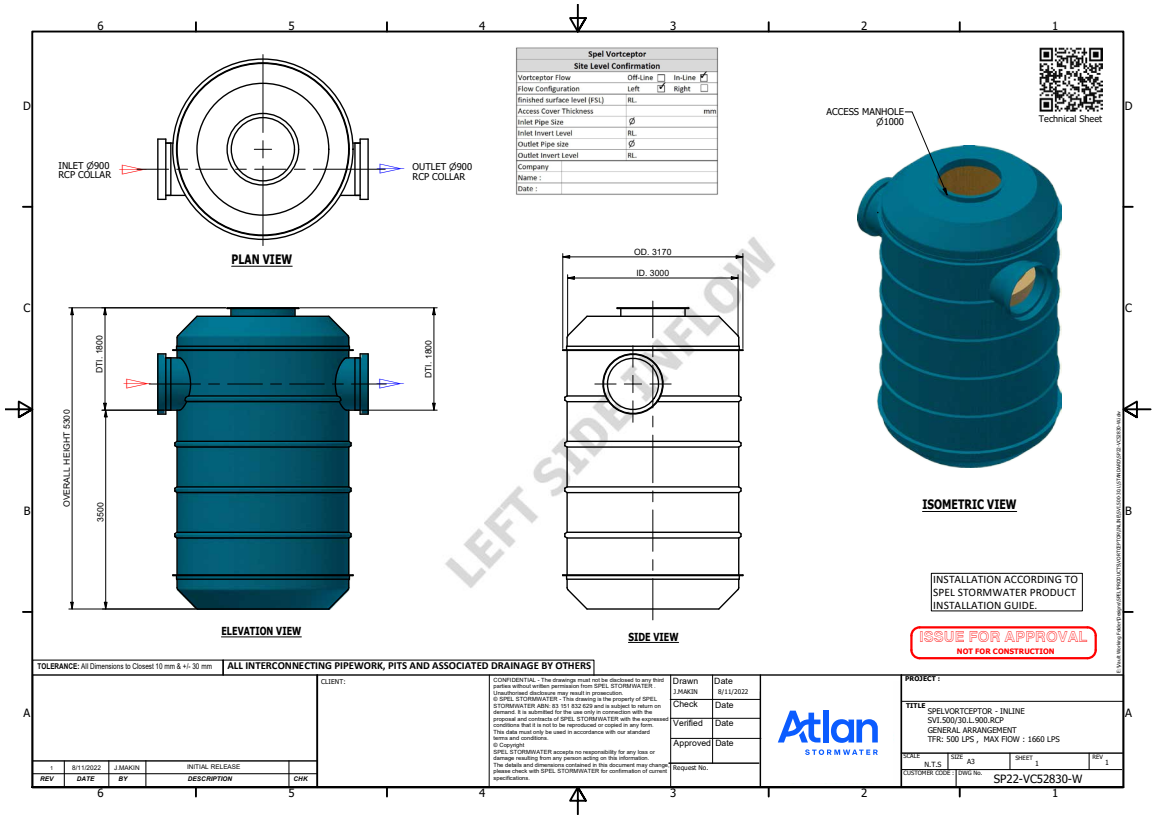

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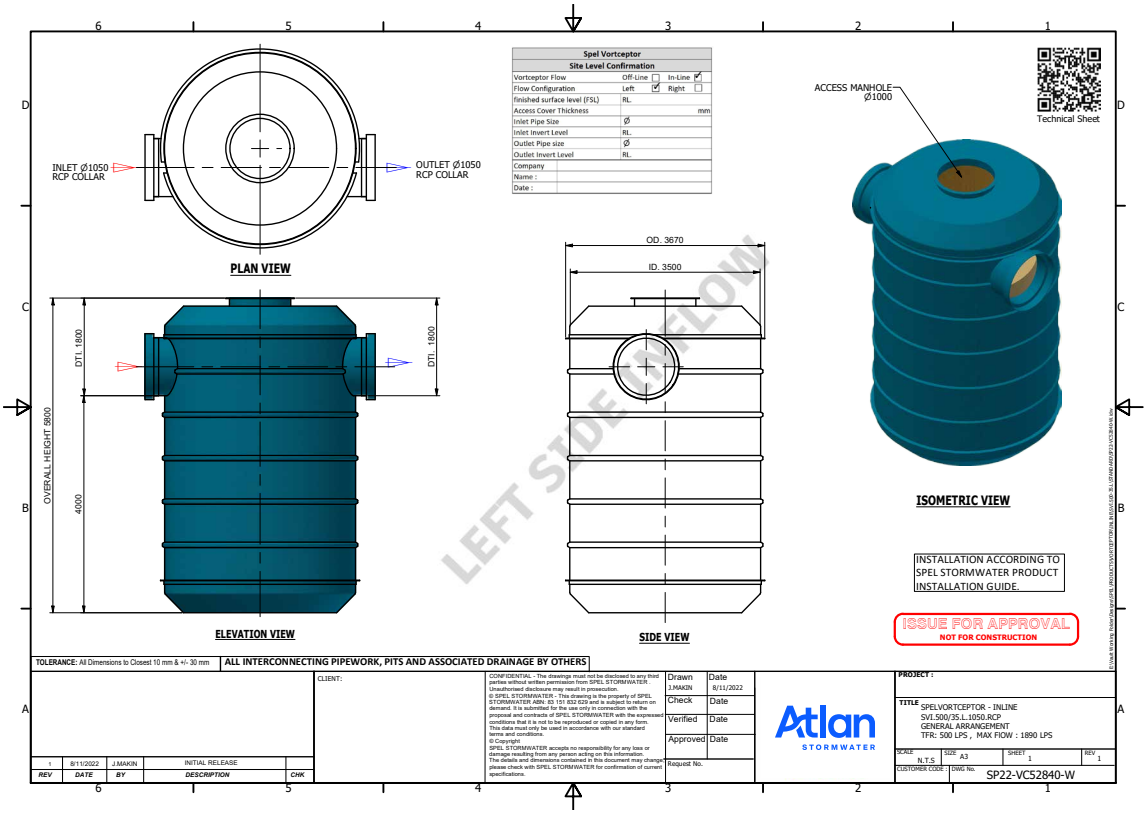

# OFFLINE DRAWINGS

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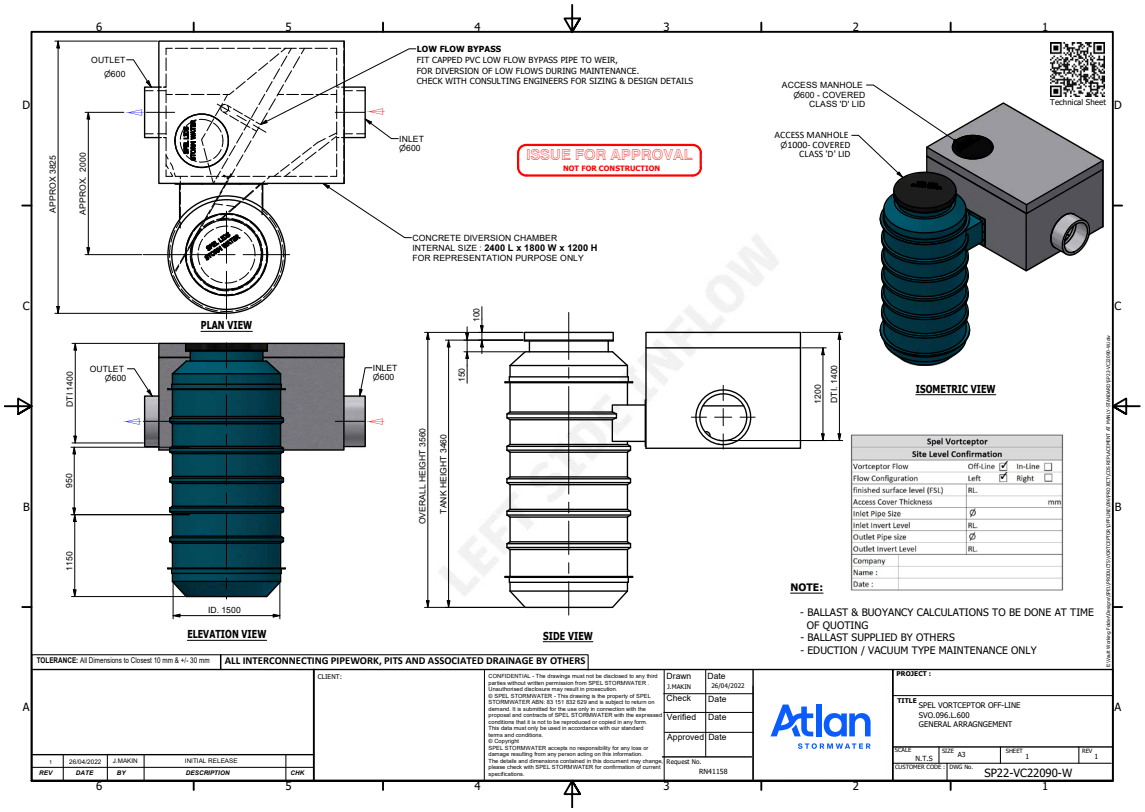


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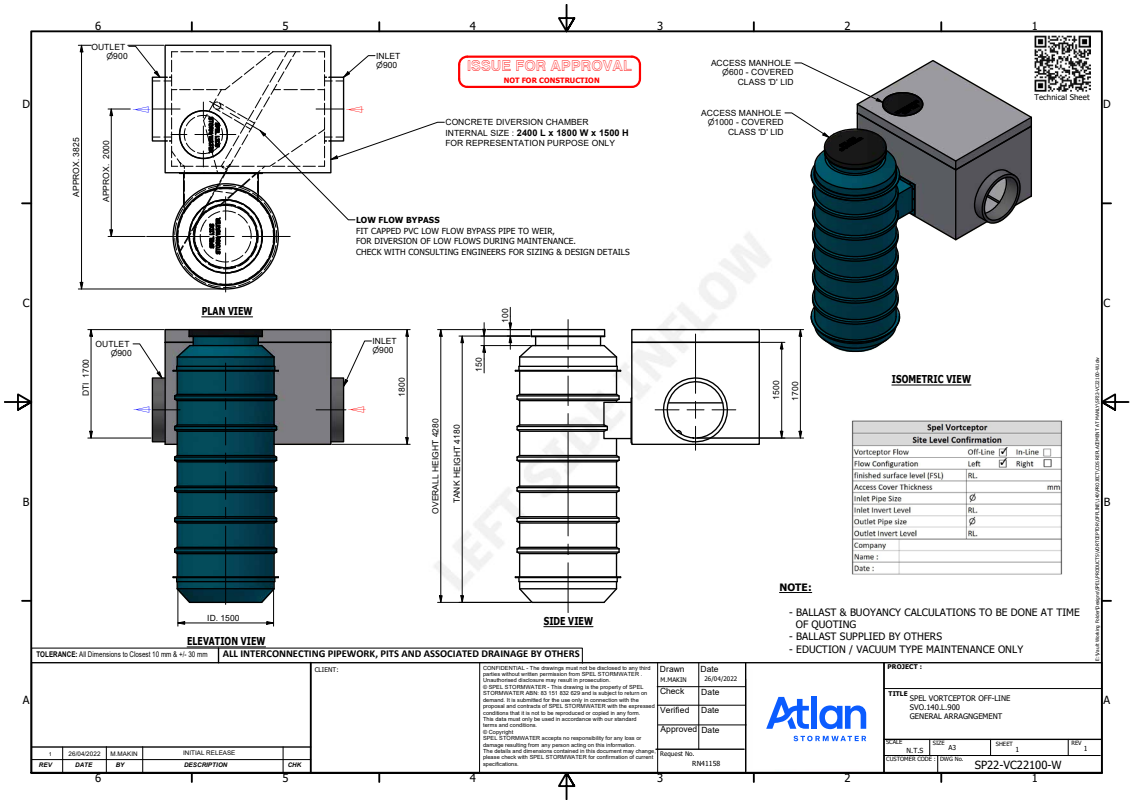

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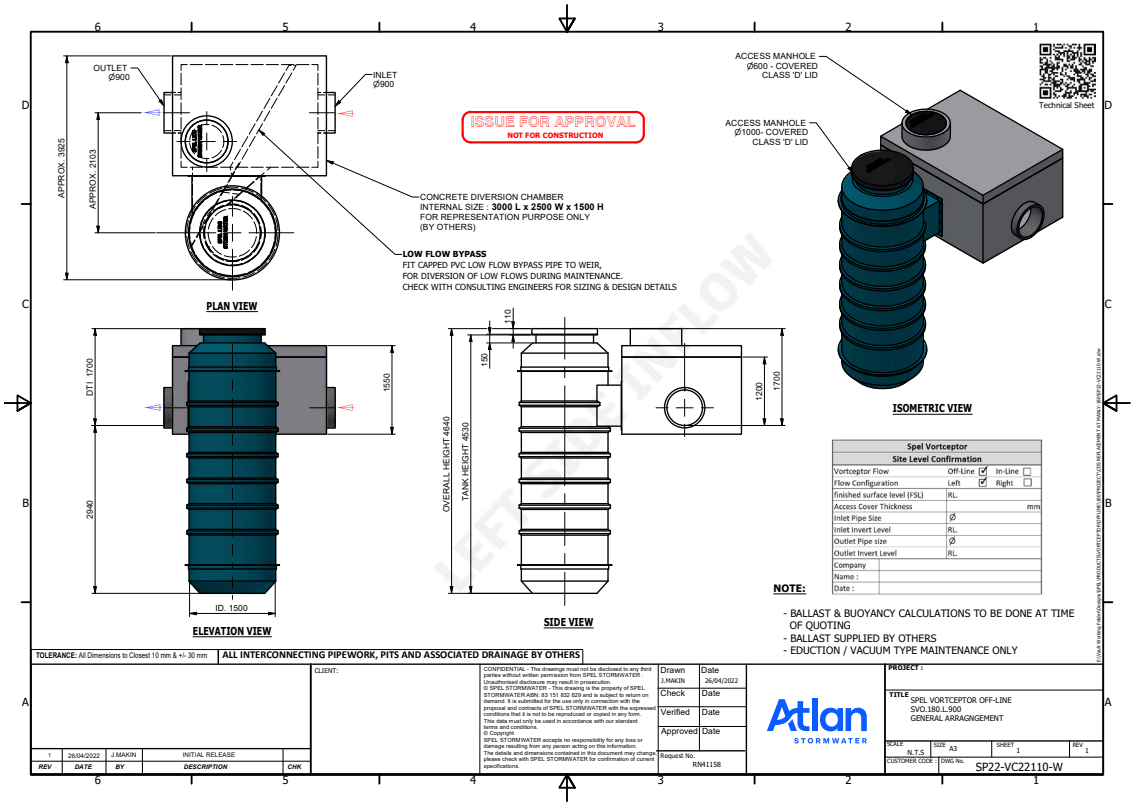


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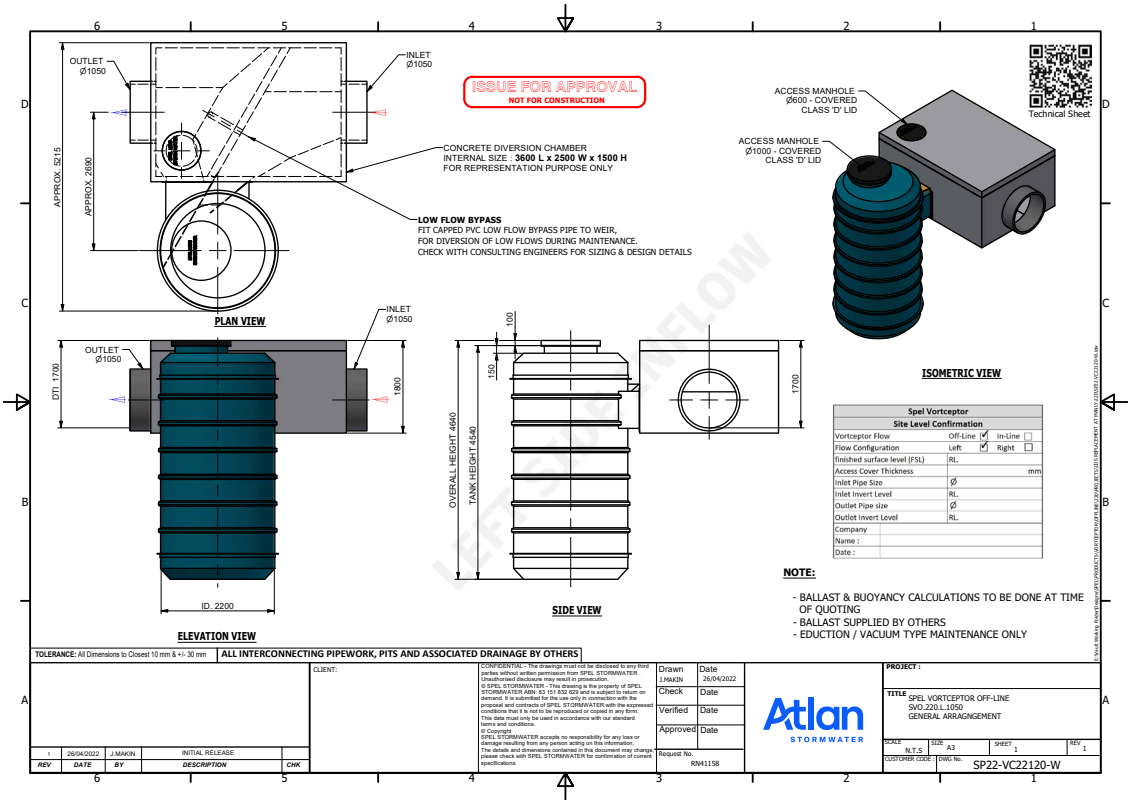

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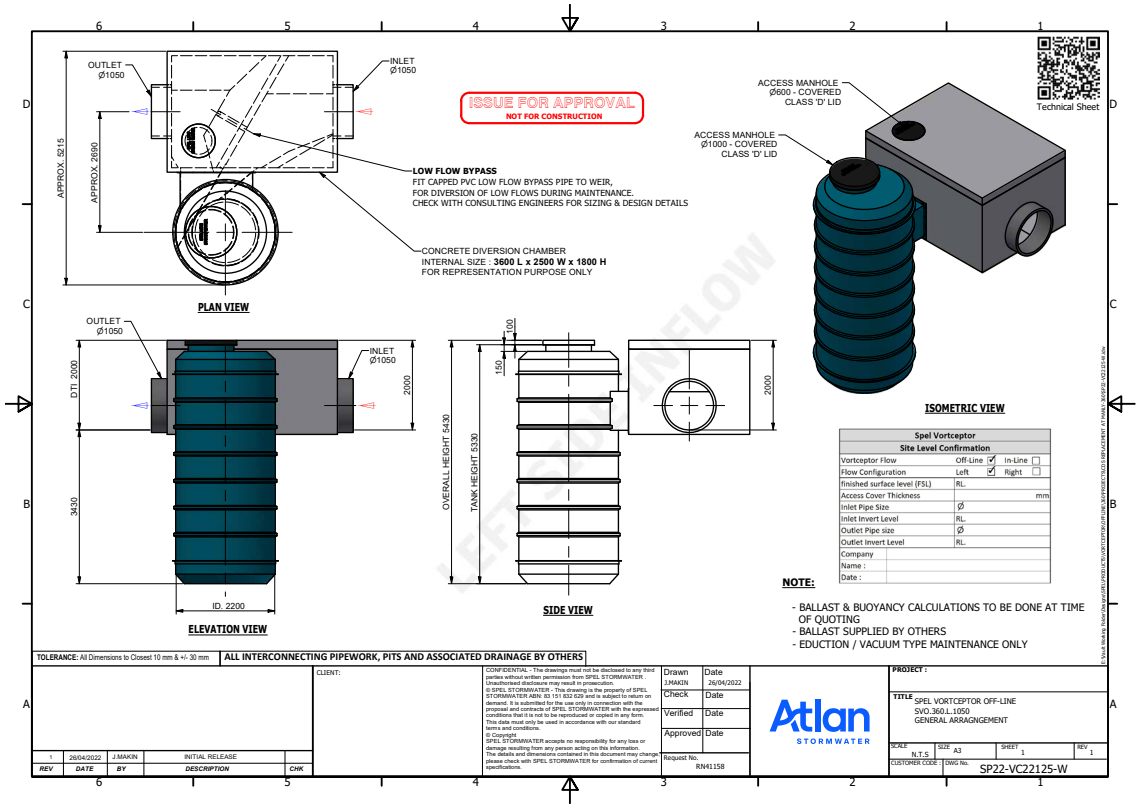


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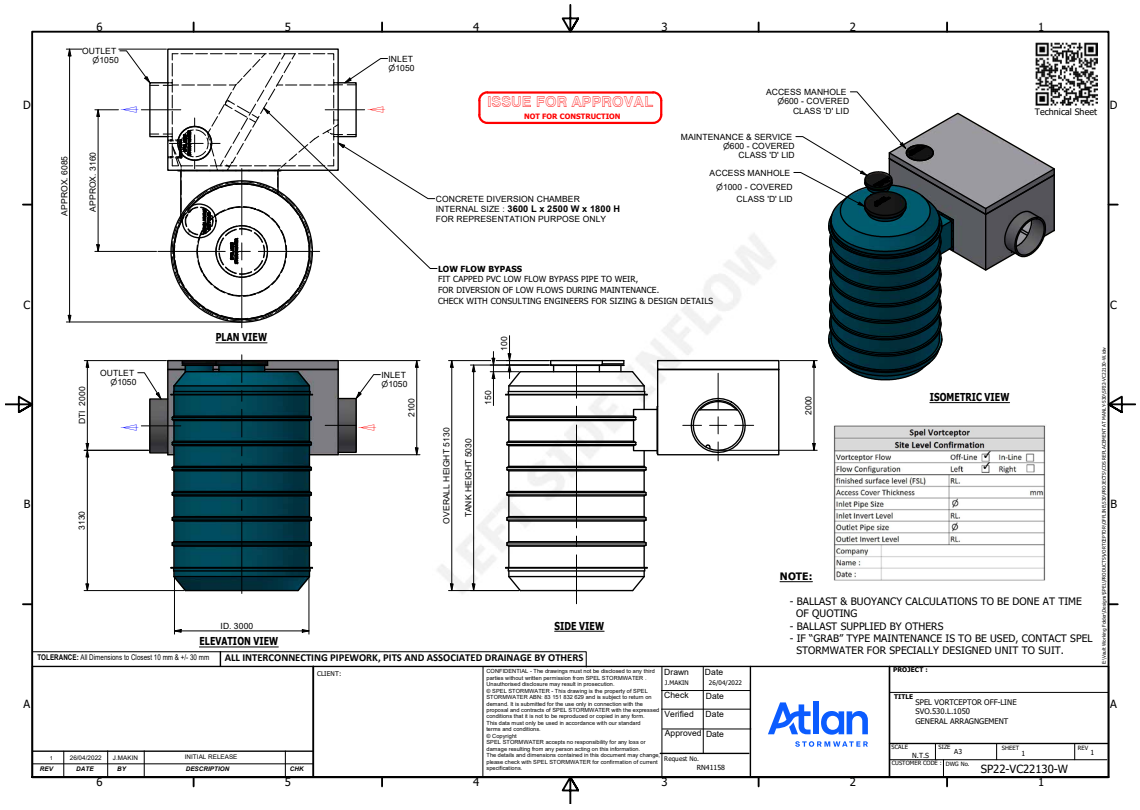

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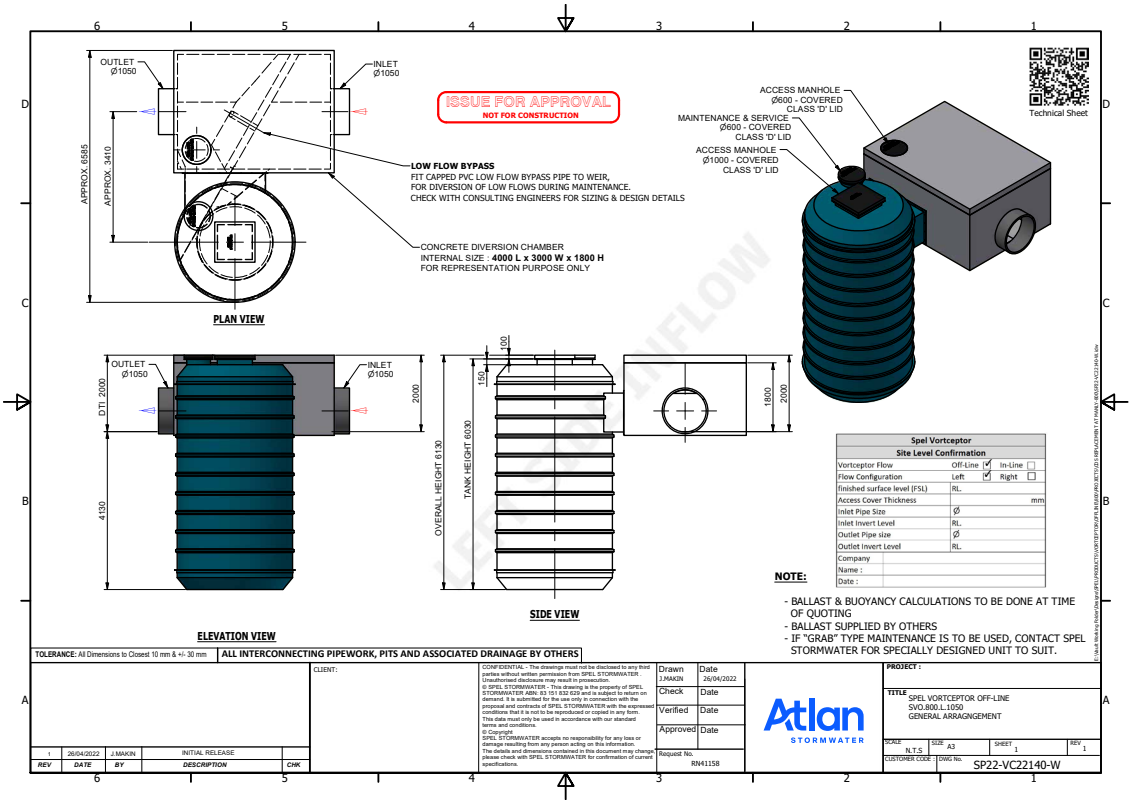


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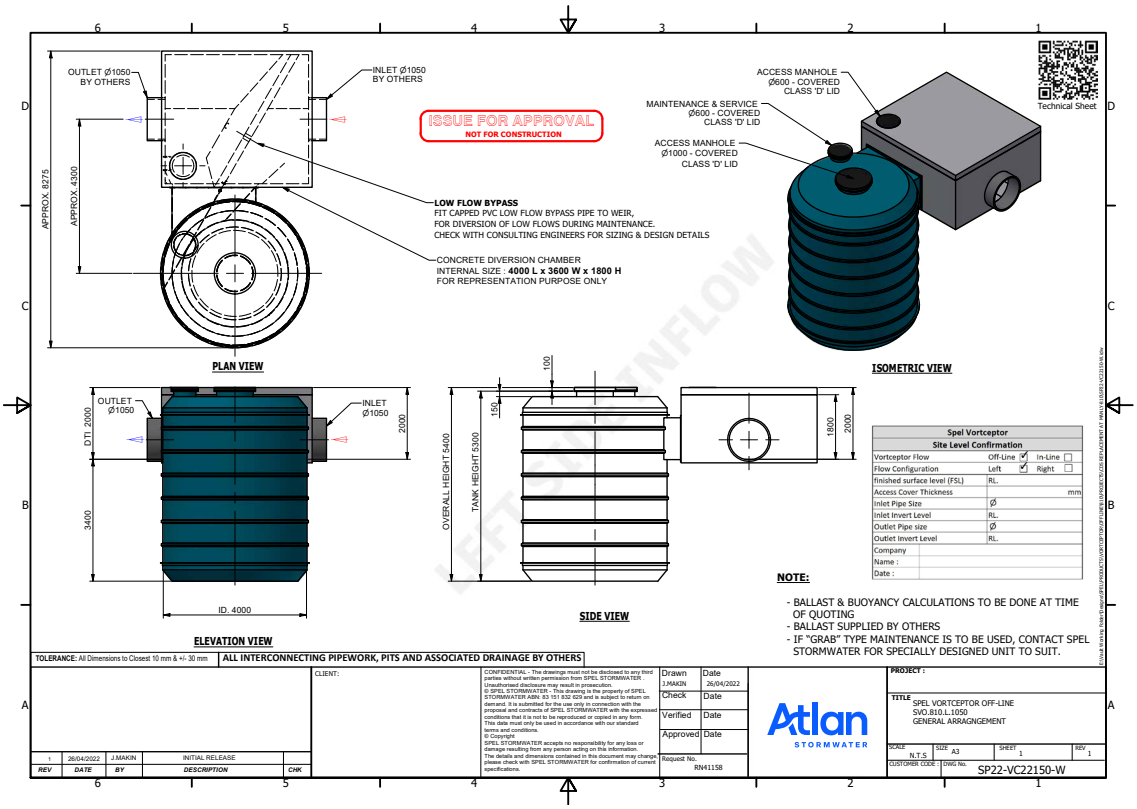

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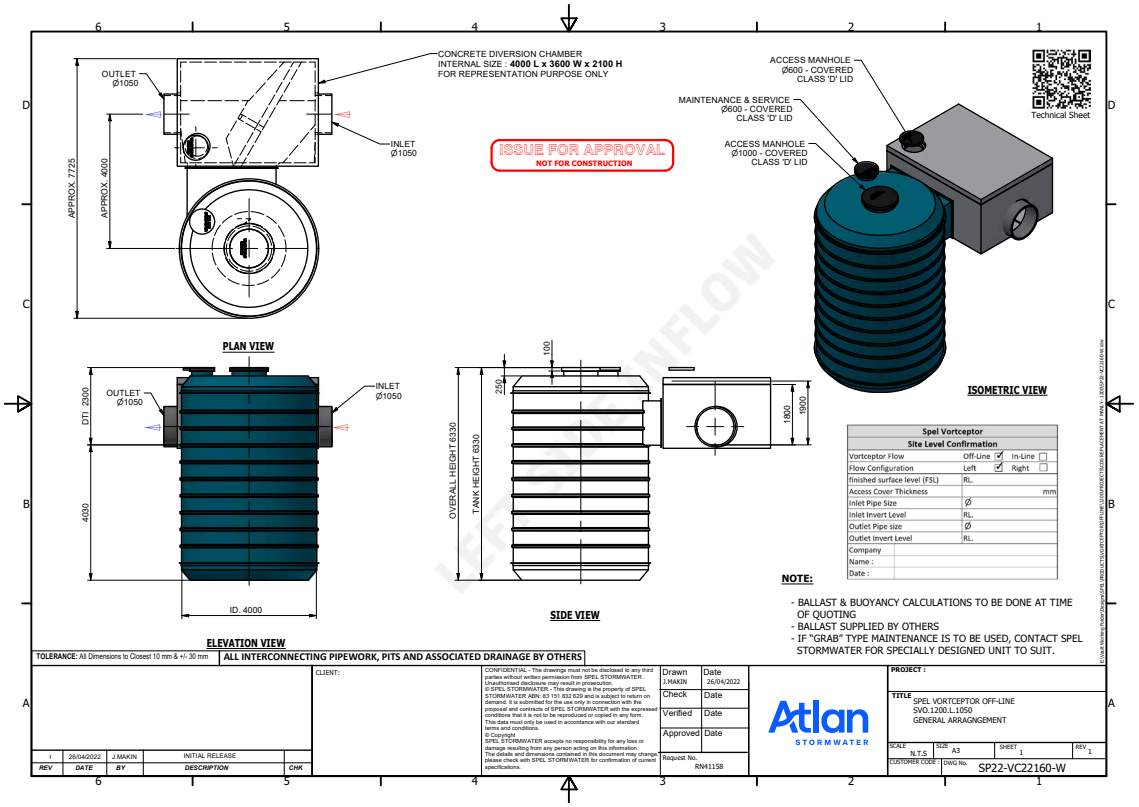


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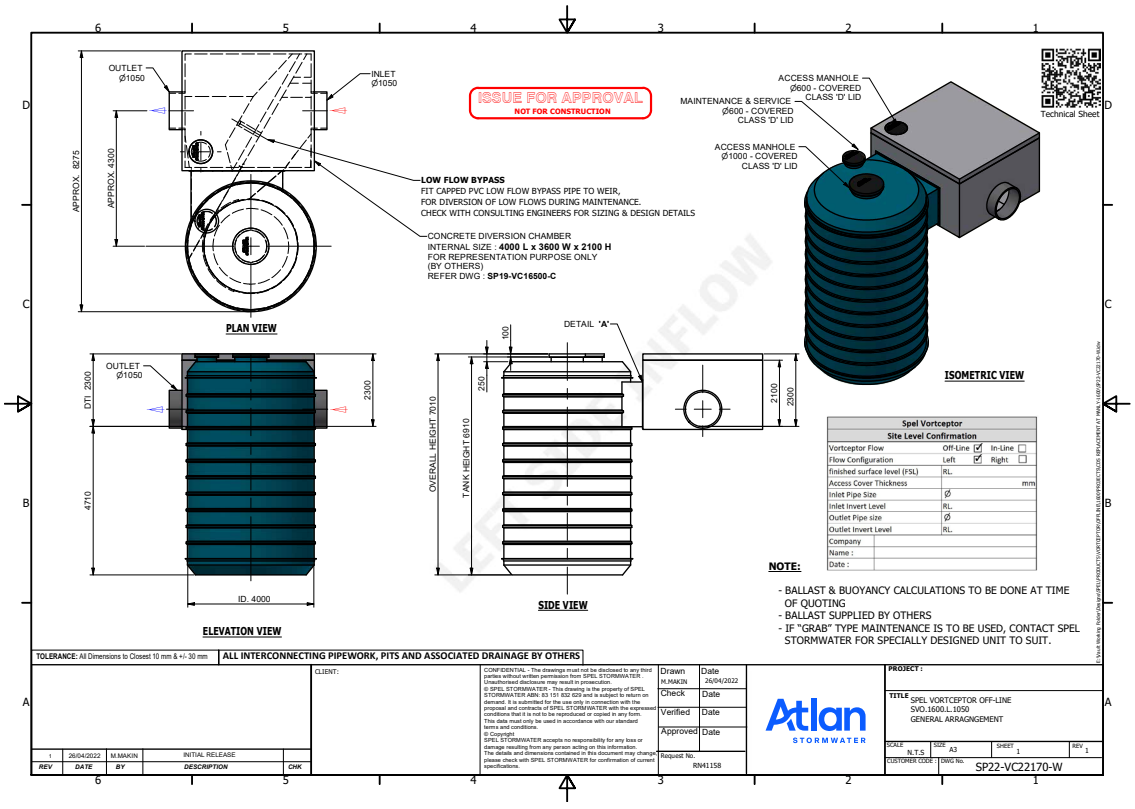

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# WASTE MANAGEMENT PLAN
# FOR
# STATELINE ASPHALT PTY LTD
# 133 SOMERSBY FALLS ROAD SOMERSBY NSW 2250

***Prepared for:*** Paul Anderson, PM Anderson Consulting Pty Ltd
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Central Coast Council
NSW Environment Protection Agency
NSW Department of Planning and Environment

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***Report No:*** 221145_WMP_Rev2
November 2023
(Released: 10 November 2023)

Benbow
ENVIRONMENTAL

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# 1. INTRODUCTION

Benbow Environmental has been engaged by Stateline Asphalt Pty Ltd to prepare a Waste Management Plan for the construction and operation of an asphalt batching plant that will produce up to 200,000 tonnes per annum, a reclaimed asphalt pavement (RAP) yard, office and depot. It is proposed to be located at 133 Somersby Falls Road, Somersby NSW 2250 (legally known as Lot 3 DP1292653). The purpose of this report is to accompany an Environmental Impact Statement. The proposed development application is for the currently vacant lot.

Procedures for managing waste at the facility and how the facility will adhere to relevant waste legislation are described in this report. The report accompanies the Environmental Impact Statement prepared by Benbow Environmental Ref: 221145_EIS_Rev1 that supports the development application for approval for operations to occur at the site.

Waste management at the site would be undertaken in line with the waste hierarchy demonstrated in the following diagram:

## 1.1 SCOPE

The Secretary's Environmental Assessment Requirements (SEARs) 1655 was issued on 30th March 2022. Relevant requirements of waste management are as follows:

- ***waste management*** *– including:*

*- details of the type, quantity and classification of waste to be received at the site*
*- details of the resource outputs and any additional processes for residual waste*
*- details of waste handling including, transport, identification, receipt, stockpiling and quality control*
*- the measures that would be implemented to ensure that the proposed development is consistent with the aims, objectives and guidelines in the NSW Waste Avoidance and Sustainable Materials Strategy 2041.*

The purpose of this plan is to provide an overview of the waste management processes to be undertaken for the proposed activities.

The scope of this WMP is limited to the following objectives:

- Provide a description of the proposed activities;
- Address regulatory requirements including consistency with the NSW Waste Avoidance and Sustainable Materials Strategy 2041 Stage 1: 2021-27 in relation to waste management for the operation;
- Provide preliminary information on the sources, type, quantity and classification of waste expected to be generated at the site during operation;
- Provide details of the maximum volume of waste to be stored on the Premises at any one time;
- Provide details of the maximum annual throughput of waste to be processed at the Premises;
- Use of estimated waste rates published in the NSW EPA Better Practice Guide for Resource Recovery in New Residential Developments to calculate waste generation rates;
- Describe waste handling, processing and management processes, including the methods for storage, reuse and recycling options, collection, transport and disposal of waste;
- Provide details of any materials produced under a Resource Recovery Order, and the controls in place for meeting the conditions of that order; and

- Provide a description of procedures for dealing with non-conforming waste (ie. waste not permitted to be received at the Premises) in an unexpected finds protocol.
- Provide a description of how the proponent will meet the EPA's record keeping and reporting requirements, including weighing material in and out of the Premises;
- Give consideration to litter management, traffic issues and requirements; and
- Recommend controls for managing environmental impacts of waste management activities.

# 2. PROPOSED DEVELOPMENT

## 2.1 PROCESS DESCRIPTION

For the purposes of this process description, the liquid binder raw material is referred to as 'bitumen'. The finished product of the plant is called 'asphalt', as asphalt concrete and asphalt pavement. A full description of the raw materials and finished product can be found in sections 0 and 2.1.2.

The aggregates will be stored in bays within the aggregate storage building at the west of the site. A front end loader operating 24/7 will transfer the aggregates to the ground level hoppers. The aggregates are then conveyed to the aggregate dryer drum, a burner supplies heat which removes the moisture from the aggregates. After the moisture is removed, the aggregates are conveyed to the top of the main section of the plant (often called the stack) using a bucket elevator. Several screens then sort the aggregates into hoppers within the stack based on their size. A control valve releases the aggregates into the pugmill, the proportions of which vary based on the grade of asphalt concrete produced.

The plant has several components, including a cold aggregate supply system, this is fed from storage bays via front end loader into hoppers, a drum dryer, a dust collector, a hot aggregate elevator, a vibrating screen, a filler supply system, a weighing and mixing (pugmill) system, a pollution control unit, asphalt storage, and a bitumen supply system. The quality of the asphalt produced is affected by each of these components, as well as the proportion of reclaimed asphalt used.

The liquid bitumen is heated in vertical insulated storage tanks maintained at approximately 160°C and pumped via pipes to above the pugmill where it is added into the pugmill and mixes with the aggregates and other materials. Approximately 5% of bitumen is used in making hot mix asphalt concrete.

The RAP material is stored in stockpiles at the north of the site. It is then transferred to the mobile crusher, which prepares it before entering the pugmill.

Powders and other additives in this plant are stored within the main stack and are added to the pugmill.

The pugmill mixes the aggregates and/or crushed RAP, bitumen, powders and additives to produce the final product, asphalt concrete, also called asphalt pavement. The pugmill has a 3 tonne capacity. Mixing requires around 1–1½ minutes at approximately 160°C.

This transfer equipment, including the skip, the skip rails and the framework would all be enclosed to ensure there is no release of "blue smoke".

### 2.1.1 Raw Materials

The materials added to an asphalt plant are:

- Bitumen;
- Aggregates including crushed stone, gravel, sand and crusher dust;
- Reclaimed Asphalt Pavement (RAP); and
- Powders.

Each of these materials are discussed below.

(1) Bitumen

Bitumen would be stored in four 60 $m^3$ vertical insulated tanks which would be heated either by electrical means or by hot oil. There is the potential for fumes to be released through manhole covers on the tanks.

(2) Aggregates

Australia uses washed aggregates in asphalt which substantially reduces the release of $PM_{2.5}$, $PM_{10}$ and TSP from materials handling. These would be stored at ground level in two locations in bunkers that will be roofed.

(3) Reclaimed Asphalt Pavement (RAP)

Reclaimed asphalt pavement, also referred to as reclaimed asphalt pavement or RAP is an asphalt matrix which was previously used as an engineering material.

(4) Powders

Cement and lime would be delivered in bulk tankers and transferred by pneumatic means into an internal silo within the main stack that has two sections – an upper one for cement, and the lower half for lime. These additives improve the material properties of the final product including toughness, resistant to rutting, durability, resistance to age hardening.

### 2.1.2 Finished Goods

The finished good is “hot mix asphalt concrete” also called asphalt pavement which is a combination of aggregates and bitumen that is used for road construction.

The hot mix asphalt concrete needs to be delivered ‘hot’ and therefore needs to be manufactured as required. The site will contain hot storage silos to hold the asphalt concrete at the required elevated temperatures until a truck is available for loading. As the majority of road construction projects are undertaken during the night, the provision of hot storage silos would allow for some manufacturing to be undertaken during the day.

## 2.2 MAXIMUM THROUGHPUT

The proposed asphalt batching plant will produce up to 200,000 tonnes per annum (tpa). This is approximately 550 tonnes per day.

## 2.3 MAXIMUM STORAGE CAPACITY

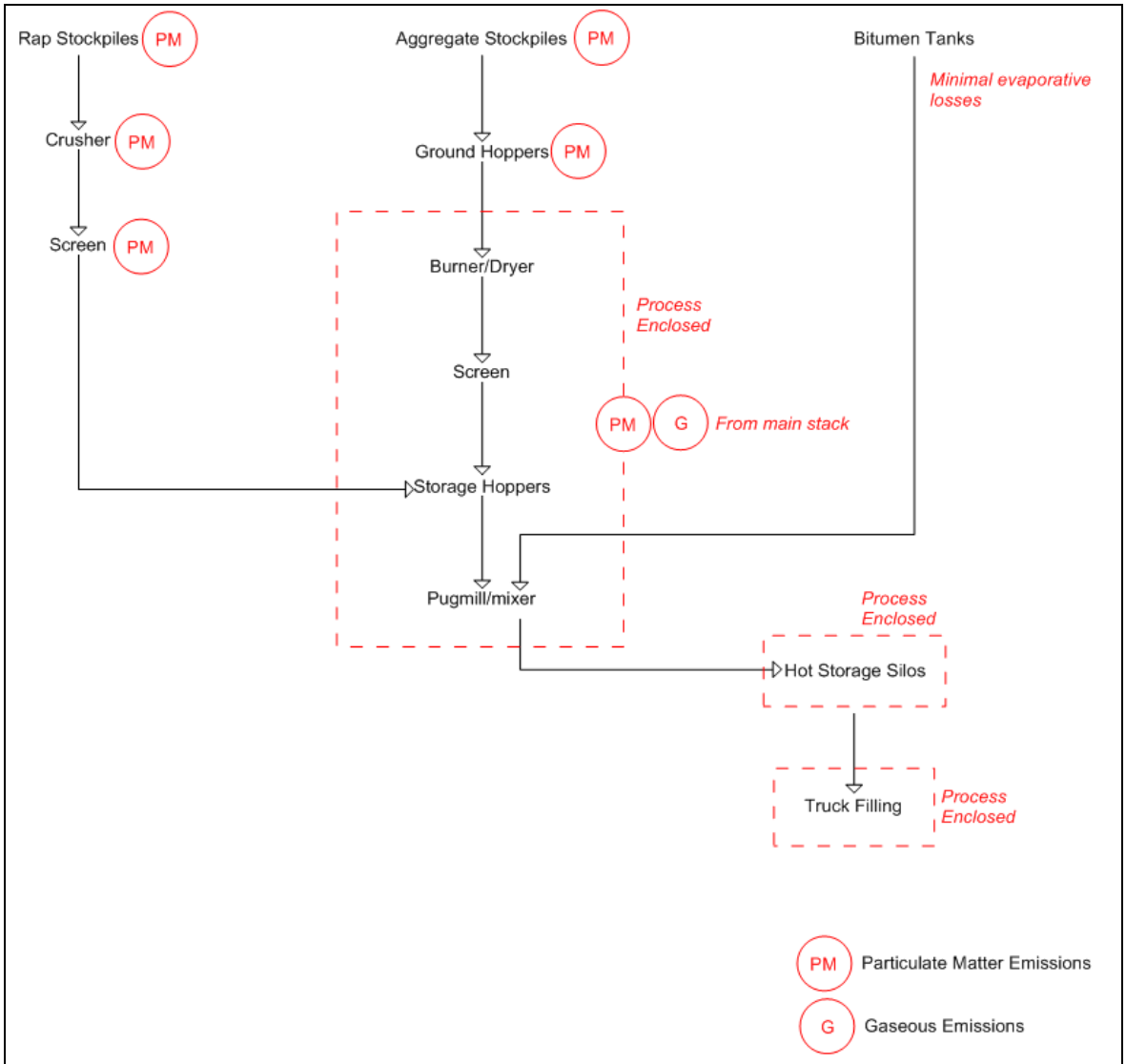
Reclaimed asphalt pavement (RAP) used in the process. Up to 50,000 tpa of RAP will be received each year. Up to 850 tonnes of RAP will be stored on site at any one time. Up to 75,000 tpa of recovered aggregate will be received annually. Up to 1275 tonnes of recovered aggregate would be stored at any one time.

## 2.4 EQUIPMENT

The list of equipment is as follows:

- Ground level hoppers;
- Heated bitumen tanks;
- Powder silos;
- Storage silos;
- Truck filling area;
- Skip bin and belt conveyor for transfer of aggregates;
- Conveyors and bucket elevators;
- Burner drum / aggregate burner;
- Aggregate screening equipment;
- Aggregate storage hoppers;
- Mobile crushing and screening equipment;
- Bitumen storage/dispensing tanks;
- Bitumen tanks heating equipment;
- Asphalt (finished product) storage silos;
- Weigh hoppers and augers;
- Pugmill mixer;
- Dust collector, baghouse and stack; and
- Control room for operating and process controls;

Figure 2-1: Process flow chart showing emission points

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## 2.5 HOURS OF OPERATION

The proposed asphalt batching plant and recycling facility will be designed to operate 24 hours per day, 365 days per year.

The nature of the industry is such that road projects more often than not are required to be undertaken at night. Thus, it is expected that the majority of asphalt production would take place during the night. The facility will have heated storage vessels for pre-made asphalt that would enable it to be stored until it is required.

## 2.6 INCOMING WASTE

- Aggregates including crushed stone, gravel, sand and crusher dust; and
- Reclaimed Asphalt Pavement (RAP).

The site is currently vacant. There will be waste associated with the site preparation (earthworks), construction and operation phases of the development.

Incoming RAP and aggregates would be sourced from road construction works and previously quarried material.

## 2.7 INCOMING MATERIAL

- Bitumen; and
- Cement and lime powders.

## 2.8 WASTE STREAMS & TYPES

Waste streams and types are defined under the NSW EPA *Waste Levy Guidelines* (2018).

One waste stream would be stored and processed at the facility. This is going to be construction and demolition waste, which is generated from construction or demolition works and includes asphalt waste or excavated natural material.

Table 2-1: Waste Type

| Waste Type | Code | Waste type description, examples and exclusions |
|---|---|---|
| Aggregate | AGG | Aggregates, road base or ballast |
| Asphalt | ASPH | Reclaimed asphalt pavement |

### Source of Waste Streams

The construction and demolition waste source is the importation of aggregates and RAP. RAP can be obtained from different sources, including old asphalt found in current pavements, unused new asphalt that is returned from construction sites, and waste produced by asphalt plants at the start or end of production runs.

# 3. LEGAL AND OTHER REQUIREMENTS

The relevant legislation and guidelines that have been addressed in relation to waste management are:

- *Waste Classification Guidelines – Part 1: Classification of waste* (NSW EPA, 2014)*;*
- *Protection of the Environment Operations Act 1997;*
- *Protection of the Environment Operations (Waste) Regulation 2014;*
- *Waste Avoidance and Resource Recovery Act 2001;* and
- *Central Coast Development Control Plan 2022 Part 2.14 – Waste Management.*

The relevance of each piece of legislation and guideline is described in the following sections.

## 3.1 WASTE CLASSIFICATION GUIDELINES

In the NSW EPA *Waste Classification Guidelines* (2014), "waste" is described as:

> *a) any substance whether solid, liquid or gaseous that is discharged, emitted or deposited in the environment in such volume, constituency or manner as to cause an alteration in the environment; or*
> *b) any discarded, rejected, unwanted, surplus or abandoned substance; or*
> *c) any otherwise discarded, rejected, unwanted, surplus or abandoned substance intended for sale or for recycling, reprocessing, recovery or purification.*

All waste materials generated during operation must be classified into one of six different categories described in the *Waste Classification Guidelines* (see Table 3-1). Classification of waste enables the owner/generator to determine the appropriate handling, transport and, if necessary, disposal requirements.

Table 3-1: *Waste Classification Guidelines* Waste Classes

| Class | Definitions/Examples |
|---|---|
| **Special waste** | • Clinical and related wastes;<br>• Asbestos waste;<br>• Waste tyres. |
| **Liquid waste** | • Waste that has an angle of repose <5 degrees;<br>• Waste that becomes free flowing at or below 60°C.<br>• Is not generally capable of being picked up by a spade or shovel. |
| **Hazardous waste** | • Waste with a pH ≤2 or ≥12.5;<br>• Containers that have not been cleaned and contained dangerous goods within the meaning of the Transport of Dangerous Goods Code;<br>• Lead-acid or nickel-cadmium batteries. |
| **Restricted solid waste** | • This type of waste is determined by chemical tests. |

Table 3-1: *Waste Classification Guidelines* Waste Classes

| Class | Definitions/Examples |
|---|---|
| **General solid waste (putrescible)** | • Waste from litter bins collected by local councils;<br>• Manure and night soil;<br>• Food waste;<br>• Animal waste;<br>• Grit or screenings from sewage treatment systems that have been dewatered so that the grit of screenings do not contain free liquids. |
| **General solid waste (non-putrescible)** | • Glass, plastic, rubber, plasterboard, ceramic, bricks, concrete or metal;<br>• Paper or cardboard;<br>• Garden waste<br>• Grit, sediment, litter and gross pollutants collected in, and removed from, stormwater treatment devices and/or stormwater management systems, that has been dewatered so that they do not contain free liquids;<br>• Garden waste;<br>• Wood waste;<br>• Virgin excavated natural material. |

The majority of waste expected to be received are classified under non-putrescible general waste.

## 3.2 PROTECTION OF THE ENVIRONMENT OPERATIONS ACT, 1997

The *Protection of the Environment Operations Act 1997* (POEO Act) is the principal environmental protection legislation for NSW. It defines 'waste' for regulatory purposes and establishes management and licensing requirements for waste. It defines offences relating to waste and sets penalties.

Part 3 of the Act details provisions for environment protection licences. Under Clause 88, the facility is required to pay a contribution in respect of all waste received at the facility. How the contribution is calculated is provided in Part 2 of the Waste Regulation.

Part 1 in Schedule 1 of the POEO Act lists premise-based activities that are scheduled activities and, as such, that require an EPL under the Act. The development falls under the definition of petroleum products and fuel production as defined by the following clauses:

> ***34 Resource recovery***
> *(1) This clause applies to the following activities:*
>
> ***recovery of general waste**, meaning the receiving of waste (other than hazardous waste, restricted solid waste, liquid waste or special waste) from off site and its processing, otherwise than for the recovery of energy.*
> ***recovery of hazardous and other waste**, meaning the receiving of hazardous waste, restricted solid waste or special waste (other than asbestos waste or waste tyres) from off site and its processing, otherwise than for the recovery of energy.*

***recovery of waste oil**, meaning the receiving of waste oil from off site and its processing, otherwise than for the recovery of energy.*
***recovery of waste tyres**, meaning the receiving of waste tyres from off site and their processing, otherwise than for the recovery of energy.*

*(2) However, this clause does not apply to the recovery of stormwater or the processing of any of the following:*
*(a) contaminated soil,*
*(b) contaminated groundwater,*
*(c) sewage within a sewage treatment system (whether or not that system is licensed).*

*(2A) This clause also does not apply to the receiving of waste at premises from off site and its processing if:*
*(a) the waste is to be sold or supplied from those premises as landscaping material (that is, as lawful soil amendments or for landscape gardening) and nothing else occurs in respect of the waste at the premises other than blending, mixing, packaging or storage of the waste for the purpose of that sale or supply, and*
*(b) the waste is virgin excavated natural material or meets all of the conditions of a resource recovery order (made under clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014 at the time it is received, and*
*(c) the waste does not include any liquid waste or biosolids that are not general solid waste (non-putrescible), and*
*(d) no other activity is carried out at the premises that would result in the premises being a scheduled waste facility within the meaning of the Protection of the Environment Operations (Waste) Regulation 2014.*

*(3) Each activity referred to in Column 1 of the Table to this clause is declared to be a scheduled activity if:*
*(a) it meets the criteria set out in Column 2 of that Table, and*
*(b) either:*
*(i) less than 50% by weight of the waste received in any year requires disposal after processing, or*
*(ii) an exemption granted under Part 9 of the Protection of the Environment Operations (Waste) Regulation 2014 exempts the person carrying out the activity from the requirements of section 48 (2) as they apply to waste disposal (application to land), waste disposal (thermal treatment), waste processing (non-thermal treatment) and waste storage.*

***Table***

| ***Column 1*** | ***Column 2*** |
|---|---|
| ***Activity*** | ***Criteria*** |
| ***recovery of general waste*** | *if the premises are in the regulated area:*<br>*(a) involves having on site at any time more than 1,000 tonnes or 1,000 cubic metres of waste, or*<br>*(b)* ***involves processing more than 6,000 tonnes of waste per year***<br>*if the premises are outside the regulated area:*<br>*(a) involves having on site at any time more than 2,500 tonnes or 2,500 cubic metres of waste, or*<br>*(b) involves processing more than 12,000 tonnes of waste per year* |
| *recovery of hazardous and other waste* | *involves having on site at any time more than 200 kilograms of waste* |
| *recovery of waste oil* | *involves processing more than 20 tonnes of waste oil per year or having on site at any time more than 2,000 litres of waste oil* |
| *recovery of waste tyres* | *involves having on site at any time (other than in or on a vehicle used to transport the tyres to or from the premises) more than 5 tonnes of waste tyres or 500 waste tyres, or*<br>*involves processing more than 5,000 tonnes of waste tyres per year* |

Comment:
The proposed facility seeks to process 80,000 tonnes of waste. As it meets the criteria in Column 2 of the table and less than 50% of the waste received would require disposal after processing, Clause 34 applies.

***42 Waste storage***

*(1) This clause applies to waste storage, meaning the receiving from off site and storing (including storage for transfer) of waste.*

*(2) However, this clause does not apply to any of the following:*
*(a) the storage of stormwater,*
*(b) the storage of up to 60 tonnes at any time of any of the following kinds of waste (but not when accompanied by any other kind of waste):*
*(i) drilling mud,*
*(ii) grease trap waste,*
*(iii) waste lead acid batteries,*
*(iv) waste oil,*
*(c) the storage of sewage within a sewage treatment system,*
*(d) the storage and transfer of liquid waste that is generated and treated on site prior to sewer discharge, or lawful discharge to waters.*

*(2A) This clause also does not apply to the receiving of waste from off site and its storage if:*

*(a) the waste is to be sold or supplied from those premises as landscaping material (that is, as lawful soil amendments or for landscape gardening) and nothing else occurs in respect of the waste at the premises other than storage of the waste for the purpose of that sale or supply, and*

*(b) the waste is virgin excavated natural material or meets all of the conditions of a resource recovery order (made under clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014) at the time it is received, and*

*(c) the waste does not include any liquid waste or biosolids that are not general solid waste (non-putrescible), and*

*(d) no other activity is carried out at the premises that would result in the premises being a scheduled waste facility within the meaning of the Protection of the Environment Operations (Waste) Regulation 2014.*

*(2B) This clause also does not apply to the receiving of virgin excavated natural material from off site and its storage if the only waste received is virgin excavated natural material.*

***(3) The activity to which this clause applies is declared to be a scheduled activity if:***

*(a) more than 5 tonnes of hazardous waste, restricted solid waste, liquid waste or special waste (other than waste tyres) is stored on the premises at any time, or*

*(b) more than 5 tonnes of waste tyres or 500 waste tyres is stored on the premises at any time (other than in or on a vehicle used to transport the tyres to or from the premises), or*

*(**c**) more than the following amounts of waste (other than waste referred to in paragraph (a) or (b)) are stored on the premises at any time:*

***(i) in the case of premises in the regulated area—more than 1,000 tonnes or 1,000 cubic metres,***

*(ii) in the case of premises outside the regulated area—more than 2,500 tonnes or 2,500 cubic metres, or*

***(d) more than the following amounts of waste (other than waste referred to in paragraph (a) or (b)) is received per year from off site:***

***(i) in the case of premises in the regulated area—6,000 tonnes,***

*(ii) in the case of premises outside the regulated area—12,000 tonnes.*

*(4) For the purposes of this clause, 1 litre of waste is taken to weigh 1 kilogram.*

Comment:
The facility would store more than 1,000 cubic metres of waste at any time and would receive more than 6,000 tonnes of waste per year from off site. Therefore, Clause 42 applies.

The proposed development requires an EPL.

The POEO Act also establishes the ability to set various waste management requirements via the *Protection of the Environment Operations (Waste) Regulation 2014*, discussed below.

## 3.3 PROTECTION OF THE ENVIRONMENT OPERATIONS (WASTE) REGULATION 2014

The *Protection of the Environment Operations (Waste) Regulation 2014* (Waste Regulation), identifies provisions relating to waste management and disposal.

The proposed development would continue using the existing system for the recording of incoming and outgoing waste. Implementation of the procedure in Section 5 of this WMP would ensure record keeping requirements under this Part are met.

Part 4 of the Waste Regulation details the requirements associated with tracking waste. Certain types of waste listed in Schedule 1 of the Waste Regulation have the potential to be harmful to the environment and are required to be tracked from the source to the waste disposal facility. The facility currently does not generate, receive, handle or process waste types that require tracking under the Waste Regulation. A liquid waste that does not meet at least one of the criteria in both Part 1 and Part 3 of Schedule 1 is not classified as trackable liquid waste. The only liquid to be transported to the site is new bitumen, which will not need to be tracked. Of relevance to the site is clause 112, repeated below.

Clause 112 – Requirements relating to the storage of waste generally

> *A person who stores waste on premises (whether or not the waste was produced on the premises) must ensure that it is stored in an environmentally safe manner.*

The site will need to comply with the above requirements.

Resource recovery orders (RRO) and resource recovery exemptions (RRE) issued under the Regulation may apply in cases where the recovered material needs to meet certain requirements to be supplied for application to land.

**Generators and processors** must meet all the conditions of an **order** to **supply** a resource recovery waste to a consumer. **Exemptions** contain conditions such as reporting and record keeping requirements which consumers must meet to **re-use a resource recovery waste**. Exemptions list the regulatory requirements each consumer is exempt from.

Acting as a resource recovery facility, the asphalt batching plant is both receiving the waste products and reusing them for new products. Therefore, both the order and exemption must be addressed.

The relevant RRO and RREs include:

- NSW EPA *The reclaimed asphalt pavement order* (2014);
- NSW EPA *The reclaimed asphalt pavement exemption* (2014);
- NSW EPA *The recovered aggregates order* (2014); and
- NSW EPA *The recovered aggregates exemption* (2014).

Controls to be put in place for meeting the conditions of this order are addressed in Section 4.10.

## 3.4 WASTE AVOIDANCE AND RESOURCE RECOVERY ACT 2001

The *Waste Avoidance and Resource Recovery Act 2001* (WARR Act) promotes waste avoidance and resource recovery to achieve a continual reduction in waste generation. Among other miscellaneous provisions, the WARR Act sets out provisions for waste strategies and programs, and industry actions for waste reduction.

Waste minimisation and resource recovery would be practised as part of the main goals of the facility. Resource recovery practices implemented at the site are in accordance with the *NSW Waste Avoidance and Resource Recovery Strategy 2041 – Stage 1: 2021-2027*, which "focuses on the environmental benefits and economic opportunities in how we manage our waste." Overall, the proposed development would have an important positive impact on the waste management practices in the local region as it allows for the effective use of primary materials in an economically viable manner.

The company would also follow the NSW EPA hierarchy of waste management for the management of wastes generated as a result of its ongoing operations.

### 3.4.1 Waste Avoidance and Resource Recovery Strategy 2041 – Stage 1: 2021-2027

The proposed development will continue to support and remain consistent with a number of statutory policies including the "Waste Avoidance and Resource Recovery Act, 2001" (WARR Act) and the "NSW Waste Avoidance and Resource Recovery Strategy 2041 – Stage 1: 2021-2027". The NSW Waste Avoidance and Waste Avoidance and Resource Recovery Strategy 2041 – Stage 1: 2021-2027 is a key policy tool under the WARR Act.

The proposed development will allow for resourceful reuse of materials offsite with the primary materials obtained. In line with the Strategy's most relevant targets, the site will:

- reduce total waste generated by 10% per person by 2030

Comment: The RAP and aggregates will be recycled, which will contribute to the reduction of total waste.

- have an 80% average recovery rate from all waste streams by 2030

Comment: The proposed development would contribute to the recovery of waste from the construction and demolition waste stream.

- significantly increase the use of recycled content by governments and industry

Comment: Asphalt is a commonly-used and necessary material. The manufacture of this product allows for use of recycled material for various levels of government and industry.

Waste minimisation and resource recovery would be practised as part of the company's commitment to the principles of Ecologically Sustainable Development (ESD) and the Waste Avoidance and Resource Recovery Act. Waste minimisation can benefit the operation of the facility by the following:

- Reducing the cost of the material inputs into the production processes;

- Recycling and reuse of waste materials generated on site;
- Reducing the quantities of waste removed off site; and
- Encouraging material suppliers to take back packaging materials.

Stateline Asphalt is committed to the reuse of materials in order to improve the economic efficiency of the process and the principles of the ESD.

## 3.5 CENTRAL COAST DEVELOPMENT CONTROL PLAN 2022 – 2.14 WASTE MANAGEMENT

Part 2.14 of the Central Coast Development Control Plan 2022 relates to waste management. Requirements relevant to the proposed development are repeated below.

> ***2.14.2.2 Waste Control Guidelines***
> *A WMP (written document/completed form) shall be prepared in accordance with the Waste Control Guidelines to show how the development handles and minimises waste through submission of the following information:*
> *a Type and amount of waste/recyclable materials which will be generated;*
> *b How waste/recyclable materials will be stored and treated on site;*
> *c How disposal of waste/management or resale of recyclable materials will take place;*
> *d How ongoing waste management will be accommodated in the design of the building or use.*
>
> *The WMP is required to cover the following stages of a development:*
> *a Clearing;*
> *b Demolition;*
> *c Site preparation;*
> *d Construction;*
> *e Subdivision;*
> *f Long term operation/On-going use.*

The following requirements are taken from Part 2.9 – Industrial Development, in terms of waste management.

> ***2.9.2.21 Waste Minimisation and Disposal***
>
> *OBJECTIVES*
>
> ▪ *To require an environmentally sound approach to the storage and disposal of waste and recyclable materials, which supports the principles of waste minimisation i.e. Avoid, Reduce, Reuse, Repair and Recycle*
> ▪ *To satisfy the relevant requirements of Waste Avoidance and Resource Recovery Act 2001*
>
> *REQUIREMENTS*
>
> *a Waste storage and disposal is to be carried out in accordance with a site and use specific Waste Management Plan which shall be prepared and submitted with the Development Application.*

*b The requirements for a Waste Management Plan are identified in Chapter 2.14 – Waste Management and Council's Waste Control Guidelines.*

*c Reference should be made to "Specification for Supply of Recycled Material for Pavements, Earthworks and Drainage" produced by Department of Environment, Climate Change and Water in April 2010.*

# 4. WASTE CLASSIFICATION & MANAGEMENT

## 4.1 WASTE CLASSIFICATION

The POEO Act (1997) describes waste as:

*a) any substance whether solid, liquid or gaseous that is discharged, emitted or deposited in the environment in such volume, constituency or manner as to cause an alteration in the environment; or*
*b) any discarded, rejected, unwanted, surplus or abandoned substance; or*
*c) any otherwise discarded, rejected, unwanted, surplus or abandoned substance intended for sale or for recycling, reprocessing, recovery or purification by a separate operation from that which produced the substance, or*
*(d) any processed, recycled, re-used or recovered substance produced wholly or partly from waste that is applied to land, or used as fuel, but only in the circumstances prescribed by the regulations, or*
*(e) any substance prescribed by the regulations to be waste.*
*A substance is not precluded from being waste for the purposes of this Act merely because it is or may be processed, recycled, re-used or recovered.*

All waste materials generated or received on the subject site must be classified into one of six (6) different categories described in the *Waste Classification Guidelines* (Table 4-1).

Table 4-1: Classes of Waste from Waste Classification Guidelines (NSW EPA, 2014)

| Class | Definitions / Examples |
|---|---|
| **Special waste** | • Clinical and related wastes;<br>• Asbestos waste;<br>• Waste tyres. |
| **Liquid waste** | • Waste that has an angle of repose <5 degrees;<br>• Waste that becomes free flowing at or below 60ºC;<br>• Is not generally capable of being picked up by a spade or shovel. |
| **Hazardous waste** | • Waste with a pH ≤2 or ≥12.5;<br>• Containers that have not been cleaned and contained dangerous goods within the meaning of the Transport of Dangerous Goods Code; |
| **Restricted solid waste** | • This type of waste is determined by chemical tests. |
| **General solid waste (putrescible)** | • Waste from litter bins collected by local councils;<br>• Food waste;<br>• Grit or screenings from sewage treatment systems that have been dewatered so that the grit of screenings do not contain free liquids. |

Table 4-1: Classes of Waste from Waste Classification Guidelines (NSW EPA, 2014)

| Class | Definitions / Examples |
|---|---|
| **General solid waste (non-putrescible)** | • Paper or cardboard;<br>• Glass, plastic, rubber, plasterboard, ceramic, bricks, concrete or metal;<br>• Grit, sediment, litter and gross pollutants collected in, and removed from, stormwater treatment devices and/or stormwater management systems, that has been dewatered so that they do not contain free liquids |

Waste associated with the proposed development is classified as general solid waste (non-putrescible) as it fits the definition of asphalt waste, being asphalt resulting from road construction and waterproofing works.

## 4.2 ONGOING WASTE

All waste processed at the site is attributed to ongoing operations.

Table 4-2: Waste Management – Operational Waste Processing

| Waste Type | Estimated Maximum Incoming Quantity | Estimated Maximum Outgoing Quantity | EPA Waste Classification[1] | Relevant Resource Recovery Order | Management |
|---|---|---|---|---|---|
| RAP | 50,000 tpa | - | General soil waste (non-putrescible) | The reclaimed asphalt pavement order 2014 | Stored in stockpiles then transferred to the mobile crusher, which prepares it before entering the manufacturing process. |
| Aggregates (road base and sandstone)– 20 mm or 10 mm | 75,000 tpa | - | General soil waste (non-putrescible) | The recovered aggregate order 2014 | Stored in stockpiles then transferred to the mobile crusher, which prepares it before entering the manufacturing process. |

Table 4-3: Waste Management - Operational Waste Generation

| Waste Type | Estimated Maximum Incoming Quantity | Estimated Maximum Outgoing Quantity | EPA Waste Classification[1] | Management |
|---|---|---|---|---|
| Oils from maintenance activities | - | 250 L | Liquid waste (100% recyclable) | Stored in 25 L sealed containers and sent to an oil recycling facility. |
| Packaging Waste | - | 5-10 tpa | General solid waste (non-putrescible) | Temporarily stored on site prior to being recycled (where possible) at a recycling facility or placed in general waste bins. |
| Office & Amenities Waste | 5 tpa | - | General solid waste (Putrescible) | Designated receptacles for rubbish and recycling. Serviced on an 'as needs' basis by a licensed Waste Contractor. |
| Office Recyclables | 5 tpa | - | General solid waste (non-putrescible) | Designated receptacles for rubbish and recycling. Serviced on an 'as needs' basis by a licensed Waste Contractor. |

Note:

1. Waste classification according to *Waste Classification Guidelines* provided.

## 4.3 DEMOLITION WASTE

No demolition works are required for the proposed development.

## 4.4 CONSTRUCTION WASTE

Construction works would involve excavations for cut and fill works to level the site. Construction waste will occur from the establishment of driveways, internal access areas, hardstand, office and facilities, asphalt batching plant and processing facility, material storage bunkers, a weighbridge and stormwater detention basin. Estimations of construction waste and how this will be managed is detailed in the table below.

Table 4-4: Expected Construction Waste

| Waste Type | Estimated Maximum Quantity (tonnes) | EPA Waste Classification[1] | Management |
|---|---|---|---|
| Concrete | 10 | General solid waste (non-putrescible) | Placed in designated skip bin to be removed from site by a recycling contractor. |
| Excavation materials | 5 | General solid waste (non-putrescible) | These are cut and fill works. They will be deposited as necessary to level the site. |
| Metals | 10 | General solid waste (non-putrescible) | Placed in designated skip bin to be removed from site by a recycling contractor. |
| Timber | 1 | General solid waste (non-putrescible) | Placed in designated skip bin to be removed from site by a recycling contractor. |

Note:

1) Waste classification according to *Waste Classification Guidelines* provided.

## 4.5 WASTE MANAGEMENT PLAN

A waste management plan template required to be submitted to Central Coast Council for all development applications is provided in Attachment 1. This addresses all waste expected to be generated during the operation of the proposed development as described in the previous sections.

## 4.6 RECEIPT & HANDLING OF WASTE

A description of the management of each waste type accepted and processed on site is provided in Table 4-2 and Table 4-3.

The site will be licenced as both an extractive industry and a resource recovery facility. The incoming waste section 2.1.5 describes the receipt, handling and processing of incoming waste and resultant construction products.

Overall, waste management practices that would be in place at the facility are considered adequate and comply with S112 of the Waste Regulation, which states the facility must store and manage waste in an environmentally safe manner.

Management of waste on site will also be in line with the *Better Practice Guidelines for Waste Management and Recycling in Commercial and Industrial Facilities* (NSW EPA, 2012) as it includes the following practices:

- Visually screening incoming waste;
- Ensuring waste is stored adequately and cannot escape receptacles and storage areas; and
- Ensuring easy access to each waste storage area for collection services.

The facility would not accept liquid wastes, hazardous wastes, special waste (including asbestos and waste tyres) or restricted solid waste. A procedure to deal with any unauthorised waste types found within incoming loads or inadvertently delivered to the site is provided in Section 5.

## 4.7 WASTE STORAGE

Up to 850 tonnes of RAP will be stored on site at any one time. Up to 1275 tonnes of recovered aggregate would be stored at any one time.

## 4.8 MATERIAL STORAGE

Up to 100 L of heated bitumen would be stored on site within heated silos at any one time. Up to 40 tonnes of cement and lime powder would be stored.

## 4.9 TRANSPORT OF WASTE

The transport waste streams accepted at the site are not required to be undertaken by licensed waste transporters as the waste is not trackable waste.

Under Part 6 of the Waste Regulation, the following is required:

- Waste must be transported in a manner that avoids the waste spilling, leaking or otherwise escaping;
- Waste must be covered during transport unless the waste consists solely of waste tyres or scrap metal;
- Transport vehicles must be constructed and maintained to avoid waste spilling leaking of otherwise escaping from the vehicle;
- Any material that has been segregated for recycling must not be mixed with other waste during transportation; and
- Transport of waste must abide by the proximity principle which restricts the transport of waste by road more than 150km from its origin.

Under Section 143 of the POEO Act, waste is required to be transported to a place that can lawfully accept it.

The above requirements would be met by transporters of the waste to the facility.

## 4.10 QUALITY CONTROL

Procedures would be put in place to manage the input quality of the incoming waste material.

### 4.10.1 Incoming Waste

Quality control for incoming waste includes:

- Control of the wastes accepted into the facility, as described in the incoming waste procedure in Section 5;
- Contaminants are minimised through visual inspection to ensure inappropriate items are removed from the waste stream at the pre-sorting area; and
- Suppliers of waste would be from authorised reputable companies whose details would be recorded with all incoming loads.
- Regular maintenance of the dewatering equipment as per the manufacturer's equipment.

#### 4.10.1.1 Reclaimed Asphalt Pavement

A Resource Recovery Order under Part 9, Clause 93 of the *Protection of the Environment Operations (Waste) Regulation 2014* applies to reclaimed asphalt pavement (RAP). This exemption is called 'The reclaimed asphalt pavement order 2014'.Under Section 2.1 of the order, the following applies:

> *2.1. The requirements in this order apply, as relevant, to any person who supplies reclaimed asphalt pavement that has been generated, processed or recovered by the person.*

The site would supply the RAP after processing into asphalt. Processor requirements under Section 4 as follows:

> ***General requirements***
> *4.1. The processor must implement procedures to minimise the potential to receive or process reclaimed asphalt pavement containing asbestos. These procedures must be formally documented and the records of compliance must be kept for a period of six years.*
> *4.2. The processor must implement procedures to minimise the potential to receive or process reclaimed asphalt pavement in which the asphalt matrix contains detectable quantities of coal tar. These procedures must be formally documented and the records of compliance must be kept for a period of six years.*
> ***Notification***
> *4.3. On or before each transaction, the processor must provide the following to each person to whom the processor supplies the reclaimed asphalt pavement:*
> *• a written statement of compliance certifying that all the requirements set out in this order have been met;*
> *• a copy of the reclaimed asphalt pavement exemption, or a link to the EPA website where the reclaimed asphalt pavement exemption can be found; and*
> *• a copy of the reclaimed asphalt pavement order, or a link to the EPA website where the reclaimed asphalt pavement order can be found.*
> ***Record keeping and reporting***
> *4.4. The processor must keep a written record of the following for a period of six years:*
> *• the quantity of any reclaimed asphalt pavement supplied; and*
> *• the name and address of each person to whom the processor supplied the reclaimed asphalt pavement, or the registration details of the vehicle used to transport the reclaimed asphalt pavement.*

The site would have to comply with this order.

A Resource Recovery Exemption under Part 9, Clauses 91 and 92 of the *Protection of the Environment Operations (Waste) Regulation 2014* applies to reclaimed asphalt pavement (RAP). This exemption is called 'The reclaimed asphalt pavement exemption 2014'. Under Section 6.1 of the exemption, the following applies:

> *Subject to the conditions of this exemption, the EPA exempts each consumer from the following provisions of the POEO Act and the Waste Regulation in relation to the consumer's actual or intended application of reclaimed asphalt pavement to land or use in connection with a process of thermal treatment at the premises:*
>
> - *Section 48 of the POEO Act in respect of the scheduled activities described in clauses 39, 40 and 42 of Schedule 1 of the POEO Act;*
> - *Part 4 of the Waste Regulation;*
> - *Section 88 of the POEO Act; and*
> - *Clause 109 and 110 of the Waste Regulation.*

However, the exemption does not apply to the processing (crushing and grinding) of RAP nor does it apply to the non-thermal treatment of RAP. Since the RAP would be introduced to the asphalt manufacturing process after the heated drum, the process is not thermal treatment. Therefore, the exemption in this case does not apply.

#### 4.10.1.2 Aggregates

A Resource Recovery Exemption under Part 9, Clause 93 of the *Protection of the Environment Operations (Waste) Regulation 2014* applies to aggregate. This exemption is called 'The recovered aggregate order 2014'. Under Section 2.1 of the exemption, the following applies:

> *2.1. The requirements in this order apply, as relevant, to any person who supplies recovered aggregate that has been generated, processed or recovered by the person.*

As the processor of recovered aggregates,

A Resource Recovery Exemption under Part 9, Clauses 91 and 92 of the *Protection of the Environment Operations (Waste) Regulation 2014* applies to aggregate. This exemption is called 'The recovered aggregate exemption 2014'. Under Section 6.1 of the exemption, the following applies:

> *6.1. Subject to the conditions of this exemption, the EPA exempts each consumer from the following provisions of the POEO Act and the Waste Regulation in relation to the consumer's actual or intended application of recovered aggregate to land when used for road making activities, building, landscaping and construction works at the premises:*
> *• section 48 of the POEO Act in respect of the scheduled activities described in clauses 39 and 42 of Schedule 1 of the POEO Act;*
> *• Part 4 of the Waste Regulation;*
> *• section 88 of the POEO Act; and*
> *• clause 109 and 110 of the Waste Regulation.*

The following definitions apply to the exemption:

> ***consumer** means a person who applies, or intends to apply, recovered aggregate to land.*
> ***processor** means a person who processes, mixes, blends, or otherwise incorporates recovered aggregate into a material in its final form for supply to a consumer.*

As defined by the exemption, the asphalt batching plant is a processor of these aggregates. Stateline Asphalt is not the one who will be using the material for roadworks, so the exemption does not apply in this case.

In the event the incoming materials do not comply with the relevant order, alternative uses for the material would be investigated.

### 4.10.2 Outgoing Material

Outgoing material will be the new asphalt. This will be poured into trucks, which will weigh their load at the weighbridge, where it is recorded. The truck is then dispatched.

## 4.11 MONITORING & RECORDS

Records of incoming waste and outgoing asphalt would be kept for 6 years. The site weighbridges would record all loads entering and leaving the facility.

# 5. INCOMING WASTE PROCEDURE

## 5.1 PURPOSE

The purpose of this procedure is to facilitate the process of dealing with unauthorised or non-conforming waste brought onto the site. The procedure will enable the identity of waste types found within incoming loads and brought onto site to be confirmed and deal with any unexpected or non-conforming wastes such as asbestos.

## 5.2 DEFINITIONS

For the purposes of the procedure, the following definitions of relevance:

**Contaminated Material**
*Materials that contain substances that are of sufficient concentration to potentially cause harm to human health or the environment* (EPA Act).

**Acceptable Wastes**
Acceptable wastes include C&D waste from reputable sources.

## 5.3 TRAINING REQUIREMENTS

Training of personnel responsible for excavation, sorting and waste storage at the site would include training in use of the equipment and the risks associated with the quarry. It would also include:

Training of personnel responsible for inspections, sorting and waste storage at the facility would include:

- Training in legal and other requirements for waste including:
  - Relevant requirements of the POEO Act (including the Waste Regulation);
  - Requirements of any waste conditions in the facility's EPL; and
  - The five standards of the *Standards for managing construction waste in NSW* (NSW EPA, 2019).

## 5.4 PROCEDURE

The following techniques aid in minimising waste:

- Segregation of Waste Streams;
- Housekeeping using workplace inspections to reduce raw material losses, spillages and overuse;
- Process Improvements & Production Upgrading; and
- Recycling of Waste.

To further manage their waste on site, the following needs to be considered:

- Adopting an incoming raw material inspection to ensure that waste materials brought onto site with incoming loads can be minimised;
- Undertaking regular waste audits via workplace inspections – items to consider include: checking that wastes are segregated into recyclable and non-recyclable wastes; and
- Should new streams be developed, classify waste in accordance with the NSW Waste Classification guidelines to ensure appropriate waste management and disposal.

Loads entering the site are to be inspected at the following points in the process:

Inspection Point 1: At the Weighbridge

- The entire top of each load must be visually inspected either from an elevated point or using a camera connected to a monitor at the weighbridge office.
- Loads free of asbestos waste and any other unpermitted waste can be accepted and directed to inspection point 2.
- Where asbestos or unpermitted waste is identified, the entire load is to be rejected and directed to immediately leave the facility. Any such loads must be recorded in the reject load register.
-

Inspection Point 2: Pre-Sort Inspection Area

Instruct the driver to tip the entire load into the designated pre-sort area. Only one load at a time it to be tipped and spread for inspection.

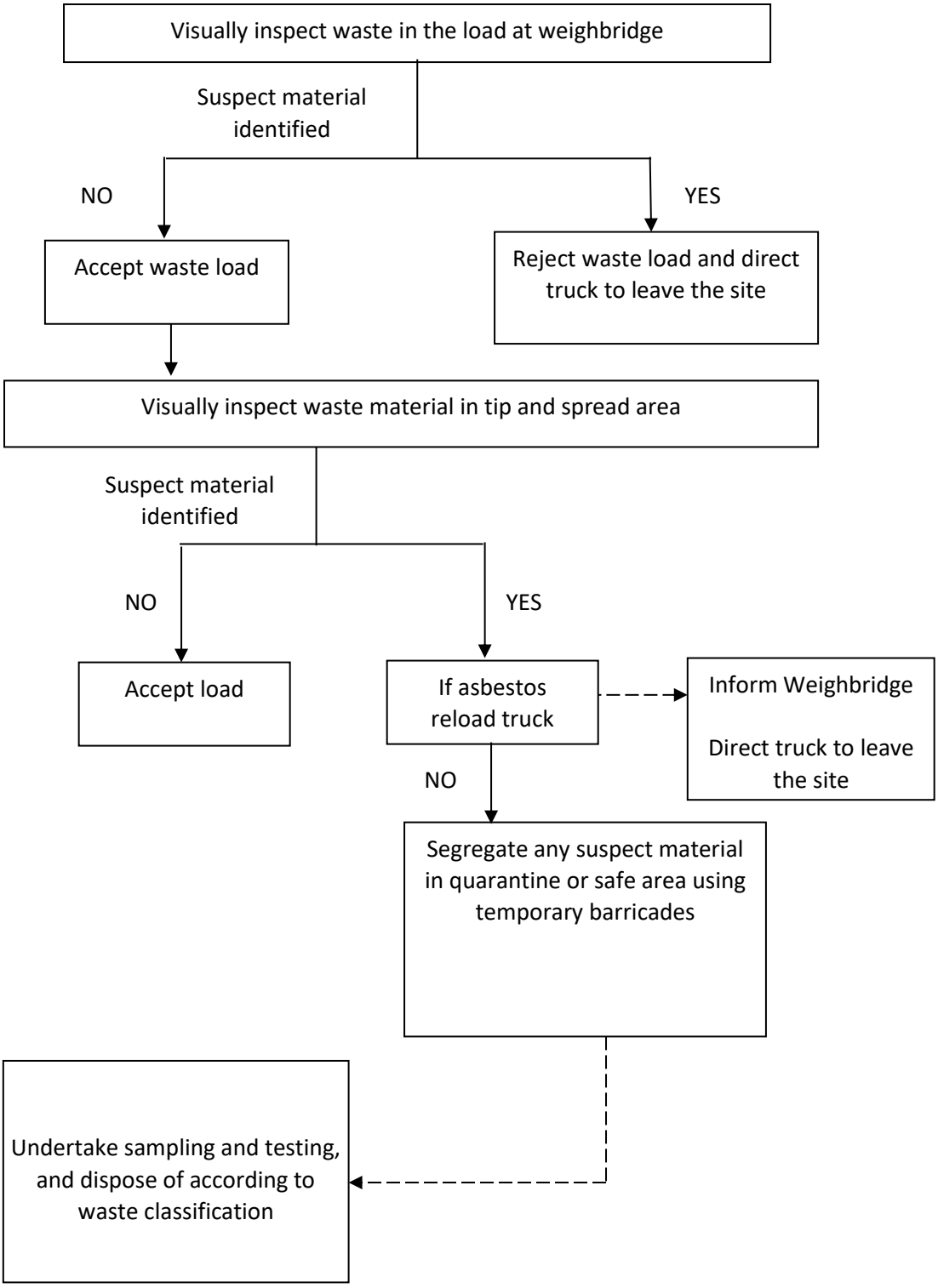
Manually turn the load and inspect the entire load.

Upon the finding of suspect or contaminated material (including asbestos and any other unpermitted waste) within a load during unloading in the pre-sort inspection area, the unexpected finds protocol must be adhered to. It is as follows:

- Where asbestos is identified in any load, reject the entire load. Re-load the truck and direct the truck driver to leave the property immediately. If possible provide the driver with alternate facilities that are able to accept the waste;
- Report the non-conforming material to the weighbridge personnel. Weighbridge personnel will need to record details in the rejected loads register;
- Where unpermitted waste is identified, remove the unpermitted waste from the load or reject the entire load.
- Place any unpermitted material within the quarantine area inside the building and secure using temporary barricades. If not safe to move the material, secure the area containing the non-conforming material using temporary barricades;
- Contact a suitably qualified consultant to determine the appropriate waste classification. This may involve sampling and testing of the material in accordance with regulatory guidelines. Once the waste classification for the material is known, dispose of this lawfully using a licensed waste contractor.

Figure 5-1 presents the unexpected finds protocol, the steps to be followed in the event of suspect or contaminated material being found within incoming waste loads.

Figure 5-1: Unexpected finds protocol



## 5.5 INSPECTION AND RECORDS

Records of waste received at the facility and materials transported from the facility will be kept for 4 years and will include the following.

### 5.5.1 Records of Incoming Waste Loads

The following details for incoming waste need to be maintained:

- Date & time received;
- Name of customer;
- Address of facility received from/customer address;
- Environment Protection Licence Number for the facility/customer;
- Estimated Weight/Volume of load to two decimal points (eg: 14.22 tonnes);
- Waste Type and Waste Stream;
- Vehicle registration number (including any trailer/s);
- Name of driver;
- Location of where the material is placed at the site; and
- Details of any unauthorised waste found in load.

### 5.5.2 Records of Outgoing Waste Loads

The following details for outgoing waste need to be maintained:

- Date & time dispatched;
- Name of destination;
- Address of destination;
- Environment Protection Licence number of destination (if applicable);
- Estimated Weight/Volume of load to two decimal places;
- Storage bay ID number from which the material was removed;
- Vehicle registration number;
- Name of driver; and
- Contents of load eg: Waste type.

### 5.5.3 Records of Vehicles

The following details in relation to vehicles that enter the facility for a purpose related to the operation of the site need to be maintained:

- Date & time the vehicle enters the facility;
- Date & time the vehicle leaves the facility;
- Vehicle registration number;
- Purpose of entry; and
- Estimated Weight of the vehicle.

This concludes the report.

Bethany Carlyon
Graduate Environmental Scientist

R T Benbow
Principal Consultant

# 6. LIMITATIONS

Our services for this project are carried out in accordance with our current professional standards for site assessment investigations. No guarantees are either expressed or implied.

This report has been prepared solely for the use of Stateline Asphalt Pty Ltd, as per our agreement for providing environmental services. Only Stateline Asphalt Pty Ltd is entitled to rely upon the findings in the report within the scope of work described in this report. Otherwise, no responsibility is accepted for the use of any part of the report by another in any other context or for any other purpose.

Although all due care has been taken in the preparation of this study, no warranty is given, nor liability accepted (except that otherwise required by law) in relation to any of the information contained within this document. We accept no responsibility for the accuracy of any data or information provided to us by Stateline Asphalt Pty Ltd for the purposes of preparing this report.

Any opinions and judgements expressed herein, which are based on our understanding and interpretation of current regulatory standards, should not be construed as legal advice.

# ATTACHMENTS

`

# Appendix A:
# Waste Management Plan Template

Information on this form is collected by council for administrative and assessment purposes. It will be used by council staff and other government agencies for the purpose of assessing the application and will be made available for public access. To protect the applicant and the owner(s) privacy, personal details are recorded only on the Part B - Application Detail and Owner(s) Consent form which is not published. It is the applicant's responsibility to ensure other documents do not contain any personal or financial information.

## 1. PROJECT DETAILS (All Developments)

| | |
|---|---|
| Address of development | 133 Somersby Falls Road, Somersby NSW 2250 |
| Existing buildings and other structures currently on the site | Demountable office |
| Description of proposed development | Construction and operation of an asphalt batching plant that will produce up to 200,000 tonnes per annum (tpa), a (Reclaimed asphalt Pavement) RAP yard, office and depot. The plant crushes raw materials, including reclaimed asphalt pavement, and combines them with new materials in correct proportions, heats them in a drum dryer, adds binder bitumen, and carefully controls the temperature to produce a workable final product which is transferred directly into hotmix trucks. The site is already established and operating. No demolition will be necessary. |

*This development achieves the waste objectives set out in the DCP. The details on this form are the provisions and intentions for minimising waste relating to this project. All records demonstrating lawful disposal of waste will be retained and kept readily accessible for inspection by regulatory authorities such as council, OEH or WorkCover NSW.*

| | |
|---|---|
| Prepared By (in Block Letters) | BETHANY CARLYON, BENBOW ENVIRONMENTAL |
| Date | 12/05/2023 |

## 2. DEMOLITION (All Types of Developments)

**Address of development:** **No demolition is occurring.**

Refer to Section 7.2.13 of the DCP for objectives regarding demolition waste.

most favourable ← least favourable

| | Reuse | Recycling | Disposal | |
|---|---|---|---|---|
| Type of waste generated | Estimate Volume (m3) or Weight (t) | Estimate Volume (m3) or Weight (t) | Estimate Volume (m3) or Weight (t) | Specify method of on-site reuse, contractor and recycling outlet and /or waste depot to be used |
| Excavation material | | | | |
| Timber (specify) | | | | |
| Concrete | | | | |
| Bricks/pavers | | | | |
| Tiles | | | | |
| Metal (specify) | | | | |
| Glass | | | | |
| Furniture | | | | |
| Fixtures and fittings | | | | |
| Floor coverings | | | | |
| Packaging (used pallets, pallet wrap) | | | | |
| Garden organics | | | | |
| Containers (cans, plastic, glass) | | | | |
| Paper/cardboard | | | | |
| Residual waste | | | | |
| Hazardous/special waste e.g. asbestos (specify) | | | | |
| Other (specify) | | | | |

## 3. CONSTRUCTION (All Types of Developments)

**Address of development:** _ 700 Peats Ridge Road, Somersby. Construction of concrete platform.

Refer to Section 7.2.14 of the DCP for objectives regarding construction

most favourable ← least favourable

| | Reuse | Recycling | Disposal | |
|---|---|---|---|---|
| Type of waste generated | Estimate Volume ($m^3$) or Weight (t) | Estimate Volume ($m^3$) or Weight (t) | Estimate Volume ($m^3$) or Weight (t) | Specify method of on site reuse, contractor and recycling outlet and/or waste depot to be used |
| Excavation material | 5 $m^3$ | | | |
| Timber (specify) | 1 $m^3$ | | | Typically oak, pine, beech, mahogany, maple and walnut |
| Concrete | 10 $m^3$ | | | Concrete platform for vibrating screen. |
| Bricks | | | | |
| Tiles | | | | |
| Metal (specify) | 10 $m^3$ | | | Typically steel, aluminum, iron, copper |
| Glass | | | | |
| Plasterboard (offcuts) | | | | |
| Fixtures and fittings | | | | |
| Floor coverings | | | | |
| Packaging (used pallets, pallet wrap) | | | | |
| Garden organics | | | | |
| Containers (cans, plastic, glass) | | | | |
| Paper/cardboard | | | | |
| Residual waste | | | | |
| Hazardous/special waste (specify) | | | | |

## 4. ONGOING OPERATION (Residential, Multi Unit, Commercial, Mixed Use and Industrial)

**Address of development:** _____

Show the total volume of waste expected to be generated by the development and the associated waste storage requirements.

| | Recyclables | | Compostables | Residual waste* | Other+ |
|---|---|---|---|---|---|
| | Paper/ cardboard | Metals/ plastics/glass | | | |
| Amount generated (L per unit per day) | 35 | | | 14 | 345 |
| Amount generated (L per development per week) | 175 | | | 70 | 2405 |
| Any reduction due to compacting equipment | No | | | No | NA |
| Frequency of collections (per week) | 1 | | | 1 | NA |
| Number and size of storage bins required | 1 240 L | | | 1 240 L | NA in concrete bunkers |
| Floor area required for storage bins (m2) | 1 $m^2$ | | | $m^2$ | NA in concrete bunkers |
| Floor area required for manoeuvrability (m2) | 4 $m^2$ | | | 4 $m^2$ | Outdoors |
| Height required for manoeuvrability (m) | 2 m | | | 2 m | Outdoors |

* Current "non-recyclables" waste generation rates typically include food waste that might be further separated for composting.

\+ Reclaimed asphalt pavement and recovered aggregates are imported for use in the asphalt batching plant.

## 5. CONSTRUCTION DESIGN (All Types of Developments)

Outline how measures for waste avoidance have been incorporated into the design, material purchasing and construction techniques of the development (refer to Section 7.2.14 of the DCP):

**Materials**

| |
|---|
| RAP, recovered aggregates, bitumen and cement and lime powders |
| |
| |
| |
| |
| |

**Lifecycle**

| |
|---|
| RAP and recovered aggregates from road construction or waterproofing works are imported and stored on site. These |
| are products of asphalt. Aggregates are dried and screened, RAP is crushed and screened then they are put in the |
| pugmill/mixer. The bitumen and powders are added to the pugmill/mixer. Asphalt is stored in hot silo containers prior |
| to dispatch. |
| |
| Detail the appropriate needs for the ongoing use of waste facilities including the transfer of waste between the residents or tenancy units, the servicing of waste location and frequency of waste transfer and collection. If truck access is required then engineering details are required. |
| Trucks will be depositing the RAP, recovered aggregates, bitumen and cement and lime powders on a weekly basis. Approximately 8 trucks per hour will arrive/leave the site, whether unloading materials or dispatching asphalt. |
| |
| |
| |
| |
| |
| |
| |
| |
| |
| |
| |

## 6. PLANS AND DRAWINGS (All Developments)

The following checklists are designed to help ensure WMP are accompanied by sufficient information to allow assessment of the application.

Drawings are to be submitted to scale, clearly indicating the location of and provisions for the storage and collection of waste and recyclables during:

- demolition
- construction
- ongoing operation.

**Demolition – not occurring**

Refer to Section 7.2.13 of the chapter for specific objectives and measures.
Do the site plans detail/indicate?:

| | Tick Yes |
|---|---|
| Size and location(s) of waste storage area(s) | |
| Access for waste collection vehicles | |
| Areas to be excavated | |
| Types and numbers of storage bins likely to be required | |
| Signage required to facilitate correct use of storage facilities | |

**Construction**

Refer to Section 7.2.15 – 7.2.19 of the chapter for specific objectives and measures.
Do the site plans detail indicate?:

| | Tick Yes |
|---|---|
| Size and location(s) of waste storage area(s) | |
| Access for waste collection vehicles | |
| Areas to be excavated | |
| Types and numbers of storage bins likely to be required | |
| Signage required to facilitate correct use of storage facilities | |

**Ongoing Operation**

Refer to Section 7.2.15 – 7.2.19 of the chapter for specific objectives and measures.

Do the site plans detail indicate?:

| | Tick Yes |
|---|---|
| **Space** | |
| Size and location(s) of waste storage areas | |
| Recycling bins placed next to residual waste bins | |
| Space provided for access to and the manoeuvring of bins/equipment | |
| Any additional facilities | |
| **Access** | |
| Access route(s) to deposit waste in storage room/area | |
| Access route(s) to collect waste from storage room/area | |
| Bin carting grade not to exceed 10% and travel distance not greater than 100m in length | |
| Location of final collection point | |
| Clearance, geometric design and strength of internal access driveways and roads | |
| Direction of traffic flow for internal access driveways and roads | |
| **Amenity** | |
| Aesthetic design of waste storage areas, including being compatible with the main building/s and adequately screened and visually unobtrusive from the street | |
| Signage – type and location | |
| Construction details of storage rooms/areas (including floor, walls, doors, ceiling design, sewer connection, lighting, ventilation, security, wash down provisions, cross & longitudinal section showing clear internal dimensions between engaged piers and other obstructions, etc) | |

# PRELIMINARY HAZARD ANALYSIS REPORT
# FOR
# STATELINE ASHPALT PTY LTD
# 133 SOMERSBY FALLS ROAD, SOMERSBY NSW 2250

***Prepared for:*** Paul Anderson, PM Anderson Consulting Pty Ltd
Stateline Asphalt Pty Ltd
Central Coast Council
NSW Environment Protection Agency
NSW Department of Planning and Environment

***Prepared by:*** Vida Nodehi, Graduate Environmental Scientist
R T Benbow, Principal Consultant

***Report No:*** 221145_PHA_Rev2
November 2023
(Released: 10 November 2023)

Benbow
ENVIRONMENTAL

*Engineering a Sustainable Future for Our Environment*

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|---|---|---|---|
| Vida Nodehi | Graduate Environmental Scientist | | 10 November 2023 |

| Reviewed by: | Position: | Signature: | Date: |
|---|---|---|---|
| R T Benbow | Principal Consultant | | 10 November 2023 |
| **Approved by:** | **Position:** | **Signature:** | **Date:** |
| R T Benbow | Principal Consultant | | 10 November 2023 |

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| | | | | |

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| 2 | 10-11-2023 | Stateline Asphalt Pty Ltd | Benbow Environmental |
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# EXECUTIVE SUMMARY

Benbow Environmental (BE) was commissioned by Stateline Asphalt Pty Ltd to prepare a Preliminary Hazard Analysis (PHA) for a proposed asphalt plant to be located at 133 Somersby Falls Road, Somersby NSW, 2250. It will be primarily used for the manufacture of asphalt as well as the storage of bitumen and diesel.

The proposed asphalt plant would have dangerous goods consisting of Class C1 and Class 9 elevated temperature liquids. The Class C1 would be diesel while the Class 9 is the heated bitumen. At the elevated temperature at which the bitumen is added to the plant pug mill, the flashpoint would warrant it to be considered as a Class C2 – combustible liquid.

A preliminary risk screening of the chemicals stored at the site in accordance with State Environmental Planning Policy (Resilience and Hazards) 2021 – Chapter 3 Hazardous and Offensive Development (SEPP) and *Hazardous and Offensive Development Application Guidelines: Applying SEPP33.* The quantities of dangerous goods do not exceed the threshold quantities in applying *State Environment Planning Policy 33.* A hazard analysis based on the methodology of the Multi-Level Risk Assessment and applying SEPP 33 has been undertaken.

The purpose of the Hazard Analysis is to assess whether the proposed development and the associated quantities of dangerous goods stored are offensive or hazardous, thereby posing an unacceptable risk to the surrounding community.

Safeguard measures have also been considered and included in the design and operation of the facility to ensure that the safety and amenity of the neighbouring premises would not be affected by the proposed development.

Section 4.5 of the report has identified and examined a number of potential events/consequence scenarios that could occur on site. The prevention and protection measures designed into the operations of each of the activities associated with each event were listed and discussed in a Hazard Identification Chart.

From the Hazard Identification Chart, a list of potentially hazardous events was prepared which was then examined in greater detail to determine which events would be considered credible and may have significant offsite impacts. A number of hazardous events involving the generation of pool fires have been modelled to determine quantitative impacts. The impacts of bitumen and diesel pool fires were found to readily satisfy the heat-flux radiation criteria, hence no further analysis for pool fires were deemed necessary.

Given the outcomes of the assessment, the Preliminary Hazard Analysis has found that the operation of the proposed development readily meets the criteria laid down in Hazard Industry Planning Advisory Paper (HIPAP) No. 4 *Risk Criteria for Land Use Safety Planning* and would not cause any risk, significant and minor, to the community, with the recommended safeguards in place. Throughout the preparation of this Preliminary Hazard Analysis, it has been determined that the proposed development meets all the safety requirements stipulated by NSW Department of Planning & Environment (DoP&E) and hence would not be considered to be a hazardous development.

An air quality impact assessment has considered the potential for odour to be offensive. The findings of the Air Quality Impact Assessment are not referred to in the Preliminary Hazard Analysis

with the controls in place that assessment has found the operations would not be an offensive development.

Vida Nodehi
Senior Environmental Engineer

R T Benbow
Principal Consultant

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# 1. INTRODUCTION

Benbow Environmental (BE) was commissioned by Stateline Asphalt Pty Ltd to prepare a Preliminary Hazard Analysis (PHA) for a proposed asphalt plant to be located at 133 Somersby Falls Road, Somersby NSW.

The site's main activity will be the manufacture of asphalt, which involves the drying and heating of aggregate to remove moisture, followed by the mixing with binding materials and heated bitumen.

The proposed site will consist of an asphalt plant and heated bitumen storage tanks and an office building. The chemicals being stored on site will be predominantly bitumen (Class 9 – *miscellaneous dangerous substances and articles*) and diesel fuel (Class C1 – *Combustible liquid*).

A Preliminary Hazard Analysis (PHA) has been prepared to ensure that all potential hazards and risks from the proposed site are assessed. Safeguards would be recommended based on the findings of the hazard analysis.

The PHA has been prepared in accordance with the "*Multi-Level Risk Assessment", "Hazardous Industry Planning Advisory Paper No. 4 – Risk Criteria for Land Use Safety Planning"* (HIPAP No.4)" and the *"Hazardous Industry Planning Advisory Paper No. 6 – Guidelines for Hazard Analysis"* (HIPAP No. 6), guidelines all published by the Department of Planning, Industry and Infrastructure (DPIE).

The study includes the following key aspects of the assessment:

- Assessment of the development with consideration to the provisions of SEPP (*Resilience and Hazards*) 2021.
- Evaluation of any potential hazards imposed by the proposed site operations on the surrounding environment and communities.
- Making recommendations on the relevant prevention/protection strategies necessary to minimise the impact and risk of human fatalities, property damage and environmental pollution.

# 2. SITE DETAILS

## 2.1 SITE LOCATION

The land is located at 133 Somersby Falls Road, Somersby NSW 2250, Somersby NSW 2250 (legally known as Lot 3 DP1292653). The site is located within the Central Coast Council Local Government Area (LGA).

The site and remaining areas within the lot number are located within land zoned E4 – *General Industrial* and RU1 – *Primary Production* under the Central Coast Local Environment Plan 2022 (CC LEP 2022). The site location is shown in Figure 2-1

Figure 2-1: Aerial Photograph of Site's Local Setting

**Source:** Six maps 2011

↑N
Not to scale

Benbow Environmental
25/27 Sherwood Street,
Northmead NSW 2152

## 2.2 NEAREST IDENTIFIED SENSITIVE RECEPTORS

Table 2-1 provides the list of the nearest identified receptors that have the potential to be affected by the processes at the subject site. These receptors were selected based on their proximity and directional bearing from the subject site.

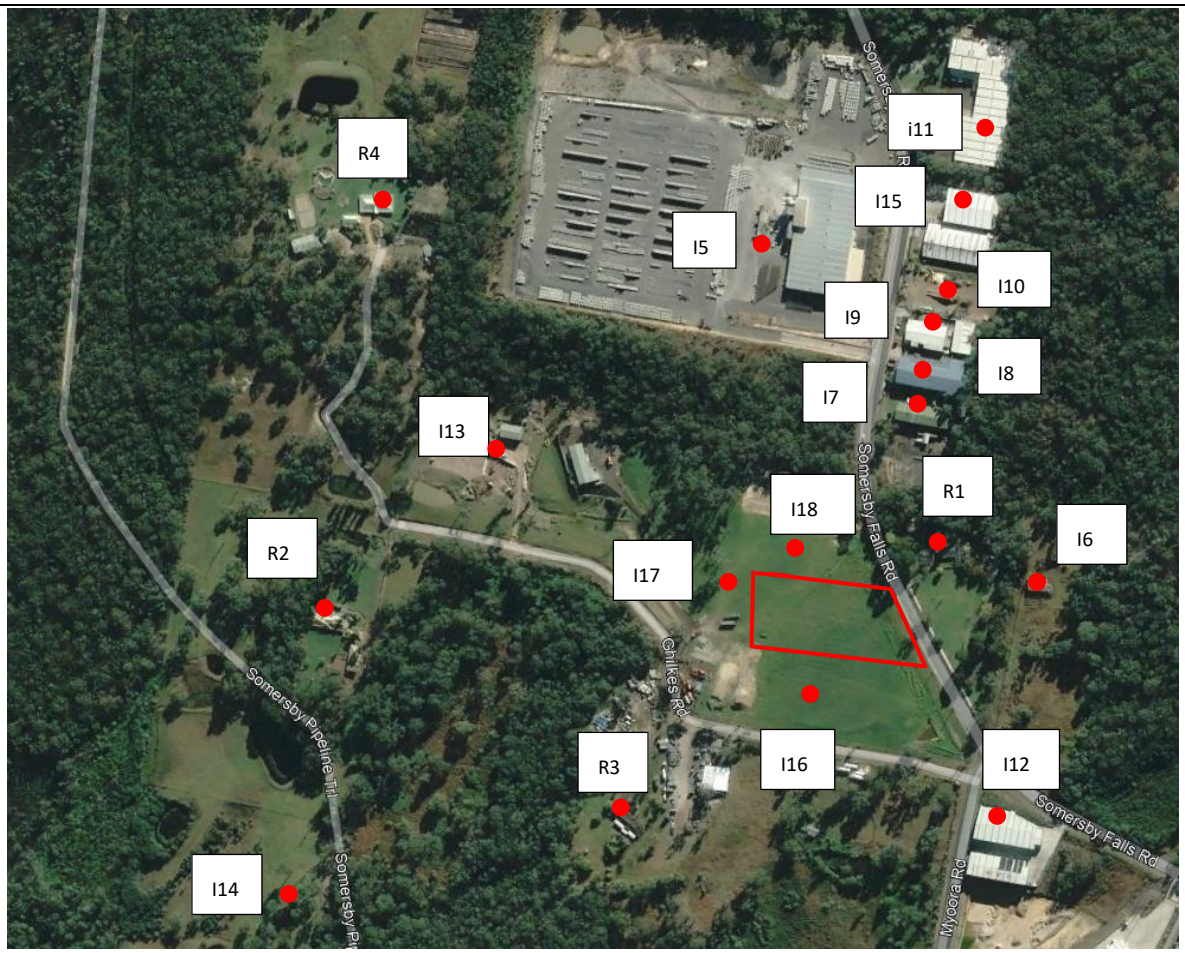
Figure 2-2 shows an aerial of the site and nearest sensitive receptors.

Table 2-1: Nearest Potentially Affected Receivers Considered

| Receptor ID | Address | Lot & DP | Approx. Distance from Proposed Development | Direction from Site | Type of Receptor |
|---|---|---|---|---|---|
| R1 | 126 Somersby Falls Road, Somersby | 1/ DP712505 | 35 m | E | Residential |
| R2 | 63 Ghilkes Road Somersby | 502/ DP712506 | 350 m | W | Residential |
| R3 | 29 Ghilkes Road, Somersby | 3/ DP712505 | 60 m | S | Residential/ Commercial |
| R4 | 64 Ghilkes Road, Somersby | 501/ DP712506 | 340 m | NW | Residential/ Commercial |
| I5 | 149 Somersby Falls Road, Somersby | 4/ DP654894 | 160 m | N | Industrial |
| I6 | 110 Somersby Falls Road, Somersby | 1/ DP510364 | 60 m | E | Industrial |
| I7 | 134 Somersby Falls Road, Somersby | 1/ DP787857 | 140 m | NE | Industrial |
| I8 | 142 Somersby Falls Road, Somersby | 2/ DP787857 | 200 m | NE | Industrial |
| I9 | 150 Somersby Falls Road, Somersby | 3/ DP787857 | 240 m | NE | Industrial |
| I10 | 156 Somersby Falls Road, Somersby | 91/ DP546768 | 305 m | NE | Industrial |
| I11 | 170 Somersby Falls Road | 7/ DP787857 | 435 m | NE | Industrial |
| I12 | 2/61 Somersby Falls Road, Somersby | 29/ DP1093201 | 130 m | S | Industrial |
| I13 | 125 Somersby Falls Road, Somersby | 5/ DP1292653 | 229 m | NW | Industrial |
| I14 | 63 Ghilkes Road, somersby | 502/ DP712506 | 590 m | SW | Industrial |
| I15 | 164 Somersby Falls Road, Somersby | 6/ DP787857 | 363 m | NE | Industrial |
| I16 | 129 Somersby Falls Road, Somersby | 4/ DP1292653 | 30 m | S | Industrial |
| I17 | 125 Somersby Falls Road, Somersby | 5/ DP1292653 | 48 m | W | Industrial |
| I18 | 139 Somersby Falls Road, Somersby | 2/ DP1292653 | 35 m | N | Industrial |

**Note:** distances measured from the boundaries of the site

Figure 2-2: Site Location and Surroundings




**Source: Google Earth 2022**

| | | |
|---|---|---|
| N<br>Not to scale | LEGEND:<br>Site<br>Receptor | Benbow Environmental<br>25-27 Sherwood Street<br>Northmead NSW 2152 |

## 2.3 PROPOSED OPERATIONS

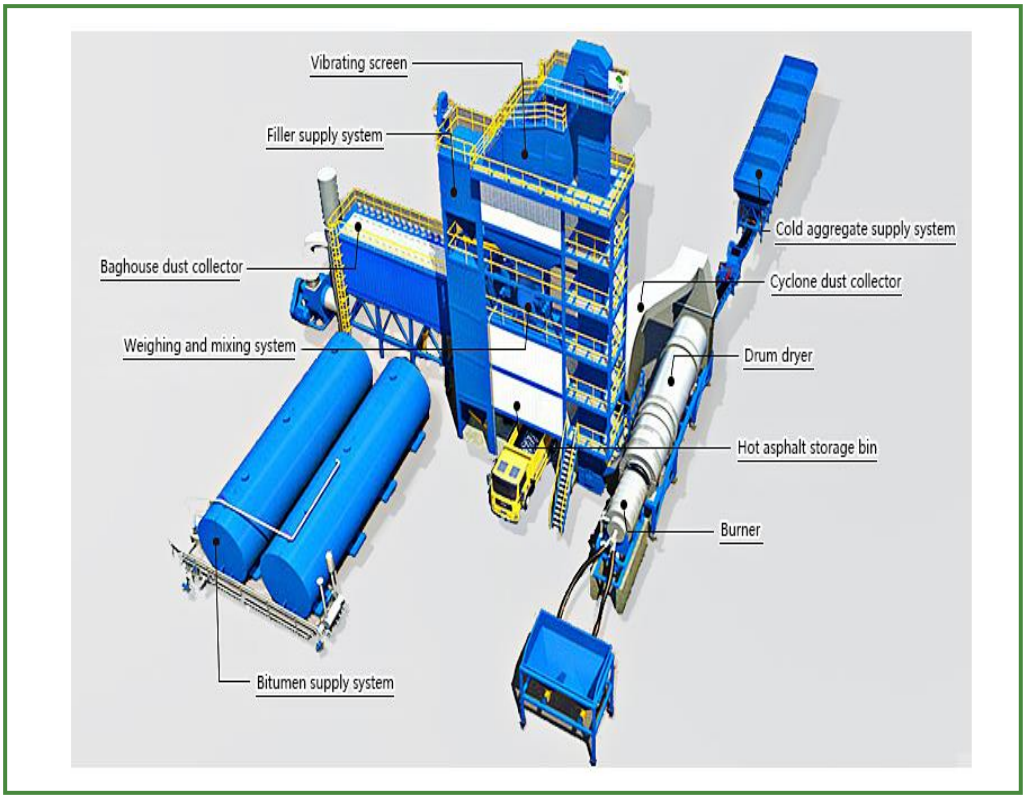
The site's main activity will be the manufacture of asphalt, which involves the drying and heating of aggregate to remove moisture, followed by the mixing with binding material and heated bitumen.

Raw materials for the manufacturing process include aggregate, which will be stored on site in stockpiles, and recycled asphalt, of which up to 15% may be added. The aggregate raw materials will be transferred to five hoppers, and the recycled asphalt to two hoppers, for conveying into the dryer.

Drying, heating and mixing operations occur with manufactured asphalt product being transferred using a skip upwards to storage hoppers for despatch.

A flow chart of the asphalt manufacturing process has been provided below.

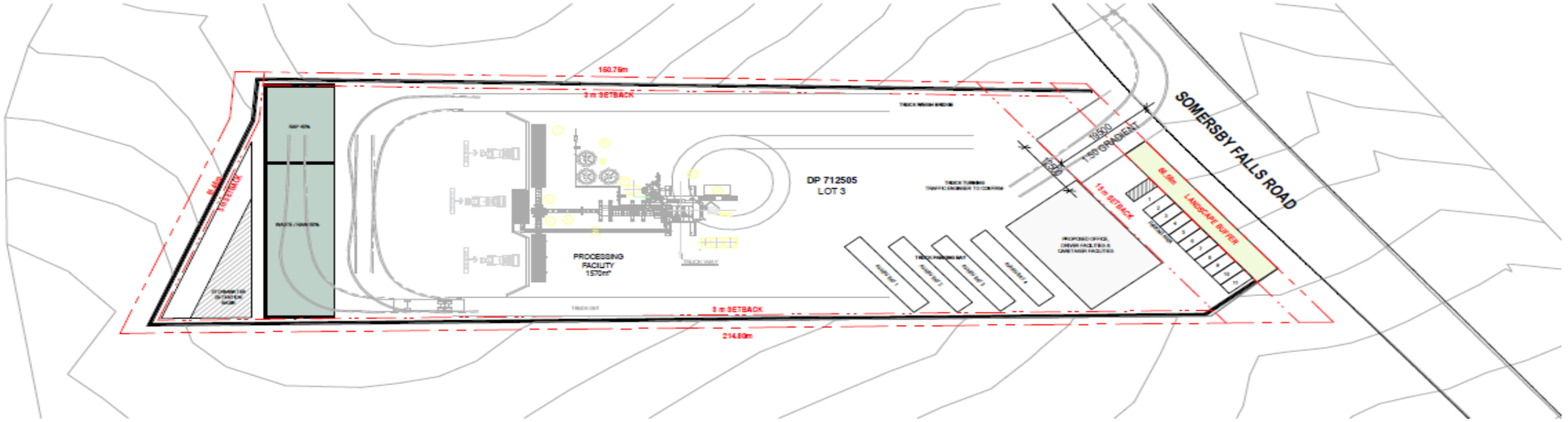
Figure 2-3: Flow Chart of Operational Activities

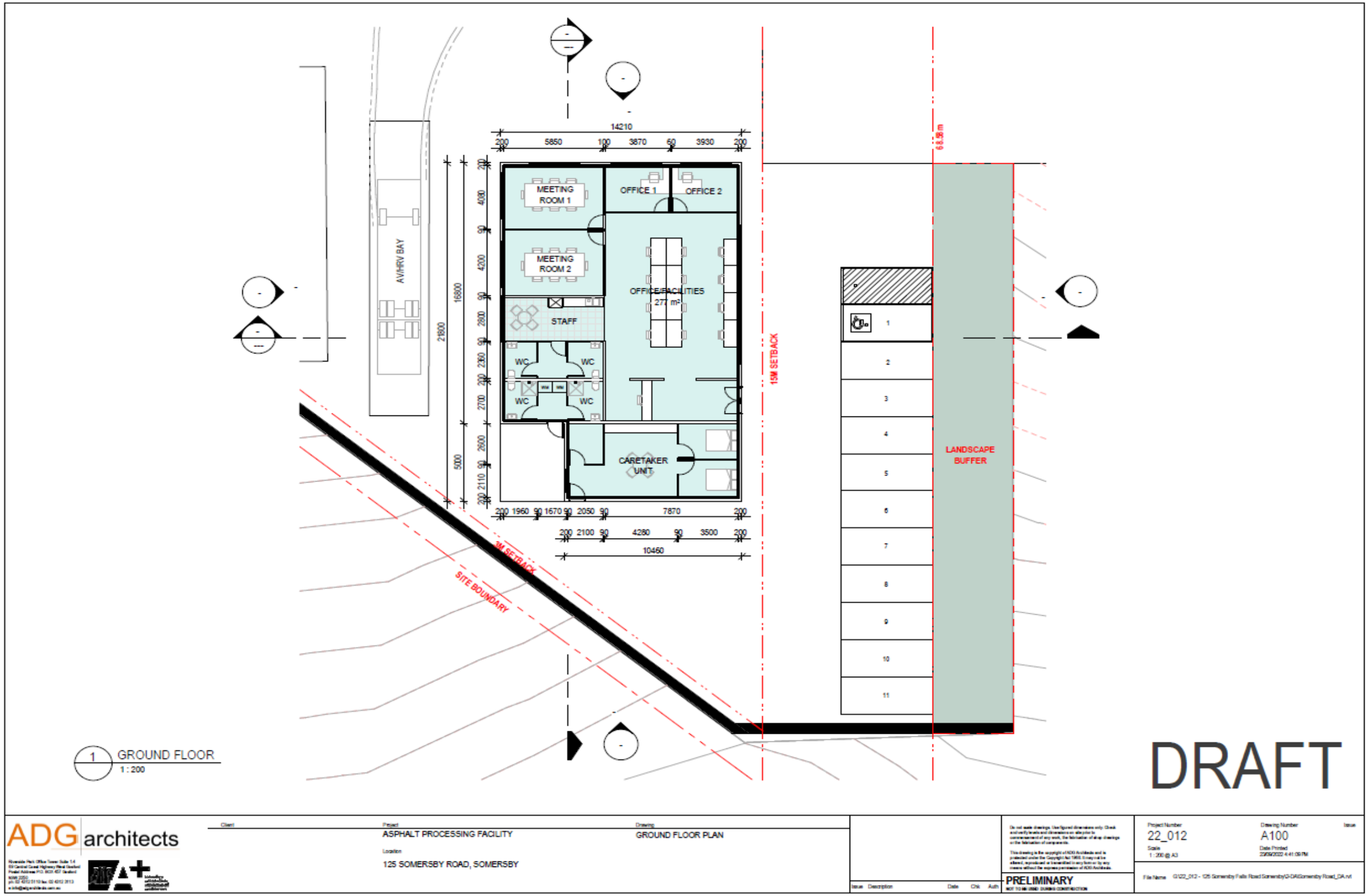



The main traffic generated at the site will be from trucks. Daily despatch of asphalt product consists of 224 tonne trucks, 144 tonne semi-trailers, 108 tonne heavy rigid truck and 13 tonne medium rigid truck.

A proposed site layout has been provided in Figure 2-3.

Figure 2-4: Proposed Site Layout




14210
200 5850 100 3870 50 3930 200
MEETING ROOM 1
OFFICE 1
OFFICE 2
MEETING ROOM 2
OFFICE/FACILITIES 277 m²
STAFF
WC
WC
WC
WC
CARETAKER UNIT
AV/HRV BAY
16800
2600
5000
200 1960 90 1670 90 2050 90 7870 200
200 2100 90 4280 90 3500 200
10460
15M SETBACK
3M SETBACK
SITE BOUNDARY
LANDSCAPE BUFFER
1
2
3
4
5
6
7
8
9
10
11
1 GROUND FLOOR
1 : 200
DRAFT
ADG architects
Client
Project
ASPHALT PROCESSING FACILITY
Location
125 SOMERSBY ROAD, SOMERSBY
Drawing
GROUND FLOOR PLAN
Issue Description Date Chk Auth
PRELIMINARY
Project Number 22_012
Drawing Number A100
Issue
Scale 1 : 200 @ A3
Date Printed 29/09/2022 4:41:09 PM
File Name G:\22_012 - 125 Somersby Falls Road Somersby\O-DA\Somersby Road_DA.rvt

# 3. CHEMICALS STORED AND HANDLED

The materials of a chemical nature which will be stored on site include heated bitumen, diesel fuel and minor storage of solvents. Natural gas would also be made available to provide heat for the drum.

Hazardous substances under the *Work Health and Safety Regulation 2011* are classified using the Globally Harmonised System of Classification and Labelling of Chemicals (GHS). GHS is replacing the use of dangerous goods Classes as defined by the Australian Dangerous Goods Code for Transport. However, as the guidelines used to assess the facility still uses the Australian Dangerous Goods Code, the original dangerous goods classes have been referred to in this assessment.

Asphalt is not classified as a dangerous good by the criteria of the Australian Dangerous Goods Code.

Bitumen is classified as a Class 9 DG - *Miscellaneous*, Packing Group III, elevated temperature liquid. Class 9 dangerous goods include ecotoxicological hazard classes and categories. Bitumen is classified in accordance with the GHS classification as Skin Irritation – Category 3, and Eye Irritation – Category 2B. The total maximum amount of bitumen stored on site will be 240,000 L.

Diesel fuel is not classified as a dangerous good but is designated as a Class C 1 *Combustible Liquid*. The Multi-Level Risk Assessment Guideline states that combustible liquids should be treated as Class 3 PGIII if they are stored with other class 3 substances. Since diesel fuel will be stored in close proximity to bitumen, a conservative approach is taken where diesel will be treated as a Class 3 PGIII substance in this assessment. The total amount stored will be 30,000 L.

There will also be minor quantities of solvents stored on site within a small bunded dangerous goods cabinet (2m x 1m). These chemicals are used to test the asphalt mix.

Information on the chemicals will be stored on-site is provided in the table below.

Table 3-1: Maximum Dangerous Goods Quantity on Site

| Chemicals | DG Class | Packing Group | Maximum Amount | Unit |
|---|---|---|---|---|
| Bitumen | 9 | III | 240,000 | L |
| Diesel | 3* | III* | 30,000 | L |

**Note:** *Diesel fuel is a C1 combustible liquid but is treated as Class 3 PGIII flammable liquid in this assessment

The chemicals stored and handled onsite have been assessed against the screening threshold of the SEPP as a preliminary assessment to identify whether or not the proposed operation is considered to be potentially hazardous or offensive.

## 3.1 PRELIMINARY RISK SCREENING

A preliminary risk screening of the chemicals stored at the sit in accordance with State Environmental Planning Policy (Resilience and Hazards) 2021 – Chapter 3 Hazardous and Offensive Development (SEPP) and *Hazardous and Offensive Development Application Guidelines: Applying SEPP33*, NSW Government Department of Planning (2011) has been undertaken, with results provided in Table 3-2 below:

Table 3-2: SEPP Preliminary Risk Screening

| Class | Screening Threshold | Description | Site Specific Description | Quantity to be stored | Triggers SEPP |
|---|---|---|---|---|---|
| Class 1.1 | Assessed by reference to figure 5 of applying SEPP | Explosives | None | None | No |
| Class 1.2 | 5 tonne or are located within 100 m of a residential area | Explosives | None | None | No |
| Class 1.3 | 10 tonne or are located within 100 m of a residential area | Explosives | None | None | No |
| Class 2.1 | (LPG only — not including automotive retail outlets[1])<br><br>10 tonne or 16 $m^3$ if stored above ground<br><br>40 tonnes or 64 $m^3$ if stored underground or mounded | Flammable Gases | None | None | No |
| | (Excluding LPG) Assessed by reference to figure 6 of applying SEPP | Flammable Gases Pressurised | None | None | No |
| | (Excluding LPG) Assessed by reference to figure 7 of applying SEPP | Flammable Gases liquified under pressure | None | None | No |
| Class 2.2 | Not relevant | Non-flammable, non-toxic gases | None | None | No |
| Class 2.3 | 5 tonne | Anhydrous ammonia, kept in the same manner as for liquefied flammable gases and not kept for sale | None | None | No |

| Class | Screening Threshold | Description | Site Specific Description | Quantity to be stored | Triggers SEPP |
|---|---|---|---|---|---|
| | 1 tonne | Chlorine and sulphur dioxide stored as liquefied gas in contains <100 kg | None | None | No |
| | 2.5 tonne | Chlorine and sulphur dioxide stored as liquefied gas in containers >100 kg | None | None | No |
| | 100 kg | Liquefied gas kept in or on premises | None | None | No |
| | 100 kg | Other toxic gases | None | None | No |
| Class 3 | Assessed by reference to figures 8 & 9 of applying SEPP | Flammable liquids PG I, II and III | Stored in Tanks | 30000 | No |
| Combustible Liquid C1 | Not relevant | Combustible liquid with flashpoint of 150°C or less | None | None | No |
| Combustible Liquid C2 | Not relevant | Combustible liquid with flashpoint exceeding 150°C | None | None | No |
| Class 4.1 | 5 tonne | Flammable Solids | None | None | No |
| Class 4.2 | 1 tonne | Substances liable to spontaneous combustion | None | None | No |
| Class 4.3 | 1 tonne | Substances which, in contact with water, emit flammable gases | None | None | No |

| Class | Screening Threshold | Description | Site Specific Description | Quantity to be stored | Triggers SEPP |
|---|---|---|---|---|---|
| Class 5.1 | 25 tonne | Ammonium nitrate – high density fertiliser grade, kept on land zoned rural where rural industry is carried out, if the depot is at least 50 metres from the site boundary | None | None | No |
| | 5 tonne | Oxidising substances, and ammonium nitrate elsewhere | None | None | No |
| | 2.5 tonne | Dry pool chlorine — if at a dedicated pool supply shop, in containers | None | None | No |
| | 1 tonne | Dry pool chlorine — if at a dedicated pool supply shop, in containers >30 kg | None | None | No |
| | 5 tonne | Any other Class 5.1 | None | None | No |
| Class 5.2 | 10 tonne | Organic peroxides | None | None | No |
| Class 6.1 PGI | 0.5 tonne | Toxic substances | None | None | No |

| Class | Screening Threshold | Description | Site Specific Description | Quantity to be stored | Triggers SEPP |
|---|---|---|---|---|---|
| Class 6.1 PGII & III | 2.5 tonne | Toxic substances | None | None | No |
| Class 6.2 | 0.5 tonne | Infectious substances, includes clinical waste | None | None | No |
| Class 7 | All | Radioactive Material, should demonstrate compliance with Australian codes | None | None | No |
| Class 8 PGI | 5 tonne | Corrosive substance | None | None | No |
| Class 8 PGII | 25 tonne | Corrosive substance | None | None | No |
| Class 8 PGIII | 50 tonne | Corrosive substance | None | None | No |

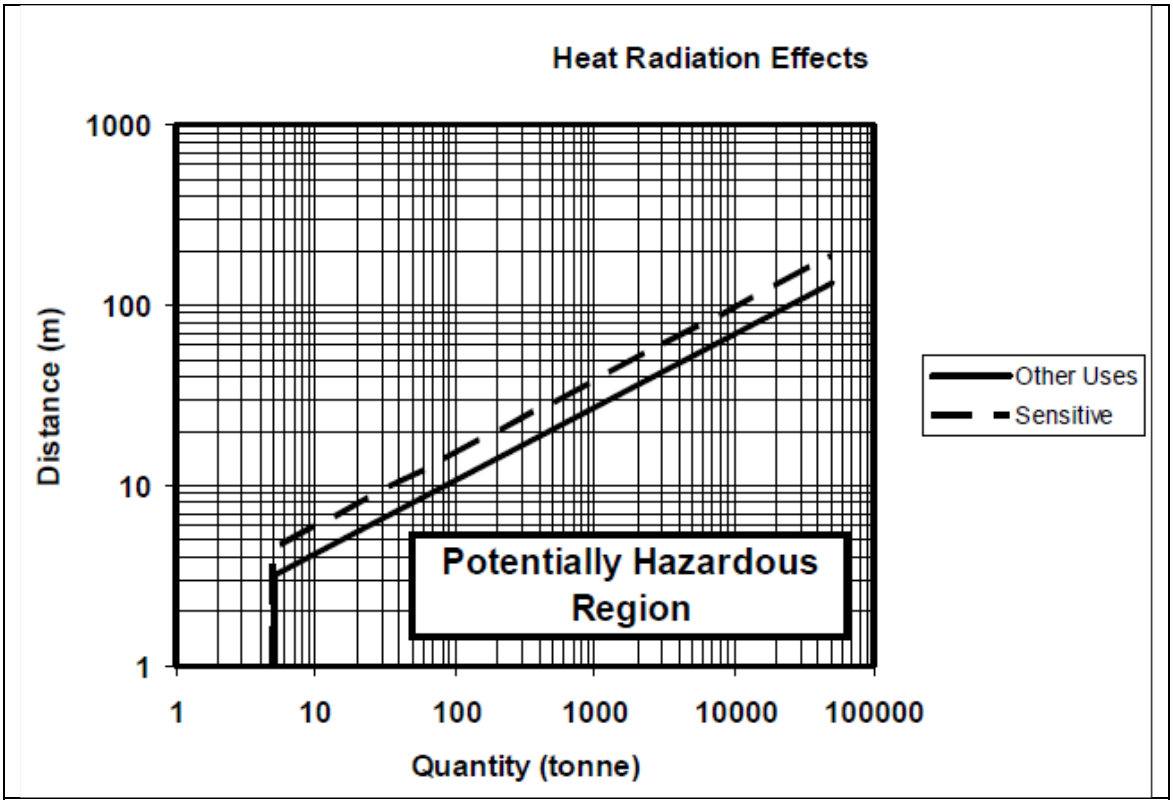
The proposed asphalt plant would have dangerous goods consisting of C1- combustible liquid and Class 9 elevated temperature liquids. The C1 would be diesel while the Class 9 is the heated bitumen.

As stated in the PHA, Diesel fuel is not classified as a dangerous good but is designated as a C1 Combustible Liquid. The Multi-Level Risk Assessment Guideline states that combustible liquids should be treated as class 3PGIII if they are stored with other class 3 substances. Since diesel fuel will be stored within close proximity to bitumen, a conservative approach is taken where diesel will be treated as a class 3PGIII substance in this assessment. The total amount stored will be 30,000 L.

As bitumen is a Class 9 Miscellaneous Dangerous Good, it cannot be assessed using the SEPP screening threshold as Class 9 is not included in the screening table.

The quantities of dangerous goods do not exceed the threshold quantities in applying *State Environment Planning Policy 33.* A hazard analysis based on the methodology of the Multi-Level Risk Assessment has been undertaken in this Preliminary Hazard Analysis (PHA).

Figure 3-1: Screening Threshold for Class 3PGIII Flammable Liquids




**Source:** DoP&E 2011 Multi-Level Risk Assessment

**Note:** Other uses = Industrial or commercial uses
Sensitive = Residential uses

## 3.2 DANGEROUS GOOD STORAGE REQUIREMENTS

Although the dangerous goods classification system has changed, the placarding requirements remain essentially the same as under the previous regulations, and placard details and ◇ signage still refers to the dangerous goods classes. The labelling required by GHS is on the packages, containers and in the safety data sheets.

The maximum storage capacity for bitumen on site will be 240,000 L. Bitumen should be stored as a Combustible Liquid C2 in accordance with AS/NZS 1940:2017 "*The storage and handling of flammable and combustible liquids*". The storage of bitumen would need a '*Miscellaneous Dangerous Goods 9*' information placard.

The maximum amount of diesel fuel stored on site will be 30,000 L. The storage of this chemical would also need to be in accordance with AS/NZS 1940:2017 "*The storage and handling of flammable and combustible liquids".* The storage of diesel, a Class C1 Combustible Liquid, would need a 'Combustible Liquid' information placard.

The site will be designed to conform to the *Work Health and Safety Regulations 2017,* and relevant Australian Standards.

A summary of the general requirements that need to be adhered with are as follows:

- Ability to hold the first 90 minutes of firefighting water on the site;
- Depot signage and erection of warning notices and HAZCHEM signs;
- Provision of adequate fire protection services;
- Provision of spill control kits at all loading/unloading areas;
- Provision of adequate ventilation system that prevents an accumulation of toxic vapour;
- Separation distance of all of the storage areas that consider the safety requirements stipulated in AS/NZS 3833:2007 and AS 1940–2017;
- The site to be securely locked when not in operation;
- Establishing environmental work practice procedures; and
- Ensuring personnel are regularly informed about the storage and handling practices that are prescribed for particular types of dangerous goods.

All dangerous good storage and handling practices would comply with Australian Dangerous Goods (ADG) Code 7th Edition, *Work Health and Safety Regulations 2017*, the WorkCover Code of Practice for Storage and Handling of Dangerous Goods and the relevant Australian standards.

# 4. HAZARD ANALYSIS

## 4.1 LEVEL OF ASSESSMENT

There are three levels of assessment specified in the Multi-Level Risk Assessment (DoP&E 2011) document and they are listed below.

**Level 1 – Qualitative Analysis:** primarily based on the hazard identification techniques. A level 1 assessment can be justified if the analysis of the facility demonstrates Societal Risk in the *negligible zone* and there are no potential accidents with significant off-site consequences.

**Level 2 – Partially Quantitative Analysis:** using hazard identification and the focused quantification of key potential off-site risk contributors. A level 2 assessment can be justified when the Societal Risk estimates fall within the middle *ALARP zone* or if one or more significant risk contributors had been identified but the frequency of risk contributors having off-site consequences is relatively low.

**Level 3 – Fully Quantitative Risk Analysis:** based on the full and detailed quantification of risks, consistent with HIPAP No. 6. A level 3 assessment is required where the Societal Risk from the facility estimates fall within the *intolerable zone* or where there are significant off-site risk contributors, and a level 2 assessment is unable to demonstrate that the risk criteria will be met.

The level of assessment required is dependent on a risk-based method which relies on broad estimations of consequences and likelihood of accidents. A risk classification and prioritisation technique is often used to determine the level of assessment. This technique provides the estimation of individual and societal fatality risk which can be compared against the given criteria. However, due to the presence of Class 9 Dangerous Goods on site and the lack of estimation procedures for these miscellaneous substances, this technique cannot be used appropriately. To be conservative, a Level 3 Fully Quantitative Risk Analysis has been carried out.

## 4.2 METHODOLOGY

The procedures adopted by this study for assessing hazardous impacts involve the following steps:

**Step 1**: Hazard identification;
**Step 2**: Risk analysis (consequence and probability estimations); and
**Step 3**: Risk evaluation and assessment against specific criteria.

The following sections of the report discuss the hazard identification and analysis process as prescribed by the Department of Planning and Infrastructure in the document *Hazardous Industry Planning Advisory Paper No* 4 (*HIPAP No. 6) – Guidelines for Hazard Analysis* and *HIPAP No. 8 – HAZOP Studies* (DoP&E 2011).

### 4.2.1 Hazard Identification

This is the first step in risk assessment. It involves the identification of all theoretically possible hazardous events as the basis for further quantification and analysis. This does not in any way imply that the hazard identified or its theoretically possible impact will occur in practice. Essentially, it identifies the particular characteristics and nature of hazards to be further evaluated in order to quantify potential risks.

To identify hazards, a survey of the proposed operations would be carried out to isolate the events which are outside normal operating conditions that have the potential to cause offsite impacts. In accordance with HIPAP No. 6, these events do not include occurrences that are a normal part of the operational cycles of the site, but rather the atypical and abnormal, such as the occurrence of a significant liquid spill during product transfer operations.

### 4.2.2 Risk Analysis

After a review of the events identified in the hazard identification stage and the identification of prevention/protection measures incorporated into the design of the site, any events which are considered to have the potential to result in impacts offsite or which have the potential to escalate to larger incidents are carried over to the next stage of analysis.

#### 4.2.2.1 Consequence Estimation

This aspect involves the analysis and modelling of the credible events carried forward from the hazard identification process in order to quantify their impacts outside the boundaries of the site. In this case, these events typically include fire and the potential effects on people and/or damage to property.

#### 4.2.2.2 Probability Likelihood Estimation

If necessary, the likelihood of incidents are quantified by adopting probability and likelihood factors derived from published data.

### 4.2.3 Risk Evaluation and Assessment Against Specific Criteria

The risk analysis includes the assessment of consequences for each hazardous event and the frequencies of each initiating failure. The results of these consequence calculations together with the probabilities and likelihood figures estimated were then compared against the accepted criteria, as specified by Department of Planning and Infrastructure. Whether it is considered necessary to conduct the predictions would depend on the probability figures, likelihood estimations, and if the risk criteria are exceeded.

## 4.3 ASSESSMENT CRITERIA

The risk criteria applied by Department of Planning and Infrastructure are published in the document *Hazardous Industry Planning Advisory Paper No 4* (HIPAP No. 4) – *Risk Criteria for Land Use Safety Planning* (DoP&E 2011). The following is a general discussion of the criteria that is used to assess the risk of a development on the surrounding community and environment.

### 4.3.1 Individual Fatality Risk Levels

The following paragraphs have been reproduced from HIPAP No. 4 to describe individual fatality risk levels:

> *"People in hospitals, children at school or old-aged people are more vulnerable to hazards and less able to take evasive action, if need be, relative to the average residential population. A lower risk than the one in a million criteria (applicable for residential areas) may be more appropriate for such cases. On the other hand, land uses such as commercial and open space do not involve continuous occupancy by the same people.*
>
> *The individual's occupancy of these areas is on an intermittent basis and the people present are generally mobile. As such, a higher level of risk (relative to the permanent housing occupancy exposure) may be tolerated. A higher level of risk still is generally considered acceptable in industrial areas"* (DoP&E 2011)."

The risk assessment criteria for individual fatality risk are presented below.

Table 4-1: Individual Fatality Risk Criteria (HIPAP No. 4)

| Land Use | Risk Criteria x $10^{-6}$ (per year) |
|---|---|
| Hospitals, schools, childcare facilities, old age housing | 0.5 |
| Residential, hotels, motels, tourist resorts | 1 |
| Commercial developments including retail centres, offices and entertainment centres | 5 |
| Sporting complexes and active open space | 10 |
| Industrial | 50 |

Figures in the table above have been utilised in the assessment.

### 4.3.2 Injury Risk Levels

HIPAP No. 4 provides guideline criteria for heat of radiation, explosion overpressure and toxic exposure. The quoted requirements from the referenced document have been summarised as follows:

- Guideline criteria for heat of radiation:

  *"Incident heat flux radiation at residential and sensitive use areas should not exceed 4.7 kW/m$^2$, at frequencies of more than 50 chances in a million per year."*

- Guideline criteria for explosion overpressure:

  *"Incident explosion overpressure at residential and sensitive use areas should not exceed 7 kPa at frequencies of more than 50 chances in a million per year."*

- Guideline criteria for toxic exposure:

  *"Toxic concentrations in residential areas should not exceed a level that would be seriously injurious to sensitive members of the community following a relatively short period of exposure at maximum frequency of 10 in a million per year."*

  and

  *"Toxic concentrations in residential areas should not cause irritation to the eyes or throat, coughing or other acute physiological responses in sensitive members of the community over a maximum frequency of 50 in a million per year."*

Please note that a risk hazard assessment only examines events that are considered to have the potential for significant off-site consequences and may not entirely reflect all variations in people's vulnerability to risk.

### 4.3.3 Risk of Property Damage and Accident Propagation

HIPAP No. 4 indicates that siting of a hazardous installation must account for the potential for propagation of an accident, causing a "domino" effect on adjoining premises. This risk would be expected within an industrial estate where siting of hazardous materials on one site may potentially cause hazardous materials on an adjoining premises to further develop the size of the accident.

The criteria for risk of damage to property and of accident propagation are stated as follows:

*"Incident heat flux at neighbouring potentially hazardous installations or at land zones to accommodate such installations should not exceed a risk of 50 in a million per year for the 23 kW/m$^2$ heat flux level."*

and

*"Incident explosion overpressure at neighbouring potentially hazardous installations, at land zoned to accommodate such installations or at nearest public buildings should not exceed a risk of 50 in a million per year for the 14 kPa explosion overpressure level."*

### 4.3.4 Criteria for Risk Assessment to the Biophysical Environment

The assessment of the ultimate effects from toxic releases into the natural ecosystem is difficult, particularly in the case of atypical accidental releases. Consequence data is limited and factors influencing the outcome variable and complex. In many cases, it may not be possible or practical to establish the final impact of any particular release. Because of such complexity, it is inappropriate to provide generalised criteria to cover any scenario. The acceptability of the risk will depend upon the value of the potentially affected zone or ecosystem to the local community and wider society.

The suggested criteria for sensitive environmental areas relate to the potential effects of an accidental release or an emission on the long-term viability of the ecosystem or any species within it and are expressed as follows:

*"Industrial developments should not be sited in proximity to sensitive natural environmental areas where the effects or consequences of the more likely accidental emissions may threaten the long-term viability of the ecosystem or any species within it."*

and

*"Industrial developments should not be sited in proximity to sensitive natural environmental areas where the likelihood or probability of impacts that may threaten the long-term viability of the ecosystem or any species within it is not substantially lower than the existing background level threat to the ecosystem."*

## 4.4 Assessment Criteria Applicable to the Proposed Development Application

In accordance with *HIPAP No 4 Risk Criteria for Land Use Safety Planning*, the following discussion of the risk assessment criteria considered applicable to the proposed development has been provided.

### 4.4.1 Heat-Flux Radiation Criteria

As the chemical will be stored on site include Class 2.1, Class 9 and Combustible Liquids, the heat flux radiation criteria have been deemed applicable to the site. Heat radiation models have been conducted to determine compliance with these criteria.

The effects of various heat fluxes (radiation) as a result of a fire incident are given in Table 4-2. The HIPAP No 4 paper (DoP&E 2011) suggests a heat flux of 4.7 kW/m$^2$ and a frequency of 50 in a million per year to be used as the risk injury criterion for thermal effects.

Table 4-2: Heat Radiation Impact (DoP&E HIPAP No. 4)

| Heat Flux Level | Effect |
|---|---|
| 4.7 kW/m$^2$ | Heat radiation level for possibility of injury to persons exposed. This heat radiation level is regarded to be high enough to potentially cause pain in 15-20 seconds and injury after 30 seconds of exposure |
| 12.6 kW/m$^2$ | Heat radiation level for possibility of fatality at extended exposure and structural failure of nearby affected structures. At this level, injury is highly probable with a significant possibility for fatality to occur. Thin steel may undergo structural failure due to thermal stress and the temperature of wooden structures may increase to a heat where exposure to a naked flame can trigger ignition |
| 23 kW/m$^2$ | Heat radiation level for possibility of fatality at instantaneous exposure and definite structural failure of nearby unprotected structures. The possibility for fatality is likely at this level, with spontaneous ignition of wood after long exposure and structural failure of unprotected steel due to thermal stress. |
| 35 kW/m$^2$ | Cellulosic material will pilot ignite within one minute's exposure. Significant chance of fatality for people exposed instantaneously. |

### 4.4.2 Explosion Over-Pressure Criteria

The explosion over-pressure criteria have been deemed applicable due to the possibility of vapour cloud explosions at the site. It is suggested by DoP&E in HIPAP No. 4 that an explosion over-pressure criteria of 7 kPa at a frequency of 50 in a million per year to be used. Above this explosion overpressure level, significant effects to people and property damage may occur with a 10% probability of injury.

For surrounding industrial premises, a criterion of 14 kPa with a probability of 50 in a million per year is suggested. At this level, significant damage to buildings and possible damage to piping and (low-pressure) equipment at neighbouring plants occur.

### 4.4.3 Toxic Criteria

HIPAP No. 4 indicates that citing of potentially hazardous developments also needs to consider the risk from accidental releases into the biophysical environment. The most applicable toxic criteria to reference are the Emergency Response Planning Guideline (ERPG) limits, which are limits designed to indicate concentrations that could impair the escape of affected persons as a result of the release of toxic substances.

The referenced toxic criteria have been identified to not apply, given that most fires involving bitumen and diesel provides plume heights that are more than 100 metres. These types of plume heights are not expected to cause any ground level concentration impacts that can exceed the Emergency Response Planning Guideline (ERPG) limits, unless temperature inversions occur. Using the CSIRO TAPM (The Air Pollution Model) data shows temperature inversions are only expected to occur at approximately 5.5% throughout the year. Furthermore, these periods were examined to only occur during the night-time period wherein the site would either be securely locked when not in use or would be attended, secured and checked at all times during the site's operation.

### 4.4.4 Biophysical Environment Risk Criteria

The site will be in an industrial area. The proposed area will be fully paved and sufficiently bunded to accommodate the proposed storage of chemicals and raw materials.

Any leaks/spills resulting from incidents would be captured within the corresponding bund provided. Spill kits would be provided at all areas that are identified to be prone to spills. A housekeeping inspection would be undertaken regularly to ensure that no leaks or spills would occur on site.

Best practice in housekeeping and operational procedures would be implemented on site. Given this consideration, the proposed development would not introduce any additional risk that may threaten the long-term viability of the development and its effect to the local environment. Consequently, the DoP&E-based criteria have been determined to be readily satisfied and no further analyses or discussions were considered necessary.

## 4.5 HAZARD IDENTIFICATION

The Hazard Identification approach has been developed and recommended by the Department of Planning and Infrastructure (DoP&E). It relies on a systematic and analytical approach to the identification and analysis of hazards, and the quantification of offsite risks, to assess any risk tolerability and land use safety implications. The Department of Planning and Infrastructure has advocated a merit-based approach, wherein the level and extent of analysis must be appropriate to the hazards present and therefore, need only progress to the extent necessary for the particular case.

### 4.5.1 Hazardous Materials

The potentially hazardous chemicals to be stored on site include bitumen and diesel. A summary of the properties and potential hazards of these substances is given below.

#### 4.5.1.1 Bitumen

Bitumen is a complex black solid made up of predominantly high molecular weight organic compounds derived from crude petroleum oil. It is often used for road building or paving as well as industrial and civil engineering applications. Bitumen is a classified as a class 9 dangerous good in the Australian Dangerous Goods Code. It is not classified as Hazardous according to the criteria of the National Occupational Health and Safety Commission (NOHSC).

Bitumen is not an expected health hazard at ambient room temperature but is typically stored and handled above 150°C. Contact with hot bitumen is a potential burn hazard and may cause permanent skin damage, severe eye burns and/or blindness. At high temperatures, contact with water must be avoided as it will result in violent expansion and a risk of splashing or boil-over. When bitumen is heated, the fumes emitted contain particulate matter, hydrocarbon vapour and very small amounts of hydrogen sulphide which is a toxic flammable gas. Hydrogen sulphide can accumulate in tanks during long term storage at high temperatures. Hydrocarbon vapours can also accumulate in confined spaces and hence pose an explosion hazard.

Deposits of carbonaceous materials and iron sulphides may develop on walls and roofs of storage tanks during long term storage. These deposits may be pyrophoric and self-ignite when in contact with air hence pose as a fire and/or explosion hazard.

Bitumen has a high normal boiling point and flash point of above 250°C thus a low fire hazard. The temperature of bitumen should be monitored to prevent overheating. In the case that bitumen temperature was raised sufficiently, the main products of combustion are carbon dioxide and water with smaller amounts of carbon monoxide and other minor components. The hazardous products of bitumen combustion may include smoke made of a complex mixture of airborne solid and liquid particulates and gases, and small amounts of hydrogen sulphide and oxides of sulphur. The Shell Bitumen Industrial Handbook (1995) reveals that there are no quantitative data for the total amount of fumes produced when bitumen is heated; however, studies show the amounts to be small.

#### 4.5.1.2 Diesel

Diesel fuel is a C1 combustible liquid consisting of a mixture of hydrocarbons with carbon numbers in the range of C9 and higher. Vapours emitted can ignite rapidly when exposed to ignition sources such as heat, static accumulation, spark or open flame. These vapours, being heavier than air, can travel long distances to an ignition source and flash back causing fire and/or explosion. Appropriate separation distances from ignition sources and electrical equipment should be enforced. Electrostatic charges may be generated during pumping, transfer activities, tank cleaning, mixing, product agitation etc. If diesel is mixed with air and exposed to an ignition source, the flammable vapours can burn in open or explode in confined spaces.

The inhalation of vapours and/or combustion products should be avoided as it may cause significant health effects. Hazardous combustion products may include smoke, carbon monoxide, oxides or sulphur and unidentified organic and inorganic compounds.

### 4.5.2 Hazardous Events

The identification of possible hazardous events for this facility has been prepared with reference to available literature and information including Davie et al. 1994. A comprehensive list of credible and significant incidents identified is summarised in a Hazard Identification Chart given below.

#### 4.5.2.1 Hazard Identification Chart

A Hazard Identification Chart has been prepared for the proposed site based on operating scenarios that are relevant to the proposed development. This chart outlines the outcomes from the hazard identification phase of the assessment.

The chart consists of five columns:

Column 1
Heading: Event ID
Event or scenario identification number

Column 2
Heading: Hazardous Event/Area
The potential hazardous event that could occur or the area of possible incidents

Column 3
Heading: Possible Initiating Event
The individual events that are considered to be likely or realistic are then listed. Where the possible consequences are similar the events are listed together, each one individually numbered.

Column 4
Heading: Possible Consequences
The outcomes of an event if it occurred are listed.

Column 5
Heading: Prevention/Protection Measures
The measures designed into the functional/operation area and the site are listed. These measures may include for example safeguards, design features, management methods and/or operator training.

The hazard identification chart is presented in Table 4-3.

Table 4-3: Event/Consequence Analysis Table

| Event ID | Hazardous Event/Area | Possible Initiating Event | Possible Consequences | Prevention/Protection Measures |
|---|---|---|---|---|
| 1 | Tank boil-over | • Bitumen in contact with water e.g. water entering hot bitumen tank | • Steam generated causing possible tank overpressure and tank failure resulting in loss of containment in bund<br>• Potential for fire if ignited<br>• Potential for injury to people, damage to equipment and environmental impacts | • Temperature control used to maintain tank above 100°C for the prevention of water condensation<br>• Large diameter emergency vents<br>• Steam not used for heating<br>• Frangible roofs on tanks<br>• Tanks located within bund to minimise consequences such as fires and injuries<br>• Control of ignition sources throughout the site<br>• Fire protection facilities available<br>• Safety showers available within close proximity to bitumen tanks<br>• Stormwater will be isolated using a valve on the discharge point |
| 2 | Tank overflow | • Human error in terms of calculations<br>• Failure of level instruments | • Loss of containment in bund<br>• Potential for fire if ignited<br>• Potential for injury to people, damage to equipment and environmental impacts | • Level monitoring and alarm system in place<br>• Level instrumentation regularly checked and maintained<br>• Tanks located within bund to minimise consequences such as fires and injuries<br>• Control of ignition sources throughout the site<br>• Fire protection facilities available<br>• Safety showers available within close proximity to bitumen tanks |

Table 4-3: Event/Consequence Analysis Table

| Event ID | Hazardous Event/Area | Possible Initiating Event | Possible Consequences | Prevention/Protection Measures |
|---|---|---|---|---|
| 3 | Tank mechanical failure | • Physical damage such as from collision<br>• Metal fatigue, corrosion or faulty fabrication<br>• Adjacent fire | • Same as above | • Tanks designed to comply with Australian Standards<br>• Regular maintenance and inspections<br>• Tanks located within bund to minimise consequences such as fires and injuries<br>• Control of ignition sources throughout the site<br>• Fire protection facilities available<br>• Safety showers available within close proximity to bitumen tanks |
| 4 | Pipe or piping system failure | • Corrosion, thermal overpressure, pipe thermal expansion, human error such as collisions or mishandling | • Same as above<br>• Potential for small spill with subsequent cooling and solidification | • Pipes designed to comply with Australian Standards<br>• Emergency isolation valves<br>• Regular maintenance and inspections<br>• Most pipes in bunded areas<br>• Fire protection facilities available<br>• Safety showers available within close proximity to bitumen tanks |
| 5 | Loss of containment | • Tank boil-over, tank overflow, tank mechanical failure, tank damage or pipe failure causing loss of containment | • Tank fire if exposed to ignition source<br>• Possible escalation to other buildings or bund fire<br>• Explosion of vapours in tanks<br>• Pollution via fire fighting water | • Prevention and protection measures listed above for tank boil-over, tank overflow, tank failure and pipe failure<br>• Stormwater will be isolated using a valve on the discharge point |

Table 4-3: Event/Consequence Analysis Table

| Event ID | Hazardous Event/Area | Possible Initiating Event | Possible Consequences | Prevention/Protection Measures |
|---|---|---|---|---|
| 6 | Bitumen pump leak during loading from road tanker | • Pump failure or human handling error during loading | • Spill should be contained within cabinet containing pump and loading system<br>• Potential for spill within cabinet and subsequent cooling and solidification<br>• Potential for bitumen fire within cabinet if ignited | • All pumps located within pump cabinets to isolate any leakages |
| 7 | Self-ignition of bitumen | • Build up of deposits inside tank due to heated bitumen exposed to air. Deposits can auto-ignite around 190°C and self heat of thickness exceeds critical values | • Tank fire<br>• Potential for injury to people, damage to equipment and environmental impacts<br>• Loss of containment | • Temperature controls used for bitumen tank<br>• Deposits removed every ten years during tank shutdowns when tanks are cool.<br>• No direct flame heating<br>• Filter units (where fitted) and vents to be regularly inspected and cleaned |

Table 4-3: Event/Consequence Analysis Table

| Event ID | Hazardous Event/Area | Possible Initiating Event | Possible Consequences | Prevention/Protection Measures |
|---|---|---|---|---|
| 8 | Bitumen tank explosion | • Accumulation of flammable gases with subsequent ignition source<br>• Overheating of tank or bitumen causing greater flammable vapour generation and/or ignition of vapours<br>• Ignition of deposits within tank and consequent ignition of flammable vapours<br>• Exposure of bitumen with direct flames such as during welding or other activities | • Damage to tank<br>• Possible injury to people near the tank, e.g. by ejected bitumen and projected tank pieces<br>• Possible missile generation and propagation to other equipment and buildings<br>• Tank fire<br>• Possible escalation to other buildings or bund fire | • Filter units (where fitted) and vents to be regularly inspected and cleaned<br>• Bitumen tank is located within a bunded area which provides bunding and protection barrier from heat and projected materials<br>• Frangible roofs on bitumen tanks will prevent excessive explosion overpressures<br>• Control of ignition sources throughout the site<br>• Tanks/Valves/Pipe work/Hot oils system to be regularly inspected for damage and any leaks<br>• Compliance with Hazardous Area Electrical Equipment standards and other relevant Australian Standards<br>• All equipment will be earthed<br>• Bitumen temperature control used<br>• No direct flame heating – use of hot oil heater<br>• Fire protection facilities available<br>• Stormwater will be isolated using a valve on the discharge point |

Table 4-3: Event/Consequence Analysis Table

| Event ID | Hazardous Event/Area | Possible Initiating Event | Possible Consequences | Prevention/Protection Measures |
|---|---|---|---|---|
| 9 | Hydrogen sulphide exposure | • Exposure to losses of containment<br>• People entering confined spaces with hot bitumen spill | • Toxic impact or fatality from hydrogen sulphide exposure at high enough concentrations | • Australian Standards will be complied to prevent loss of containment<br>• Confined space permits required and risk assessments made before entry<br>• Filter units (where fitted) and vents to be regularly inspected and cleaned<br>• Overheating of bitumen prevented using temperature controls to prevent generation of fumes<br>• Bitumen loading occurs in an enclosed system where any potential leaks will be collected within the pump cabinet<br>• Emergency response procedures available including ringing 000 if required |
| 10 | Burns | • Exposure to hot bitumen from loss of containment | • Burn injuries | • Use of appropriate PPE if handling bitumen e.g. heat resistant gauntlet gloves, face shield and hood<br>• Safety showers available within close proximity to bitumen tanks<br>• Trained first aid personnel available on site<br>• Emergency response procedures available including ringing 000 if required |
| 11 | Insulation fires | • Ignition of piping, tank or vessel insulation from contact with losses of containment | • Potential for fires and propagation to adjoining equipment and systems | • Control of ignition sources<br>• Insulation specifications include waterproofing and minimised openings<br>• Loss of containment prevention<br>• Fire protection facilities available |

Table 4-3: Event/Consequence Analysis Table

| Event ID | Hazardous Event/Area | Possible Initiating Event | Possible Consequences | Prevention/Protection Measures |
|---|---|---|---|---|
| 12 | Loss of containment of diesel fuel | • Tank damage or pipe failure e.g. by collision, corrosion or flange failure<br>• Human error e.g. valve left open | • Potential for pool fire if ignited<br>• Potential for propagation to adjacent equipment and buildings, tank explosion and overpressure damage to equipment, and injury to people | • Tank and piping designed and constructed to comply with Australian Standards<br>• Sufficient bunding constructed using reinforced concrete slabs with concrete black walls in accordance with AS 1940-2004 to contain 110% of maximum storage<br>• Drains and vent valves are plugged in case of leakages<br>• Regular inspection and maintenance<br>• Periodic patrolling to detect odorous leakages<br>• Stormwater will be isolated using a valve on the discharge point |
| 13 | Truck spray up station | • Vehicle collision/impact<br>• Human error or accidents | • Injuries as the result of being struck by delivery vehicles<br>• Release of Slip Agent and/or diesel fuel causing environmental contamination<br>• Manual handling injuries<br>• Slip/Trips/Falls<br>• Eye irritation | • Truck Operators and personnel in immediate area to wear Hi-Vis clothing<br>• Drivers to remain clear of traffic areas and be vigilant for other vehicles<br>• 10 KPH speed limit to be enforced on site area<br>• Chemicals and drums to be stored only within bunded area<br>• Spill kits available close by<br>• Manual handling guidelines to be followed when handling heavy items<br>• Use Spray Up Platform to spray truck bodies. Do not climb into truck body<br>• Wear Safety Glasses in windy conditions |

Table 4-3: Event/Consequence Analysis Table

| Event ID | Hazardous Event/Area | Possible Initiating Event | Possible Consequences | Prevention/Protection Measures |
|---|---|---|---|---|
| 14 | Unloading of bitumen to tanks | • Vehicle collision/impact<br>• Manual handling errors | • Injuries as the result of being struck by delivery vehicles<br>• Burns, cuts or abrasions from bitumen transfer equipment<br>• Bitumen burns<br>• Respiratory problems due to bitumen fumes | • Tanker Operators and personnel in immediate area to wear Hi-Vis clothing<br>• Operators to remain clear of traffic areas and be vigilant for other vehicles<br>• Plant personnel and other drivers to be briefed on existence of Bitumen Unloading area and necessary precautions when operating in the area<br>• 10 KPH speed limit to be enforced in Bitumen Unloading area<br>• Tanker Operator to be inducted into and follow Bitumen Unloading Procedure<br>• PPE required for Bitumen Unloading operations to be worn by all personnel involved in unloading<br>• Gloves to be worn when handling hot equipment<br>• Manual handling guidelines to be followed when handling heavy items<br>• Fume masks to be available should nose or throat irritations occur<br>• MSDS's for all stored products to be held on site<br>• Enter / exit bunded areas using designated walkways |

### 4.5.3 Hazard Identified for Further Analysis

Given the information as listed in Table 4-3, hazards that have been identified for further analyses were those with the greatest potential for offsite impacts. These possible hazards have been analysed in a scenario based risk assessment and have been provided below.

**Pool Fire**

Scenario 1: Fire incident where 60,000 L of bitumen is spilt within a one (1) tank and ignited.
Scenario 2: Fire incident where 120,000 L of bitumen is spilt within two (2) tanks and ignited.
Scenario 3: Fire incident where 240,000 L of bitumen is spilt within four (4) tanks and ignited.
Scenario 4: Fire incident where 3,000 L of bitumen have been spilt and ignited within a 15m$^2$ pool area.
Scenario 5: Diesel bund fire where 30,000 L of diesel burns in a 15.2 m$^2$ bunded area.
Scenario 6: Bitumen and diesel fire (cumulative impact from Scenarios 3 and 5).

**Explosions**

Scenario 7: There are no credible explosion events.

Further detailed assessments of each of these areas have been provided in the following section.

## 4.6 RISK ANALYSIS

### 4.6.1 Consequence Analysis

Consequence estimations are required in a Quantitative Risk Analysis and should be carried out for each of the incident scenarios identified for further analysis in Section 4.5.3. Consequence analysis involves the analysis and quantification of possible accidents in terms of injury or fatalities, damage to property, or damage to the biophysical environment. The consequences of these incidents can be estimated quantitatively in terms of thermal effects, explosive overpressures and toxic effects.

The consequences of the identified pool fire scenarios have been estimated in terms of thermal effects using TNO Effects (Version 7.6). TNO Effects is a modelling software developed by TNO Built Environment and Geoscience, situated in the Netherlands. The software is able to predict both physical effects and consequences of a specific incident from the proposed development. TNO Effects was used to obtain heat radiation contours based on combustion rates of the materials involved. However, as the chemical data within the program is limited, it was not possible to model particular chemicals specific to the events; instead, chemicals listed within TNO that were found to have similar heats of combustions to the materials being modelled were utilised. The radiation contours obtained from TNO were mapped from the perimeter of the source area.

The modelling assumptions and results for the consequence analysis of identified hazardous scenarios are presented below.

#### 4.6.1.1 Scenario 1: Single Tank Bitumen Fire

This scenario describes the event where large losses in containment of bitumen occurs within one of the tanks and ignites from various reasons including the presence of an ignition source or self-ignition. This event is unlikely as bitumen combusts at temperatures above 250°C but it will only be stored at temperatures around 150°C. Losses in containment could be caused by a number of initiating events such as tank boil-over, tank overflow, tank mechanical failure or pipe failure. The following calculations and assumptions were considered in the modelling of effects using TNO Effects:

- 60,000 L of bitumen would burn in the tank fire;
- Ambient weather condition was taken from the averages of the nearest meteorological station of Mangrove Mountain AWS (061375);
- The pool fire surface area is equal to the area of the tank of 40.2 $m^2$;
- The use of the chemical tetrachloroethylene as a substitute input for bitumen and Gasoline for Diesel due to similar heat of combustion and physical properties; and
- A pool temperature of 120°C for the substitute chemicals is used as bitumen is normally stored at temperatures above 150°C.

The heat radiation distances obtained from TNO Effects and heat radiation contours are presented in Table 4-4 and Figure 4-1 respectively.

Table 4-4: Heat Radiation Distances for Scenario 1

| Level | Heat Radiation Distance from Fire Boundary (m) |
|---|---|
| 4.7 kW/$m^2$ | 34.7 |
| 12.6 kW/$m^2$ | 24.5 |
| 23 kW/$m^2$ | 18.5 |

The modelling software, TNO Effects, predicted a radiation distance of 34.7 m from the edge of the pool fire for a heat flux of 4.7 kW/hr.

#### 4.6.1.2 Scenario 2: Double Tank Bitumen Fire

Similarly to Scenario 1, this scenario describes situation where bitumen is spilt and ignited in both tanks. The same assumptions were used with the following exceptions:

- 120,000 L of bitumen is involved as the worst case scenario; and
- The pool fire surface area is equal to the area of two tanks: 80.4 $m^2$

The heat radiation distances obtained from TNO Effects and heat radiation contours are presented in Table 4-5 and Figure 4-2 respectively.

Table 4-5: Heat Radiation Distances for Scenario 2

| Level | Heat Radiation Distance from Fire Boundary (m) |
|---|---|
| 4.7 kW/m$^2$ | 47.7 |
| 12.6 kW/m$^2$ | 33.5 |
| 23 kW/m$^2$ | 25.4 |

The modelling results given by TNO Effects for this scenario show that a heat radiation level of 4.7 kW/m$^2$ would extend 47.7 m from the pool fire perimeter.

#### 4.6.1.3 Scenario 3: Bitumen Spill Fire

Scenario 3 describes the worst case where bitumen spill has occurred within four (4) of the tanks. The same assumptions were used with the following exceptions:

- 240,000 L of bitumen is spilt within 4 tanks; and
- The pool fire surface area is equal to the area of 4 tanks: 160.8 m$^2$.

The heat radiation distances obtained from TNO Effects were identical to those of Scenario 1, which is given in Table 4-4. This finding by TNO Effects represents that a heat radiation level of 4.7 km/ m$^2$ would be extend 65.5 m from the pool fire perimeter.

Table 4-6: Heat Radiation Distances for Scenario 3

| Level | Heat Radiation Distance from Fire Boundary (m) |
|---|---|
| 4.7 kW/m$^2$ | 65.5 |
| 12.6 kW/m$^2$ | 45.7 |
| 23 kW/m$^2$ | 35 |

#### 4.6.1.4 Scenario 4: Bitumen Spill Fire

This event assumes that smallest amount of bitumen is released within one of the tanks but has only spread across a pool area of 15 m$^2$. This scenario is used to account for a difference in viscosities of bitumen which occurs at different temperatures leading to different pool sizes. The results of scenario 3 and 4 will help predict the different impacts of heat effects for differing pool surface sizes.

The heat radiation distances obtained from TNO Effects and heat radiation contours are presented in Table 4-7 and Figure 4-4 respectively.

Table 4-7: Heat Radiation Distances for Scenario 4

| Level | Heat Radiation Distance from Fire Boundary (m) |
|---|---|
| 4.7 kW/m$^2$ | 22 |
| 12.6 kW/m$^2$ | 15.8 |
| 23 kW/m$^2$ | 11.8 |

The modelling results given by TNO Effects for this scenario show that a heat radiation level of 4.7 kW/m$^2$ would extend 22 m from the pool fire perimeter. This impact is considerably less than that of Scenario 3 (65.5 m).

#### 4.6.1.5 Scenario 5: Diesel Bund Fire

Scenario 5 assesses the possible incident involving a diesel pool fire occurring within the bunded area. This event could occur due to human error or if the diesel tank or tank pipes becomes damaged causing loss of containment with subsequent ignition. To account for the worst case scenario, a 30,000 L diesel spill has been modelled. An estimated bunding area of 15.2 m$^2$ is used as the pool area.

The heat radiation distances obtained from TNO Effects and heat radiation contours are presented in Table 4-8 and Figure 4-5 respectively.

Table 4-8: Heat Radiation Distances for Scenario 5

| Level | Heat Radiation Distance from Fire Boundary (m) |
|---|---|
| 4.7 kW/m$^2$ | 11.8 |
| 12.6 kW/m$^2$ | 9.1 |
| 23 kW/m$^2$ | 7 |

The modelling results given by TNO Effects for this scenario show that a heat radiation level of 4.7 kW/m$^2$ would extend 11.8 m from the pool fire perimeter.

#### 4.6.1.6 Scenario 6: Diesel Bund Fire

Scenario 3 and 5 describes the individual fire incidents concerning the total capacity of bitumen and diesel. However, Figure 4-6 and Table 4-9 suggest possible fire propagation across the bitumen tank and diesel tank. Hence, this scenario examines the event that both the bitumen tanks and the diesel tank would be ignited causing a relatively larger heat impact. This heat radiation impact is illustrated in
Figure 4-6 .

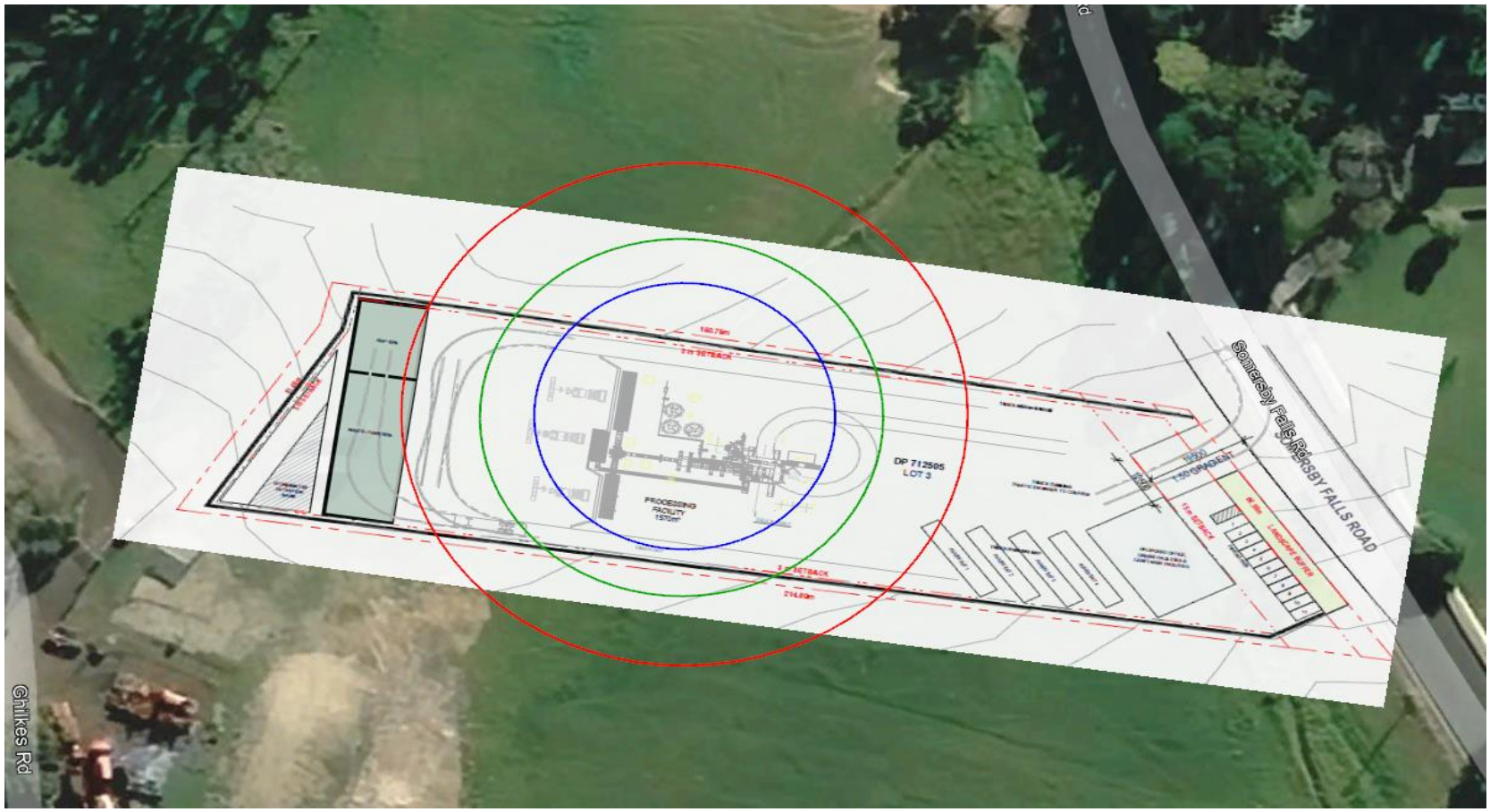
Table 4-9: Heat Radiation Distances for Scenario 6

| Level | Heat Radiation Distance from Fire Boundary (m) |
|---|---|
| 4.7 kW/m$^2$ | 68.3 |
| 12.6 kW/m$^2$ | 47.6 |
| 23 kW/m$^2$ | 36.5 |

Figure 4-1: Heat Radiation Contours for Scenario 1: Single Tank Bitumen Fire

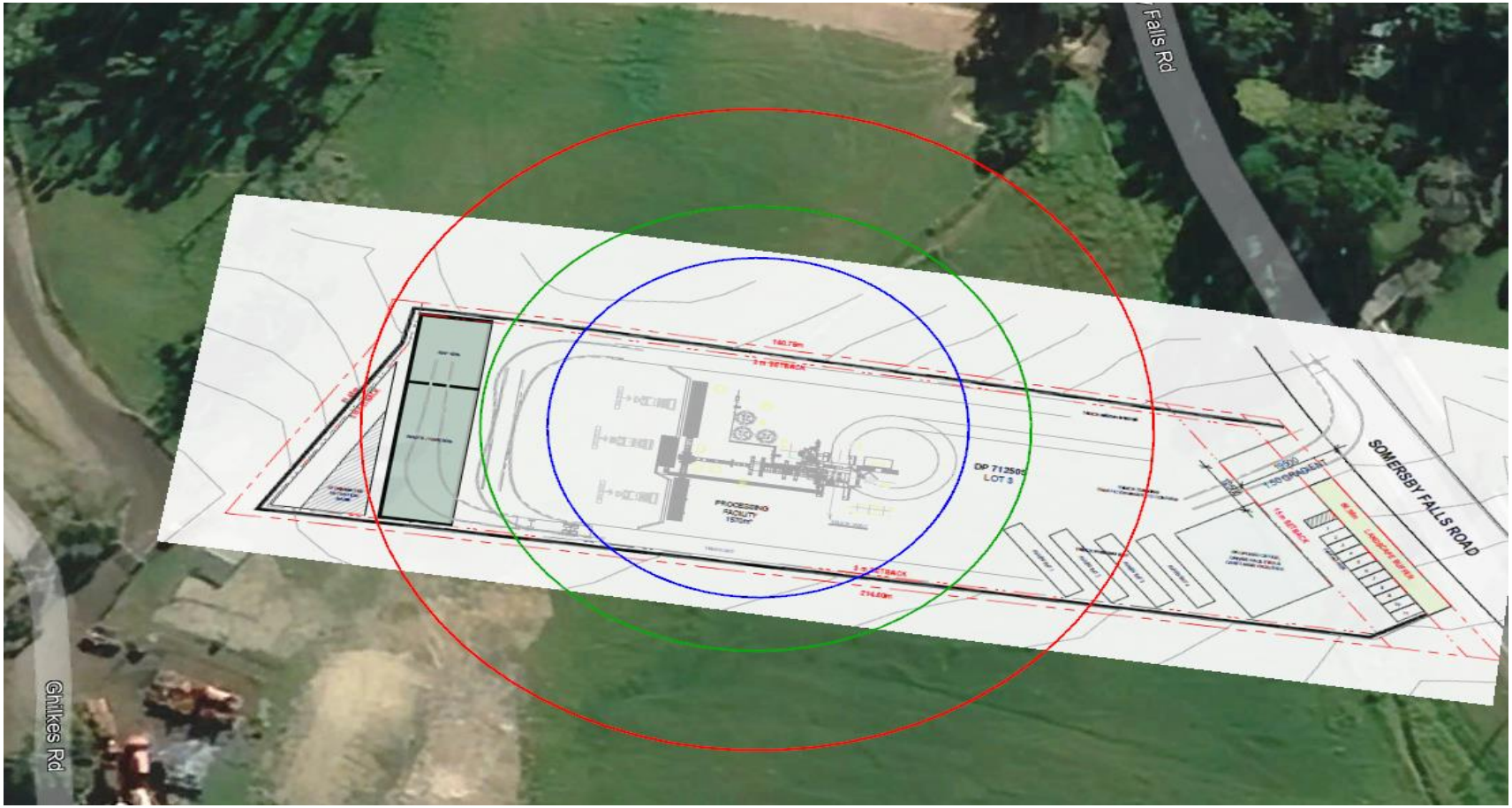
Note: Isopleths illustrate the heat of radiation contours: Red = 23 kW/m$^2$; Green = 12.6 kW/m$^2$; Blue = 4.7 kW/m$^2$.

Figure 4-2: Heat Radiation Contours for Scenario 2: Double Tank Bitumen Fire



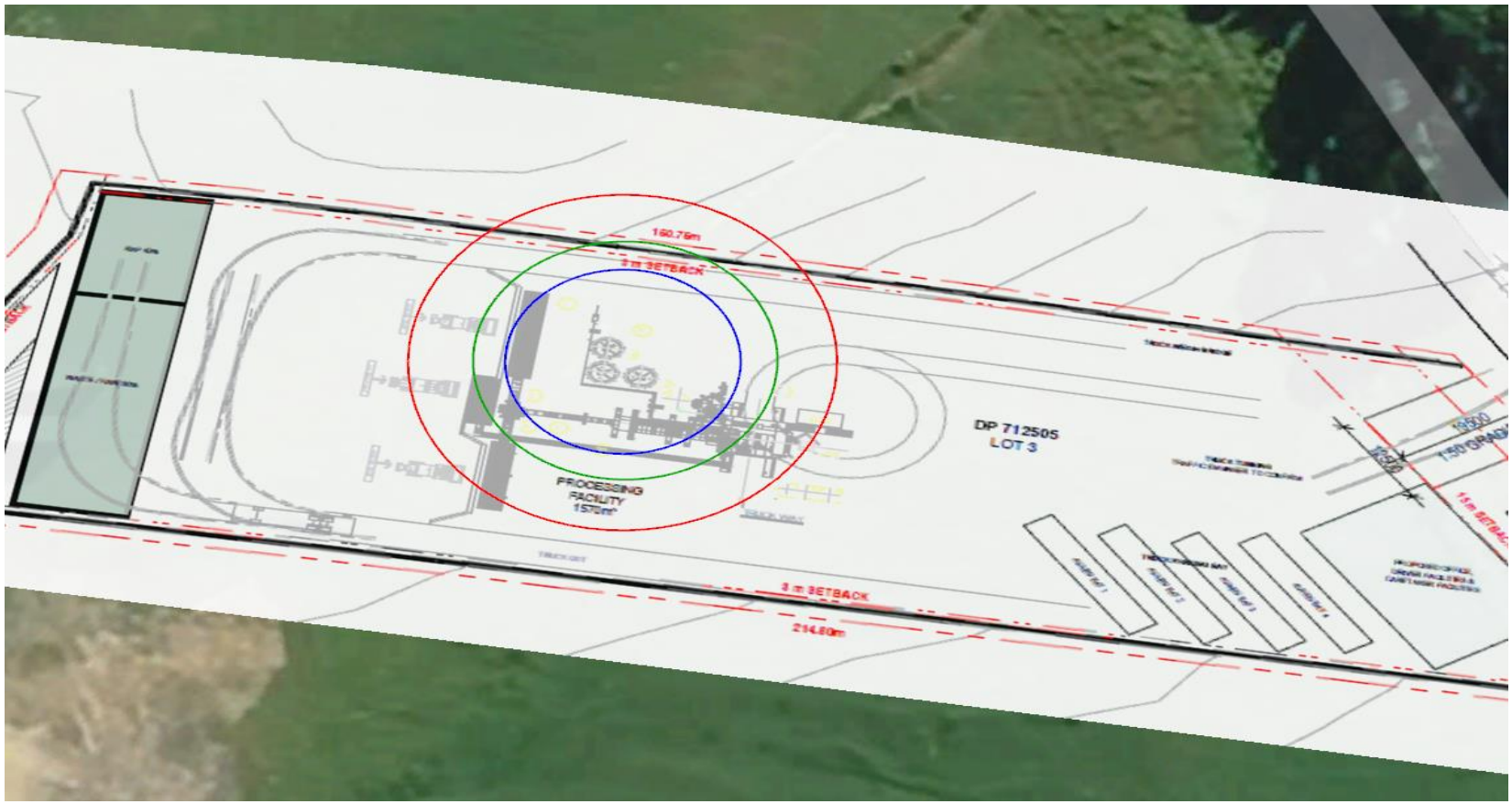

Note: Isopleths illustrate the heat of radiation contours: Red = 23 kW/m$^2$; Green = 12.6 kW/m$^2$; Blue = 4.7 kW/m$^2$.

Figure 4-3: Heat Radiation Contours for Scenario 3: Four Tanks Bitumen Fire



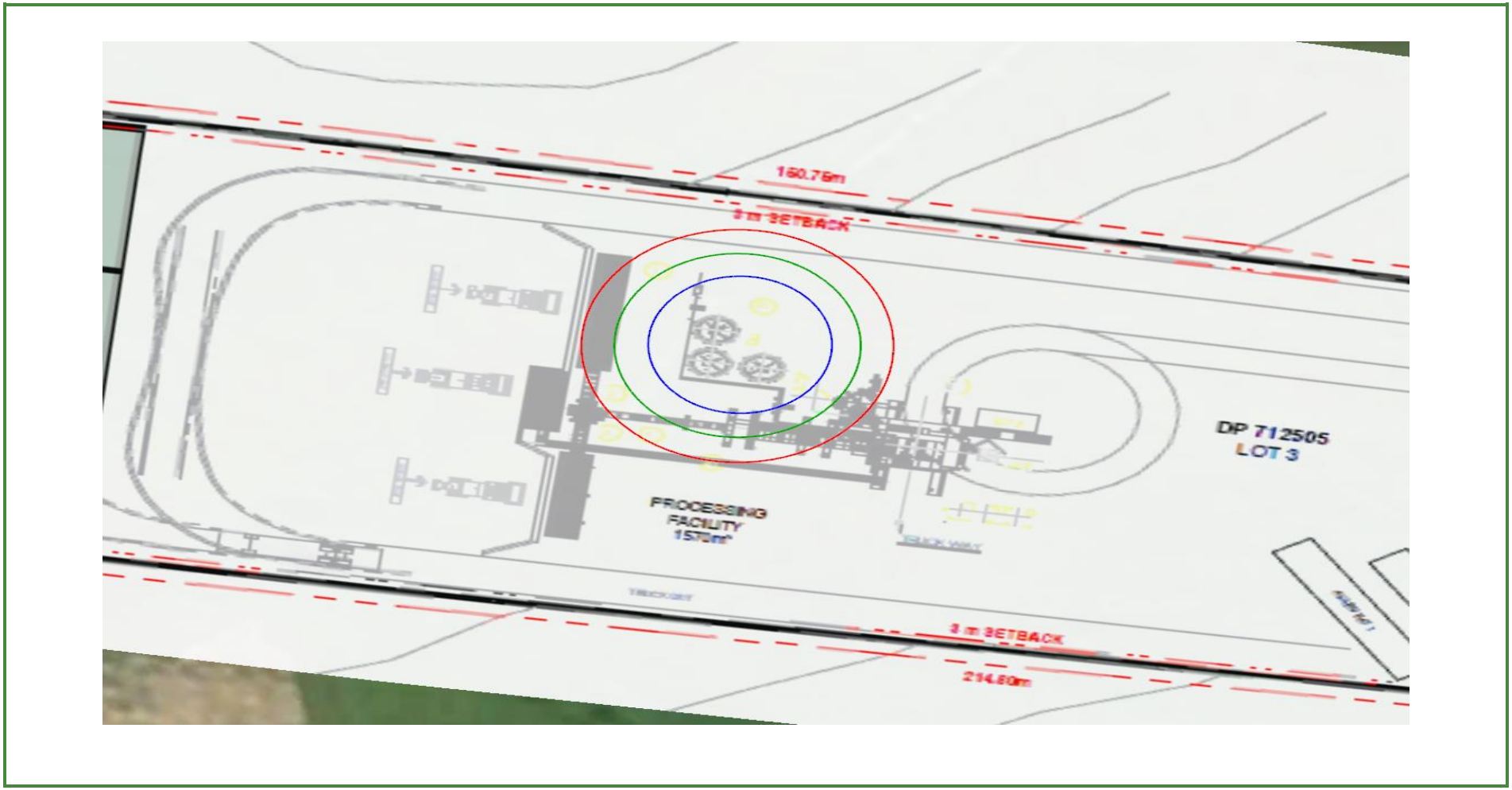

Note: Isopleths illustrate the heat of radiation contours: Red = 23 kW/m$^2$; Green = 12.6 kW/m$^2$; Blue = 4.7 kW/m$^2$.

Figure 4-4: Heat Radiation Contours for Scenario 4: 3000 L Bitumen Spill Fire




Note: Isopleths illustrate the heat of radiation contours: Red = 23 kW/m$^2$; Green = 12.6 kW/m$^2$; Blue = 4.7 kW/m$^2$.

Figure 4-5: Heat Radiation Contours for Scenario 5: 30,000 L of diesel Fire




Note: Isopleths illustrate the heat of radiation contours: Red = 23 kW/m$^2$; Green = 12.6 kW/m$^2$; Blue = 4.7 kW/m$^2$.

Figure 4-6: Heat Radiation Contours for Scenario 6: Bitumen and Diesel Fire

Note: Isopleths illustrate the heat of radiation contours: Red = 23 kW/m$^2$; Green = 12.6 kW/m$^2$; Blue = 4.7 kW/m$^2$.

#### 4.6.1.7 Summary of Results

The nearest identified receptor is located approximately 170 m southwest of the subject site. The pool fire results illustrated in Figure 4-1 to
Figure 4-6 reveal that the heat radiation impacts from the possible pool fire scenarios would not affect the nearest resident or adjacent industrial premises. Therefore, there is no credible risk of injury or fatality in residential or industrial areas from pool fires. Hence no further risk analysis of the identified pool fire scenarios is required as compliance with the DoP&E criteria has been provided.

#### 4.6.1.8 Diesel Storage Area

A fault tree analysis was conducted using the following information:

- A study conducted by NASA for operators exposed to 80ºF (or 26.6ºC) shows that humans make 19 mistakes per 3 hours. This provides a probability figure of 0.002312, which would apply to entries relating to human error.

- The probability of a tanker hose failing and pipe failure were both assumed to be similar to a pipe joint failure occurring. Lees 1996 estimates a failure probability of 0.5 failures per $10^6$ hours for this event. This equates to a probability figure of 0.00438.

- Pump failure is estimated to be approximately $3 \times 10^{-5}$ per year and per pump, according to the information provided by the UK Health and Safety Executive (HSE 2010).

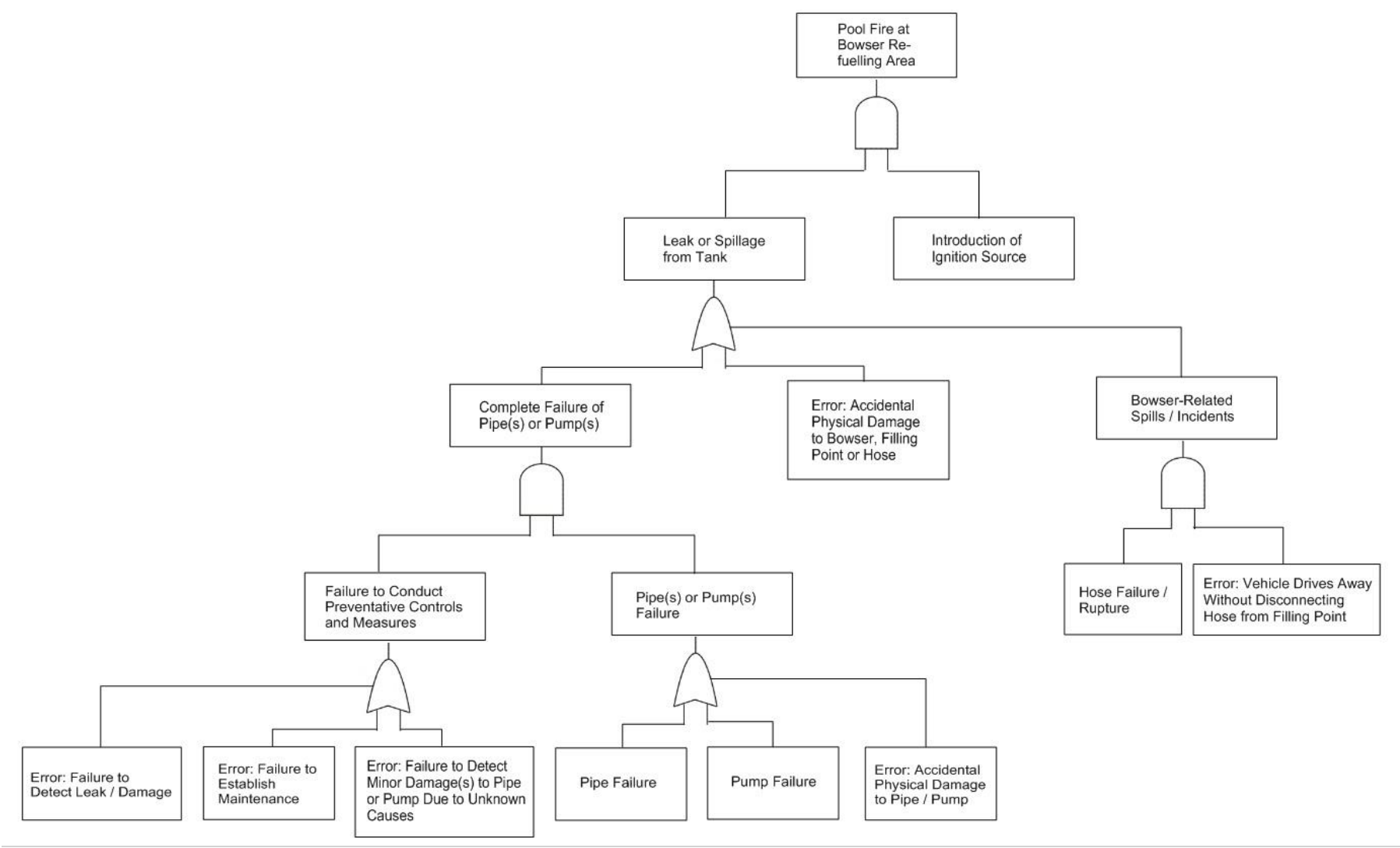
- Minor failure of a double-walled vessel was estimated by the UK Health and Safety Executive (HSE 2010) is $3 \times 10^{-5}$ per year and per vessel.

A fault tree diagram has been provided in Figure 4-7 below.

Using the data above, the estimated frequency for this event is approximately $5.41 \times 10^{-6}$, which is equivalent to 5.41 in a million per year.

Given that the likelihood criteria applicable for this event is 50 in a million per year, it can then be deduced that the criteria is readily satisfied considering that the frequency of this scenario is approximately 5 in a million per year.

Figure 4-7: Fault Tree Diagram – Pool Fire at Diesel Storage Area



#### 4.6.1.9 Discussion of Results

The TNO Effects modelling program estimates that the heat radiation effects from the possible pool fire scenarios can extent up to 65.5 m away from the pool fire source and not cause any off-site impacts. Therefore, there is no credible risk of injury or fatality to off-site premised including residential or industrial areas from pool fires. Hence no further risk analysis of the identified pool fire scenarios is required as compliance with the DoP&E criteria has been provided.

Likelihoods of the examined events were identified to be well below the likelihood criteria adopted from the DoP&E's HIPAP guidelines. Hence, further assessment and additional safety controls were deemed not required. With this, the proposed development satisfies the requirements proposed by the DoP&E guidelines.

Recommendations have been provided in the next section, which ensures that the likelihood of potential hazardous events are mitigated and minimised as much as practicable until the end of the proposed development's lifespan.

# 5. HAZARD AND RISK ANALYSIS

Table 5-1: Hazard and Risk Register

| Event Number | Hazard Identification Guide Word | Hazardous Event | Causes | Prevention Safeguards | Consequences | Mitigation Safeguards | Consequences | Likelihood | Existing Risk Rating | Is the risk ALARP? | Additional Safeguards | Consequence | Likelihood | Residual Risk Rating |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1. General Site Risks** | | | | | | | | | | | | | | |
| 1 | External Fire / Explosion | Vehicle fire | Brake fire.<br>Tyre fire.<br>Fuel leak (e.g. fork lift trucks (FLT) use LPG) and fire.<br>Batteries short-circuiting.<br>Packaging fires | Vehicle design and maintenance, vehicles registered , DG licensed drivers, inspected vehicles, no smoking on site (except in the designated area), hot work permit | Damage to the vehicle, propagation to package goods storage and property damage | Operator response to oil leaks, fire extinguishers, fire water available from hydrants and hand-held hoses, emergency response plan includes actions to take if a fire occurs | Significant | Unlikely | III | Yes | | Significant | Unlikely | III |
| 2 | Activity Hazards | Injury to the heavy vehicle driver | Lifting the side gates into place on a heavy vehicle | Cage designed to be of minimum weight, cage supported by hangers | Injury requiring medical treatment and possibly a lost time injury | Trained First Aider on site, First Aid facilities | Severe | Possible | II | No | An additional trained First Aid person is required on site, e.g. to cover annual leave | Severe | Possible | II |
| 3 | Environmental Pollution | Potential for environmental impact from vehicle fuel or oil leaks | Fuel or oil leaks from vehicles, i.e. leaching through the bitumen or entering the stormwater system with the ultimate potential to flow off-site to the local creeks. | Vehicle design and maintenance, vehicles registered, DG licensed drivers, inspected vehicles | Impact to the aquatic life in the local creeks. | Spill kit on DG vehicle, emergency response plan with sand bags and the requirement to close the stormwater isolation valve to the local creeks. | Significant | Possible | III | No | Obtain hydrocarbon spill kits for the site | Significant | Unlikely | III |
| | | | | | Potential for a fine (business impact) | | Minor | Possible | III | | | Minor | Unlikely | III |

Table 5-1: Hazard and Risk Register

| Event Number | Hazard Identification Guide Word | Hazardous Event | Causes | Prevention Safeguards | Consequences | Mitigation Safeguards | Consequences | Likelihood | Existing Risk Rating | Is the risk ALARP? | Additional Safeguards | Consequence | Likelihood | Residual Risk Rating |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | Transport Hazards | Impact from FLT | Driver error.<br>Excessive speed.<br>Poor visibility, e.g. corners of warehouses | All FLT drivers licensed, site speed limit, observations of work practices by management, mirrors on warehouse corners | Injury to personnel | Trained First Aider on site, First Aid facilities | Severe | Possible | II | No | Formalise work practice reviews by management, e.g. via an audit program. Include in the site induction the site speed limit | Severe | Unlikely | III |
| | | | | | Damage to property, e.g. FLT rollover | Maintenance and repair | Minor | Possible | III | No | | Minor | Unlikely | III |
| 5 | Transport Hazards | Loss of load whilst using a FLT | Rough floor surface.<br>Tynes piercing containers and packages.<br>Driver error.<br>Excessive speed.<br>Poor visibility | All FLT drivers licensed, site speed limit, observations of work practices by management, mirrors on warehouse corners | Injury to personnel if pallet dropped from a height | Routine maintenance of the roads to fix cracks and holes, trained First Aider on site, First Aid facilities | Ex. Serious | V. Unlikely | III | Yes | | Ex. Serious | V. Unlikely | III |
| | | | | | Release of materials leading to environmental impact | Housekeeping and spill response including isolation of the stormwater outlet valve | Severe | Ex. Unlikely | III | Yes | | Severe | Ex. Unlikely | III |

Table 5-1: Hazard and Risk Register

| Event Number | Hazard Identification Guide Word | Hazardous Event | Causes | Prevention Safeguards | Consequences | Mitigation Safeguards | Consequences | Likelihood | Existing Risk Rating | Is the risk ALARP? | Additional Safeguards | Consequence | Likelihood | Residual Risk Rating |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | External Fire / Explosion | Warehouse fire | Ignition of packaging (i.e. cardboard), plastic wrap, wooden pallets, wooden structures (Building 1).<br>Vehicles fires.<br>Conveyor fires.<br><br>Smoking.<br>Lightning strike.<br>Grass fires.<br>Adjacent property fires.<br>Arson.<br>Broken fluorescent light.<br>Appliance fire, e.g. stove in Building 1 | Vehicle design and maintenance, licensed FLT drivers, no smoking on site (except in the designated area), hot work permit, landscaping to keep grass level low, security system including fully fenced site, locked gates when facility not in use, smoke detectors within selected buildings | This can result in toxic products of combustion equipment and property damage from radiant heat, missiles (e.g. LPG cylinders), rupturing of containers and contaminated fire water runoff. | Fire sprinkler systems installed, fire water from hydrants, emergency response including off-site evacuations, hand held hoses and extinguishers for small fires | Ex. Serious | Unlikely | II | No | Provide covers over all lights within the warehouse.<br>Provide routine electrical testing for all electrical leads and earth leakage detectors at the site.<br>Incompatible materials should not be stored in the same area. | Ex. Serious | Unlikely | II |
| 7 | Harmful Exposure | Mixing of incompatible materials | Common drainage system where spills could mix.<br><br>Inadequate housekeeping with multiple spills in a warehouse.<br><br>FLT collision whilst carrying incompatible material | Housekeeping and immediate clean-up of a spill, waste water pit contains water and hence dilution occurs, management observation of work practices, licensed FLT drivers, | Ultimate impact is harm to people | Evacuation and emergency response safety showers | Severe | Unlikely | III | No | As above, review if the incompatible materials can be separated further.<br>As above, provide liquid spill response absorbents and equipment | Severe | Unlikely | III |

Table 5-1: Hazard and Risk Register

| Event Number | Hazard Identification Guide Word | Hazardous Event | Causes | Prevention Safeguards | Consequences | Mitigation Safeguards | Consequences | Likelihood | Existing Risk Rating | Is the risk ALARP? | Additional Safeguards | Consequence | Likelihood | Residual Risk Rating |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | This could also result in off-site impact to people (i.e. adverse public relations) | | Serious | Unlikely | III | | | Serious | Unlikely | III |
| 8 | Physical Over / Under Pressure | Solvent container rupture | Blocked vent due to faulty membrane | Store men place containers within the Warehouses. | Spray release of vapour with the potential to harm personnel | Trained First Aider on site, First Aid facilities, safety glasses worn when handling drums | Severe | Unlikely | III | Yes | | Severe | Unlikely | III |
| 9 | Harmful Exposure | Release of liquid from container | | Trained personnel aware if checking all shipments for leaking containers. | Release of solution causing chemical harm to personnel | Trained First Aider on site, First Aid facilities, safety glasses worn, safety showers | Severe | Unlikely | III | Yes | | Severe | Unlikely | III |
| 10 | Activity Hazards | Manual handling injuries due to personnel lifting containers and boxes | Inadequate lifting techniques, one person lifting a 40 kg container (a two person activity) | Training program on correct lifting techniques, signage, observations by management, toolbox talks on issues such as correct lifting techniques, job rotation | Injuries, e.g. back injuries, and chemical exposure injuries (skin and eyes).<br>Potential for spillage of solutions. | Medical treatment required | Severe | Probable | II | Yes | | Severe | Probable | II |
| 11 | Activity Hazards | Personnel exposed to dust | Spill cleaning.<br><br>Disposing of empty packaging | Skin protection via sprayed on barrier cream | Harm to skin, lungs, eyes | Medical treatment required | Minor | Probable | III | No | | Minor | Probable | III |

Table 5-1: Hazard and Risk Register

| Event Number | Hazard Identification Guide Word | Hazardous Event | Causes | Prevention Safeguards | Consequences | Mitigation Safeguards | Consequences | Likelihood | Existing Risk Rating | Is the risk ALARP? | Additional Safeguards | Consequence | Likelihood | Residual Risk Rating |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12 | Violent Release of Energy | Warehouse racking collapse | Impact from FLT.<br>Excessive weight.<br>Corrosion.<br>Fire.<br>Fatigue.<br>Poor lighting in warehouses | Licensed FLT drivers, site speed limit, racking designed for single pallet stacking only, Dexion perform a routine racking audit, job rotation, FLT fitted with lights | Potential for spills within the bunded warehouses and injury to personnel | Medical treatment required | Ex. Serious | V. Unlikely | III | Yes | | Ex. Serious | V. Unlikely | III |
| 13 | Natural and Other Occurrences | Aircraft crash | Pilot error, plane failure | Aviation standards for aircraft design, maintenance and safe operation | Significant damage and injury toll across the site | Emergency response | Catastrophic | Ex. Unlikely | III | Yes | | Catastrophic | Ex. Unlikely | III |
| 14 | Activity Hazards | Lone workers | Activities on site where personnel are working in isolation | Supervisors conduct regular visits to all work areas | In an emergency, assistance may be inadequate | Emergency response | Serious | Possible | II | No | Implement means for detecting when lone workers are in need of emergency assistance | Serious | Unlikely | III |

Table 5-1: Hazard and Risk Register

| Event Number | Hazard Identification Guide Word | Hazardous Event | Causes | Prevention Safeguards | Consequences | Mitigation Safeguards | Consequences | Likelihood | Existing Risk Rating | Is the risk ALARP? | Additional Safeguards | Consequence | Likelihood | Residual Risk Rating |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 15 | Harmful Exposure | Flammable or combustible liquid. | Ignition of packaging (i.e. cardboard), plastic wrap, wooden pallets, wooden structures (Building 1).<br>Vehicles fires.<br>Conveyor fires.<br>Hot work.<br>Smoking.<br>Lightning strike.<br>Grass fires.<br>Adjacent property fires.<br>Arson.<br>Broken fluorescent light.<br>Appliance fire, e.g. stove in Building 1 | Vehicle design and maintenance, licensed FLT drivers, no smoking on site (except in the designated area), hot work permit, landscaping to keep grass level low, security system including fully fenced site, locked gates when facility not in use, smoke detectors within selected buildings | Potential to release decomposition products | Fire water from hydrants, emergency response including off-site evacuations, hand held hoses and extinguishers for small fires | Severe | V. Unlikely | III | Yes | | Severe | V. Unlikely | III |
| 16 | Exposure to Damaging Energy | Electrocution | Contact with electricity due to poor quality electrical lead, damaged conduits, e.g. submersible pump for the waste liquid concrete underground tank | Earth leakage protection on all GPOs | Fatality | Emergency response | Ex. Serious | Unlikely | II | No | As above, implement electrical safety testing | Ex. Serious | V. Unlikely | III |
| 17 | Activity Hazards | Contact with moving parts | Stretch wrapping machines | Observations by management, operator training and awareness | Injury if clothing and body caught in the machines | Trained First Aider on-site and First Aid facilities | Severe | Possible | II | No | As above, include formal reviews of machine safety | Severe | Unlikely | III |

Table 5-1: Hazard and Risk Register

| Event Number | Hazard Identification Guide Word | Hazardous Event | Causes | Prevention Safeguards | Consequences | Mitigation Safeguards | Consequences | Likelihood | Existing Risk Rating | Is the risk ALARP? | Additional Safeguards | Consequence | Likelihood | Residual Risk Rating |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 18 | Violent Release of Energy | Compressed air hose failure | Inadequate connection, hose degradation, coupling failure | Hoses inspected annually and replaced as required, operators respond to leaking hoses for maintenance, low pressure in the hoses, hoses tied when in use | Injury to personnel if struck with a flaying hose | Medical treatment required | Significant | Unlikely | III | Yes | | Significant | Unlikely | III |
| 19 | Activity Hazards | Confined space entry | Person enters a tank or pit | Work permits | Potential for fatality | | Ex. Serious | V. Unlikely | III | No | Review means to prevent people falling through tank manholes. Identify all confined spaces on the site and then produce confined space risk assessments | Ex. Serious | V. Unlikely | III |
| 20 | Natural and Other Occurrences | Software theft | Hacking | Firewalls | Loss of company confidential information | | Serious | V. | III | Yes | | Serious | V. | III |

Table 5-1: Hazard and Risk Register

| Event Number | Hazard Identification Guide Word | Hazardous Event | Causes | Prevention Safeguards | Consequences | Mitigation Safeguards | Consequences | Likelihood | Existing Risk Rating | Is the risk ALARP? | Additional Safeguards | Consequence | Likelihood | Residual Risk Rating |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **2. Front Gate Activities** | | | | | | | | | | | | | | |
| 21 | Transport Hazards | Heavy vehicle movement resulting in impact | Heavy vehicle brake failure (i.e. unplanned movement down the slope).<br>Driver error | Modern vehicle design includes brakes being locked when the motor is off | Injury to people and/or damage to equipment (including other vehicles). This could also result in pallets falling off the heavy vehicle resulting in spills and/or injury | Medical treatment | Ex. Serious | V. Unlikely | III | No | Use wheel chocks to prevent trucks rolling down the slope | Ex. Serious | V. Unlikely | III |
| 22 | Transport Hazards | Fork lift truck operations when pallet loaded onto a truck (applies for all similar operations across the site) | Dropping pallets off tynes.<br>Impact with people, heavy vehicle and/or property.<br>Piercing of containers.<br>Pinch hazards | Licensed FLT drivers, site speed limit, observation by management, stretch wrap around the packages on the pallets | Injury to people and/or damage to equipment | Medical treatment | Ex. Serious | V. Unlikely | III | Yes | | Ex. Serious | V. Unlikely | III |
| | | | | | Spilt material could cause environmental impact if it flows off-site through the stormwater system | Spill response, stormwater pit outlet isolation valve to be closed in an emergency | Severe | Unlikely | III | Yes | | Severe | Unlikely | III |

Table 5-1: Hazard and Risk Register

| Event Number | Hazard Identification Guide Word | Hazardous Event | Causes | Prevention Safeguards | Consequences | Mitigation Safeguards | Consequences | Likelihood | Existing Risk Rating | Is the risk ALARP? | Additional Safeguards | Consequence | Likelihood | Residual Risk Rating |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 23 | Environmental Pollution | Raw materials or products on a vehicle's wheels and driven off-site | Vehicles drive through a spill and material sticks to the wheels of the vehicles | Housekeeping and spill response, small size of the packages limits amount involved, stretch wrapping provides some containment | Potential for materials to pollute the environment when washed into the off-site stormwater drains. | Off-site response to contaminants on the roads | Significant | Possible | III | Yes | | Significant | Possible | III |

# 6. RECOMMENDATIONS

After having examined the potential hazardous scenarios that could occur on site, the following recommendations are considered to be fundamental in aiding the control of risks presented by the proposed development:

- Tight security of the site at all times must be established, preventing any incidents that could lead to a possibility of an accidental fire event. Management and staff must establish a protocol for the subject site to minimise these events, and special attention must be placed on the storage areas of the large quantities of dangerous goods on site;
- Site management to maintain the following acknowledged proposed procedures and management tools, which have been determined to help reduce the level of potential threats and incidents on site (given the effective outcome and the thoroughness of using these procedures):

  - Dangerous Goods Register;
  - SDS and Hazardous Products Register;
  - Confined Space Entry Procedures and Permit;
  - Corrective Action Report;
  - Critical Incident Response Procedure;
  - Early Notification of Injury;
  - Electrical Tools Register;
  - Environmental Work Method Statement Register;
  - Incident Register;
  - Hot Work Permit;
  - Medical Treatment Protocols;
  - Job Safety Analysis Procedure and Associated JSA Sheets;
  - Monthly Inspection Register for Lifting Devices;
  - Non-Conformance Register and Report;
  - OHS Representative Procedures;
  - RTA Plant Minimum Requirements List;
  - Plant Operator Skills Assessment;
  - Public Complaints Register and Report;
  - Register of Fire Extinguishers Available on Site;
  - Risk Assessment Standard Form for Plant;
  - Safety and Environmental Improvement Notice;
  - Safe Work Method Statement and Associated Checklist;
  - Toolbox Meetings, Standard Agenda Form and Attendance Record;
  - Training Authorisation Report;
  - Waste Records Register; and
  - Weekly OHS&E Plant Inspection Report and Action Plan.

- Dangerous good storage areas are to comply with the following standards:

  - AS/NZS 1940:2017 - “The storage and handling of flammable and combustible liquids”;
  - AS/NZS 1596:2008 – “The storage and handling of LP Gas”; and
  - AS 2030.1-2009: *Gas cylinders – General requirements*

- Fire protection equipment are to be installed in accordance with the following standards:
  - AS 2441:2005 – "Installation of Fire Hose Reels"; and
  - AS2444:2001 – *"Portable Fire Extinguishers and Fire Blankets - Selection and Location."*
- Fire services at the site are to be maintained in accordance with AS 1851:2005 - *"Maintenance of Fire Protection Systems and Equipment";*
- Minimise the operation of the forklifts near the area to eliminate the possibility of mechanical impact;
- Specific on site personnel are to be trained in specific site procedures, emergency procedures and the use of fire extinguishers and hose reels;
- Fire extinguishers and spill control kits are to be provided near the high spill risk areas such as areas where handling of diesel would be conducted;
- Dangerous good packages are to comply with the Australian Dangerous Goods (ADG) Code and the relevant Australian Standards;
- Strict control of ignition sources to be enforced on site, especially near the diesel storage tank; and
- Vegetation clearance within the predicted heat contour areas.

Note that the dangerous goods notification would need to be updated in the event of any changes in chemicals used (including types and quantities) or if there are changes to the proposed operations.

# 7. CONCLUSION

The Preliminary Hazard Analysis (PHA) has been carried out in accordance Hazardous Industry Planning Advisory Paper No. 6 – Guidelines for Hazard Analysis (HIPAP No. 6) and the Multi-Level Risk Assessment published by the Department of Planning and Infrastructure (DoP&E, formerly known as DoP).

Despite the State Environmental Planning Policy (Resilience and Hazards) 2021 – Chapter 3 Hazardous and Offensive Development screening assessment method, further hazard assessment was conducted with due diligence to determine the extent of off-site impacts from the proposed development. The assessment has found that the proposed development meets the criteria stipulated in the HIPAP No. 4 – Risk Criteria for Land Use Safety Planning (HIPAP No. 4) and the Multi-Level Risk Assessment guidelines.

The assessment has predicted outcomes that the proposed development would not cause any risk (significant or minor) to the community. Due diligence had been performed by undertaking hazard analysis in the form of software modelling to determine the extent of impacts from the identified worst case scenarios and have found that the proposed development would not pose any hazardous or excessive risks to the nearest potentially affected receptors.

It is the conclusion of this PHA that the proposed development meets all the safety requirements stipulated within the Department of Planning and Infrastructure guidelines and is then considered to be non-offensive or a non-hazardous development.

This concludes the report.

Prepared by:

Vida Nodehi
Senior Environmental Engineer

R T Benbow
Principal Consultant

# 8. LIMITATIONS

Our services for this project are carried out in accordance with our current professional standards for site assessment investigations. No guarantees are either expressed or implied.

This report has been prepared solely for the use of Stateline Asphalt Pty Ltd, as per our agreement for providing environmental services. Only Stateline Asphalt Pty Ltd is entitled to rely upon the findings in the report within the scope of work described in this report. Otherwise, no responsibility is accepted for the use of any part of the report by another in any other context or for any other purpose.

Although all due care has been taken in the preparation of this study, no warranty is given, nor liability accepted (except that otherwise required by law) in relation to any of the information contained within this document. We accept no responsibility for the accuracy of any data or information provided to us by Stateline Asphalt Pty Ltd for the purposes of preparing this report.

Any opinions and judgements expressed herein, which are based on our understanding and interpretation of current regulatory standards, should not be construed as legal advice.

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# FIRE SAFETY STUDY FOR
# PROPOSED ASPHALT BATCHING PLANT AT
# 133 SOMERSBY FALLS ROAD, SOMERSBY

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***Report No:*** 221145_FSS_Rev2
November 2023
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# 1. INTRODUCTION

This report provides the findings of a Fire Safety Study (FSS) for the proposed asphalt batching plant to be located at 133 Somersby Falls Road, Somersby, NSW 2250 (legally known as Lot 5; DP1292653). The chemicals of concern to fire safety being stored will be primarily bitumen (Class 9) and diesel fuel (Class 1).

The FSS has been prepared to the guidelines of the Department of Planning and Environment (DoP&E), outlined in the *Hazardous Industry Planning and Advisory Paper No. 2 – Fire Safety Study Guidelines* (DoP&E HIPAP No. 2; 2011).

The main activity proposed to be undertaken within the facility is the manufacturing of asphalt, which involves the drying and heating of aggregate to remove moisture, followed by mixing with binding material and heated bitumen.

This study includes an evaluation of potential fire incidents imposed on the site and the adjacent community and commercial areas. The FSS supports the design of the firefighting equipment recommended by the fire engineers considered necessary to reduce the potential impact of a fire on site and to minimise risk of property damage and pollution. The fire protection strategy Is based on the requirements stipulated by the Building Code of Australia (BCA), relevant fire protection codes and relevant Australian Standards (AS).

The site is located within the Local Government Area of Central Coast Council.

In preparation and presentation of the FSS, the following has been undertaken:

- Review of the potential fire hazards of the facility;
- Identification of the areas of high fire risk;
- Hazard assessment o areas of fire hazard to form the premise of the FSS; and
- Detail of the required fire prevention and control facilities for the site.

A major finding of the FSS is to address reducing risks to fire officers who may be required to rescue trapped personnel within the facility. This can be fully addressed in the provision of an Emergency Plan (EP) to provide simple, easy to follow rescue plans for a number of scenarios.

# 2. SITE DETAILS

## 2.1 OVERVIEW

Stateline Asphalt Pty Ltd is to operate an Asphalt Batching facility at 133 Somersby Falls Road Somersby NSW 2250 (Lot 5; DP1292653).

Central Coast Council is the Appropriate Regulatory Authority (APA).

The site is zoned *IN1 – General Industrial* and *E4 – Environmental Living* under the Central Coast Council Local Environmental Plan 2022.

## 2.2 SITE DESCRIPTION

The site is located at 133 Somersby Falls Road, Somersby NSW 2250 (Lot 5; DP1292653). An aerial of view of the Lot is presented in Figure 2-1**.**

The major features of the site will include:

- Office and amenities;
- Car park;
- Raw material storage bays;
- Heated bitumen storage tanks; and
- Asphalt batching plant

The subject land is zoned *IN1 – General Industrial* and *E4 – Environmental Living* under Central Coast Council LEP 2022 and the proposed development is permissible with consent in this zone under Section 120 of the *State of Environmental Planning Policy (Transport and Infrastructure) 2021*. A land zoning map is presented in Figure 2-2**.**

Section 2.5 discusses the chemical storage in detail.

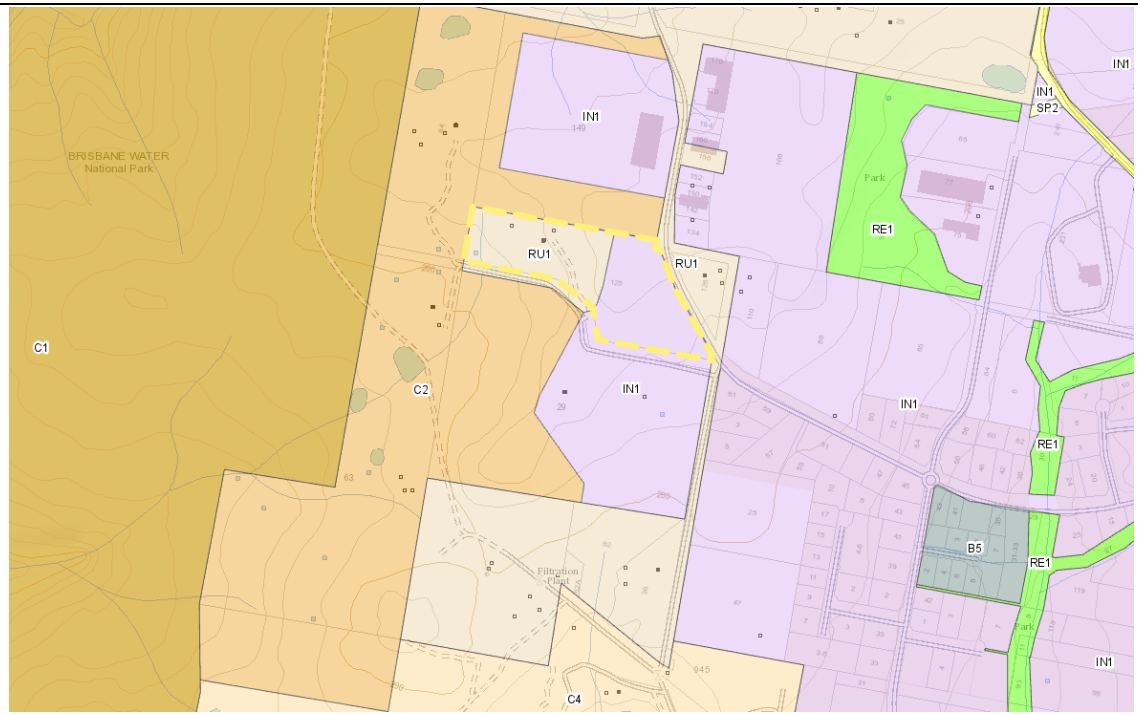
A Site Plan is provided as Figure 2-4.

Figure 2-1: Aerial View of the Lot Boundaries

**Source:** Six Maps (2018)

| | | |
|---|---|---|
| ↑N<br>Not to scale | LEGEND:<br>Site Boundary: | Benbow Environmental<br>25-27 Sherwood Street,<br>Northmead NSW 2152 |

Figure 2-2: Land Zoning Map




**Source:** ePlanning Spatial Viewer 2022

↑N
Not to scale

LEGEND
Site boundary

**Zone**

| | | | | | |
|---|---|---|---|---|---|
| B1 | Neighbourhood Centre | E1 | National Parks and Nature Reserves | RE1 | Public Recreation |
| B2 | Local Centre | E2 | Environmental Conservation | RE2 | Private Recreation |
| B3 | Commercial Core | E3 | Environmental Management | RU1 | Primary Production |
| B4 | Mixed Use | E4 | Environmental Living | RU2 | Rural Landscape |
| B5 | Business Development | IN1 | General Industrial | RU3 | Forestry |
| B6 | Enterprise Corridor | IN4 | Working Waterfront | RU5 | Village |
| | | R1 | General Residential | SP1 | Special Acitivites |
| | | R2 | Low Density Residential | SP2 | Infrastructure |

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### 2.2.1 Nearest Natural Watercourse

The nearest natural waterway is a tributary of Floods Creek which runs through the SW boundary of the site, followed by a tributary of Leask Creek approximately 430m S from the site boundary.

### 2.2.2 Nearest Sensitive Receptors

Table 2-1 provides the list of the nearest identified receptors that have the potential to be affected by the processes at the subject site. These receptors were selected based on their proximity and directional bearing from the subject site. shows an aerial of the site and nearest sensitive receptors.

Table 2-1: Nearest Potentially Affected Receivers Considered

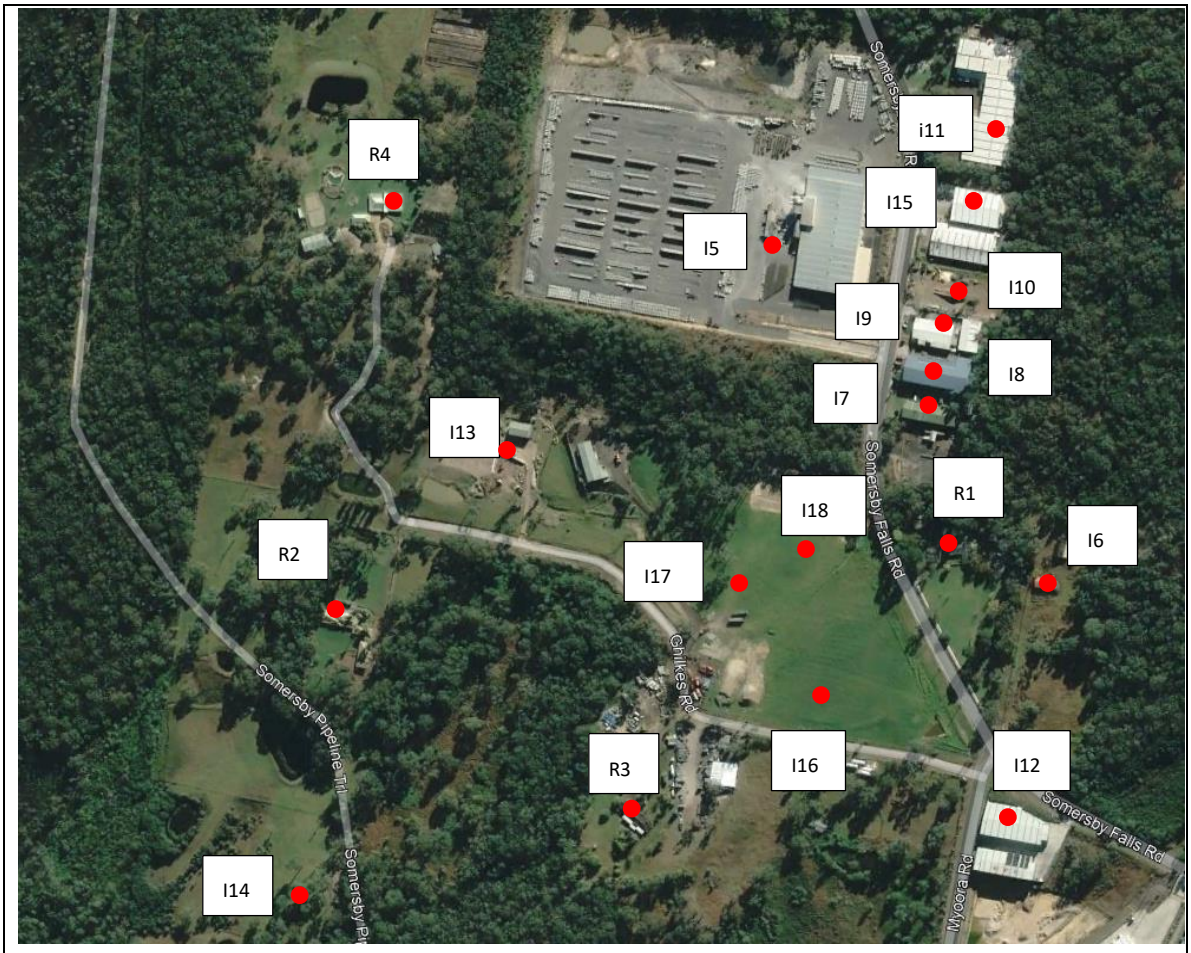
| Receptor ID | Address | Lot & DP | Approx. Distance from Proposed Development | Direction from Site | Type of Receptor |
|---|---|---|---|---|---|
| R1 | 126 Somersby Falls Road, Somersby | 1/ DP712505 | 35 m | E | Residential |
| R2 | 63 Ghilkes Road Somersby | 502/ DP712506 | 350 m | W | Residential |
| R3 | 29 Ghilkes Road, Somersby | 3/ DP712505 | 60 m | S | Residential/ Commercial |
| R4 | 64 Ghilkes Road, Somersby | 501/ DP712506 | 340 m | NW | Residential/ Commercial |
| I5 | 149 Somersby Falls Road, Somersby | 4/ DP654894 | 160 m | N | Industrial |
| I6 | 110 Somersby Falls Road, Somersby | 1/ DP510364 | 60 m | E | Industrial |
| I7 | 134 Somersby Falls Road, Somersby | 1/ DP787857 | 140 m | NE | Industrial |
| I8 | 142 Somersby Falls Road, Somersby | 2/ DP787857 | 200 m | NE | Industrial |
| I9 | 150 Somersby Falls Road, Somersby | 3/ DP787857 | 240 m | NE | Industrial |
| I10 | 156 Somersby Falls Road, Somersby | 91/ DP546768 | 305 m | NE | Industrial |
| I11 | 170 Somersby Falls Road | 7/ DP787857 | 435 m | NE | Industrial |
| I12 | 2/61 Somersby Falls Road, Somersby | 29/ DP1093201 | 130 m | S | Industrial |
| I13 | 125 Somersby Falls Road, Somersby | 5/ DP1292653 | 229 m | NW | Industrial |
| I14 | 63 Ghilkes Road, Somersby | 502/ DP712506 | 590 m | SW | Industrial |
| I15 | 164 Somersby Falls Road, Somersby | 6/ DP787857 | 363 m | NE | Industrial |

Table 2-1: Nearest Potentially Affected Receivers Considered

| Receptor ID | Address | Lot & DP | Approx. Distance from Proposed Development | Direction from Site | Type of Receptor |
|---|---|---|---|---|---|
| I16 | 129 Somersby Falls Road, Somersby | 4/ DP1292653 | 30 m | S | Industrial |
| I17 | 125 Somersby Falls Road, Somersby | 5/ DP1292653 | 48 m | W | Industrial |
| I18 | 139 Somersby Falls Road, Somersby | 2/ DP1292653 | 35 m | N | Industrial |

**Note:** distances measured from the boundaries of the site

Figure 2-3: Aerial Photograph of the Project Site Location and the Nearest Potentially Affected Receptors




**Source: Google Earth 2022**

N

Not to scale

LEGEND:
Site
Receptor

Benbow Environmental
25-27 Sherwood Street
Northmead NSW 2152

## 2.3 PROPOSED OPERATIONAL ACTIVITIES

The site's main activity will be the manufacturing and batching of asphalt material, which involves the drying and heating of aggregate to remove moisture, followed by the mixing with binding material and heated bitumen.

Raw materials for the manufacturing process include:

- Aggregate - stored within stockpile areas on the site; and
- Recycled Asphalt - of which up to 15% may be added.

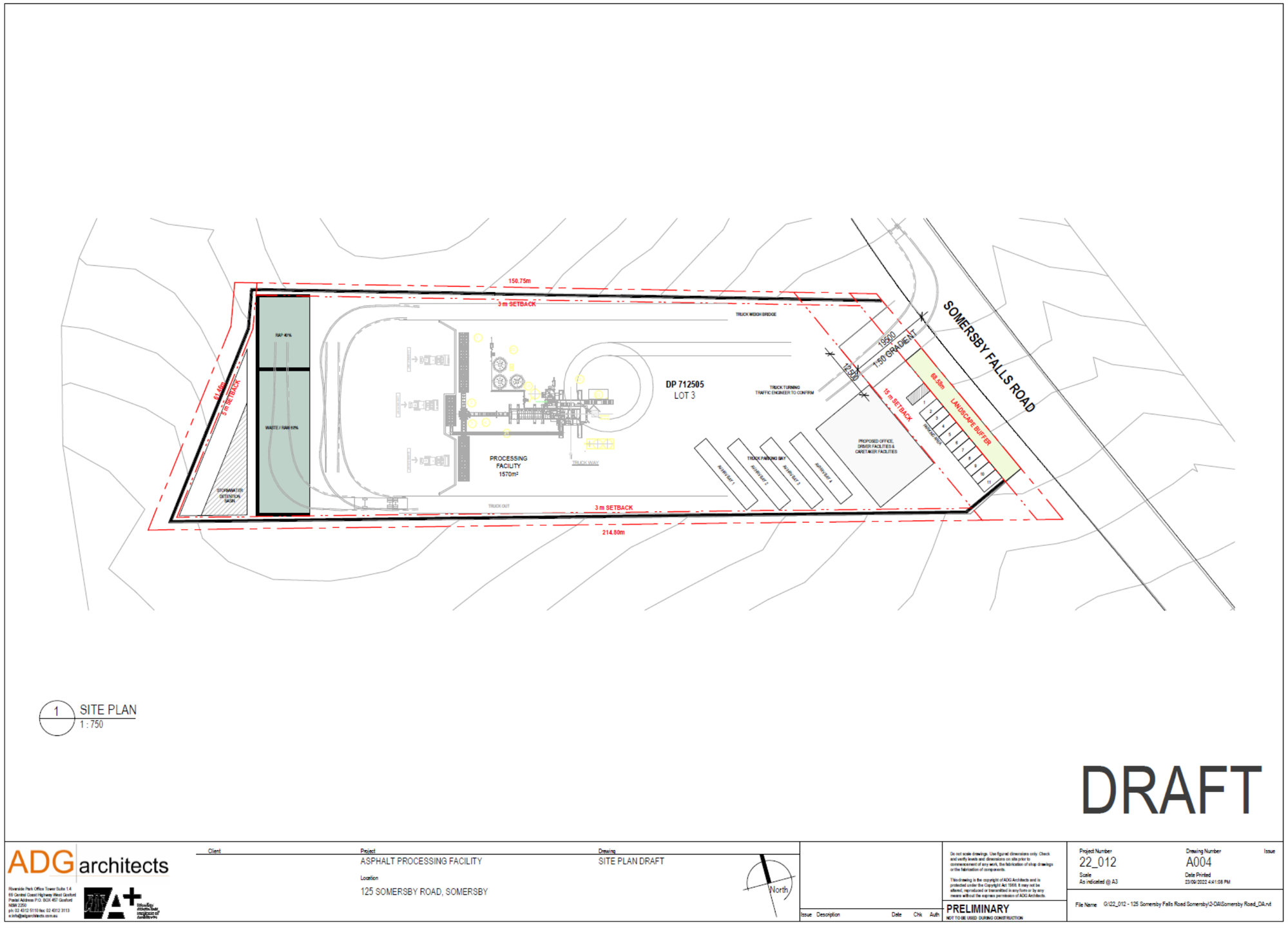
The aggregate raw materials will be transferred to five hoppers, and the recycled asphalt to two hoppers, for conveying into the dryer.

Drying, heating and mixing operations occur with manufactured asphalt product being transferred using a skip upwards to storage hoppers for despatch.

## 2.4 HOURS OF OPERATION

The site will operate 24/7.

Figure 2-4: Proposed Site Plan



## 2.5 CHEMICAL STORAGE

The dangerous materials that will be stored on site are listed in Table 2-2 below:

Table 2-2: Dangerous Goods Storage

| Chemicals | DG Class | Packing Group | Maximum Amount | Unit |
|---|---|---|---|---|
| **Bitumen** | 9 | III | 240,000 | L |
| **Diesel** | 3* | III* | 30,000 | L |

**** Note:** Diesel is typically considered a Class 1 combustible liquid (Category 4 flammable liquid under GHS) and is not usually considered a flammable liquid. However, by assuming it could be a flammable liquid, a worst-case scenario has been assessed for this FSS.*

## 2.6 PRELIMINARY RISK SCREENING

A preliminary risk screening of the chemicals to be stored on site in accordance with *State Environmental Planning Policy (Resilience and Hazards) 2021 – Chapter 3: Hazardous and Offensive Development* and *Hazardous and Offensive Development Application Guidelines: Applying SEP33 (NSW Department of Planning 2011)* has been undertaken.

The results from this screening are provided in the table below:

Table 2-3: Preliminary Risk Screening

| Class | Screening Threshold | Description | Site Specific Description | Quantity to be stored | Triggers SEPP |
|---|---|---|---|---|---|
| Class 1.1 | Assessed by reference to figure 5 of applying SEPP | Explosives | None | None | No |
| Class 1.2 | 5 tonne or are located within 100 m of a residential area | Explosives | None | None | No |
| Class 1.3 | 10 tonne or are located within 100 m of a residential area | Explosives | None | None | No |

| Class | Screening Threshold | Description | Site Specific Description | Quantity to be stored | Triggers SEPP |
|---|---|---|---|---|---|
| Class 2.1 | (LPG only — not including automotive retail outlets[1])<br><br>10 tonne or 16 $m^3$ if stored above ground.<br><br>40 tonnes or 64 $m^3$ if stored underground or mounded | Flammable Gases | None | None | No |
| | (Excluding LPG) Assessed by reference to figure 6 of applying SEPP | Flammable Gases Pressurised | None | None | No |
| | (Excluding LPG) Assessed by reference to figure 7 of applying SEPP | Flammable Gases liquified under pressure | None | None | No |
| Class 2.2 | Not relevant | Non-flammable, non-toxic gases | None | None | No |
| Class 2.3 | 5 tonne | Anhydrous ammonia, kept in the same manner as for liquefied flammable gases and not kept for sale | None | None | No |
| | 1 tonne | Chlorine and sulphur dioxide stored as liquefied gas in contains <100 kg | None | None | No |
| | 2.5 tonne | Chlorine and sulphur dioxide stored as liquefied gas in containers >100 kg | None | None | No |
| | 100 kg | Liquefied gas kept in or on premises | None | None | No |

| Class | Screening Threshold | Description | Site Specific Description | Quantity to be stored | Triggers SEPP |
|---|---|---|---|---|---|
| | 100 kg | Other toxic gases | None | None | No |
| **Class 3** | Assessed by reference to figures 8 & 9 of applying SEPP | Flammable liquids PG I, II and III | Stored in Tanks (Diesel) | 30,000 | **No** |
| Combustible Liquid C1 | Not relevant | Combustible liquid with flashpoint of 150°C or less | None | None | No |
| Combustible Liquid C2 | Not relevant | Combustible liquid with flashpoint exceeding 150°C | None | None | No |
| Class 4.1 | 5 tonne | Flammable Solids | None | None | No |
| Class 4.2 | 1 tonne | Substances liable to spontaneous combustion | None | None | No |
| Class 4.3 | 1 tonne | Substances which, in contact with water, emit flammable gases | None | None | No |
| Class 5.1 | 25 tonne | Ammonium nitrate – high density fertiliser grade, kept on land zoned rural where rural industry is carried out, if the depot is at least 50 metres from the site boundary | None | None | No |
| | 5 tonne | Oxidising substances, and ammonium nitrate elsewhere | None | None | No |

| Class | Screening Threshold | Description | Site Specific Description | Quantity to be stored | Triggers SEPP |
|---|---|---|---|---|---|
| | 2.5 tonne | Dry pool chlorine — if at a dedicated pool supply shop, in containers | None | None | No |
| | 1 tonne | Dry pool chlorine — if at a dedicated pool supply shop, in containers >30 kg | None | None | No |
| | 5 tonne | Any other Class 5.1 | None | None | No |
| Class 5.2 | 10 tonne | Organic peroxides | None | None | No |
| Class 6.1 PGI | 0.5 tonne | Toxic substances | None | None | No |
| Class 6.1 PGII & III | 2.5 tonne | Toxic substances | None | None | No |
| Class 6.2 | 0.5 tonne | Infectious substances, includes clinical waste | None | None | No |
| Class 7 | All | Radioactive Material, should demonstrate compliance with Australian codes | None | None | No |
| Class 8 PGI | 5 tonne | Corrosive substance | None | None | No |
| Class 8 PGII | 25 tonne | Corrosive substance | None | None | No |
| Class 8 PGIII | 50 tonne | Corrosive substance | None | None | No |

As bitumen is a *Class 9 - Miscellaneous Dangerous Goods*, it cannot be assessed using the SEPP 33 screening threshold as Class 9 is not included in the screening table. To satisfy a conservative approach, further analysis in the form of a Preliminary Hazard Analysis (PHA) this FSS has been completed based on the findings of the PHA.

## 2.7 FIRE WATER CONTAINMENT SYSTEM

As the site is currently undeveloped, there is not an established stormwater isolation system for firewater containment.

A recommendation from Benbow Environmental for the installation of a manually operated fire water containment system is outlined in Section 8.

# 3. HAZARD ASSESSMENT

The hazard analysis and quantified risk assessment approach developed and recommended by the Department of Planning and Environment relies on a systematic and analytic approach to the identification and analysis of hazards and the quantification of off-site risks to assess risk tolerability and land-use safety implications.

The department of Planning and Environment has advocated a merit-based approach, the level and extent of analysis must be appropriate to the hazards present and therefore, need only progress to the extent necessary for the particular case.

## 3.1 METHODOLOGY

The procedures adopted by this study for assessing hazardous impacts involve the following steps:

**Step 1**: Hazard identification;
**Step 2**: Hazard analysis (consequence and probability estimations); and
**Step 3**: Risk evaluation and assessment against specific criteria.

The following sections of the report discuss the hazard identification and analysis process as prescribed by the *Department of Planning and Environment* in the document *Hazardous Industry Planning Advisory Paper No* 4 (*HIPAP No. 6) – Guidelines for Hazard Analysis* and *HIPAP No. 8 – HAZOP Studies* (DoP&E 2011).

### 3.1.1 Hazard Identification

This is the first step in risk assessment. It involves the identification of all theoretically possible hazardous events as the basis for further quantification and analysis. This does not in any way imply that the hazard identified or its theoretically possible impact will occur in practice. Essentially, it identifies the particular characteristics and nature of hazards to be further evaluated in order to quantify potential risks.

To identify hazards, a survey of the proposed operations was carried out to isolate the events which are outside normal operating conditions and which have the potential to cause offsite impacts. In accordance with HIPAP No. 6, these events do not include occurrences that are a normal part of the operational cycles of the site but rather the atypical and abnormal, such as the occurrence of a significant liquid spill during product transfer operations.

### 3.1.2 Hazard Analysis

After a review of the events identified in the hazard identification stage and the identification of prevention/protection measures incorporated into the design of the site, any events which are considered to have the potential to result in impacts offsite or which have the potential to escalate to larger incidents are carried over to the next stage of analysis.

#### 3.1.2.1 Consequence Estimation

This aspect involves the analysis and modelling of the credible events carried forward from the hazard identification process in order to quantify their impacts outside the boundaries of the site. In this case, these events typically include fire and the potential effects on people and/or damage to property.

#### 3.1.2.2 Probability Likelihood Estimation

If necessary, the likelihood of incidents are quantified by adopting probability and likelihood factors derived from published data.

### 3.1.3 Risk Evaluation and Assessment

The risk analysis includes the assessment of consequences for each hazardous event and the frequencies of each initiating failure. The results of these consequence calculations together with the probabilities and likelihood figures estimated were then compared against the accepted criteria, as specified by Department of Planning and Environment. Whether it is considered necessary to conduct the predictions would depend on the probability figures, likelihood estimations, and if the risk criteria are exceeded.

The consequence and likelihood matrix utilised for this assessment is provided in Table 3-1. Consequence definitions are provided in Table 3-2.

Table 3-1: Modified Consequence and Likelihood Matrix for Qualitative Analysis

| | | | | | | |
|---|---|---|---|---|---|---|
| **Frequent** >1/yr | II | II | I | I | I | I |
| **Probable** >$10^{-1}$ to 1/yr | III | II | II | I | I | I |
| **Possible** >$10^{-2}$ to $10^{-1}$/yr | III | III | II | II | I | I |
| **Unlikely** >$10^{-4}$ to $10^{-2}$/yr | III | III | III | III | II | I |
| **Very Unlikely** >$10^{-6}$ to $10^{-4}$/yr | III | III | III | III | III | II |
| **Extremely Unlikely** <=$10^{-6}$/yr | III | III | III | III | III | III |
| **Likelihood** **Consequence** | Minor | Significant | Severe | Serious | Extremely Serious | Catastrophic |

***Note**: This matrix is a modified version of the qualitative analysis matrix published in the Australian/New Zealand Standard 31000:2009 – "Risk Management".*

***Region I*** *High, synonymous to the Intolerable Region as per HIPAP*

***Region II*** *Medium Risk, or beginning of ALARP or As Low As Reasonably Practicable as per HIPAP*

***Region III*** *Low, synonymous to Negligible as per HIPA*

Table 3-2: Matrix Based Assessment Consequence Definitions

| | Minor | Significant | Severe | Serious | Extremely Serious | Catastrophic |
|---|---|---|---|---|---|---|
| **Safety and Health** | One minor injury, First Aid | Recordable or single MTI | Multiple MTI or one LTI | Permanent disability casualty or multiple LTI | Multiple permanent disabilities or one fatality | Multiple fatalities |
| **Environment** | Very minor pollution. No offsite escape of material (contained within the operational areas). On site nuisance value only. | Minor local pollution. Nuisance offsite effect, typically of short duration, e.g. noise, odours, dust and/or visible plumes for less than one hour. | Evident pollution, local concern. Minimal duration offsite effects (e.g. waterway slightly discoloured, turbid etc around the point of release with no or very few fish killed). | Significant local pollution. For example, waterways discoloured 10s of metres, fire or smoke affecting people near to the site. | Major local pollution. Observable offsite effect (e.g. waterways discoloured 10s to 100s of metres for a few weeks with a significant number of aquatic life adversely affected). | Extremely severe pollution. Ecosystems at high risk of destruction. Only resolved via long term solutions (potentially taking years). |
| **Public Relations** | Minor issue, one complaint | Local issue, 10 complaints | Local media, 100 complaints | Regional or state media | Wide media national coverage | Headlines, corporate damage |
| **Financial Impact** | <$25,000 | $25,000 to $100,000 | >$100,000 to $1 million | >$1 million to $20 million | >$20 million to $100 million | >$100 million |

## 3.2 ASSESSMENT CRITERIA

The risk criteria applied by Department of Planning and Environment are published in the document *Hazardous Industry Planning Advisory Paper No 4* (HIPAP No. 4) - *Risk Criteria for Land Use Safety Planning* (DoP&E 2011).

The following is a general discussion of the criteria that is used to assess the risk of a development on the surrounding community and environment.

### 3.2.1 Individual Fatality Risk Levels

The following paragraphs are reproduced from HIPAP No. 4 relating to individual fatality risk levels:

> *"People in hospitals, children at school or old-aged people are more vulnerable to hazards and less able to take evasive action, if need be, relative to the average residential population. A lower risk than the one in a million criteria (applicable for residential areas) may be more appropriate for such cases. On the other hand, land uses such as commercial and open space do not involve continuous occupancy by the same people.*
>
> *The individual's occupancy of these areas is on an intermittent basis and the people present are generally mobile. As such, a higher level of risk (relative to the permanent housing occupancy exposure) may be tolerated. A higher level of risk still is generally considered acceptable in industrial areas"* (DUAP 1992).

The risk assessment criteria for individual fatality risk are presented below.

Table 3-3: Individual Fatality Risk Criteria

| Land Use | Risk Criteria x $10^{-6}$ |
|---|---|
| Hospitals, schools, etc. | 0.5 |
| Residential | 1 |
| Commercial | 5 |
| Sporting and active open space | 10 |
| Industrial | 50 |

### 3.2.2 Injury Risk Levels

Injury risk levels from HIPAP No. 4 are stated below for heat of radiation.

- Incident heat flux radiation at residential areas should not exceed 4.7 kW/m$^2$, at frequencies of more than 50 chances in a million per year.

- Incident explosion overpressure at residential areas should not exceed 7 kPa, at frequencies of more than 50 chances in a million per year.

The requirements for toxic exposure are stated as follows:

- Toxic concentrations in residential areas should not exceed a level that would be seriously injurious to sensitive members of the community following a relatively short period of exposure at maximum frequency of 10 in a million per year.

- Toxic concentrations in residential areas should not cause irritation to the eyes or throat, coughing or other acute physiological responses in sensitive members of the community over a maximum frequency of 50 in a million per year.

Please note that a risk hazard assessment only examines events that are considered to have the potential for significant off-site consequences.

Based on correspondence with NSW Fire and Rescue heat flux should not exceed 3 kW/m$^2$ in areas required for fire fighter personal access by NSW Fire and Rescue in the event of an incident.

### 3.2.3 Risk of Property Damage and Accident Propagation

HIPAP No. 4 indicates that siting of a hazardous installation must account for the potential for propagation of an accident causing a "domino" effect on adjoining premises. This risk would be expected within an industrial estate where siting of hazardous materials on one Site may potentially cause hazardous materials on an adjoining premises to further develop the size of the accident.

The criteria for risk to damage to property and of accident propagation are stated as follows:

- Incident heat flux at neighbouring potentially hazardous installations or at land zones to accommodate such installations should not exceed a risk of 50 in a million per year for the 23 kW/m$^2$ heat flux level.

- Incident explosion overpressure at neighbouring potentially hazardous installations, at land zoned to accommodate such installations or at nearest public buildings should not exceed a risk of 50 in a million per year for the 14 kPa explosion overpressure level.

#### 3.2.3.1 Heat-Flux Radiation Criteria

Table 3-4: Consequences of Heat Radiation

| Heat Radiation (kW/m$^2$) | Effect |
|---|---|
| 1.2 | Received from the sun at noon in summer. |
| 2.1 | Minimum to cause pain after 1 minute. |
| 3 | Based on correspondence with NSW Fire and Rescue heat flux should not exceed 3 kW/m$^2$ in areas required for fire fighter personal access by NSW Fire and Rescue in the event of an incident. |
| 4.7 | Will cause pain in 15–20 seconds and injury after 30 seconds' exposure (at least second degree burns will occur). |

Table 3-4: Consequences of Heat Radiation

| Heat Radiation ($kW/m^2$) | Effect |
|---|---|
| 12.6 | • Significant chance of fatality for extended exposure. High chance of injury.<br>• Causes the temperature of wood to rise to a point where it can be ignited by a naked flame after long exposure.<br>• Thin steel with insulation on the side away from the fire may reach a thermal stress level high enough to cause structural failure. |
| 23 | • Likely fatality for extended exposure and chance of fatality for instantaneous exposure.<br>• Spontaneous ignition of wood after long exposure.<br>• Unprotected steel will reach thermal stress temperatures which can cause failure.<br>• Pressure vessel needs to be relieved or failure would occur. |
| 35 | • Cellulosic material will pilot ignite within one minute's exposure.<br>• Significant chance of fatality for people exposed instantaneously. |

#### 3.2.3.2 Explosion Over-Pressure Criteria

Table 3-5: Consequences of Explosion Overpressure

| Explosion Overpressure | Effect |
|---|---|
| 3.5 kPa (0.5 psi) | • 90% glass breakage.<br>• No fatality and very low probability of injury. |
| 7 kPa (1 psi) | • Damage to internal partitions and joinery but can be repaired.<br>• Probability of injury is 10%. No fatality. |
| 14 kPa (2 psi) | • House uninhabitable and badly cracked. |
| 21 kPa (3 psi) | • Reinforced structures distort.<br>• Storage tanks fail.<br>• 20% chance of fatality to a person in a building. |
| 35 kPa (3 psi) | • House uninhabitable.<br>• Wagons and plant items overturned.<br>• Threshold of eardrum damage.<br>• 50% chance of fatality for a person in a building and 15% chance of fatality for a person in the open. |
| 70 kPa (10 psi) | • Threshold of lung damage.<br>• 100% chance of fatality for a person in a building or in the open.<br>• Complete demolition of houses. |

## 3.3 HAZARDS IDENTIFICATION AND ASSESSMENT OF THE FIRE THREAT

The purpose of the hazard identification is to define the extent of the engineering solutions that will be required to be determined. The engineering solutions involved in this FSS following a methodology as outlined below:

- Undertake a preliminary risk screening and a ranking of the events that could give rise to a fire;
- The outcomes of these identified events need to be assessed for their potential consequences;
- The major fire hazards at the proposed site have been identified based on the types of processes conducted within particular areas where flammable or combustible materials will be stored or handled in significant quantities;
- A brief discussion on the fire hazards associated with each of the main process areas of the site follows.

### 3.3.1 Bitumen Tank Storage Area

The major fire hazard stemming from the Bitumen Tank storage area are associated with the storage and handling o major quantities of dangerous goods. Specifically, *Class 9 – Miscellaneous Dangerous Goods* will be stored will be stored together in within large tanks. These pose a major fire risk if:

- Spillage;
- Fume release;
- Tank failure (from excessive pressure);
- Fire at the heated storage tanks;
- Fire within the drying drum;
- Fire within the pug mill at the asphalt plant;
- Fire within a storage silo.

These fire risks are discussed throughout the following sub-sections.

#### 3.3.1.1 Spillage

The risk of a spillage occurring that would cause a hazard is very low from operational experience. This risk is mainly a consequence of the bitumen not remaining fluid once it cools to ambient temperatures. The viscosity of bitumen rapidly diminishes when it is exposed to ambient conditions.

It is found that most bitumen contain the following:

- **Carbon** - 82-88%;
- **Hydrogen** - 8-11%; and
- **Sulphur** - 0-6%.

Bitumen is almost solid at ambient temperatures and is heated to make it less viscous, pourable, and able to be added to heated materials in a pug mill so that it coats these materials (usually aggregates and fillers) so that the resulting product is an adhesive mixture we call asphaltic concrete or "*hot bitumen mix*". As a result, bitumen is considered to be a construction material and is a non-hazardous substance and a non-dangerous goods until it is heated. The auto ignition temperature of bitumen is ~400°C.

The flashpoint varies between types of bitumen but is considered to be >200°C.

At the plant, it is usually heated to around 150°C and always must be kept at least 30°C below its flashpoint.

The fire point is the temperature at which a substance will sustain a flame for at least 5 seconds after its surface has been directly exposed to a flame. The fire point for bitumen is not widely published even on Safety Data Sheets but it is ~30°C above the flash point.

This gives an indication that direct flame impingement would be needed to cause the bitumen to ignite and begin to burn strongly.

#### 3.3.1.2 Fume Release

Fume release and potential odour is assessed within the associated air quality impact assessment (AQIA). With the implementation of the recommended controls stimulated in that document, odour is not expected to be detectable at offensive levels for adjacent commercial premises and thus would not be detectable at nearest residences.

#### 3.3.1.3 Excessive Pressure in Tank

The event leading to excessive pressure build up in a tank involves hot bitumen coming into contact with water. The water is rapidly turned to steam and is unable to flow out of the tank causing a build-up of pressure that may cause the tank to fail.

This is avoided at the asphalt plant by having dedicated bitumen storage tanks that are only ever used for bitumen.

#### 3.3.1.4 Fire

The history of fires at asphalt plants has been reviewed and is discussed within this section.

Safe handling procedures would be expected to reduce the risk of a fire to a very low level. These would be developed in the Emergency and Pollution Incident Risk Management Plan for the site.

Control of fire is usually most effective if dry powder or foam extinguishers are used. Water jets are not recommended as it causes the hot bitumen to froth. Foam injected into a hose reel would be effective directed into the source of the fire coupled with water jets to cool surrounding surfaces until the Fire and Rescue NSW arrive to take over the emergency event.

The most common causes of a fire involving bitumen are failures of contractors during maintenance at the asphalt plant to following hot work requirements. This is readily avoided by requiring risk assessments and workplace health and safety statements to be prepared after a contractor has been inducted on site and before any maintenance work commences.

The main cause of fires is spillage or overfilling causing the thermal insulation that is around the tanks to be impregnated with bitumen and this, if it occurs, requires the insulation to be immediately replaced.

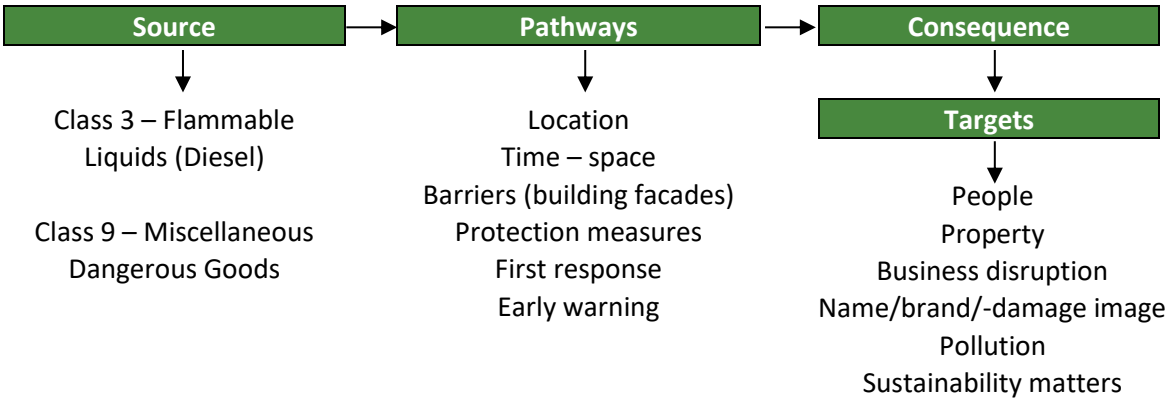
### 3.3.2 General Fire Hazard Control Methods

The critical factors governing fire control at the proposed Site are as follows:

1. Provision of adequate fire services on site;
2. Adequate supervision and maintenance of process and safety equipment;
3. Strict adherence and compliance with the dangerous goods storage and handling requirements stipulated by relevant Australian Standards;
4. Emergency Procedures including on-site training of emergency personnel and co-ordination with local State Emergency Services;
5. Building construction in terms of separation distances and compliance with Building Code of Australia and Australian Standard requirements and regulations; and
6. Good housekeeping practices, specifically periodic cleaning of the building spaces and processing equipment.

### 3.3.3 Site Characteristics

In undertaking the hazard identification and assessment of the fire threat, the following are examined:




### 3.3.4 Hazard Identification Charts

In order to identify and characterise the nature of potential fire events, a series of Hazard Identification Charts have been compiled. The charts, for the purpose of this study only assess potential fire events. Each chart consists of four columns:

**Column 1**: *Functional/Operational Area*
The process area of the Site involved with the potential event is listed.

**Column 2**: *Possible Initiating Event*
The events that are considered to be likely or realistic are listed. Where the possible consequences are similar, the events are listed together and individually numbered.

**Column 3**: *Possible Consequences*
The outcomes from an even occurring are listed e.g. Fire.

**Column 4**: *Prevention/Protection Measures*
The measures designed into the function/operation of the particular area of the Site are listed. The measures include for example safeguards, design features, management methods and operator

The hazard identification chart is presented in Table 3-6.

Table 3-6: Event/Consequence Analysis Table

| Event ID | Hazardous Event/Area | Possible Initiating Event | Possible Consequences | Prevention/Protection Measures |
|---|---|---|---|---|
| **1** | **Tank Boil-Over** | • Bitumen in contact with water e.g. water entering hot bitumen tank. | • Steam generated causing possible tank overpressure and tank failure resulting in loss of containment in bund;<br>• Potential for fire if ignited; and<br>• Potential for injury to people, damage to equipment and environmental impacts. | • Temperature control used to maintain tank above 100°C for the prevention of water condensation;<br>• Large diameter emergency vents;<br>• Steam not used for heating;<br>• Frangible roofs on tanks;<br>• Tanks located within bund to minimise consequences such as fires and injuries;<br>• Control of ignition sources throughout the site;<br>• Fire protection facilities available;<br>• Safety showers available within close proximity to bitumen tanks; and<br>• Stormwater will be isolated using a valve on the discharge point |
| **2** | **Tank Overflow** | • Human error in terms of calculations; or<br>• Failure of level instruments. | • Loss of containment in bund;<br>• Potential for fire if ignited; and<br>• Potential for injury to people, damage to equipment and environmental impacts. | • Level monitoring and alarm system in place;<br>• Level instrumentation regularly checked and maintained;<br>• Tanks located within bund to minimise consequences such as fires and injuries;<br>• Control of ignition sources throughout the site;<br>• Fire protection facilities available; and<br>• Safety showers available within close proximity to bitumen tanks. |

Table 3-6: Event/Consequence Analysis Table

| Event ID | Hazardous Event/Area | Possible Initiating Event | Possible Consequences | Prevention/Protection Measures |
|---|---|---|---|---|
| **3** | **Tank Mechanical Failure** | • Physical damage (e.g. from collision);<br>• Metal fatigue, corrosion or faulty fabrication; or<br>• Adjacent fire | • As above. | • Tanks designed to comply with Australian Standards;<br>• Regular maintenance and inspections;<br>• Tanks located within bund to minimise consequences such as fires and injuries;<br>• Control of ignition sources throughout the site;<br>• Fire protection facilities available; and<br>• Safety showers available within close proximity to bitumen tanks. |
| **4** | **Pipe or Piping System Failure** | • Corrosion;<br>• Thermal overpressure;<br>• Pipe thermal expansion; and<br>• Human error (e.g. collisions or mishandling) | • As above; and<br>• Potential for small spill with subsequent cooling and solidification. | • Pipes designed to comply with Australian Standards;<br>• Emergency isolation valves;<br>• Regular maintenance and inspections;<br>• Most pipes in bunded areas;<br>• Fire protection facilities available; and<br>• Safety showers available within close proximity to bitumen tanks |
| **5** | **Loss of Containment** | • Tank boil-over;<br>• Tank overflow;<br>• Tank mechanical failure;<br>• Tank damage; or<br>• Pipe failure. | • Tank fire if exposed to ignition source;<br>• Possible escalation to other buildings or bund fire;<br>• Explosion of vapours in tanks; and<br>• Pollution via fire water. | • Prevention and protection measures listed above for *tank boil-over*, *tank overflow*, *tank failure* and *pipe failure*; and<br>• Stormwater isolation using a valve on the discharge point. |

Table 3-6: Event/Consequence Analysis Table

| Event ID | Hazardous Event/Area | Possible Initiating Event | Possible Consequences | Prevention/Protection Measures |
|---|---|---|---|---|
| **6** | **Bitumen Pump Leak During Loading from Tanker** | • Pump failure; or<br>• Human handling error during loading | • Spill should be contained within cabinet containing pump and loading system;<br>• Potential for spill within cabinet and subsequent cooling and solidification; and<br>• Potential for bitumen fire within cabinet if ignited. | • All pumps located within pump cabinets to isolate any leakages. |
| **7** | **Self-Ignition of Bitumen** | • Build up of deposits inside tank due to heated bitumen exposed to air; or<br>• Deposits can auto-ignite around 190°C | • Tank fire;<br>• Potential for injury to people, damage to equipment and environmental impacts; and<br>• Loss of containment | • Temperature controls used for bitumen tank;<br>• Deposits removed every ten years during tank shutdowns when tanks are cool;<br>• No direct flame heating; and<br>• Filter units and vents to be regularly inspected and cleaned. |

Table 3-6: Event/Consequence Analysis Table

| Event ID | Hazardous Event/Area | Possible Initiating Event | Possible Consequences | Prevention/Protection Measures |
|---|---|---|---|---|
| **8** | **Bitumen Tank Explosion** | • Accumulation of flammable gases with subsequent ignition source;<br>• Overheating of tank or bitumen causing greater flammable vapour generation and/or ignition of vapours;<br>• Ignition of deposits within tank and consequent ignition of flammable vapours; and<br>• Exposure of bitumen with direct flames such as during welding or other activities. | • Damage to tank;<br>• Possible injury to people near the tank;<br>• Possible missile generation and propagation to other equipment and buildings;<br>• Tank fire; and<br>• Possible escalation to other buildings or bund fire. | • Filter units and vents to be regularly inspected and cleaned;<br>• Bitumen tank will be located within a bunded area which will provide bunding and a protection barrier from heat and projected materials;<br>• Frangible roofs on bitumen tanks will prevent excessive explosion overpressures;<br>• Control of ignition sources throughout the site;<br>• Tanks/Valves/Pipes/Hot oils system to be regularly inspected for damage and any leaks;<br>• Compliance with Hazardous Area Electrical Equipment standards and other relevant Australian Standards;<br>• All equipment will be earthed;<br>• Bitumen temperature control used;<br>• No direct flame heating – use of hot oil heater;<br>• Fire protection facilities available; and<br>• Stormwater will be isolated using a valve on the discharge point. |

Table 3-6: Event/Consequence Analysis Table

| Event ID | Hazardous Event/Area | Possible Initiating Event | Possible Consequences | Prevention/Protection Measures |
|---|---|---|---|---|
| 9 | **Hydrogen Sulphide Exposure** | • Exposure to losses of containment; and<br>• People entering confined spaces with hot bitumen spill. | • Toxic impact or fatality from hydrogen sulphide exposure at high concentrations. | • Australian Standards will be complied to prevent loss of containment;<br>• Confined space permits required and risk assessments made before entry;<br>• Filter units and vents to be regularly inspected and cleaned;<br>• Overheating of bitumen prevented using temperature controls to prevent generation of fumes;<br>• Bitumen loading occurs in an enclosed system where any potential leaks will be collected within the pump cabinet; and<br>• Emergency response procedures available including ringing 000 if required. |
| 10 | **Burns** | • Exposure to hot bitumen from loss of containment. | • Burn injuries. | • Use of appropriate PPE if handling bitumen e.g. heat resistant gauntlet gloves, face shield and hood;<br>• Safety showers available close to bitumen tanks;<br>• Trained first aid personnel available on site; and<br>• Emergency response procedures available including ringing 000 if required. |
| 11 | **Insulation Fires** | • Ignition of piping, tank or vessel insulation from contact with losses of containment. | • Potential for fires and propagation to adjoining equipment and systems. | • Control of ignition sources;<br>• Insulation specifications include waterproofing and minimised openings;<br>• Loss of containment prevention; and<br>• Fire protection facilities available. |

Table 3-6: Event/Consequence Analysis Table

| Event ID | Hazardous Event/Area | Possible Initiating Event | Possible Consequences | Prevention/Protection Measures |
|---|---|---|---|---|
| **12** | **Loss of Containment of Diesel Fuel** | • Tank damage or pipe failure e.g. by collision, corrosion or flange failure;<br>• Human error e.g. valve left open. | • Potential for pool fire if ignited;<br>• Potential for propagation to adjacent equipment and buildings, tank explosion;<br>• Overpressure damage to equipment; and<br>• Injury to people | • Tank and piping designed and constructed to comply with Australian Standards;<br>• Sufficient bunding constructed using reinforced concrete slabs with concrete block walls in accordance with AS 1940-2004 to contain 110% of maximum storage;<br>• Drains and vent valves are plugged in case of leakages;<br>• Regular inspection and maintenance;<br>• Periodic patrolling to detect odorous leakages; and<br>• Stormwater will be isolated using a valve on the discharge point. |
| **13** | **Truck Spray Up Station** | • Vehicle collision/impact; or<br>• Human error or accidents. | • Injuries as the result of being struck by delivery vehicles;<br>• Release of Slip Agent and/or diesel fuel causing environmental contamination;<br>• Manual handling injuries;<br>• Slip/Trips/Falls; and<br>• Eye irritation | • Truck Operators and personnel in immediate area to wear Hi-Vis clothing;<br>• Drivers to remain clear of traffic areas and be vigilant for other vehicles;<br>• 10 Km/h speed limit to be enforced on site area;<br>• Chemicals and drums to be stored only within bunded area;<br>• Spill kits available close by;<br>• Manual handling guidelines to be followed when handling heavy items;<br>• Use Spray Up Platform to spray truck bodies. Do not climb into truck body; and<br>• Wear Safety Glasses in windy conditions |

Table 3-6: Event/Consequence Analysis Table

| Event ID | Hazardous Event/Area | Possible Initiating Event | Possible Consequences | Prevention/Protection Measures |
|---|---|---|---|---|
| **14** | **Unloading of Bitumen to Tanks** | • Vehicle collision/impact; or<br>• Manual handling errors. | • Injuries as the result of being struck by delivery vehicles;<br>• Burns, cuts or abrasions from bitumen transfer equipment;<br>• Bitumen burns; and<br>• Respiratory problems due to bitumen fumes. | • Tanker Operators and personnel in immediate area to wear Hi-Vis clothing;<br>• Operators to remain clear of traffic areas and be vigilant for other vehicles;<br>• Plant personnel and other drivers to be briefed on existence of Bitumen Unloading area and necessary precautions when operating in the area;<br>• 10 Km/h speed limit to be enforced in Bitumen Unloading area;<br>• Tanker Operator to be inducted into and follow Bitumen Unloading Procedure;<br>• PPE required for Bitumen Unloading operations to be worn by all personnel involved in unloading;<br>• Gloves to be worn when handling hot equipment;<br>• Manual handling guidelines to be followed when handling heavy items;<br>• Fume masks to be available should nose or throat irritations occur;<br>• MSDS's for all stored products to be held on site; and<br>• Enter / exit bunded areas using designated walkways. |

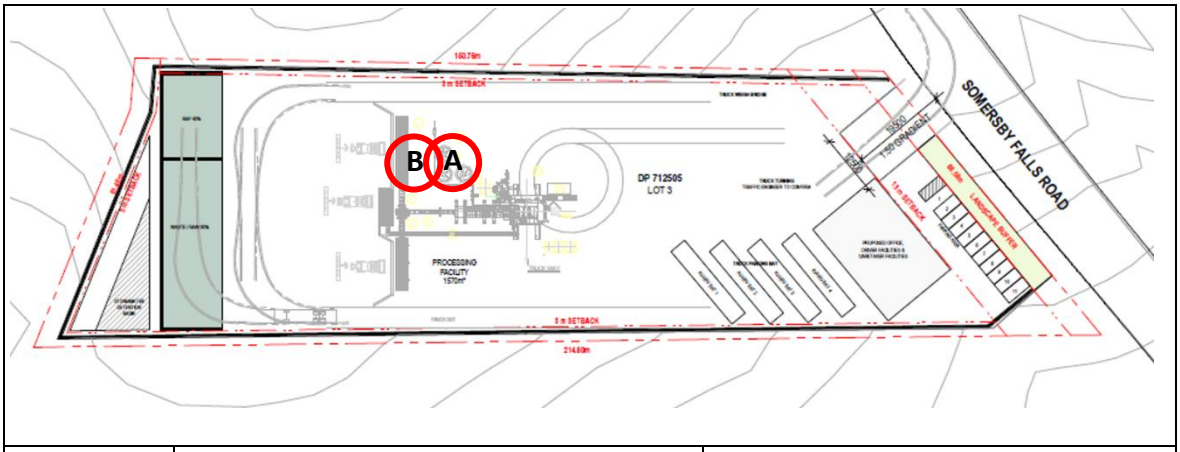
# 4. CONSEQUENCES ANALYSIS

Analysis of heat of radiation from fire scenarios fuelled by Class 9 DG bitumen and Class 3 DG Diesel are provided within this section. The consequences of fires within the proposed site were considered in the following areas:

A Bitumen Tank Storage Area
B Diesel Storage Area

These scenario locations are visualised in Figure 4-1 below.

Figure 4-1: Fire Hazard Scenario Map




The following scenarios have been determined as major hazardous events that could occur on the subject site as per outcomes from the Preliminary Hazard Analysis (PHA):

**Scenario 1**: Fire incident where 60,000 L of bitumen is spilt within a one (1) tank and ignited.
**Scenario 2**: Fire incident where 120,000 L of bitumen is spilt within two (2) tanks and ignited.
**Scenario 3**: Fire incident where 240,000 L of bitumen is spilt within four (4) tanks and ignited.
**Scenario 4**: Fire incident where 3,000 L of bitumen have been spilt and ignited within a 15m$^2$ pool area.
**Scenario 5**: Fire incident caused by a pump leak within the pump cabinet involving 100 L of bitumen.
**Scenario 6**: Diesel bund fire where 30,000 L of diesel burns in a 15.2 m$^2$ bunded area.
**Scenario 7**: Bitumen and diesel fire (cumulative impact from Scenarios 3 and 6).

The assumptions associated with these pool fire scenarios include:

- Spilt bitumen and diesel are elevated to high temperatures that may be enough for these to ignite or combust;

- An ignition source is present to initiate the fire;

- Immediate firefighting or fire mitigating controls are not available to minimise the fire or could not be used by trained personnel on site. and

- The use of the chemical tetrachloroethylene as a substitute input for bitumen and Gasoline for Diesel due to similar heat of combustion and physical properties.

## 4.1 SCENARIO 1: SINGLE TANK BITUMEN FIRE

This scenario describes the event where large losses in containment of bitumen occurs within one of the tanks and ignites from various reasons including the presence of an ignition source or self-ignition. This event is unlikely as bitumen combusts at temperatures above 250°C but it will only be stored at temperatures around 150°C. Losses in containment could be caused by a number of initiating events such as tank boil-over, tank overflow, tank mechanical failure or pipe failure. The following calculations and assumptions were considered in the modelling of effects using TNO Effects:

- 60,000 L of bitumen would burn in the tank fire;
- Ambient weather condition was taken from the averages of the nearest meteorological station of Mangrove Mountain AWS (061375);
- The pool fire surface area is equal to the area of the tank of 40.2 $m^2$;
- The use of the chemical tetrachloroethylene as a substitute input for bitumen and Gasoline for Diesel due to similar heat of combustion and physical properties; and
- A pool temperature of 120°C for the substitute chemicals is used as bitumen is normally stored at temperatures above 150°C.

The heat radiation distances obtained from TNO Effects and heat radiation contours are presented in Table 4-1 and Figure 4-2 respectively.

Table 4-1: Heat Radiation Distances for Scenario 1

| Level | Heat Radiation Distance from Fire Boundary (m) |
|---|---|
| 4.7 kW/$m^2$ | 34.7 |
| 12.6 kW/$m^2$ | 24.5 |
| 23 kW/$m^2$ | 18.5 |

The modelling software, TNO Effects, predicted a radiation distance of 34.7 m from the edge of the pool fire for a heat flux of 4.7 kW/hr.

## 4.2 SCENARIO 2: DOUBLE TANK BITUMEN FIRE

Similarly to Scenario 1, this scenario describes situation where bitumen is spilt and ignited in both tanks. The same assumptions were used with the following exceptions:

- 120,000 L of bitumen is involved as the worst case scenario; and
- The pool fire surface area is equal to the area of two tanks: 80.4 $m^2$

The heat radiation distances obtained from TNO Effects and heat radiation contours are presented in Table 4-2 and Figure 4-3 respectively.

Table 4-2: Heat Radiation Distances for Scenario 2

| Level | Heat Radiation Distance from Fire Boundary (m) |
|---|---|
| 4.7 kW/$m^2$ | 47.7 |
| 12.6 kW/$m^2$ | 33.5 |
| 23 kW/$m^2$ | 25.4 |

The modelling results given by TNO Effects for this scenario show that a heat radiation level of 4.7 kW/$m^2$ would extend 47.7 m from the pool fire perimeter.

## 4.3 SCENARIO 3: BITUMEN SPILL FIRE

Scenario 3 describes the worst case where bitumen spill has occurred within four (4) of the tanks. The same assumptions were used with the following exceptions:

- 240,000 L of bitumen is spilt within 4 tanks; and
- The pool fire surface area is equal to the area of 4 tanks: 160.8 $m^2$.

The heat radiation distances obtained from TNO Effects were identical to those of Scenario 1, which is given in Table 4-1. This finding by TNO Effects represents that a heat radiation level of 4.7 km/ $m^2$ would be extend 65.5 m from the pool fire perimeter.

Table 4-3: Heat Radiation Distances for Scenario 3

| Level | Heat Radiation Distance from Fire Boundary (m) |
|---|---|
| 4.7 kW/$m^2$ | 65.5 |
| 12.6 kW/$m^2$ | 45.7 |
| 23 kW/$m^2$ | 35 |

## 4.4 SCENARIO 4: BITUMEN SPILL FIRE

This event assumes that smallest amount of bitumen is released within one of the tanks but has only spread across a pool area of 15 $m^2$. This scenario is used to account for a difference in viscosities of bitumen which occurs at different temperatures leading to different pool sizes. The results of scenario 3 and 4 will help predict the different impacts of heat effects for differing pool surface sizes.

The heat radiation distances obtained from TNO Effects and heat radiation contours are presented in Table 4-4 and Figure 4- respectively.

Table 4-4: Heat Radiation Distances for Scenario 4

| Level | Heat Radiation Distance from Fire Boundary (m) |
|---|---|
| 4.7 kW/$m^2$ | 22 |
| 12.6 kW/$m^2$ | 15.8 |
| 23 kW/$m^2$ | 11.8 |

The modelling results given by TNO Effects for this scenario show that a heat radiation level of 4.7 kW/$m^2$ would extend 22 m from the pool fire perimeter. This impact is considerably less than that of Scenario 3 (65.5 m).

## 4.5 SCENARIO 5: DIESEL BUND FIRE

Scenario 5 assesses the possible incident involving a diesel pool fire occurring within the bunded area. This event could occur due to human error or if the diesel tank or tank pipes becomes damaged causing loss of containment with subsequent ignition. To account for the worst case scenario, a 30,000 L diesel spill has been modelled. An estimated bunding area of 15.2 $m^2$ is used as the pool area.

The heat radiation distances obtained from TNO Effects and heat radiation contours are presented in Table 4-5.

Table 4-5: Heat Radiation Distances for Scenario 5

| Level | Heat Radiation Distance from Fire Boundary (m) |
|---|---|
| 4.7 kW/$m^2$ | 11.8 |
| 12.6 kW/$m^2$ | 9.1 |
| 23 kW/$m^2$ | 7 |

The modelling results given by TNO Effects for this scenario show that a heat radiation level of 4.7 kW/$m^2$ would extend 11.8 m from the pool fire perimeter.

## 4.6 SCENARIO 6: DIESEL BUND FIRE

Scenario 3 and 5 describes the individual fire incidents concerning the total capacity of bitumen and diesel. However, Figure 4-4 suggests possible fire propagation across the bitumen tank and diesel tank. Hence, this scenario examines the event that both the bitumen tanks and the diesel tank would be ignited causing a relatively larger heat impact. This heat radiation impact is illustrated in
Figure 4-4 .

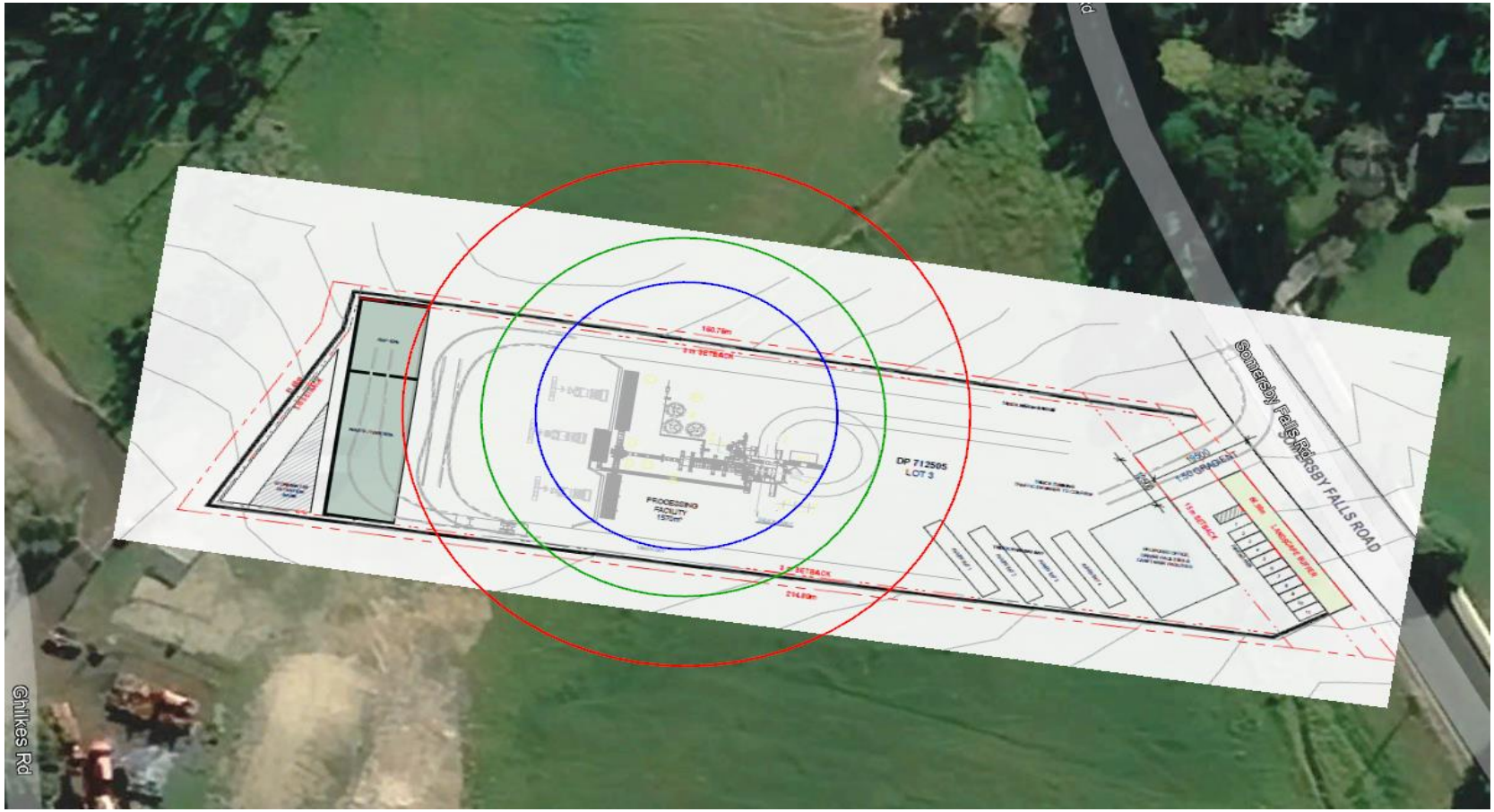
Table 4-6: Heat Radiation Distances for Scenario 6

| Level | Heat Radiation Distance from Fire Boundary (m) |
|---|---|
| 4.7 kW/$m^2$ | 68.3 |
| 12.6 kW/$m^2$ | 47.6 |
| 23 kW/$m^2$ | 36.5 |

Figure 4-2: Heat Radiation Contours for Scenario 1: Single Tank Bitumen Fire

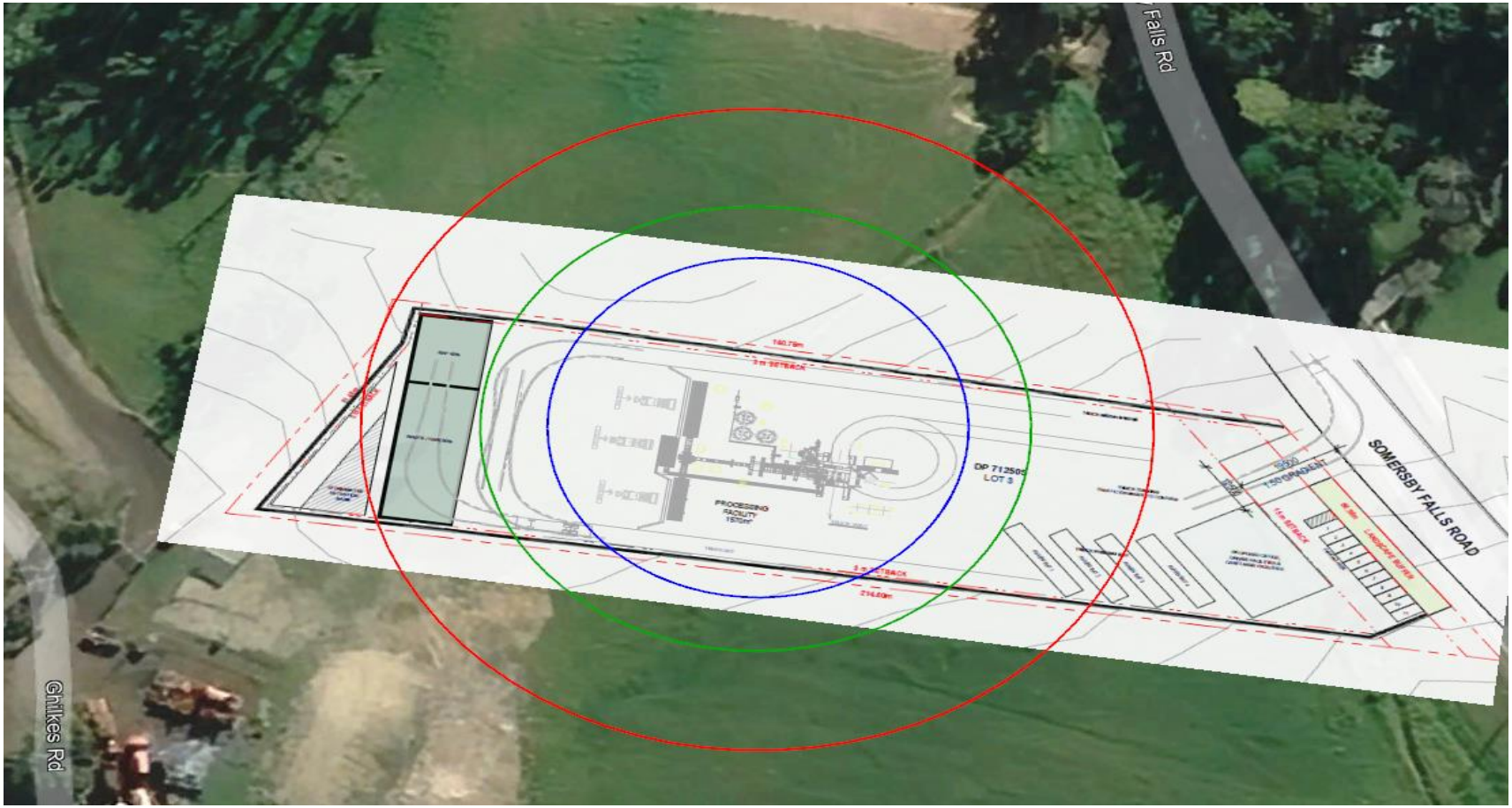
Note: Isopleths illustrate the heat of radiation contours: Red = 23 kW/m$^2$; Green = 12.6 kW/m$^2$; Blue = 4.7 kW/m$^2$.

Figure 4-3: Heat Radiation Contours for Scenario 2: Double Tank Bitumen Fire



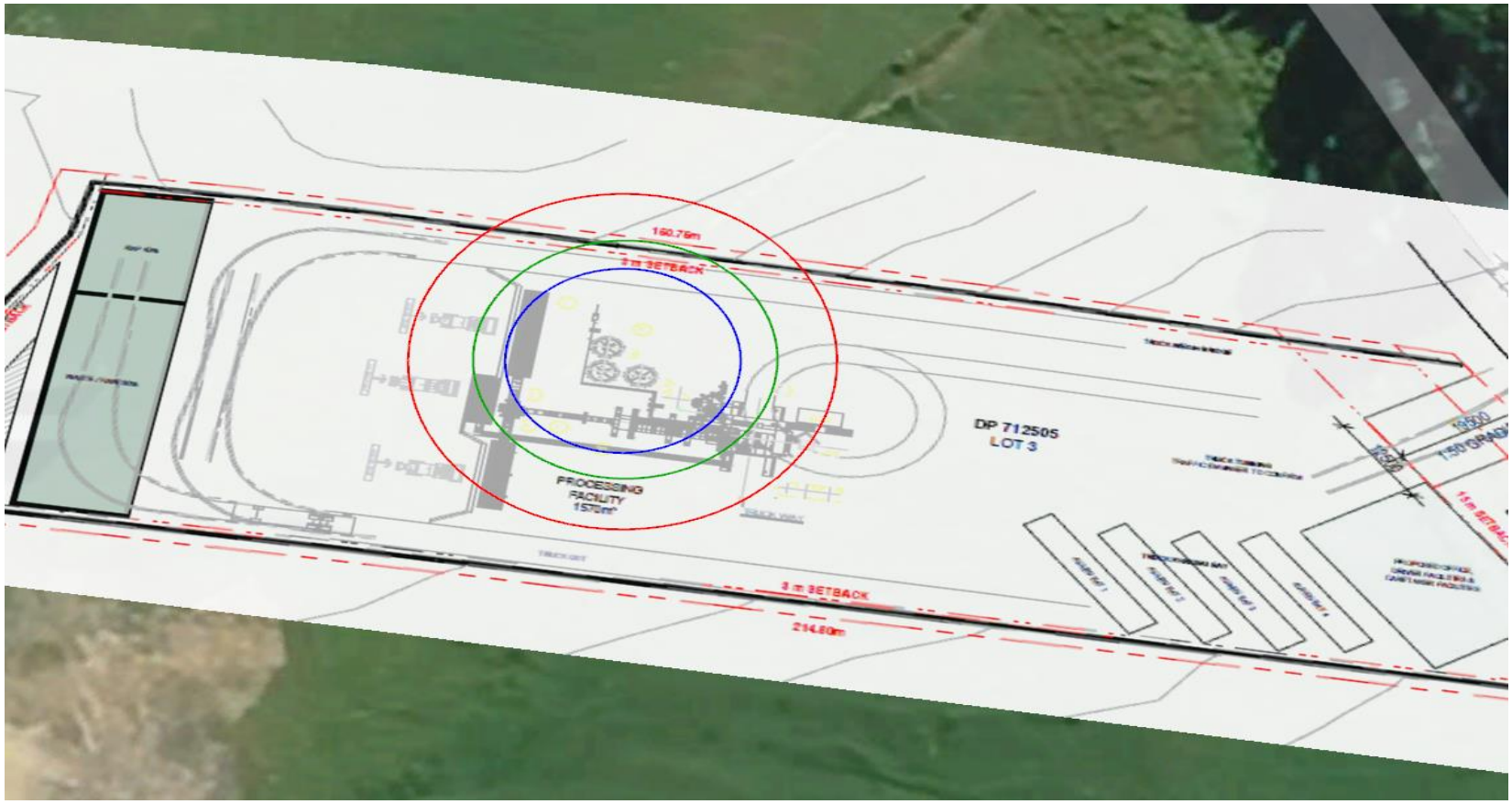

Note: Isopleths illustrate the heat of radiation contours: Red = 23 kW/m$^2$; Green = 12.6 kW/m$^2$; Blue = 4.7 kW/m$^2$.

Figure 4-3: Heat Radiation Contours for Scenario 3: Four Tanks Bitumen Fire



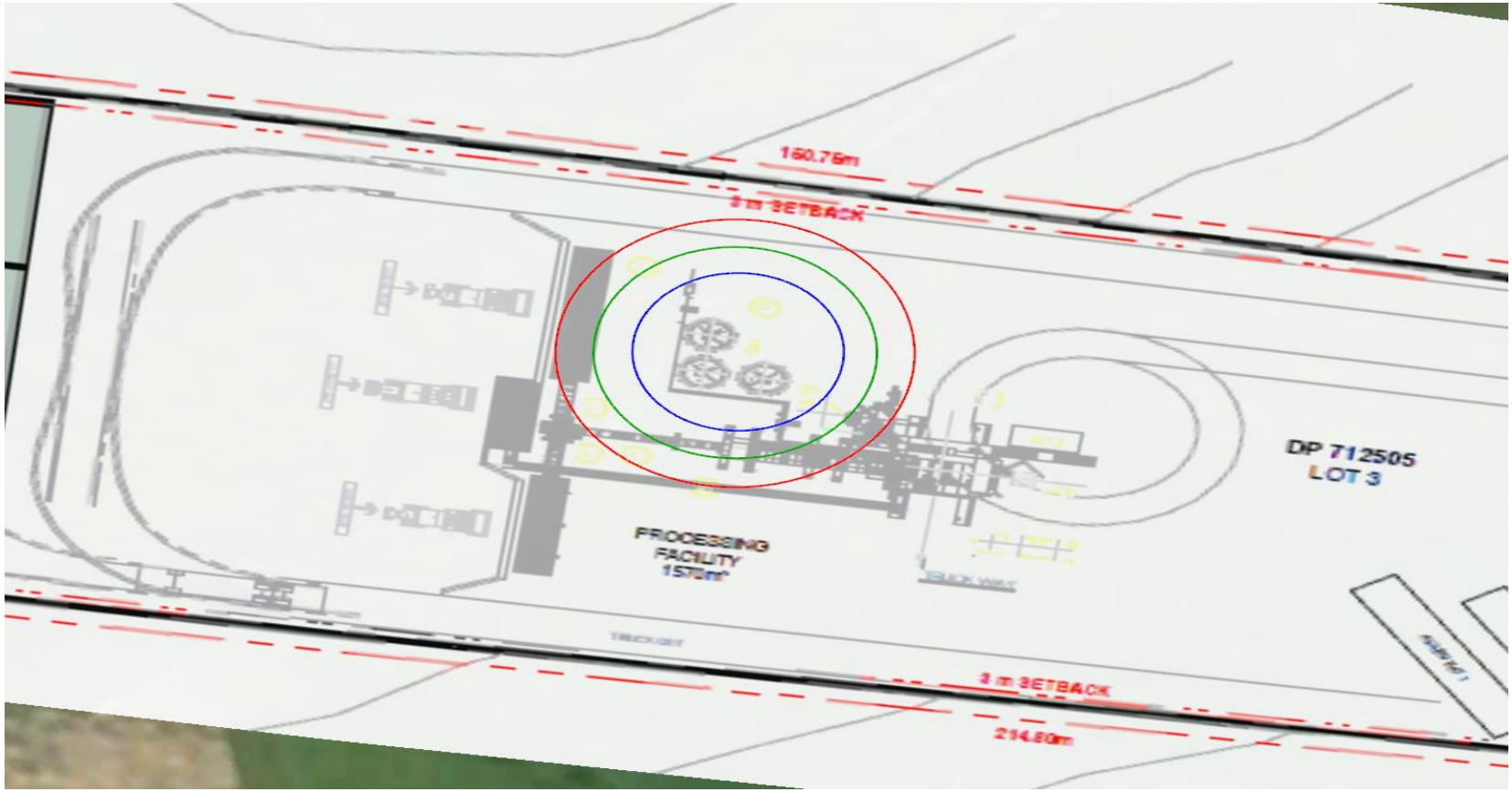

Note: Isopleths illustrate the heat of radiation contours: Red = 23 kW/m$^2$; Green = 12.6 kW/m$^2$; Blue = 4.7 kW/m$^2$.

Figure 4-4 : Heat Radiation Contours for Scenario 4: 3000 L Bitumen Spill Fire



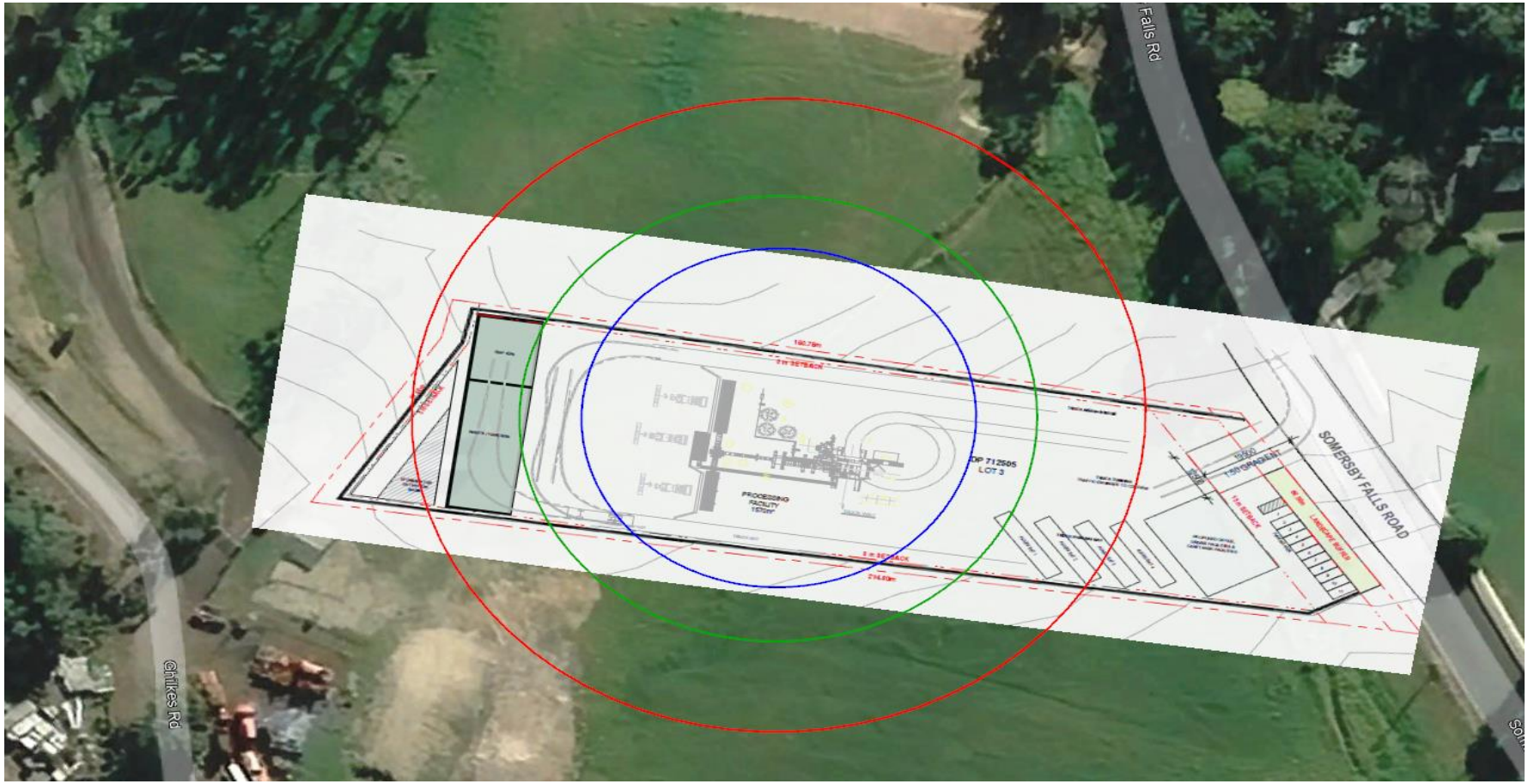

Note: Isopleths illustrate the heat of radiation contours: Red = 23 kW/m$^2$; Green = 12.6 kW/m$^2$; Blue = 4.7 kW/m$^2$.

Figure 4-5: Heat Radiation Contours for Scenario 5: 30,000 L of diesel Fire




Note: Isopleths illustrate the heat of radiation contours: Red = 23 kW/m$^2$; Green = 12.6 kW/m$^2$; Blue = 4.7 kW/m$^2$.

Figure 4-4: Heat Radiation Contours for Scenario 6: Bitumen and Diesel Fire




Note: Isopleths illustrate the heat of radiation contours: Red = 23 kW/m$^2$; Green = 12.6 kW/m$^2$; Blue = 4.7 kW/m$^2$.

## 4.7 SUMMARY OF RESULTS

The nearest identified receptor is located approximately 170 m southwest of the subject site. The pool fire results illustrated in Figure 4-2 to
Figure 4-4 reveal that the heat radiation impacts from the possible pool fire scenarios would not affect the nearest resident or adjacent industrial premises. Therefore, there is no credible risk of injury or fatality in residential or industrial areas from pool fires. Hence no further risk analysis of the identified pool fire scenarios is required as compliance with the DoP&E criteria has been provided.

## 4.8 DIESEL STORAGE AREA

A fault tree analysis was conducted using the following information:

- A study conducted by NASA for operators exposed to 80ºF (or 26.6ºC) shows that humans make 19 mistakes per 3 hours. This provides a probability figure of 0.002312, which would apply to entries relating to human error.

- The probability of a tanker hose failing and pipe failure were both assumed to be similar to a pipe joint failure occurring. Lees 1996 estimates a failure probability of 0.5 failures per $10^6$ hours for this event. This equates to a probability figure of 0.00438.

- Pump failure is estimated to be approximately $3 \times 10^{-5}$ per year and per pump, according to the information provided by the UK Health and Safety Executive (HSE 2010).

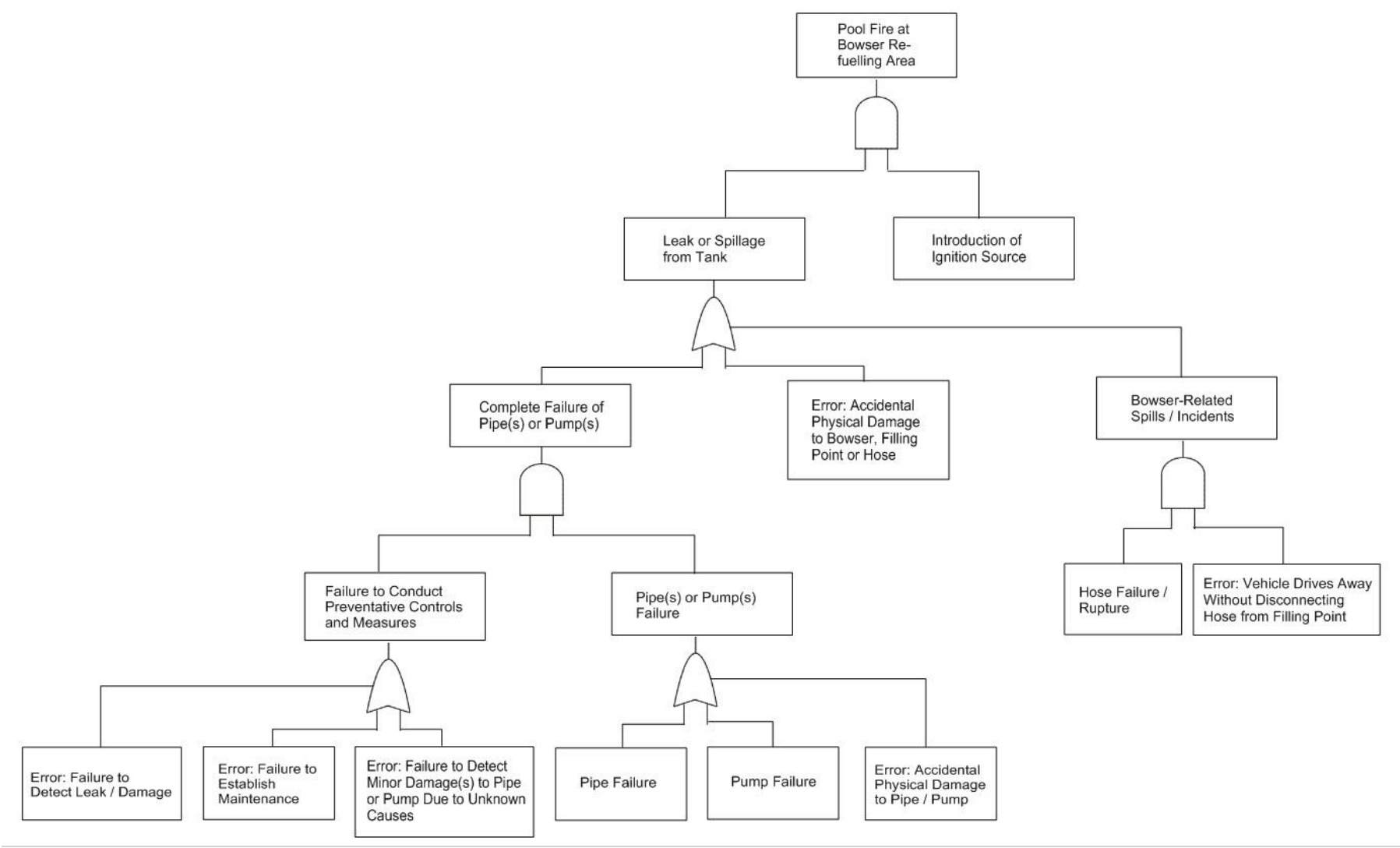
- Minor failure of a double-walled vessel was estimated by the UK Health and Safety Executive (HSE 2010) is $3 \times 10^{-5}$ per year and per vessel.

A fault tree diagram has been provided in Figure 4-5 below.

Using the data above, the estimated frequency for this event is approximately $5.41 \times 10^{-6}$, which is equivalent to 5.41 in a million per year.

Given that the likelihood criteria applicable for this event is 50 in a million per year, it can then be deduced that the criteria is readily satisfied considering that the frequency of this scenario is approximately 5 in a million per year.

Figure 4-5: Fault Tree Diagram – Pool Fire at Diesel Storage Area



## 4.9 DISCUSSION OF RESULTS

The TNO Effects modelling program estimates that the heat radiation effects from the possible pool fire scenarios can extent up to 65.5 m away from the pool fire source and not cause any off-site impacts. Therefore, there is no credible risk of injury or fatality to off-site premised including residential or industrial areas from pool fires. Hence no further risk analysis of the identified pool fire scenarios is required as compliance with the DoP&E criteria has been provided.

Likelihoods of the examined events were identified to be well below the likelihood criteria adopted from the DoP&E's HIPAP guidelines. Hence, further assessment and additional safety controls were deemed not required. With this, the proposed development satisfies the requirements proposed by the DoP&E guidelines.

- Recommendations have been provided in the next section, which ensures that the likelihood of potential hazardous events are mitigated and minimised as much as practicable until the end of the proposed development's lifespan

## 4.10 OTHER CONSIDERATIONS

Given the size of the facility, the amount of dangerous goods handled, and the simplistic operations established on site, no other considerations were necessary to be accounted for in this study.

## 4.11 IDENTIFICATION OF FIRE SAFETY CONTROLS AND MEASURES

The following measures were proposed as recommendations from the PHA, which are relevant to this study:

- Tight security of the site at all times must be established, preventing any incidents that could lead to a possibility of an accidental fire event. Management and staff must establish a protocol for the subject site to minimise these events, and special attention must be placed on the storage areas of the large quantities of dangerous goods on site;

- Fire extinguishers and spill control kits are to be provided near the high spill risk areas such as areas where handling of diesel would be conducted;

- Strict control of ignition sources to be enforced on site, especially near the diesel storage tank;

- Hot Work Permit;

- Register of Fire Extinguishers Available on site;

- Fire protection equipment are to be installed in accordance with the following standards:
  - AS 2441:2005 – "Installation of Fire Hose Reels"; and
  - AS 2444:2001 – *"Portable Fire Extinguishers and Fire Blankets - Selection and Location."*

- Fire services at the site are to be maintained in accordance with AS 1851:2012 - *" Routine service of fire protection systems and equipment";*

- Specific on-site personnel are to be trained in specific site procedures, emergency procedures and the use of fire extinguishers and hose reels; and

- Vegetation clearance within the predicted heat contour areas.

The following is a summary of the safeguards that are included in the design and operation of the site:

- Bitumen storage tanks:
  - Tanks are made to satisfy a recognised international standard such as API 650 and API 653. Tanks are re-inspected every ten years. Tanks will also need to be inspected at least 5 yearly to ensure there is no build-up of deposits as these can ignite if exposed to sudden changes in temperature;
  - Tanks are placarded in accordance with the ADGC Seventh Edition and satisfying requirements in the Work, Health and Safety Regulations, 2017;
  - Fill pipes and distribution pipes are labelled;
  - Tanks and the piping system are thermally insulated and completely covered in metal sheathing with no gaps remaining;
  - Transfer pump(s) are located in a bunded and weather protected area;
  - Each tank has a level gauge;
  - Each tank has an access ladder to the man hole which has a hinged cover;
  - Each tank has high level alarms – one at the set level for filling and then a further alarm set at an overfill level which also interlocks with an audible sound and flashing light to warn the tanker driver that filling of this tank is to stop.
- A set of work procedures will need to be prepared that detail maintenance of the bitumen storage system;
- A detailed Emergency Plan in accordance with the Guidelines of Fire and Rescue NSW.

# 5. FIRE PREVENTION STRATEGIES AND MEASURES

## 5.1 BUILDING CLASSIFICATION AND CONSTRUCTION

The proposed facility will consist of mostly sealed outdoor areas a two building for a small office/laboratory. The construction involved will be relatively simple as it will only require the construction of piers or a base slab for the plant, a ramp for the loader and bins for raw materials, and the construction of the two conventional buildings for the workshop (pre-fabricated shed) and office/laboratory.

The building on site would be classified as Class 8 as defined by the Building Code of Australia (BCA):

> *Class 8: a laboratory, or a building in which a handicraft or process for the production, assembling, altering, repairing, packing, finishing, or cleaning of goods or produce is carried on for trade, sale, or gain.*

Appropriate fire ratings would be applied to buildings on site, in accordance with the BCA. Fire services shall also adhere with BCA and with the relevant Australian Standards.

## 5.2 MATERIALS HANDLING AND STORAGE

Bitumen will be stored in heated tanks which are maintained at temperatures above 150°C using no direct flame heating to prevent ignition. These will be located within a bunded area. These tanks will be designed to comply with relevant Australian Standards.

The pumps used for the transfer of bitumen will be located within pump cabinets to isolate any leakages.

The piping used for the transfer of materials will be designed to comply with relevant Australian Standards and will be stored in bunded areas wherever possible.

The diesel and emulsion tanks will have sufficient bunding constructed using reinforced concrete slabs with concrete block walls in accordance with AS 1940-2017 to contain at least 110% of maximum storage.

## 5.3 INSPECTION AND MAINTENANCE

All tanks, pumps, pipes, vents, and control instrumentation will be inspected and maintained regularly to prevent leakages and faults. Bunding drains and vent valves will be plugged during normal operating conditions to prevent the release of any leakages or spills that may occur.

Bitumen deposits formed in bitumen tanks will be removed at least every ten years during tank shutdowns when tanks are cool to prevent the self-ignition of bitumen.

## 5.4 HOUSEKEEPING AND TRAINING

There will be a control of ignition sources throughout the site to prevent accidental ignitions of combustible or flammable substances. Any spills will be cleaned up immediately by trained staff using readily available spill kits around the site.

A 10 KPH speed limit will be enforced on site to prevent major vehicle accidents. Staff and truck drivers will be trained in the use of the bunded spray up platform. All plant personnel and drivers will also be briefed on the use of the bitumen unloading area and any necessary precautions they may need to take. Tank operators will be trained in the use of the Bitumen Unloading Procedure. Hot work permits will be required on site. Specific on site personnel are to be trained in specific site procedures, emergency procedures and the use of fire extinguishers and hose reels.

Tight security of the site at all times must be established, preventing any incidents that could lead to a possibility of an accidental fire event. Management and staff must establish a protocol for the subject site to minimise these events, and special attention must be placed on the storage areas of the large quantities of dangerous goods on site.

Vegetation will be cleared or maintained appropriately within the predicted heat contour areas.

## 5.5 EMERGENCY PLANS AND PROCEDURES

An Emergency Plan will be prepared for the proposed facility covering aspects of fire prevention and protection.

# 6. FIRE DETECTION AND PROTECTION

Periodic patrolling and attentiveness by management and staff operating around bitumen and diesel storage areas will allow detection of any odorous leakages.

## 6.1 FIRE HYDRANTS

As stated by the Building Code of Australia in regards to fire hydrants:

*(a) A fire hydrant system must be provided to serve a building –*
*(i) having a total floor area greater than 500 $m^2$; and*
*(ii) where a fire brigade is available to attend a building fire*

*(b) The fire hydrant system –*
*(i) must be installed in accordance with AS 2419.1*

The facility will have a hydrant system meeting the requirements of Clause 3.3 (open yard protection) of AS 2419.1-2021. There is a 150 UPVC Class 12 water main with three street hydrants with a located within close proximity to the site on the opposite side of Tom Thumb Avenue. All points on the site are within 120m of a street hydrant. There will also be a fire hydrant located on site within close proximity to the asphalt plant with a "Class B" foam attachment for any potential "Class B" fires.

### 6.1.1 Hydrant Available Pressure and Flow

The Australian Standard *AS 2419.1 – 2021 Fire hydrant installations – System design, installation and commissioning* provides guidance in determining the pressure and flow requirements for fire hydrants in NSW. This guideline states that the minimum fire hydrant outlet flow rate required is 10 L/s with a minimum residual pressure of 150 kPa for feed fire hydrants (unassisted) and 250 kPa for attack fire hydrants (unassisted).

A pressure and flow data check will need to be made prior to construction.

## 6.2 FIRE AND EXPLOSION SUPPRESSION

Bitumen tanks will have frangible roofs and large diameter emergency vents to prevent the potential for overpressure explosions, and level monitoring and alarm systems to prevent tank overflow.

## 6.3 FIRE SPRINKLERS

Fire sprinklers were not considered necessary for the development, given the nature of the proposed operations, the type of raw materials and products handled, and the amount of dangerous goods stored on site.

No standards and guidelines were also found to be relevant that indicates the need for fire sprinklers.

## 6.4 AVAILABLE WATER SUPPLIES

This would be assessed during preparation of the design of the site for construction.

# 7. FIRE SERVICES LAYOUT

A detailed fire services layout would be provided with the Emergency Plan.

# 8. CONTAINMENT OF CONTAMINATED FIRE FIGHTING WATER

The site does not have fire fighting water containment. A stormwater isolation valve will be provided that will contain onsite stormwater including water stored withing onsite detention tank (50m$^3$).

## 8.1 ACCESS TO FIRE SERVICES DURING A FIRE EVENT

### 8.1.1 Fire Hydrant

Three (3) fire hydrants would be provided. This information would be included in the Emergency Plan.

### 8.1.2 Fire Hose Reels

Hose reels for buildings on site would be provided in accordance with the BCA and the relevant Australian Standard.

If a fire event occurs in one of the buildings on site, it is expected that the only hose reel(s) that can be utilised would be the reels located within the building, as per the Australian Standards.

This information would be included in the Emergency Plan.

### 8.1.3 Fire Sprinklers

Fire sprinklers do not exist on site and are not required as part of the proposed development.

### 8.1.4 Fire Extinguishers

Fire extinguishers shall be installed in buildings on site in accordance with the BCA.

This information would be included in the Emergency Plan.

# 9. FIRST AID FIRE PROTECTION

## 9.1 FIRE EXTINGUISHERS

Fire extinguishers and spill control kits are to be provided near the high spill risk areas such as areas where handling of diesel would be conducted. Fire protection equipment will be installed in accordance with the following standards:

- AS 2441:2005 – "Installation of Fire Hose Reels"; and
- AS 2444:2001 – *"Portable Fire Extinguishers and Fire Blankets - Selection and Location."*

Fire services at the site are to be maintained in accordance with AS 1851:2012 - *"Routine service of fire protection systems and equipment".* A register of fire extinguishers available on the site will be maintained.

A number of fire extinguishers will be installed in the office, lunch room, adjacent to the exterior electrical switchboard and within the workshop.

There will be fire hose reels located externally on each building

## 9.2 FIRE HOSE REELS

As stated by the Building Code of Australia in regards to fire hose reels:

*(a) A fire hose reel system must be provided –*
*(i) to serve the whole building where one or more internal fire hydrants are installed; or*
*(ii) where internal fire hydrants are not installed, to serve any fire compartment with a floor area greater than 500 $m^2$*
*(b) The fire hose reel system must –*
*(i) have fire hose reels installed in accordance with AS 2441*
*(c) Fire hose reels must be located internally, externally or in combination, to achieve the system coverage specified in AS 2441*

#### 9.2.1.1 Hose Reel Available Pressure and Flow

The Australian Standard *AS 2441 – 2005 Installation of fire hose reels* provides guidance in determining the pressure and flow requirements for hose reels. This standard states that the discharge rates from hose reels should achieve a minimum discharge inlet pressure of 220 $\pm$10 kPa at flow rates of 0.33 L/s (for a 19 mm nominal hose diameter) and 0.41 L/s (for a 25 mm nominal hose diameter).

## 9.3 WARNING SIGNS

Exit signs would be provided in all buildings, in accordance with the BCA.

Dangerous goods placarding would also be provided.

Operational aspects that present a safety concern (occupational or environmental) shall also be provided with warning signs.

These signs shall be erected and maintained in accordance with the Safety Management System (SMS) to be implemented on site.

## 9.4 TRAINING AND AWARENESS

An Emergency Plan would be prepared and this would provide procedures related to fire control.

A safety management system will be needed for the operation of the site. This could include induction for employees and contractors.

This concludes the report.

| | | |
|---|---|---|
| Francesco Faustino | Vida Nodehi | R T Benbow |
| Graduate Environmental Scientist | Graduate Environmental Scientist | Principal Consultant |

# 10. LIMITATIONS

Our services for this project are carried out in accordance with our current professional standards for site assessment investigations. No guarantees are either expressed or implied.

This report has been prepared solely for the use of Stateline Asphalt Pty Ltd , as per our agreement for providing environmental services. Only Stateline Asphalt Pty Ltd is entitled to rely upon the findings in the report within the scope of work described in this report. Otherwise, no responsibility is accepted for the use of any part of the report by another in any other context or for any other purpose.

Although all due care has been taken in the preparation of this study, no warranty is given, nor liability accepted (except that otherwise required by law) in relation to any of the information contained within this document. We accept no responsibility for the accuracy of any data or information provided to us by Stateline Asphalt Pty Ltd for the purposes of preparing this report.

Any opinions and judgements expressed herein, which are based on our understanding and interpretation of current regulatory standards, should not be construed as legal advice.

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30 October 2023

P2661 PMA 133 Somersby Falls Road assessment

PM Anderson Consulting

**Attn: Paul Anderson**

Dear Paul

**Traffic Impact Statement, proposed asphalt batching plant, 133 Somersby Falls Road, Somersby**

Further to your email and plans, we have now completed our site visit and traffic surveys and a review of the plans and information for the proposed development of an asphalt batching plant within the Somersby Business Industrial area to the west of Gosford, NSW close to the M1 Pacific Motorway (Figure 1 and 2).

This traffic impact assessment has been prepared in accordance with the Austroads Guidelines and the Guide to Traffic Generating Developments published by TfNSW.

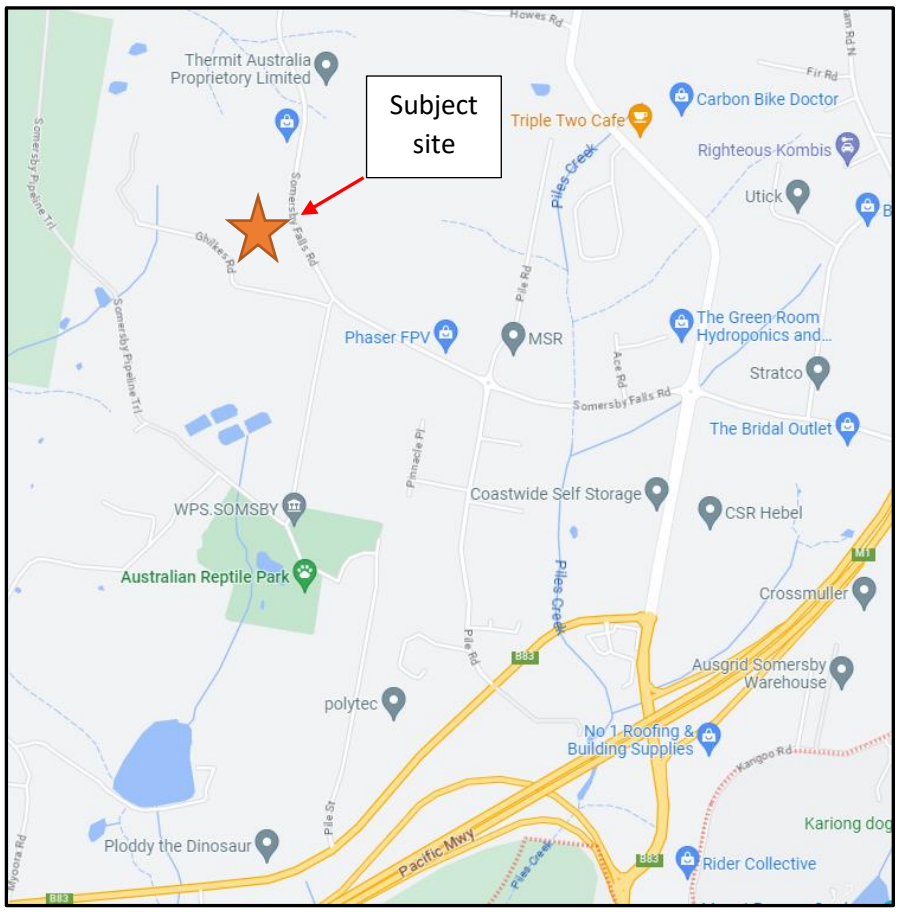


*Figure 1 – site location within context of local road network*

*Figure 2 – subject site and access frontage*

### *Project Description*

The project allows for the construction and operation of an asphalt batching plant that will produce up to 200,000 tonnes per annum (tpa), a (Reclaimed Asphalt Pavement) RAP yard, office and depot, together with on-site parking. All access is via Somersby Falls Road. The plant crushes raw materials, including reclaimed asphalt pavement, and combines them with new materials in correct proportions, heats them in a drum dryer, adds binder bitumen, and carefully controls the temperature to produce a workable final product which is transferred directly into hotmix trucks. The site will operate 24/7 and shall have 50 staff working a number of shifts over the 24 hour operational period.

### *SEARs*

SEARs have been issued for the project and are presented below, together with the relevant section of the report and summary response as appropriate.

| Issue | Response / section |
|---|---|
| Identify Annual Average Daily Traffic (AADT) volumes with percentage heavy vehicles along the transport route/s and diagrammatically demonstrate AM and PM peak hour movements at key intersections | AM peak traffic flows surveyed. PM peak traffic demands for the project shall be very low and no surveys completed accordingly in the PM peak.<br><br>Refer section 2.3.1 and 2.3.5. |
| Background traffic data from published sources and/or recent survey data. The source of data and any assumptions are to be clearly explained and justified, including the growth rate applied to the future horizon | Traffic surveys completed by Seca Solution for the project.<br><br>Background growth value of 4% per annum applied for future 2033 Sidra assessment.<br><br>Refer Section 2.3.1. |

| | |
|---|---|
| The volume and distribution of any existing and proposed trips to be generated by the construction, operational and decommission phases of the development | Construction and operational traffic demands determined. Any decommissioning will be completed beyond 10 years and not relevant to this assessment.<br><br>Refer Section 4.1 and 4.4.3 |
| Traffic analysis of any major / relevant intersections impacted, using SIDRA | Refer section 4.4.2 |
| Identify and assess the implications of any road and / or rail projects that will potentially be occurring simultaneously with the scheduling of the OSOM movements along the proposed OSOM routes | No rail line in vicinity of the subject site |
| An assessment should be undertaken as a part of the EIS and TIA, to identify where projects will have overlapping construction periods within the vicinity of the project site | No other projects noted in the immediate vicinity of the subject site |
| The cumulative impacts from traffic generated from the construction workforces in terms of the routes, access, AM/PM peaks where there is overlap with other projects | No other projects noted in the immediate vicinity of the subject site |
| The cumulative impacts of heavy vehicle movements in terms of AM/PM peaks and routes where there is an overlap with other projects | No other projects noted in the immediate vicinity of the subject site |
| Cumulative impacts and consideration in relation to the timing of movements of OSOMs where other projects will be utilising the same routes as proposed for this development | No other projects noted in the immediate vicinity of the subject site |
| Any potential for future expansion of the subject development and the potential impacts any such expansion would have on the development, the broader road network and the AM/PM peaks | No expansion proposed. If any future expansion is proposed then a separate application will be prepared and assessed at that time |

Impact Assessment based on Guide to Traffic Generating Developments (TfNSW)

| Item | Comment |
|---|---|
| *2.1.1 Site Location and Access* | The subject site is located at 133 Somersby Falls Road, Somersby with the project to have a single vehicle access direct to Somersby Falls Road only. |
| *2.2.1 Road Hierarchy* | The main road through the locality is the **M1 Pacific Motorway**, which runs in a north-south direction and provides an important road connection along the east coast of Australia. It connects through to Sydney and beyond to the south and towards Newcastle and beyond to the north. It provides a minimum of two lanes of travel in both directions to the north of the locality and three lanes to the south, with restricted access to side roads via grade separated interchanges. It operates under the posted speed limit of 110 km/h and carries high traffic volumes, especially between the Central Coast area and Sydney.<br>Access from the M1 Pacific Motorway is available via **Wisemans Ferry Road** which connects with the Central Coast Highway allowing for direct connection towards Gosford as well as connecting to the M1 Motorway. Wisemans Ferry Road connects with Somersby Falls Road at a four leg roundabout to the east of the site.<br><br>The **Central Coast Highway** provides a direct connection to Gosford and provides a minimum of 2 lanes of travel in both directions, with additional lanes at intersections to maintain capacity and reduce delays / congestion. It has been upgraded through Gosford and beyond to ensure capacity is |

| Item | Comment |
|---|---|
| | improved and it provides a feeder access road to the various suburbs and road network throughout the Central Coast.<br><br>Wisemans Ferry Road / Central Coast Highway connects with the M1 Motorway via a grade separated interchange, with access ramps permitting connection in all directions between the two roads.<br><br>Wisemans Ferry Road provides a single lane of travel in both directions with a raised central median. It allows for parking to both sides of the road for much of its length and provides a key access into the Somersby Industrial Park. It carries a high volume of both light and heavy traffic. It connects with Somersby Falls Road via a single lane circulating roundabout.<br><br>**Somersby Falls Road** provides access to the subject site, with a single lane of travel provided in both directions with kerb side parking provided to both sides of the road. It provides access to the various industrial facilities in the Industrial Park with these users having direct access to this road together with other users connecting via the side roads to Somersby Falls Road. It operates under the posted speed limit of 60 km/h with no pedestrian facilities provided. It provides a carriageway width of 11.0 metres and the Industrial area extends to the north of the site for approximately 700 metres and then the road becomes rural in nature. |
| *2.2.2 Roadworks* | No road works are occurring within the general locality of the subject site. The road construction is in good condition and other than general maintenance Council have no requirement to upgrade this length of road. |
| *2.2.3 Traffic Management Works* | None noted. |
| *2.2.4 Pedestrian and Cycling Facilities* | There are no footpaths or cyclist facilities within the general locality of the subject site. Given the relative isolation of the site from Gosford and other urban areas it can be seen that there are minimal pedestrian demands in the area. Pedestrians are able to walk along the verges to both sides of the roads as required or to the side of the road.<br>Cyclists are able to ride on the road as required. |
| *2.2.5 Public Transport* | The site is not serviced by trains.<br>There is a regular bus route along Pile Road with a bus stop on the corner of Pile Road and Somersby Falls Road. Bus Route 33 operated by Busways provides a regular service in the morning and afternoon which connects to the train station at Gosford. |
| 2.3 Traffic Flows | |
| *2.3.1 Daily Traffic Flows* | Daily traffic flows in the vicinity of the site are high along the M1 Motorway, reflective of its importance in the road network. Historic traffic provided by TfNSW indicates that the daily traffic flows along the M1 are in the order of 62,411 vehicles per day in 2016.<br>As part of the study work, Seca Solution collected traffic data at the intersection of Somersby Falls Road and Wisemans Ferry Road. These counts were timed to coincide with the typical morning peak period, covering the period 7.00 to 9.30 AM. The surveys showed that the two-way flows on Somersby Falls Road to the west of Wisemans Ferry Road |

| Item | Comment |
|---|---|
| | in the AM peak (7.45-8.45 AM) was 303 vehicles whilst the two way flows on Wisemans Ferry Road south of the roundabout were 593 vehicles.<br><br>Based on this data and peak hour flows typically representing 10% of the daily flows, this would indicate that the daily traffic flow along Somersby Falls Road at its eastern end are in the order of 3,000 vehicles per day, which would decrease towards the subject site as the extent of development and hence traffic demands decrease. Daily traffic flows along Wisemans Ferry Road to the south of the roundabout could be in the order of 6,000 vehicles per day. |
| *2.3.2 Daily Traffic Flow Distribution* | The daily traffic flows in the vicinity of the subject site are reasonably well balanced.<br>Morning flows on the M1 Motorway are bias southbound towards Sydney for commuter trips with the reverse bias in the afternoon. The traffic data along Somersby Falls Road shows a bias westbound in the AM peak reflective of commuter traffic movements. The reverse would occur in the PM with local industrial users closing at the end of the day. |
| *2.3.3 Vehicle Speeds* | No speed surveys were completed as part of the study work. However, it is considered that the majority of drivers observe the posted speed limit, especially heavy vehicles. Due to the road alignment and wide pavement, vehicles could be encouraged to speed outside the working week when the interaction between driveways, parked cars and heavy vehicle movements is less. |
| *2.3.4 Existing Site Flows* | The subject site is currently un-occupied and therefore does not generate any traffic flows. |
| *2.3.5 Heavy Vehicle Flows* | There are a high number of heavy vehicle movements in the locality of the subject site, associated with other users across the Somersby Industrial Area. There are a wide range of users across the business area which require heavy vehicle access including distribution warehousing. The peak hour surveys indicate that the heavy vehicle content is in the order of 23% of the total flows. |
| *2.3.6 Current Road Network Operation* | The road network in the vicinity of the subject site currently operates well with minimal delays and congestion. |
| 2.4 Traffic Safety and Accident History | The road network adjacent to the site offers a safe road environment, with wide pavement width and straight roads. The surrounding intersections are well laid out and provide good visibility on all approaches.<br><br>Traffic accident data provided by the TfNSW shows that there have been no accidents in the immediate vicinity of the subject site and a single vehicle crash to the south of the site near Myoora Road, involving a vehicle running off the road resulting in a serious injury. Overall there have been less than 5 accidents within the Somersby Industrial Area reflecting the general high standard of design for the roads and intersections. |
| 2.5 Parking Supply and Demand | |
| *2.5.1 On-street Parking Provision* | Parking is generally permitted along both sides of the local roads in the general vicinity of the subject site, with normal restrictions at driveways and intersections. |

| Item | Comment |
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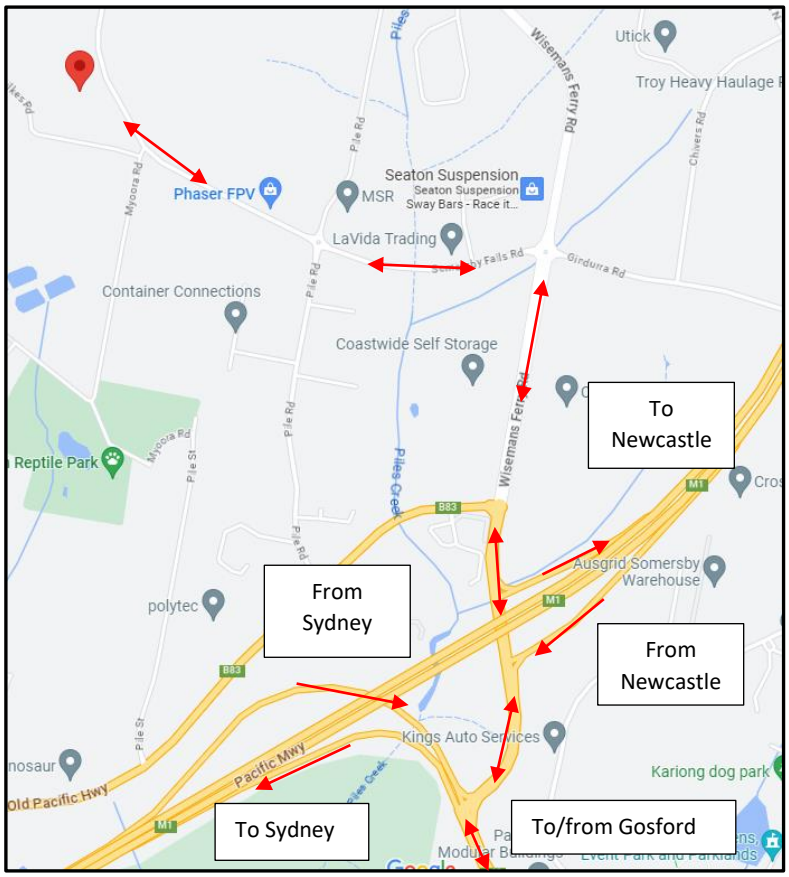
| | |
| *2.5.3 Parking Demand and Utilisation* | There was no demand for on street parking noted adjacent to the subject site on Somersby Falls Road during the site work due to lack of development here. Further south there is significant demand on the local roads within the industrial area associated with local workers. |
| *2.5.4 Set down or pick up areas* | There are no designated set down areas in the immediate locality of the subject site. |
| 2.6 Public Transport | |
| *2.6.1 Rail Station Locations* | The nearest railway station is located at Gosford, approximately 8 kms east of the subject site. |
| *2.6.2 Bus Stops and Associated Facilities* | Bus stops are provided to both sides of Somerby Falls Road south of the subject site near the Pile Road intersection, adjacent to the current Borg operations. The bus stops provide a sign only with no seating or shelter. |
| *2.6.3 Pedestrians* | There are no footpaths provided along the roads in the general locality of the subject site. There are very low pedestrian demands in this location and pedestrians can walk on the verges or on the side of the roads as required. |
| 2.7 Other Proposed Developments | No other significant developments noted in the immediate locality of the subject site. |
| ***The Development*** | |
| *3.1 The Development* | The development allows for the construction and operation of an asphalt batching plant that will produce up to 200,000 tonnes per annum (tpa), a (Reclaimed Asphalt Pavement) RAP yard, office and depot.<br><br>The plant crushes raw materials, including reclaimed asphalt pavement, and combines them with new materials in correct proportions, heats them in a drum dryer, adds binder bitumen, and carefully controls the temperature to produce a workable final product which is transferred directly into hotmix trucks.<br><br>The site will have staff of 50 spread over various shifts allowing for 24/7 operation. Of these 12 are based on site during the day (including office staff) with the balance being drivers coming and going to drop off and pick up materials. Parking for staff shall be provided on site. |
| *3.1.1 Nature of Development* | Industrial. |
| *3.1.2 Access and Circulation Requirements* | All vehicles will be required to enter and exit the site in a forward direction. The vehicle driveway has been designed and constructed in accordance with AS2890.2 -Off-street Commercial Vehicle Facilities suitable to cater for heavy vehicle movements.<br>It is noted that the use of the site has specific requirements with regard to access and parking of vehicles on the site, and that these operational requirements impact on the layout within the site to ensure heavy vehicles can access and manoeuvre around the site in a safe and appropriate manner. |
| 3.2 Access | The subject site has an access point onto Somersby Falls Road on its eastern boundary. |

| Item | Comment |
|---|---|
| | The access point caters for all turning movements, with the majority of traffic movements to approach the site from the south with a left turn in movement and right turn out of the site for the outbound movement. Some traffic associated with staff may approach from the north depending upon their origin/destination.<br>The access has been designed to provide for the swept path of trucks to access from Somersby Falls Road. |
| *3.2.1 Driveway Location* | The development has a single driveway onto Somersby Falls Road. The driveway provides access for all vehicles including light vehicles which will enter the car park developed to the front of the site.<br><br>The driveway is 12.8m wide and allowing for the width of Somersby Falls Road being 11m wide this is considered acceptable to large vehicles (up to 25m) to enter the site in accordance with AS2890.2. Attachment A provides the site plan with swept paths of the proposed vehicles entering the access. |
| *3.2.2 Sight Distances* | The access driveway to Somersby Falls Road is located on a reasonably straight section of road alignment with an uphill gradient for northbound traffic. The location of the driveway ensures good visibility for drivers exiting the site to observe another vehicle approaching along the roadway. For the posted speed limit of 60 km/h along the frontage road, AS2890.1 specifies the minimum stopping sight distance at the driveway as being 65 metres with 83 metres desirable (light vehicles only). For heavy vehicles, the minimum stopping sight distance is specified by AS2890.2 as being 83 metres. A review of the sight lines for this driveway has been completed on site with visibility exceeding 100 metres to the left and 350 metres to the right for exiting drivers onto Somersby Falls Road.<br><br>It is noted that the trucks exiting the site have a higher vantage point for drivers which would improve the sight lines for drivers and improve road safety implications. |
| *3.2.3 Service Vehicle Access* | The site layout allows for the entry and exit movements of large semi-trailers to the site. This also ensures that all service vehicles can safely enter the site and circulate as required. It is considered that all servicing requirements can be contained on the site with no external impacts, the servicing requirements being primarily for the office and amenities areas.<br><br>The trucks associated with deliveries of product to the site shall be serviced off site. |
| *3.2.4 Queuing at entrance to site* | Allowing for the majority of traffic movements to have an origin/destination to the south/east of the site inbound movements will be a left in creating minimal delays and queues. Outbound movements will generally be a right turn out of the site however allowing for the low flows along Somersby Falls Road there is minimal delays expected. Any queues associated with vehicles exiting the site will be contained within the site and do not impact upon the external road network. |
| *3.2.5 Comparison with existing site access* | There is no access to the site off Somerby Falls Road currently. |

| Item | Comment |
|---|---|
| *3.2.6 Access to Public Transport* | The site allows for connection via the existing bus service that runs along Pile Road. However, with the shift hours operated by the site it is considered that the use of these infrequent buses would not be high by the workers and that there would be minimal public transport demand generated by the proposed development. |
| 3.3 Circulation | |
| *3.3.1 Pattern of circulation* | Heavy vehicles will be able to circulate as required within the subject site to be un-loaded and loaded. The size of the site and the open apron area will allow for ease of circulation around the site and ensure vehicles can enter and exit in a forward direction. |
| *3.3.2 Road width* | The driveway into the site provides a width of 12.5 metres to allow for 2-way truck movements. Beyond this access, the apron area for trucks covers the width of the site and allows for the unique operations on the site for the end user. |
| *3.3.3 Internal Bus Movements* | No internal bus movement will be required for this development. |
| *3.3.4 Service Area Layout* | No specific operational service area will be provided with a standing area available if required. |
| 3.4 Parking | |
| *3.4.1 Proposed Supply* | The plans allow for 12 parking spaces to the front of the site in an area separate to the truck movements. |
| *3.4.2 Authority Parking* | The Council DCP does not provide parking rates for an asphalt facility. Parking is therefore determined based upon the day to day staff levels for the project. |
| *3.4.3 Parking Layout* | The car park layout has been designed in accordance with AS2890 with a single disabled parking space and direct pedestrian access to the office building for staff accessing the site. |
| *3.4.4 Parking Demand* | The project will see a maximum of 12 staff located on site at any one time and assuming all staff drive to the site will require 12 parking spaces. The balance of the staff are drivers who have parked elsewhere when picking up their truck to then travel to and from the site. The site provides 12 parking spaces on site, that shall accommodate the staff parking needs. Normal parking demands can therefore be accommodated within the site. |
| *3.4.5 Service Vehicle Parking* | No dedicated parking area required for servicing on the site. There is an area suitable for the parking/holding of trucks within the site to the rear of the office. |
| *3.4.6 Pedestrian and Bicycle Facilities* | Pedestrian access through the site is controlled with no general public access. Staff movements are controlled by site management guidelines. Cyclists are able to access the site via the existing road network. Parking is available for staff if required within the site for bikes. |
| ***Traffic Assessment*** | |
| 4.1 Traffic Generation | The Guide to Traffic Generating Developments published by TfNSW does not provides advice on traffic movements for the operational characteristics of the subject site. The subject site offers a very specific development. |

| Item | Comment |
|---|---|
| | The project team has assessed the projected traffic movements for the site, based on the maximum capacity for operations on site of 200,000 tonnes per annum of production.<br><br>Whilst the site will operate 24 /7, the traffic demands will be busier during the traditional working week Monday to Friday. On these days the truck movements are:<br><br>• 20 inbound trucks per day inbound with raw material (and corresponding outbound empty trucks)<br>• 29 outbound trucks per day with produce to market (and corresponding inbound empty trucks).<br><br>It is noted that the truck type for inbound raw material delivery and outbound produce delivery differ in size, with trucks varying from medium rigid trucks with 8 Tonnes of material through to semi-trailers with a load capacity of 36 tonnes.<br><br>In addition, there will be 20 inbound light vehicle movements associated with staff and a corresponding outbound movement. There may also be some movement during the day for staff associated with local trips e.g. lunch breaks. |
| *4.1.1 Other Developments* | No other significant developments currently occurring within the locality of the site. There is on-going industrial land being developed across the Somersby area as part of the overall masterplan for the site however in the immediate vicinity of the subject site no other projects are currently proceeding. |
| *4.1.3 Daily and Seasonal Factors* | It is not considered that there will be seasonal factors generally associated with the development on the site due to normal construction demands. There could be some reduction in traffic movements over the traditional Christmas and New Year break period.<br><br>The weekend traffic demands are lower, with the predicted truck movements being 5 inbound for raw material (and empty outbound) and 5 trucks for delivery of the produce (and 5 empty trucks inbound). |
| *4.1.4 Pedestrian Movements* | It is considered that the proposed development will not generate any pedestrian demands and that external pedestrian movements will be nil. There will be minimal internal pedestrian access available within the subject site and the facility's WHS management plan will provide for the safe movement of staff throughout the site. |
| 4.2 Traffic Distribution and Assignments | All traffic will enter and exit the site via Somersby Falls Road with traffic using the Central Coast Highway from the greater Gosford area, or the M1 Motorway from the north or south of the locality. Some traffic associated with staff may also access the site via Somersby Falls Road, however this is considered to be low. |
| *4.2.1 Origin / destinations assignment* | All traffic accessing the site from the external locations e.g. Greater Gosford and the M1 Motorway will access the site via Wisemans Ferry Road then turn at the roundabout to connect to Somersby Falls Road. |

| Item | Comment |
|---|---|
| | Traffic at the interchange of Wisemans Ferry Road and the M1 will be split between three directions with a potential equal split in each direction for material inbound and outbound. Outbound product will be dependant upon the end user demands.<br><br>  <br>Figure 3 - Access routes to and from subject site |
| 4.3 Impact on Road Safety | It is considered that the proposed development will have a minimal impact upon the road network in the general vicinity of the subject site. There is a minor hourly increase in traffic volumes generated by the development across the working week with 100 truck movements per day, spread over 24 hours. It is considered that some 80% of the activities will occur during the typical working day (8-5) giving 80 truck movements over a 9 hour day being in the order of 10 truck movements per hour, equally split inbound and outbound.<br><br>The roads in the general vicinity of the subject site have been designed to cater for the demands of the industrial park, are well laid out and the key intersections are controlled by roundabouts or traffic signals (for access to Gosford and south towards Sydney).<br><br>The access to the site is located on a straight section of road offering good visibility for drivers entering or exiting the site, with sight distances exceeding the requirements of AS2890.<br>Overall, it is considered that the development will have a minimal impact on road safety in this location. |

| Item | Comment |
|---|---|
| | |
| 4.4 Impact of Generated Traffic | |
| *4.4.1 Impact on Daily Traffic Flows* | Overall, the project shall generate up to 150 vehicle movements per day (24 hours) Monday to Friday and less than 50 vehicle movements per day (24 hours) on a Saturday and Sunday.<br><br>This would increase the daily flows from 3,000 vehicles per day on Somerby Falls Road to 3,150 Monday to Friday. Whilst representing an increase of 5% over the current flows, these flows will remain well within acceptable limits for this road. Whilst no daily limits are provided by the RTA Guide to Traffic Generating Developments, the hourly flows on this road would be less than 250 vehicles per hour per direction, well within its limits of 900 vehicles per direction.<br>Similarly, for Wisemans Ferry Road the daily flows could increase from 6,000 vehicles to 6,150 to the south of the roundabout with Somersby Falls Road, but will remain well within the hourly capacity for this road, with hourly flows of less than 380 vehicles per hour per direction, well within the limit of 900 vehicles per hour per direction..<br><br>Based on the hourly flows being acceptable it is considered that the daily increase in traffic flows will also have an acceptable impact. |
| *4.4.2 Peak Hour Impacts on Intersections* | The operation of the intersection of Somerby Falls Road and Wisemans Ferry Road has been observed on site and operates with minimal delays and queues in the AM peak periods. It is considered that the magnitude of traffic would be similar in the PM peak and the roundabout will continue to operate well.<br><br>Sidra modelling for this roundabout has been completed and the results of the modelling are presented below. The modelled scenarios are:<br>• Existing AM peak flows<br>• Existing AM peak flows plus development<br>• Future 2033 AM peak flows<br>• Future 2033 AM peak flows plus development<br><br>For the future 2033 design year, a background growth value of 4% per annum i.e. 40% over 10 years has been applied to allow for a conservative assessment, compared with normal background growth of 2% applied in NSW.<br><br>Due to the mature of the project, the extent of traffic demands in the PM peak on the local road network shall be low, typically only allowing for the staff movements and limited inbound and outbound traffic movements. Accordingly the critical morning peak period has been surveyed and Sidra modelling completed accordingly. |

| Item | Comment |
|---|---|

Table A – existing AM operations 2023

| Approach | Degree of saturation | Average delay (seconds) | Level of service | 95th percentile queue (metres) |
|---|---|---|---|---|
| Wisemans Ferry Road (south) | 0.316 | 6.8 | A | 16.8 |
| Gindurra Road | 0.180 | 5.8 | A | 7.9 |
| Wisemans Ferry Road north | 0.139 | 6.1 | A | 6.1 |
| Somersby Fall Road | 0.132 | 9.4 | A | 6.4 |

Table B – existing AM 2023 plus development

| Approach | Degree of saturation | Average delay (seconds) | Level of service | 95th percentile queue (metres) |
|---|---|---|---|---|
| Wisemans Ferry Road (south) | 0.340 | 6.7 | A | 19.1 |
| Gindurra Road | 0.185 | 6.0 | A | 8.1 |
| Wisemans Ferry Road north | 0.143 | 6.3 | A | 6.4 |
| Somersby Fall Road | 0.164 | 10.1 | A | 8.6 |

Table C – future 2033 AM base

| Approach | Degree of saturation | Average delay (seconds) | Level of service | 95th percentile queue (metres) |
|---|---|---|---|---|
| Wisemans Ferry Road (south) | 0.468 | 7.4 | A | 29.2 |
| Gindurra Road | 0.272 | 6.5 | A | 13.0 |
| Wisemans Ferry Road north | 0.214 | 7.0 | A | 10.2 |
| Somersby Fall Road | 0.211 | 10.6 | A | 11.2 |

<table>
<tr><th>Item</th><th>Comment</th></tr>
<tr><td></td><td>Table D – future 2033 AM plus development
<table>
<tr><th>Approach</th><th>Degree of saturation</th><th>Average delay (seconds)</th><th>Level of service</th><th>95th percentile queue (metres)</th></tr>
<tr><td>Wisemans Ferry Road (south)</td><td>0.504</td><td>7.4</td><td>A</td><td>33.9</td></tr>
<tr><td>Gindurra Road</td><td>0.282</td><td>6.8</td><td>A</td><td>13.5</td></tr>
<tr><td>Wisemans Ferry Road north</td><td>0.223</td><td>7.3</td><td>A</td><td>10.7</td></tr>
<tr><td>Somersby Fall Road</td><td>0.264</td><td>11.4</td><td>A</td><td>15.2</td></tr>
</table>
<br>It can be seen that the proposed development will have a minimal impact upon the operation of this intersection, with the modelling allowing for a conservative approach with 20 inbound and 20 outbound trucks per hour impacting upon this roundabout modelled, which is substantially greater than the expected demand of 5 inbound and 5 outbound trucks per hour. The results above demomsatre that the roundabout shall continue to operate to a high standard with level of service remaining at A for the future 2033 design year.<br><br>The light vehicle movements, associated with staff movements are split across 3 shift change times and shall have a minor impact upon the operation of this intersection, as these shifts will generally occur outside of the peak hours at this location.</td></tr>
<tr><td>4.4.3 Impact of Construction Traffic</td><td>All construction work will be contained within the site so will have minimal impact upon the external road network. There will be the requirement for some construction machinery to access the site and traffic associated with workers. The movement of construction heavy vehicle in and out of the site will managed with a Construction Traffic Management Plan to be prepared as part of the Construction Certificate stage of the project.<br>Parking for the construction staff can be provided on site or along the adjacent road network.<br><br>Construction activities shall require less traffic movements compared with the operations phase and similar truck movements, over a short duration of construction.</td></tr>
<tr><td>4.4.4 Other Developments</td><td>No other significant developments occurring in the immediate locality of the subject site.</td></tr>
<tr><td>4.5 Public Transport</td><td></td></tr>
<tr><td>4.5.1 Options for improving services</td><td>No requirements to improve services.</td></tr>
<tr><td>4.5.2 Pedestrian Access to Bus Stops</td><td>There is a bus stop to the south of the site which can be accessed along the existing verge if required.</td></tr>
<tr><td>4.6 Recommended Works</td><td></td></tr>
</table>

| Item | Comment |
|---|---|
| *4.6.1 Improvements to Access and Circulation* | The proposed site access offers safe and appropriate access. Heavy vehicles will be able to manoeuvre within the hardstand area which provided adequate width to cater for the turning movements. |
| *4.6.2 Improvements to External Road Network* | No external road works are required as part of this project. The current road network in the vicinity of the site operates well with minimal delays and congestion for all users. There is minimal impact associated with this development. |
| *4.6.3 Improvements to Pedestrian Facilities* | No upgrades required. It is considered that the proposed project will not generate external pedestrian movements. |
| *4.6.4 Effect of Recommended Works on Adjacent Developments* | No impact as no external works recommended. |
| *4.6.5 Effect of Recommended Works on Public Transport Services* | Nil |
| *4.6.6 Provision of LATM Measures* | None required |
| *4.6.7 Funding* | No external road upgrades required. |

*Photo 1 – View along Somersby Falls Road showing typical cross section.*

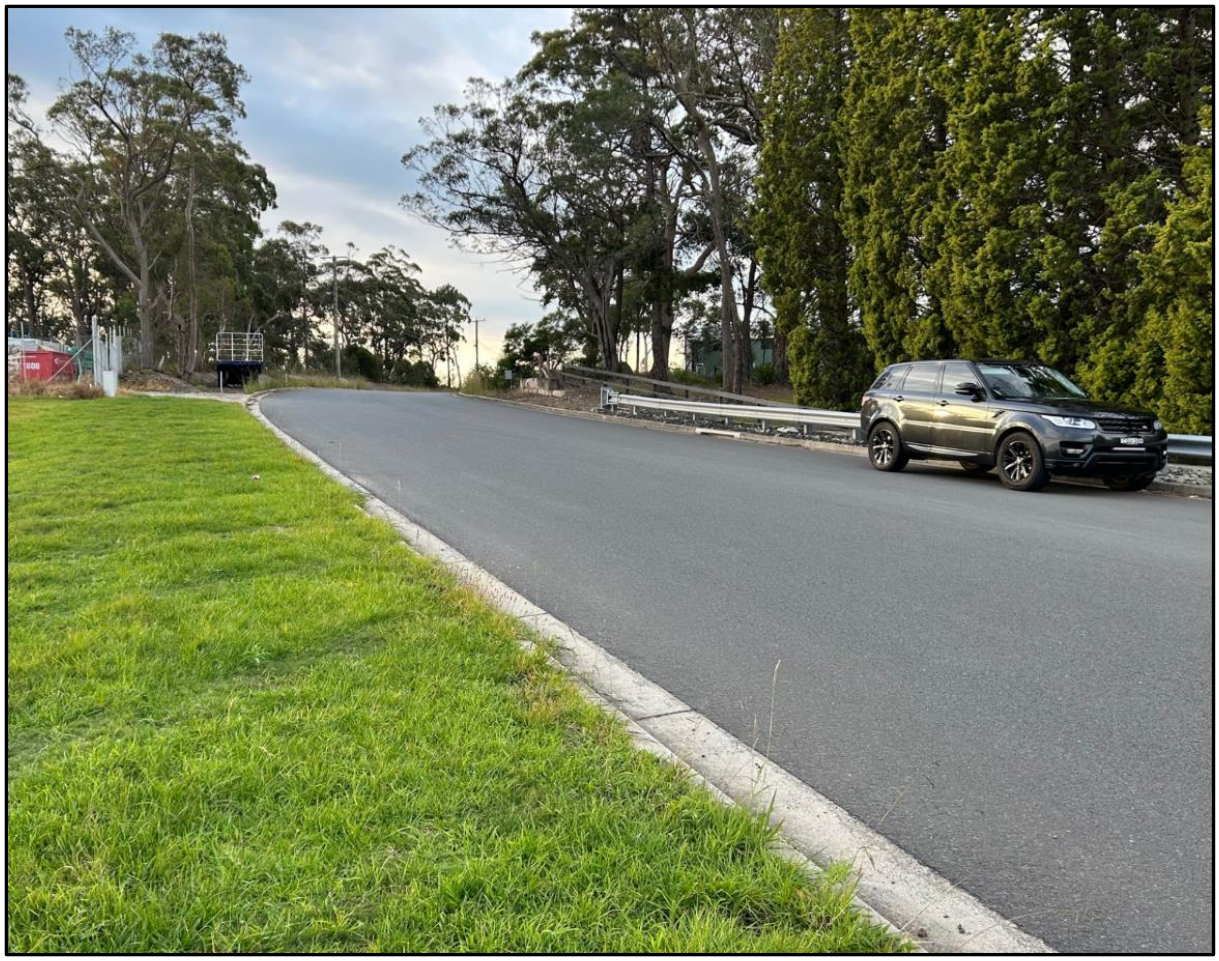


*Photo 2 – View to left for drivers exiting the site onto Somersby Falls Road in the vicinity of the site access.*

*Photo 3 – View to right for drivers exiting the site onto Somersby Falls Road in the vicinity of the site access.*

**Conclusion**

From the site work completed and the review of the project, it is considered that the proposed asphalt plant facility at 133 Somersby Falls Road, Somersby will have a minimal and acceptable impact upon the local road network in the general vicinity of the subject site.

The additional traffic being generated by the proposal will have a minor impact upon the local road network, with 10 truck movements per hour accessing the site (5 inbound and 5 outbound) across 24 hours and 7 days a week. This shall have a minor and acceptable impact upon the operation of the intersection of Somersby Falls Road and Wisemans Ferry Road.

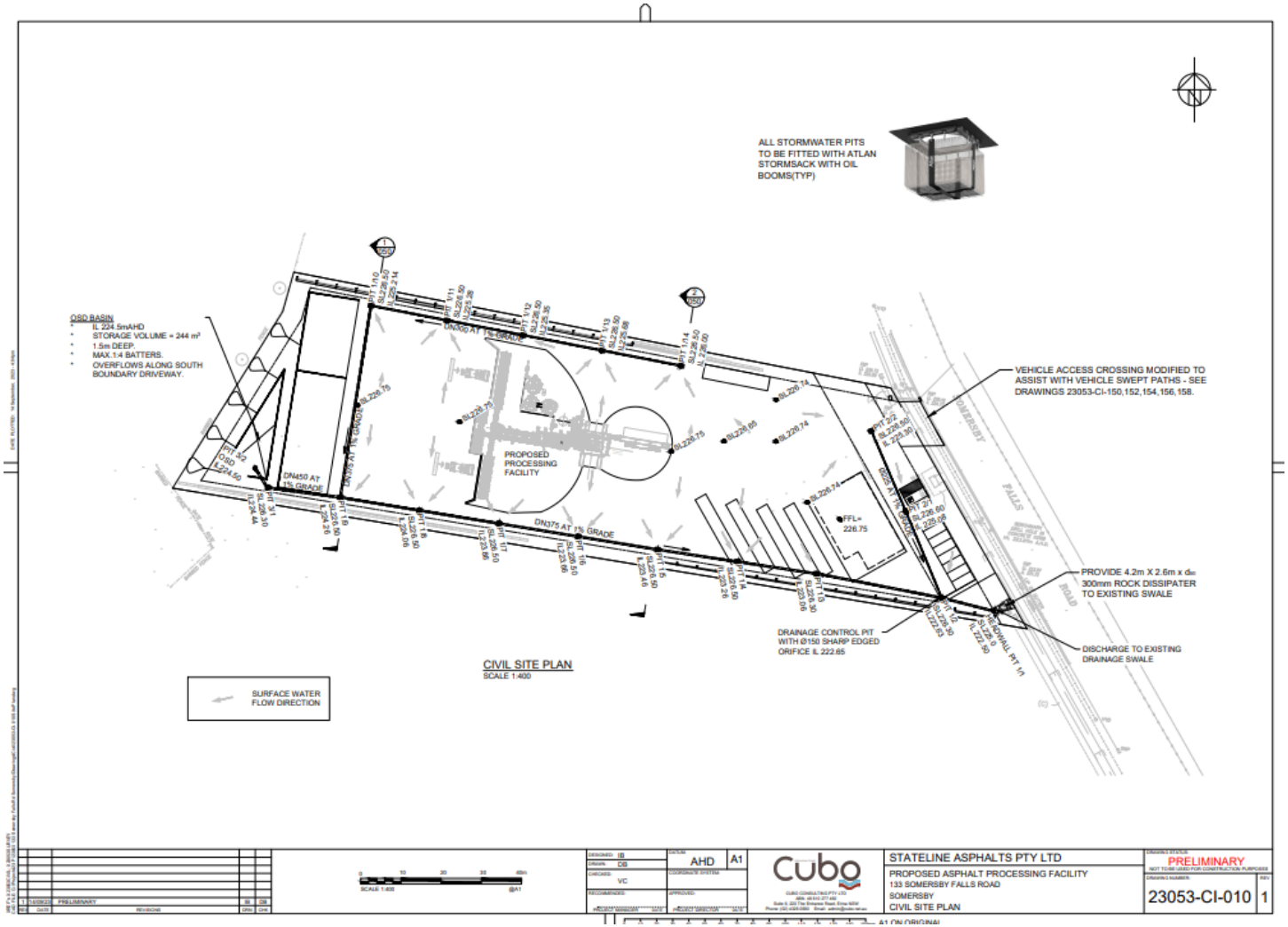
The site access complies with AS2890 and can operate in a safe manner allowing for vehicles to enter and exit the site in a safe manner. The key intersection of Somersby Falls Road and Wisemans Ferry Road has been observed on site during both the morning peak period and the current operation is very good with minimal delays and congestion.

Parking provided on site is suitable to accommodate the staffing requirements on site.

It is concluded that the development should be approved on traffic and access grounds.

Sean Morgan, ***Director***

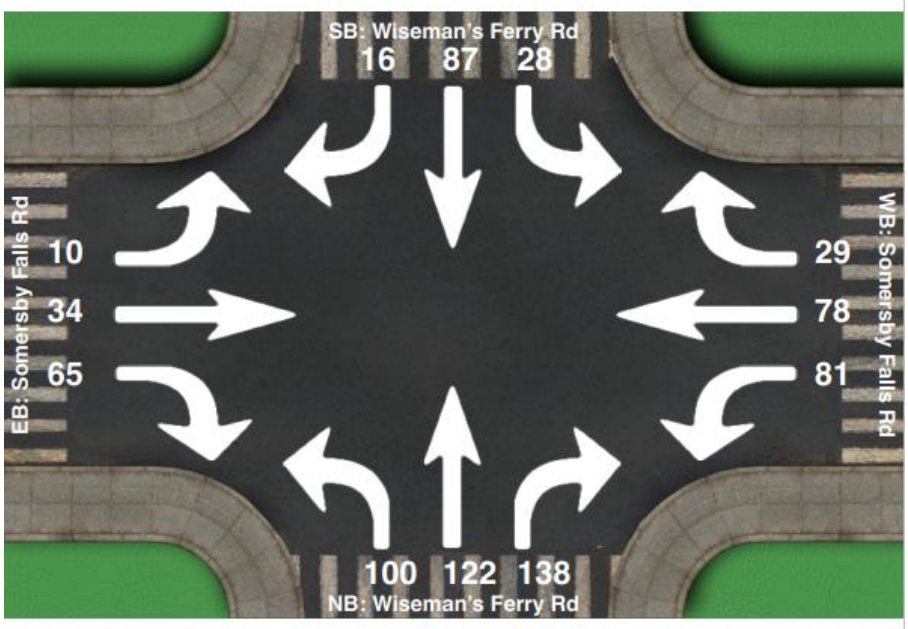
# Attachment A - Site Plans



# Attachment B – Traffic Surveys AM/PM

## Intersection Peak Hour

| | |
|---|---|
| Location: | Wiseman's Ferry Rd at Somersby Falls Rd, Somersby |
| GPS Coordinates: | |
| Date: | 2023-05-25 |
| Day of week: | Thursday |
| Weather: | Sunny |
| Analyst: | KS |




## Intersection Peak Hour

07:45 - 08:45

# Attachment C – Sidra results

## MOVEMENT SUMMARY

### Site: 101 [Wisemans Ferry / Somersby Falls /Gindurra 2023 AM (Site Folder: General)]

**Output produced by SIDRA INTERSECTION Version: 9.1.4.221**

Wisemans Ferry / Somersby Falls / Gindurra 2017 AM
Site Category: (None)
Roundabout

**Vehicle Movement Performance**

| Mov ID | Turn | Mov Class | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Deg. Satn v/c | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh. veh | Dist ] m | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Wisemans Ferry Road | | | | | | | | | | | | | | | |
| 1 | L2 | All MCs | 105 | 22.0 | 105 | 22.0 | 0.316 | 4.7 | LOS A | 2.0 | 16.8 | 0.38 | 0.51 | 0.38 | 51.9 |
| 2 | T1 | All MCs | 128 | 27.0 | 128 | 27.0 | 0.316 | 4.8 | LOS A | 2.0 | 16.8 | 0.38 | 0.51 | 0.38 | 52.3 |
| 3 | R2 | All MCs | 145 | 15.2 | 145 | 15.2 | 0.316 | 10.0 | LOS A | 2.0 | 16.8 | 0.38 | 0.51 | 0.38 | 51.4 |
| Approach | | | 379 | 21.1 | 379 | 21.1 | 0.316 | 6.8 | LOS A | 2.0 | 16.8 | 0.38 | 0.51 | 0.38 | 51.8 |
| East: Gindurra Road | | | | | | | | | | | | | | | |
| 4 | L2 | All MCs | 85 | 29.6 | 85 | 29.6 | 0.180 | 5.2 | LOS A | 1.0 | 7.9 | 0.41 | 0.51 | 0.41 | 52.3 |
| 5 | T1 | All MCs | 82 | 9.0 | 82 | 9.0 | 0.180 | 4.9 | LOS A | 1.0 | 7.9 | 0.41 | 0.51 | 0.41 | 53.3 |
| 6 | R2 | All MCs | 31 | 3.4 | 31 | 3.4 | 0.180 | 10.1 | LOS A | 1.0 | 7.9 | 0.41 | 0.51 | 0.41 | 52.4 |
| Approach | | | 198 | 17.0 | 198 | 17.0 | 0.180 | 5.8 | LOS A | 1.0 | 7.9 | 0.41 | 0.51 | 0.41 | 52.7 |
| North: Wisemans Ferry Road | | | | | | | | | | | | | | | |
| 7 | L2 | All MCs | 29 | 0.0 | 29 | 0.0 | 0.139 | 4.9 | LOS A | 0.7 | 6.1 | 0.46 | 0.52 | 0.46 | 53.0 |
| 8 | T1 | All MCs | 92 | 33.3 | 92 | 33.3 | 0.139 | 5.7 | LOS A | 0.7 | 6.1 | 0.46 | 0.52 | 0.46 | 52.7 |
| 9 | R2 | All MCs | 17 | 18.8 | 17 | 18.8 | 0.139 | 10.8 | LOS A | 0.7 | 6.1 | 0.46 | 0.52 | 0.46 | 51.7 |
| Approach | | | 138 | 24.4 | 138 | 24.4 | 0.139 | 6.1 | LOS A | 0.7 | 6.1 | 0.46 | 0.52 | 0.46 | 52.6 |
| West: Somersby Falls Road | | | | | | | | | | | | | | | |
| 10 | L2 | All MCs | 11 | 40.0 | 11 | 40.0 | 0.132 | 6.1 | LOS A | 0.7 | 6.4 | 0.51 | 0.61 | 0.51 | 50.5 |
| 11 | T1 | All MCs | 36 | 23.5 | 36 | 23.5 | 0.132 | 5.8 | LOS A | 0.7 | 6.4 | 0.51 | 0.61 | 0.51 | 51.4 |
| 12 | R2 | All MCs | 68 | 46.2 | 68 | 46.2 | 0.132 | 11.8 | LOS A | 0.7 | 6.4 | 0.51 | 0.61 | 0.51 | 49.4 |
| Approach | | | 115 | 38.5 | 115 | 38.5 | 0.132 | 9.4 | LOS A | 0.7 | 6.4 | 0.51 | 0.61 | 0.51 | 50.1 |
| All Vehicles | | | 829 | 23.1 | 829 | 23.1 | 0.316 | 6.8 | LOS A | 2.0 | 16.8 | 0.42 | 0.53 | 0.42 | 51.9 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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# MOVEMENT SUMMARY

## Site: 101 [Wisemans Ferry / Somersby Falls /Gindurra 2023 AM+dev (Site Folder: General)]

**Output produced by SIDRA INTERSECTION Version: 9.1.4.221**

Wisemans Ferry / Somersby Falls / Gindurra 2017 AM
Plus development traffic
Site Category: (None)
Roundabout

**Vehicle Movement Performance**

| Mov ID | Turn | Mov Class | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Deg. Satn v/c | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh. veh | Dist ] m | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Wisemans Ferry Road | | | | | | | | | | | | | | | |
| 1 | L2 | All MCs | 126 | 35.0 | 126 | 35.0 | 0.340 | 4.9 | LOS A | 2.2 | 19.1 | 0.39 | 0.51 | 0.39 | 51.6 |
| 2 | T1 | All MCs | 128 | 27.0 | 128 | 27.0 | 0.340 | 4.8 | LOS A | 2.2 | 19.1 | 0.39 | 0.51 | 0.39 | 52.3 |
| 3 | R2 | All MCs | 145 | 15.2 | 145 | 15.2 | 0.340 | 10.0 | LOS A | 2.2 | 19.1 | 0.39 | 0.51 | 0.39 | 51.3 |
| Approach | | | 400 | 25.3 | 400 | 25.3 | 0.340 | 6.7 | LOS A | 2.2 | 19.1 | 0.39 | 0.51 | 0.39 | 51.7 |
| East: Gindurra Road | | | | | | | | | | | | | | | |
| 4 | L2 | All MCs | 85 | 29.6 | 85 | 29.6 | 0.185 | 5.4 | LOS A | 1.0 | 8.1 | 0.44 | 0.52 | 0.44 | 52.2 |
| 5 | T1 | All MCs | 82 | 9.0 | 82 | 9.0 | 0.185 | 5.0 | LOS A | 1.0 | 8.1 | 0.44 | 0.52 | 0.44 | 53.1 |
| 6 | R2 | All MCs | 31 | 3.4 | 31 | 3.4 | 0.185 | 10.2 | LOS A | 1.0 | 8.1 | 0.44 | 0.52 | 0.44 | 52.3 |
| Approach | | | 198 | 17.0 | 198 | 17.0 | 0.185 | 6.0 | LOS A | 1.0 | 8.1 | 0.44 | 0.52 | 0.44 | 52.6 |
| North: Wisemans Ferry Road | | | | | | | | | | | | | | | |
| 7 | L2 | All MCs | 29 | 0.0 | 29 | 0.0 | 0.143 | 5.0 | LOS A | 0.8 | 6.4 | 0.48 | 0.53 | 0.48 | 52.8 |
| 8 | T1 | All MCs | 92 | 33.3 | 92 | 33.3 | 0.143 | 5.9 | LOS A | 0.8 | 6.4 | 0.48 | 0.53 | 0.48 | 52.6 |
| 9 | R2 | All MCs | 17 | 18.8 | 17 | 18.8 | 0.143 | 11.0 | LOS A | 0.8 | 6.4 | 0.48 | 0.53 | 0.48 | 51.6 |
| Approach | | | 138 | 24.4 | 138 | 24.4 | 0.143 | 6.3 | LOS A | 0.8 | 6.4 | 0.48 | 0.53 | 0.48 | 52.5 |
| West: Somersby Falls Road | | | | | | | | | | | | | | | |
| 10 | L2 | All MCs | 11 | 40.0 | 11 | 40.0 | 0.164 | 6.2 | LOS A | 0.9 | 8.6 | 0.53 | 0.62 | 0.53 | 50.4 |
| 11 | T1 | All MCs | 36 | 23.5 | 36 | 23.5 | 0.164 | 5.9 | LOS A | 0.9 | 8.6 | 0.53 | 0.62 | 0.53 | 51.2 |
| 12 | R2 | All MCs | 89 | 58.8 | 89 | 58.8 | 0.164 | 12.2 | LOS A | 0.9 | 8.6 | 0.53 | 0.62 | 0.53 | 48.9 |
| Approach | | | 136 | 48.1 | 136 | 48.1 | 0.164 | 10.1 | LOS A | 0.9 | 8.6 | 0.53 | 0.62 | 0.53 | 49.6 |
| All Vehicles | | | 872 | 26.8 | 872 | 26.8 | 0.340 | 7.0 | LOS A | 2.2 | 19.1 | 0.44 | 0.54 | 0.44 | 51.7 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Project: Not Saved

# MOVEMENT SUMMARY

## Site: 101 [Wisemans Ferry / Somersby Falls /Gindurra 2033 AM (Site Folder: General)]

**Output produced by SIDRA INTERSECTION Version: 9.1.4.221**

Wisemans Ferry / Somersby Falls / Gindurra 2017 AM
Site Category: (None)
Roundabout
Design Life Analysis (Final Year): Results for 10 years

**Vehicle Movement Performance**

| Mov ID | Turn | Mov Class | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Deg. Satn v/c | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh. veh | Dist ] m | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Wisemans Ferry Road | | | | | | | | | | | | | | | |
| 1 | L2 | All MCs | 147 | 22.0 | 147 | 22.0 | 0.468 | 5.3 | LOS A | 3.5 | 29.2 | 0.53 | 0.55 | 0.53 | 51.4 |
| 2 | T1 | All MCs | 180 | 27.0 | 180 | 27.0 | 0.468 | 5.5 | LOS A | 3.5 | 29.2 | 0.53 | 0.55 | 0.53 | 51.8 |
| 3 | R2 | All MCs | 203 | 15.2 | 203 | 15.2 | 0.468 | 10.6 | LOS A | 3.5 | 29.2 | 0.53 | 0.55 | 0.53 | 50.9 |
| Approach | | | 531 | 21.1 | 531 | 21.1 | 0.468 | 7.4 | LOS A | 3.5 | 29.2 | 0.53 | 0.55 | 0.53 | 51.4 |
| East: Gindurra Road | | | | | | | | | | | | | | | |
| 4 | L2 | All MCs | 119 | 29.6 | 119 | 29.6 | 0.272 | 5.9 | LOS A | 1.6 | 13.0 | 0.52 | 0.55 | 0.52 | 51.9 |
| 5 | T1 | All MCs | 115 | 9.0 | 115 | 9.0 | 0.272 | 5.5 | LOS A | 1.6 | 13.0 | 0.52 | 0.55 | 0.52 | 52.8 |
| 6 | R2 | All MCs | 43 | 3.4 | 43 | 3.4 | 0.272 | 10.6 | LOS A | 1.6 | 13.0 | 0.52 | 0.55 | 0.52 | 52.0 |
| Approach | | | 277 | 17.0 | 277 | 17.0 | 0.272 | 6.5 | LOS A | 1.6 | 13.0 | 0.52 | 0.55 | 0.52 | 52.3 |
| North: Wisemans Ferry Road | | | | | | | | | | | | | | | |
| 7 | L2 | All MCs | 41 | 0.0 | 41 | 0.0 | 0.214 | 5.6 | LOS A | 1.2 | 10.2 | 0.57 | 0.58 | 0.57 | 52.5 |
| 8 | T1 | All MCs | 128 | 33.3 | 128 | 33.3 | 0.214 | 6.6 | LOS A | 1.2 | 10.2 | 0.57 | 0.58 | 0.57 | 52.2 |
| 9 | R2 | All MCs | 24 | 18.8 | 24 | 18.8 | 0.214 | 11.6 | LOS A | 1.2 | 10.2 | 0.57 | 0.58 | 0.57 | 51.3 |
| Approach | | | 193 | 24.4 | 193 | 24.4 | 0.214 | 7.0 | LOS A | 1.2 | 10.2 | 0.57 | 0.58 | 0.57 | 52.1 |
| West: Somersby Falls Road | | | | | | | | | | | | | | | |
| 10 | L2 | All MCs | 15 | 40.0 | 15 | 40.0 | 0.211 | 7.3 | LOS A | 1.2 | 11.2 | 0.64 | 0.67 | 0.64 | 49.8 |
| 11 | T1 | All MCs | 50 | 23.5 | 50 | 23.5 | 0.211 | 6.8 | LOS A | 1.2 | 11.2 | 0.64 | 0.67 | 0.64 | 50.7 |
| 12 | R2 | All MCs | 96 | 46.2 | 96 | 46.2 | 0.211 | 13.0 | LOS A | 1.2 | 11.2 | 0.64 | 0.67 | 0.64 | 48.8 |
| Approach | | | 161 | 38.5 | 161 | 38.5 | 0.211 | 10.6 | LOS A | 1.2 | 11.2 | 0.64 | 0.67 | 0.64 | 49.5 |
| All Vehicles | | | 1161 | 23.1 | 1161 | 23.1 | 0.468 | 7.5 | LOS A | 3.5 | 29.2 | 0.55 | 0.57 | 0.55 | 51.4 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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# MOVEMENT SUMMARY

## Site: 101 [Wisemans Ferry / Somersby Falls /Gindurra 2033 AM+dev (Site Folder: General)]

**Output produced by SIDRA INTERSECTION Version: 9.1.4.221**

Wisemans Ferry / Somersby Falls / Gindurra 2017 AM
Plus development traffic
Site Category: (None)
Roundabout
Design Life Analysis (Final Year): Results for 10 years

**Vehicle Movement Performance**

| Mov ID | Turn | Mov Class | Demand Flows [ Total veh/h | HV ] % | Arrival Flows [ Total veh/h | HV ] % | Deg. Satn v/c | Aver. Delay sec | Level of Service | 95% Back Of Queue [ Veh. veh | Dist ] m | Prop. Que | Eff. Stop Rate | Aver. No. of Cycles | Aver. Speed km/h |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Wisemans Ferry Road | | | | | | | | | | | | | | | |
| 1 | L2 | All MCs | 177 | 35.0 | 177 | 35.0 | 0.504 | 5.6 | LOS A | 4.0 | 33.9 | 0.56 | 0.55 | 0.56 | 51.0 |
| 2 | T1 | All MCs | 180 | 27.0 | 180 | 27.0 | 0.504 | 5.5 | LOS A | 4.0 | 33.9 | 0.56 | 0.55 | 0.56 | 51.7 |
| 3 | R2 | All MCs | 203 | 15.2 | 203 | 15.2 | 0.504 | 10.6 | LOS A | 4.0 | 33.9 | 0.56 | 0.55 | 0.56 | 50.8 |
| Approach | | | 560 | 25.3 | 560 | 25.3 | 0.504 | 7.4 | LOS A | 4.0 | 33.9 | 0.56 | 0.55 | 0.56 | 51.2 |
| East: Gindurra Road | | | | | | | | | | | | | | | |
| 4 | L2 | All MCs | 119 | 29.6 | 119 | 29.6 | 0.282 | 6.2 | LOS A | 1.7 | 13.5 | 0.55 | 0.57 | 0.55 | 51.7 |
| 5 | T1 | All MCs | 115 | 9.0 | 115 | 9.0 | 0.282 | 5.8 | LOS A | 1.7 | 13.5 | 0.55 | 0.57 | 0.55 | 52.6 |
| 6 | R2 | All MCs | 43 | 3.4 | 43 | 3.4 | 0.282 | 10.9 | LOS A | 1.7 | 13.5 | 0.55 | 0.57 | 0.55 | 51.8 |
| Approach | | | 277 | 17.0 | 277 | 17.0 | 0.282 | 6.8 | LOS A | 1.7 | 13.5 | 0.55 | 0.57 | 0.55 | 52.1 |
| North: Wisemans Ferry Road | | | | | | | | | | | | | | | |
| 7 | L2 | All MCs | 41 | 0.0 | 41 | 0.0 | 0.223 | 5.9 | LOS A | 1.3 | 10.7 | 0.60 | 0.60 | 0.60 | 52.3 |
| 8 | T1 | All MCs | 128 | 33.3 | 128 | 33.3 | 0.223 | 7.0 | LOS A | 1.3 | 10.7 | 0.60 | 0.60 | 0.60 | 52.0 |
| 9 | R2 | All MCs | 24 | 18.8 | 24 | 18.8 | 0.223 | 11.9 | LOS A | 1.3 | 10.7 | 0.60 | 0.60 | 0.60 | 51.1 |
| Approach | | | 193 | 24.4 | 193 | 24.4 | 0.223 | 7.3 | LOS A | 1.3 | 10.7 | 0.60 | 0.60 | 0.60 | 52.0 |
| West: Somersby Falls Road | | | | | | | | | | | | | | | |
| 10 | L2 | All MCs | 15 | 40.0 | 15 | 40.0 | 0.264 | 7.4 | LOS A | 1.5 | 15.2 | 0.66 | 0.69 | 0.66 | 49.6 |
| 11 | T1 | All MCs | 50 | 23.5 | 50 | 23.5 | 0.264 | 7.0 | LOS A | 1.5 | 15.2 | 0.66 | 0.69 | 0.66 | 50.5 |
| 12 | R2 | All MCs | 125 | 58.8 | 125 | 58.8 | 0.264 | 13.6 | LOS A | 1.5 | 15.2 | 0.66 | 0.69 | 0.66 | 48.2 |
| Approach | | | 190 | 48.1 | 190 | 48.1 | 0.264 | 11.4 | LOS A | 1.5 | 15.2 | 0.66 | 0.69 | 0.66 | 48.9 |
| All Vehicles | | | 1220 | 26.8 | 1220 | 26.8 | 0.504 | 7.9 | LOS A | 4.0 | 33.9 | 0.58 | 0.59 | 0.58 | 51.1 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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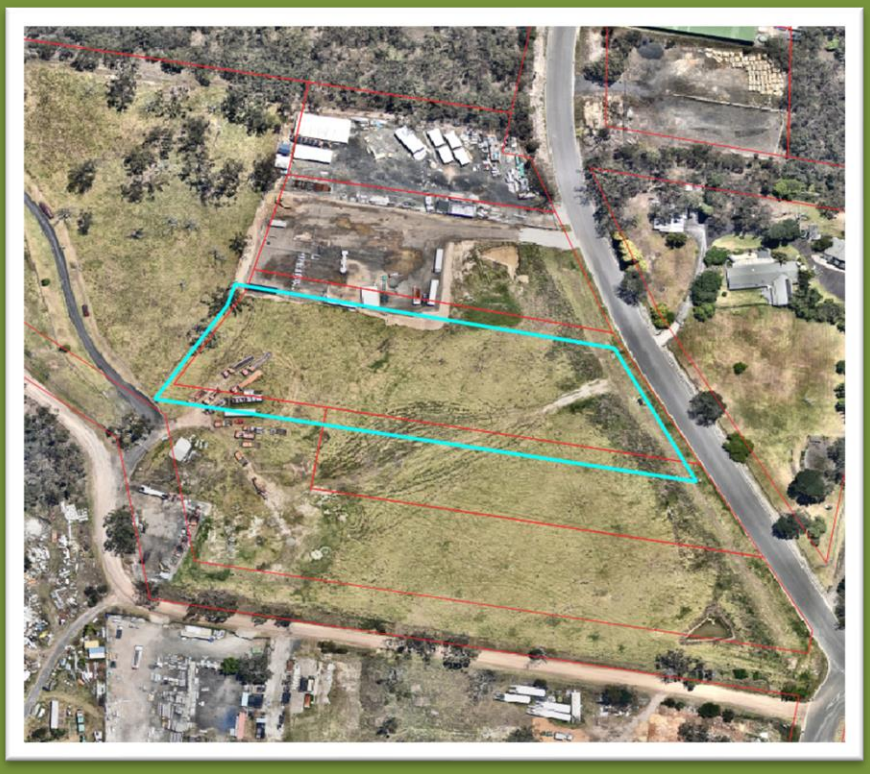
**CLARKE DOWDLE & ASSOCIATES**
**DEVELOPMENT CONSULTANTS**
SURVEYORS • PLANNERS • ECOLOGISTS • BUSHFIRE CONSULTANTS

# BUSH FIRE ASSESSMENT REPORT



at

## 133 SOMERSBY FALLS ROAD, SOMERSBY, NSW

## (LOT 3 IN DP 1292653)

**November 2023**

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## DOCUMENT TRACKING

| | |
|---|---|
| **Project Location** | 133 Somersby Falls Road, Somersby |
| **Date** | 08/11/23 |
| **Prepared by** | Ashley Dowdle |
| **Reviewed by** | Kristan Dowdle |
| **Approved by** | Kristan Dowdle |
| **Status** | FINAL |
| **Version** | 2 |

# 1.0 INTRODUCTION

We have attended the above-described property for the purpose of undertaking a Bush Fire Assessment Report (BFAR) in accordance with the guidelines outlined in *Planning for Bushfire Protection, 2019* (PBP), to determine the level of bushfire threat to the site and the proposed Asphalt Processing Facility. Central Coast Council has provided mapping of Bushfire Prone Areas that identifies areas of bushfire threat. This mapping identifies properties that are in the buffer zone of 100m metres from Category 1 mapped vegetation or 30m from Category 2 & 3 mapped vegetation. All developments occurring on land mapped as bushfire prone are subject to the conditions detailed in the planning document PBP. In this context, the subject site has been classified as bushfire-prone land, as demonstrated in Figure 1.

As stated, the proposal involves the construction of an Asphalt Processing Facility which is a building/development type under the National Construction Code (NCC) (Class 5 to 8 Building), that has no bushfire specific performance requirements applicable. As such the AS 3959-2018 and the NASH Standard are not considered as a set of 'deemed to satisfy' provisions. However, Class 5 to 8 Building/development is designated as "other" development in Section 8.3.1 of PBP.

As "other" development, a key issue for the proposal will be meeting the aim and objectives of PBP and the performance requirements for commercial and industrial development. PBP articulates the following objectives for Class 5-8 buildings which will be applied in relation to access, water and services, and emergency and evacuation planning:

- to provide safe access to/from the public road system for firefighters providing property protection during a bush fire and for occupant egress for evacuation;
- to provide suitable emergency and evacuation (and relocation) arrangements for occupants of the development;
- to provide adequate services of water for the protection of buildings during and after the passage of bush fire, and to locate gas and electricity so as not to contribute to the risk of fire to a building; and
- provide for the storage of hazardous materials away from the hazard wherever possible.

This BFAR outlines a risk-based assessment of the proposal, taking into account various critical factors, including the type of development, the prevailing environmental conditions, and the inherent bushfire risk. Furthermore, it evaluates the extent to which the proposal aligns with and complies with the l aims and objectives outlined in 'Planning for Bushfire Protection, 2019' (PBP)

In addition, the proposal will form part of a State Significant Development (SSD) application. SSD projects are assessed under Division 4.7 of the *Environmental Planning & Assessment Act*, 1979, and require development consent from the Independent Planning Commission or the Minister for Planning (or delegate) before they may proceed.

This report will form part of a collation of reports required under the Secretary's Environmental Assessment Requirements (SEARs) for the proposal

**Figure 1: Bushfire Mapping (site boundary in green)**
**Source: MOASIC mecone, 2023**

## 1.1 Proposed Development

The proposal relates to the construction of an asphalt processing facility which will include, but not limited to, the construction following works;

- Asphalt Processing facility (estimated production 250kT pa)
- Administration/caretaker building
- Weighbridge
- Truck/facility access road
- Truck Parking Bays
- Car park, footpath and landscaping
- RAP processing and stockpile areas
- Storage bunkers
- Hardstand areas

Figure 2 provides a site plan of the proposed works.

## 1.2 Secretary's Environmental Assessment Requirements

This report serves to address the Secretary's Environmental Assessment Requirements (SEARs), specifically key issue Hazard and Risks which state;

*'An assessment of the risk of bushfire, including addressing the requirements of Planning for Bush Fire Protection 2019 (RFS). Any proposed Asset Protection Zones must not adversely affect environmental objectives (e.g., buffers*).'

The subsequent sections of this report will provide an analysis of the aforementioned key concern.

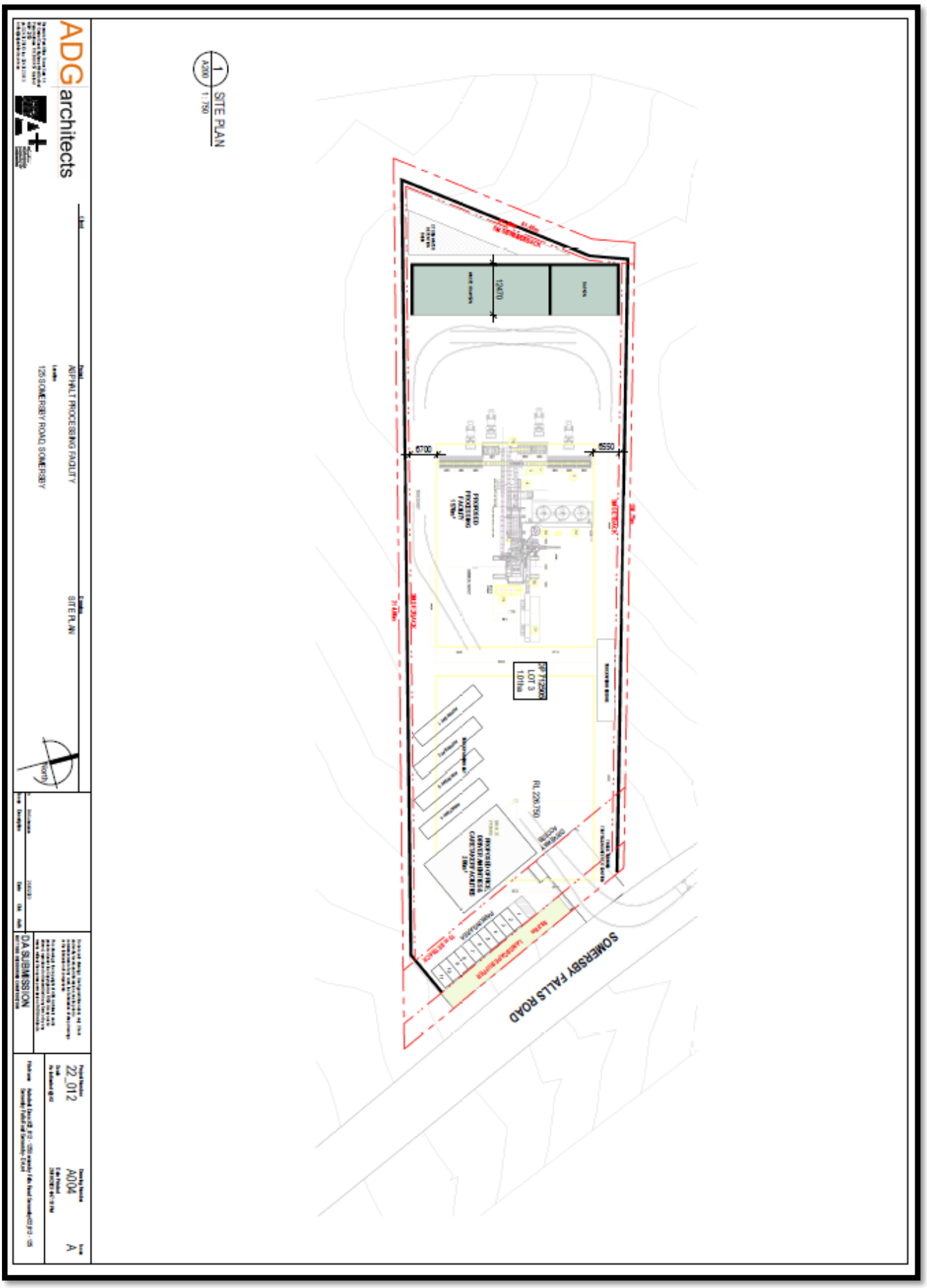


**Figure 2: Proposed Development Site Plan**

# 2.0 SITE IDENTIFICATION

The subject site is located at 133 Somersby Falls Road, Somersby (Lot 3 in DP 1292653). The site is in the Local Government Area (LGA) of Central Coast Council (Fire Danger Index-100).

**Figure 3: Aerial Photograph of the site (approx. site boundary bordered in blue)**
**Source: Nearmap, 2023**

The site is a vacant parcel of land located within a recently subdivision industrial/commercial subdivision.

The property is currently occupied by grasslands with no permanent structure currently existing.

The site has access to the town water supply with hydrants located along Somersby Falls Road to the east and also has access to the main electrical grid.

# 3.0 BUSH FIRE HAZARD ASSESSMENT

## 3.1 Surrounding Vegetation

In accordance with PBP, the surrounding land features and vegetation found within 140m of the proposed works found on the date of inspection (07/11/23) are detailed below (See Figures 4 & 5).

**North**
The property is adjacent to an industrial/commercial development presently in the construction phase. This development shares a boundary with an already established industrial parcel of land, which, in turn, is adjacent to a vegetated area identified as *Disturbed-Underscrubbed* and *Exposed Hawkesbury Woodland*. Upon inspection, this vegetation meets with the Keith (2004) description of a 'dry sclerophyll forest'. In accordance with Appendix 1 in PBP, this vegetation will be assessed as **Forest** as per PBP.

**North-East**
To the north-east beyond Somersby Falls Road and a developed rural allotment is vegetation that has been mapped as containing *Disturbed- Underscrubbed Exposed Hawkesbury Woodland* and *Hawkesbury Banksia Scrub Woodland*. Upon inspection, this vegetation meets with the Keith (2004) description of a 'dry sclerophyll forest'. In accordance with Appendix 1 in PBP, this vegetation will be assessed as **Forest** as per PBP.

**South & West**
To the south and west beyond the site are unmanaged grasslands. These areas will be assessed as a **Grassland** hazard as per PBP.

It is noted that the property/s to the south will be developed upon in time, resulting in the removal of the grassland hazard currently present.

**East**
The surrounding land on this aspect is occupied by public roads, developed residential and industrial allotments of which contain industrial buildings, hardstand areas and managed lands. Therefore, this aspect does not pose a bushfire threat to the proposal.

**South-West**
To the south-west beyond the site and unmanaged grasslands is vegetation that has been mapped as containing *Exposed Hawkesbury Woodland*. In accordance with Appendix 1 in PBP, this vegetation will be assessed as **Forest** as per PBP.

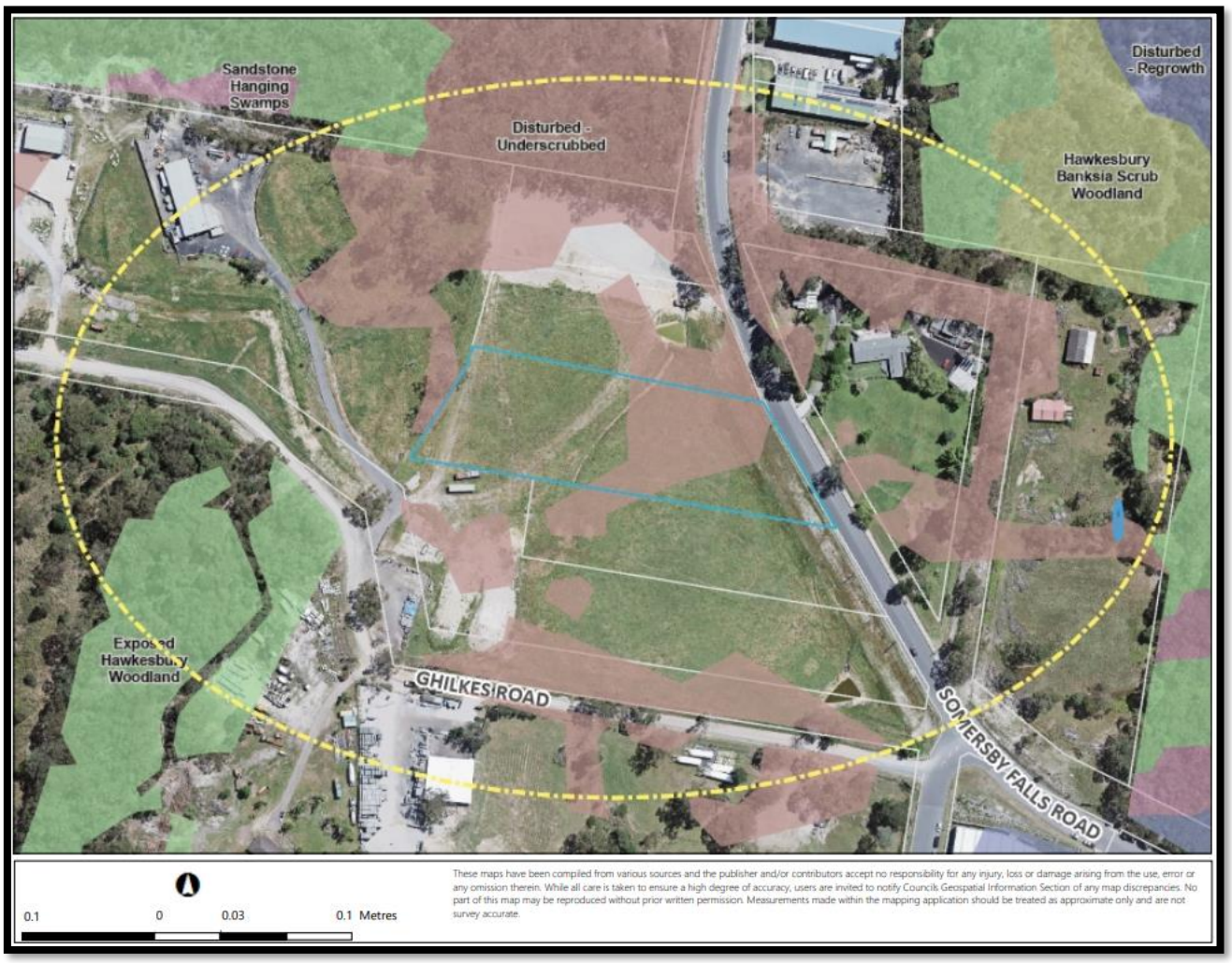


**Figure 4: Vegetation Mapping (yellow circle is ~140m from the proposal)**
**Source: Central Coast Council, 2023**

**1.**

**2.**

**3.**

**4.**

**5.**

**6.**

**Note: See Figure 5 for the photograph location and direction.**

## 3.2 Effective Slope

PBP states in A1.5 that the effective slope is;

*'The slope of the land under the classified vegetation has a direct influence on the rate of fire spread, the intensity of the fire and the ultimate level of radiant heat flux. The effective slope is the slope of the ground under the hazard (vegetation). It is not the slope between the vegetation and the building (slope located between the asset and vegetation is the site slope).'*

Figure 5 provides the topographic and vegetation mapping surrounding the proposal as sourced by NSW Spatial Services (2m contours).

Upon inspection of the topographic mapping and the site inspection, the effective slope measured 100m from the proposed development for the hazard facing aspects are (See Figure 5);

**North, South & North-East:** **0-5° Down Slope**
**West/South-West:** **5-10° Down Slope**

# 4.0 BUSHFIRE PROTECTION MEASURES

As stated, the NCC states that Class 5 to 8 buildings do not have specific bushfire performance requirements and therefore AS3959-2018 and NASH Standard are not considered 'deemed to satisfy' provisions for these classes.

PBP outlines objectives related to access, water and services, and emergency and evacuation planning for Class 5-8 buildings in bushfire-prone areas. These objectives include providing safe access for firefighters and occupants during a bushfire, establishing emergency and evacuation plans, ensuring adequate water services for building protection, and safely locating gas and electricity infrastructure.

PBP mandates the assessment of various bushfire protection measures to ensure an adequate level of protection for development proposals in bushfire-prone areas. The bushfire protection measures are outlined below in the subsequent sections.

## 4.1 Access

### *4.1.1 Public Roads*

The existing public road access is Somersby Falls Road which is the primary collector road in the locality and provides access for the site and the adjoining properties to the north and south.

The existing public road access is adequate for the proposal to facilitate emergency response and evacuation. Alternate options of access are available.

### *4.1.2 Property Access Roads*

Due to the industrial design and large vehicle usage expected on the site, the internal access road will meet the established guidelines for property access roads in areas prone to bushfires. The road will be designed to accommodate the passage of trucks in both directions and offer perimeter access around the entire facility, as indicated in Figure 1.

Due to the nature of the design, the proposed internal access road would be assumed to meet the acceptable solutions for property access roads in bushfire-prone areas. However, compliance with PBP for the internal roads will be recommended.

## 4.2 Defendable Space

For habitable development, like residential dwellings, the determination of a bushfire hazard building setback (referred to as APZ) is linked to the vulnerability of the structure, often in terms of the flammability of external materials or the characteristics of its occupants. The resulting APZ measurement would specify a building construction standard known as the Bushfire Attack Level (BAL), in accordance with the Australian Standard AS3959-2018 for constructing buildings in bushfire-prone regions.

However, since the intended land use does not involve residential dwellings or habitable PBP does not mandate a specific APZ measurement. Nevertheless, one of PBP's objectives is to ensure an adequate hazard separation to prevent the spread of fire to buildings.

PBP also requires the consideration of a managed hazard-separation area designed for firefighting purposes, commonly known as a 'defendable space.' This area is situated between the building and the bushfire hazard, providing a space where firefighters can carry out property protection activities after a bushfire has passed with some degree of safety. The dimensions of the defendable space are determined by the need for access around the asset and the execution of defensive firefighting operations.

Although not required, the proposal will be located to ensure a defendable space that prevents buildings from being impacted and subject to Bushfire Attack Level BAL-FZ. Table 1 and Figure 6 highlight the defendable space that will be available for the proposed amenities building external walls and the processing facility.

**Table 1: Bushfire Attack Level Assessment**

| | ASPECT | | | | |
|---|---|---|---|---|---|
| | **Northern** | **Southern** | **South-Western** | **North-Eastern** | **Western** |
| **Vegetation[1] within 100m of development** | Forest | Grasslands | Forest | Forest | Grasslands |
| **Effective Slope of Land** | 0-5° Down Slope | 0-5° Down Slope | 5-10° Down Slope | 0-5° Down Slope | 5-10° Down Slope |
| **APZ/Setback Provided[2]** | >100m | 9m | >100m | ~90m | 50m |
| **Bushfire Attack Level (BAL)[3]** | BAL Low | BAL 40 | BAL Low | BAL 12.5 | BAL Low |
| **Recommended Construction** | General fire safety construction provisions of the NCC | | | | |

**Notes for Table 1:**

- (1) Refer to Keith (2004), AS 3959-2018 and Table A1.12.5 in *PBP 2019*
- (2) Distance to vegetation
- (3) Bushfire Attack Levels are in accordance with PBP 2019

## 4.3 Construction Requirements

There is no requirement for any bush fire-specific performance for proposals building class and as such AS3959-2018 does not provide 'deemed to satisfy' provisions. PBP states:

*'The general fire safety construction provisions of the NCC are taken as acceptable solutions however construction requirements for bush fire protection will need to be considered on a case-by-case basis.'.*

Based on the characteristics of the site, the surrounding development and the proposed works, it is determined that the application of AS3959-2018 is not necessary. This determination is based on multiple factors, including the fact that AS3959-2018 is not required under the National Construction Code (NCC) for a Class 5-8 building, and the use of non-combustible construction materials, which effectively prevent the spread of fire within the building and minimize the risk of fire impacting the surrounding properties or buildings.

Additional bushfire protection measures will be recommended for the development with recognition of the surrounding site conditions.

## 4.4 Emergency and evacuation

A 'Bushfire Emergency Management and Evacuation Plan' is typically prepared for facilities within bushfire prone areas depending on the level of bushfire risk. The NSW Rural Fire Service has formulated *A Guide to Develop a Bush Fire Emergency Management and Evacuation Plan* and prepared in accordance with section 6.8.4 of *Planning for Bush Fire Protection* 2019.

This document should be completed by the management of the site for use during a bushfire event.

After completion, it should be regularly reviewed (at least once a year) and stored in a location to be easily accessible for reference during a bushfire emergency.

## 4.5 Water and Utility Services Supply

### *4.5.1 Water*

The site is connected to the reticulated supply of water, with a water hydrant located <70m from the site on Somersby Falls Road. Compliance with PBP will be made.

### *4.5.2 Gas*

At the time of report preparation, it is not known if it is proposed to connect the gas supply to the subject development. However, any future connection to either mains or portable gas supply should be undertaken and maintained to the provisions of AS 1596-2002 Storage and handling of LP Gas. All piping associated with the installation must be metal.

### *4.5.3 Electricity*

The methodology for electrical connection had not been finalized at the time of formulating this report although this report recommends that wherever possible this is located below ground level to reduce both ignition potential and to minimize potential infrastructure damage.

**Figure 5: Bushfire Site Plan**

# 5.0 RECOMMENDATIONS

This Bush Fire Assessment Report concluded that the proposed development may comply with the performance criteria for PBP if the proposed acceptable solutions and recommendations are implemented. These items are outlined below.

## 5.1 Asset Protection Zones

- Fuel management within the entire site should be maintained with regular maintenance of the landscaped areas, managed lawns in accordance with an Inner Protection Area (IPA) in accordance with **Appendix 4 of PBP**.
- Hazardous/Flammable material storage should be avoided on the southern and western portions of the property

### *5.1.1 Environmental Considerations*

No tree clearing is required for bushfire protection.

## 5.2 Construction Standards

- The proposal shall be constructed to comply with the relevant provisions as required by the National Construction Code and the application of *AS 3959-2019 Construction of buildings in bushfire prone areas* is not required.

- However, to increase the bushfire resilience of the proposal, the following is recommended for the proposed amenities building:
    - The roof shall be fully sarked with a material that shall have a flammability index of not more than 5 when tested to AS 1530.2.
    - All openable windows shall be externally screened with metal mesh screens having a maximum aperture size of 1.8mm;
    - All gaps greater than 3mm be screened and/or enclosed
    - All external side hung doors shall be fitted with weather strips where the doors do not close on a rebated edge
    - All new fencing and gates shall be constructed in accordance with Section 7.6 of PBP ( i.e. non-combustible)
    - Any roller doors are to be 'boxed in' or sealed in a manner that restricts ember penetration within a building

## 5.3 Property Access and Evacuation Safety

- Safe access will be provided to the subject property via Somersby Falls. This bitumen road will serve both as an access point for firefighters and an egress point for residents during a bushfire event.

- Any new internal access road should provide compliance with Table 7.4a of PBP, which includes (but is not limited to);
    - A minimum 4m carriageway width;
    - the capacity of road surfaces and any bridges/ causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes); bridges and causeways are to clearly indicate load rating.
    - a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches;
    - property access must provide a suitable turning area in accordance with Appendix 3;
    - curves have a minimum inner radius of 6m and are minimal in number to allow for rapid access and egress;
    - the minimum distance between inner and outer curves is 6m; the crossfall is not more than 10 degrees;

- maximum grades for sealed roads do not exceed 15 degrees and not more than 10 degrees for unsealed roads.

## 5.4 Emergency Management

- A 'Bushfire Emergency Management and Evacuation Plan' is to be prepared in accordance with the NSW Rural Fire Service document '*A Guide to Developing a Bushfire Emergency Management and Evacuation Plan'*

## 5.5 Water and Utility Services Supply

### *5.5.1 Water*

The site is connected to the reticulated supply of water (hydrant <70m from the site,.. In recognition of this, new water services shall comply with Table 7.4a of PBP, which includes (but is not limited to);

- The sizing, pressure and spacing of the hydrant system be installed in accordance with AS2419.1-2021.
- All other essential fire safety equipment as per the NCC shall be provided (e.g. fire hose reels, internal sprinkler systems, etc.).

### *5.5.2 Gas (if applicable)*

New gas connection/services shall comply with Table 7.4a of PBP, which includes (but is not limited to);

- Any gas cylinders or gas connections should be installed and maintained in accordance with Australian Standard AS1596 - *The Storage and Handling of LP Gas* and the requirements of relevant authorities.
- If gas cylinders need to be kept close to the building, the release valves are directed away from the building and at least 2 metres away from any combustible material, so that they do not act as a catalyst to combustion.

### *5.5.3 Electricity*

New gas electrical connections shall comply with Table 7.4a of PBP, which includes (but is not limited to);

- Where possible electrical connection should occur via underground lines
- Where overhead electrical connection lines are proposed-lines area installed with short pole spacing and no part of a tree closer to a power line than the distance set out in accordance with the specifications in 'Vegetation Safety Clearance' issued by Energy Australia

# 6.0 AIMS & OBJECTIVE COMPLIANCE

The following table indicates compliance or otherwise with the objectives as outlined in Section 8.3.1 of PBP for Class 5 to 8 buildings.

| PBP OBJECTIVE | COMPLIANCE |
|---|---|
| **to provide safe access to/from the public road system for firefighters providing property protection during a bush fire and for occupant egress for evacuation;** | The subject site has street access to Somersby Falls Road to the west. Persons seeking to egress the proposed development will be able to do so via the proposed internal road system and along with existing road infrastructure.<br><br>The buildings have been designed to carry articulated vehicles and as such sufficient widths have been applied to provide fire appliance access through the site.<br><br>The proposed access arrangements in conjunction with the existing access provisions are considered acceptable for occupant evacuation and firefighter access. |
| **to provide suitable emergency and evacuation (and relocation) arrangements for occupants of the development;** | A bushfire emergency plan in accordance with RFS guidelines has been recommended for the new facility. |
| **to provide adequate services of water for the protection of buildings during and after the passage of bush fire, and to locate gas and electricity so as not to contribute to the risk of fire to a building; and** | In-ground hydrants are available along Somersby Falls Road and surrounding roads for the replenishment of attending fire services. A hydrant system will be installed throughout the subject site. The sizing, pressure and spacing of this internal hydrant system must be installed in accordance with AS2419.1-2021.<br><br>Compliant installation of the electrical supply and gas supply is recommended.<br><br>It is assumed that services and equipment (fire protection measures including extinguishers and hose reels) will be provided to the building in accordance with the National Construction Codes |
| **provide for the storage of hazardous materials away from the hazard wherever possible.;** | Recommendations to not store flammable material on the southern and western portions of the property have been made. |

With reference to the above comments and the nature of the proposed development, it is considered that with the inclusion of the recommendations detailed within this report, the proposal is deemed to meet with the objectives as outlined in Section 8.3.1 of PBP.

# 7.0 CONCLUSION

Clarke Dowdle & Associates have been engaged to conduct a Bush Fire Assessment Report upon the property located at 133 Somersby Falls Road, Somersby, NSW. This original assessment was performed in November 2023 and was conducted in accordance with the procedures and methods recommended in the NSW Rural Fire Service published document '*Planning for Bushfire Protection, 2019'* (PBP).

As the NCC does not provide for any bushfire specific performance requirements for the type of development or use proposed, the deemed-to-satisfy provisions of PBP and AS 3959-2018 do not apply. However, the assessment has taken into account the aim and objectives of PBP required under Section 8.3.1 of PBP, as well as the site-specific bushfire risk assessment.

In accordance with the bushfire protection measures contained in this report, and consideration of the site specific bushfire risk assessment it is our opinion that when combined, they will provide a reasonable and satisfactory level of bushfire protection to the subject development and also align with the objectives outlined in the 'Planning for Bush Fire Protection, 2019' (PBP).

This report has addressed the Secretary's Environmental Assessment Requirements (SEARs) and requirements concerning bushfire and has assessed the proposal against the requirements of 'Planning for Bush Fire Protection, 2019' (PBP) and has outlined that the proposed Asset Protection Zones will adversely affect environmental objectives (no vegetation clearing required).

The determining authorities and Rural Fire Service may suggest additional measures to be implemented with any planning and construction upon the subject site.

We would be pleased to provide further information on any aspects of this report.

For and on behalf of

**Clarke Dowdle and Associates**

**Ashley Dowdle**
Bushfire Consultant
*Planning for Bushfire Prone Areas - UTS Short Course*

**Kristan Dowdle**
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Bushfire Consultant

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- *It is important to note that the measures outlined in the relevant requirements of AS3959-2018 Construction of Buildings in Bushfire-Prone Areas, NASH Standard - Steel Framed Construction in Bushfire Areas 2021, and the construction requirements in Planning for Bushfire Protection 2019 cannot provide a guarantee that a building will survive a bushfire event on every occasion. This is primarily due to factors such as the level of vegetation management, the unpredictable nature and behaviour of fire, and extreme weather conditions. As a result, Clarke Dowdle & Associates disclaims any claims and assumes no liability in the event of any damage, loss of property, or loss of life resulting from a bushfire event.*

# REFERENCES


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- National Construction Code (2022), Building Codes Australia, *Class 2 to Class 9 Building Housing Provisions Volume 1*

- NSW Rural Fire Service and Department of Planning (2019), *Planning for Bushfire Protection, A guide for Councils, Planners, Fire Authorities and Developers*. NSW Rural Fire Service.

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- Standards Australia, (2018), *AS3959 Construction of Buildings in Bushfire-prone Areas*. Standards Australia International

# OPERATIONAL MANAGEMENT PLAN

## Proposed Asphalt Batching Plant

133 Somersby Falls Road, Somersby NSW 2250

| Issued and Approved by: | Date: |
|---|---|
| | |

***Document Reference***: 221145_OperationMgmt_Rev1
***Date of Issue***: 19 June 2023

**Prepared by:**

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# 1. INTRODUCTION

Benbow Environmental have been engaged by Stateline Asphalt Pty Ltd to prepare an operational management plan for the proposed asphalt batching plant located at 133 Somersby Falls Road, Somersby NSW 2250. This plan is to accompany an Environmental Impact Statement (EIS).

The project involves the construction and operation of an asphalt batching plant which will produce up to 200,000 tonnes per annum (tpa), a (Reclaimed asphalt Pavement) RAP yard, office and depot.

This report was requested by Central Coast Council in the Pre-DA meeting minutes.

## 1.1 SCOPE

- Hours of operation
- Lighting
- Noise control
- Waste management
- Servicing
- Carparking

# 2. HOURS OF OPERATIONS

The proposed facility will operate 24/7.

It is common for asphalt paving to be produced during evening and night time periods due to repair works conducted on major roadways during nighttime.

The site has been designed to comply with the reduced operational noise limits for evening and nighttime.

# 3. LIGHTING

The site must be fully lit at all times. Security lighting will be installed, and consistently maintained to be operational and entry and exit points can be adequately lit.

# 4. NOISE CONTROL

Most roadworks occur at night, so the asphalt will need to be delivered hot at all times. This means that mixing within the pugmill and dispatch will occur during the nighttime period. The following nosie controls will be implemented:

- Restriction of daytime operations (7am to 6pm) of RAP crushing plant and use of front-end loader.
- Fully enclosed asphalt plant and truck filling area and dryer drum. Building material would be Trimdek Zincalumine 0.8 BMT ($R_w$ 27 dB) or similar. Fast acting roller shutter doors to be installed for truck filling.
- Noise walls or neighbouring structure to be installed. 1.8m perimeter wall and a section of wall that is 6m on a portion of the southern boundary.
- A noise management plan has been developed and a more detailed plan would be prepared prior to commissioning. This would have a simple-to-follow one page guide for truck drivers accessing the site.
- Restrictions would be placed on the use of engine brakes when this use could cause excessive noise levels at residential areas.

# 5. WASTE MANAGEMENT

Recovered wastes will be stored in the designated storage bays at the west of the site prior to being processed to make the asphalt. The bitumen and cement and lime powders would be stored in designated silos prior to addition to the asphalt mix.

The main waste type generated as a result of the proposed development during construction and ongoing operations would be that of General solid waste (non-putrescible). The main waste type accepted on site as part of the ongoing business operations of the proposed development would also be that of General solid waste (non-putrescible).

Minor waste is expected as any off-specification material can be reused in the process.

The following are the main waste management controls:

- Incoming waste to be thoroughly inspected.
- Waste segregated according to classification and managed accordingly.
- Visually screening designated waste areas and receptacles from public places (in building).
- Ensuring waste is stored adequately and cannot escape receptacles/storage areas.
- Ensuring easy access to each waste storage area for collection services.
- Designated waste bins serviced regularly by licensed contractors.
- Recyclable waste stored in recycling bins and serviced by a licensed recycling contractor.

An *unexpected finds protocol* would provide instruction on what to do in the event that suspect materials identified by unusual staining, odour, discolouration or inclusions such as building rubble, asbestos, ash material etc. are encountered during any stage of earthworks, site preparation and construction. Works would cease immediately and temporary barricades set up to prevent access to area.

# 6. SERVICING

Maintenance of equipment, trucks, storage silos or containers and bunkers would occur regularly to reduce the likelihood of breakdowns or failures, and the chance of any fuel or chemical leaks.

In the event of breakdowns, a contractor would be contacted promptly to fix the issue. Due to the operational times of the business, the issue may remain until regular business hours, depending on the severity of the problem.

# 7. CAR PARKING

11 car parking spaces have been provided on site, with one being a disabled parking space. There are 4 AV/HRV bays for trucks provided as well.

This concludes the report.

Bethany Carlyon
Graduate Environmental Engineer

Richard Benbow
Principal Consultant

# NSW POLICE

# Crime Prevention through Environmental Design Checklist

**PROJECT:** 133 Somersby Falls Road, Somersby

| CPTED MEASURES | RECOMMENDATIONS | COMPLY * YES ✓ and description | IF NO, PLEASE PROVIDE JUSTIFICATION |
|---|---|---|---|
| * Where relevant, each item is to be shown on the architectural plans. A description of how the development complies, together with the corresponding plan reference number, should also be provided. | | | |
| **1. STREET NUMBER / WAY FINDING SIGNAGE** | 1.1 The street number must be clearly visible from the street.<br>1.2 The street number must be visible at night.<br>1.3 Unit block identification signage must be visible from the street frontage. | ✓<br>The street number will be made visible from Somersby Falls Road and will be visible at night. | |
| **2. SIGNAGE** | 2.1 There must be directional signage located at the entry to the estate/complex clearly indicating location of estate mangers office, building names and unit numbers.<br>2.2 There must be warning signs displayed.<br>2.3 The warning signs must be appropriate.<br>2.4 A map must be displayed of the complex. | ✓<br>Warning signage will be displayed at the site.<br>Directional signage will be provided to access offices and for truck access.<br>A map will be provided. | |

| CPTED MEASURES | RECOMMENDATIONS | COMPLY * YES ✓ and description | IF NO, PLEASE PROVIDE JUSTIFICATION |
|---|---|---|---|
| **3. BUILDING DESIGN** | 3.1 The orientation of buildings must allow for easy natural surveillance between the street, neighbouring property, and the buildings. | ✓ Complies | |
| | 3.2 The floors, walls and ceilings must be of solid construction. | The floors, wall and ceilings are of solid construction. | |
| | 3.3 There must be adequate steps taken to ensure that persons cannot utilise the design of the premises to climb structures from the outside. | The design of the building minimises climbing opportunities. | |
| | 3.4 Have entry/exit points to the estate and/ or buildings been limited? If yes, please comment. | The entry points will be gated and secure. | |
| | 3.5 At entry/exit points there must be electronic entry for example keypad or swipe card entry. | This is not relevant to an industrial development. | |
| | 3.6 Alcoves or recesses must be monitored by CCTV. | This is not relevant to an industrial development. | |
| | 3.7 Garbage bays must be locked to restrict unauthorised entry. | No garage bays are proposed. | |
| | 3.8 There must be a 'Rapid Removal' policy for graffiti. | Graffiti would be removed as required. | |
| | 3.9 There must be graffiti resistant materials utilised in the design of the building. For example painted on masonry garden walls, fencing. | N/A - The building and walls already exist. | |

| CPTED MEASURES | RECOMMENDATIONS | COMPLY * YES ✓ and description | IF NO, PLEASE PROVIDE JUSTIFICATION |
|---|---|---|---|
| **4. FENCES AND GATES** | 4.1 There must be perimeter fences erected around the property.<br>4.2 Access must not be restricted.<br>4.3 Fences must be fitted with locks.<br>4.4 Fences and gates must be in good condition.<br>4.5 Fences must be constructed of appropriate materials.<br>4.6 Gates must be secured.<br>4.7 If the estate complex is a gated complex local Ambulance, Fire Brigade and Police must have keys/swipe cards etc. for access in an emergency. | Lockable gates will be provided<br>Fences and gates are good condition and constructed of chain wire and topped with barbed wire.<br>Gates are lockable and can be secured when the site is not in operation. | |
| **5. LANDSCAPING** | 5.1 People must be able to see your unit/premises clearly from the street.<br>5.2 Landscaping must be regularly maintained.<br>5.3 No person should be able to conceal themselves behind vegetation or gardens. | ✓<br>The premises will be clearly seen from the street<br><br>Landscaping to be regularly maintained.<br><br>Landscaping is minimal and unlikely to provide concealment. | |
| **6. SECURITY LIGHTING** | 6.1 Security lighting must be installed.<br>6.2 Security lighting must be operating.<br>6.3 The entry and exit points must be adequately lit.<br>6.4 Lighting must be positioned in a way to reduce opportunities for vandalism?<br>6.5 The lighting must be sufficient to support images obtained from CCTV footage.<br>6.6 Light switches for all lights must be located in a secure area within the premises.<br>6.7 There must be light timers. | ✓<br>Security lighting is installed and entry and exit points can be adequately lit.<br><br>Clauses 6.5, 6.6 and 6.7 do not apply to industrial developments. | |

| CPTED MEASURES | RECOMMENDATIONS | COMPLY * YES ✓ and description | IF NO, PLEASE PROVIDE JUSTIFICATION |
|---|---|---|---|
| **7. POWER BOARD & LETTERBOX** | 7.1 The power board must be enclosed in a cabinet or room.<br>7.2 The cabinet or room must be fitted with a lock set approved by the local authority.<br>7.3 The cabinet or room must be kept locked?<br>7.4 The letter box must be fitted with an appropriate lock set and kept locked.<br>7.5 The letter box collection facility must be enclosed in the foyer window of the property that has street frontage. | The power board will be enclosed in a cabinet or room.<br>The cabinet/room will be fitted with a lock.<br>The cabinet/room will remain locked.<br>Not applicable<br>Not applicable | |
| **8. GARAGE** | 8.1 The garage must be lockable.<br>8.2 The garage 'tilta' door must have a bolt lock installed.<br>8.3 The garage facility must have floor to ceiling wall. For example, strong mesh or masonry walls.<br>8.4 The garage ceiling and walls must be painted white.<br>8.5 The contents inside the garage facility must not be able to be visible from the outside.<br>8.6 The garage facilities must have CCTV coverage.<br>8.7 The garage facility area must be restricted to non-residents by way of security gates. | Not applicable. | No garage is proposed as this is an industrial development. |

| CPTED MEASURES | RECOMMENDATIONS | COMPLY * YES ✓ and description | IF NO, PLEASE PROVIDE JUSTIFICATION |
|---|---|---|---|
| **9. BALCONY** | 9.1 The balcony must be designed so as not to act as a natural ladder.<br>9.2 The balcony must be adequately designed so as not to allow hand and foot holds to potential offenders trying to scale up the outside of the building.<br>9.3 The railings must be designed so that foot or hand grips cannot be used by offenders.<br>9.4 The balcony must have a sensor light to automatically activate when motion is detected.<br>9.5 Sliding doors and windows adjacent to balconies must be re-enforced with adequate locks etc. to restrict unauthorised access. | Not applicable | A balcony is not proposed. |

| CPTED MEASURES | RECOMMENDATIONS | | COMPLY * YES ✓ and description | IF NO, PLEASE PROVIDE JUSTIFICATION |
|---|---|---|---|---|
| **10. DOORS AND FIRE EXITS** | 10.1 | The external doors must be of solid construction. | YES | |
| | 10.2 | The door frames must be of solid construction. | YES | |
| | 10.3 | The doors must be fitted with quality lock sets to restrict access when not in use. | YES | |
| | 10.4 | The locks must be in good working order. | YES | |
| | 10.5 | A peep hole (door viewer) must be installed. | Not applicable | |
| | 10.6 | Keys must be removed from locks when house is unoccupied. | To be encouraged. | |
| | 10.7 | An Australian standard security/screen door must be installed on all doors. | Not applicable | |
| | 10.8 | Sliding doors must be fitted with a suitable lock sets. | Not applicable | |
| | 10.9 | Entry/exit points must be clearly identified. | Pedestrian entry and exit points will be clearly defined. | |
| | 10.10 | All fire exit doors must be self-closing. | YES | |
| | 10.11 | Fire exit doors must be used appropriately. | Training to be provided in site induction | |
| | 10.12 | All exit doors must be free from obstructions and/or rubbish. | Training to be provided in site induction | |
| | 10.13 | All high-risk doors must be locked at all times. | Training to be provided in site induction | |
| | 10.14 | All external door hinges must be mounted so they cannot be removed. | YES | |
| **11. WINDOWS** | 11.1 | All external windows must be solidly constructed. | YES | |
| | 11.2 | All windows must be fitted with quality lock sets. | YES | |
| | 11.3 | All unused windows must be permanently closed and secured. | YES | |

| CPTED MEASURES | RECOMMENDATIONS | COMPLY * YES ✓ and description | IF NO, PLEASE PROVIDE JUSTIFICATION |
|---|---|---|---|
| | 11.4 Windows must be able to be locked in a partially open position. For example, with a bolt lock.<br>11.5 Skylights must be suitably secured.<br>11.6 Keys must be removed from locks when no persons are home. | Not applicable<br>Not applicable<br>Not applicable | |
| **12. CARPARK** | 12.1 There must be security car parking facilities available.<br>12.2 Residents must have an individual secured garage space.<br>12.3 The access to residential car park must be restricted to residents only.<br>12.4 Access and control must be restricted to residents only by keypad, swipe card or remote system.<br>12.5 'Park Smarter' signage must be displayed within this area to warn motorists to secure their vehicle and property.<br>12.6 CCTV system must be installed and monitor inside the car park facility.<br>12.7 All residents must be supplied with additional storage facilities so that items are not left in areas where they can be seen or easily removed.<br>12.8 The car park must be well lit.<br>12.9 The ceiling of the car park must be painted white.<br>12.10 The car park entry must be restricted by a security roller shutter.<br>12.11 Access to the security roller shutter must have access control measures such as swipe card, key pad or remote system.<br>12.12 Bicycle racks must be | .<br>Not applicable | As the site is an industrial development, Clause 12 does not apply. |

| CPTED MEASURES | RECOMMENDATIONS | COMPLY * YES ✓ and description | IF NO, PLEASE PROVIDE JUSTIFICATION |
|---|---|---|---|
| | positioned in visible areas from the street.<br>12.13 Emergency Services parking should be provided in a large unit complex. | | |
| **13. SURVEILLANCE SYSTEM** | 13.1 CCTV systems must be installed at vehicle entry points.<br>13.2 CCTV systems must be installed at all foyer entry points.<br>13.3 CCTV systems must be installed on the perimeter of the building.<br>13.4 CCTV systems must be installed near to letter box collection facilities.<br>13.5 CCTV systems must be installed near to waste facilities.<br>13.6 CCTV systems must be installed near to fire exits.<br>13.7 Footage must be recorded appropriately.<br>13.8 Footage must be kept for a minimum of 14 days.<br>13.9 The property must be free of dummy cameras.<br>13.10 The cameras must be placed in suitable locations to positively identify an individual from recorded images. | If considered necessary CCTV systems will be installed in compliance with CPTED requirements. | |

| CPTED MEASURES | RECOMMENDATIONS | COMPLY * YES ✓ and description | IF NO, PLEASE PROVIDE JUSTIFICATION |
|---|---|---|---|
| **14. FIRE SAFETY** | 14.1 Smoke detectors must be installed within foyer areas and garages of unit blocks to comply with the Building Code of Australia.<br>14.2 Smoke detector must be installed in the unit complex.<br>14.3 Gutters must be kept clean.<br>14.4 The unit complex must have a site plan displayed in a prominent position.<br>14.5 Waste bins must be stored in a secure place after hours. | Not applicable | The site will comply with fire safety requirements of the NCC and relevant Australian Standards. |

# Water Cycle Management Plan to Support Development Application

## 133 Somersby Falls Rd, Somersby

Prepared for Stateline Asphalts Pty Ltd

Our Ref: 23053-WCMP-1.0

2 November 2023

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CONSULTING Cubo

ENGINEERING BUILDABLE SOLUTIONS

# Document Information

| | |
|---|---|
| Prepared for | Stateline Asphalts Pty Ltd |
| Project Name | Water Cycle Management Plan to Support Development Application |
| Job Reference | 23053 |
| Date | 2 November 2023 |

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# 1 Executive Summary

Cubo Consulting Pty Ltd has been engaged by Sateline Asphalts Pty Ltd to prepare a water cycle management plan (WCMP) to support the development application (DA) submission to the Central Coast Council for the proposed industrial development at 133 Somersby Falls Rd, Somersby.

The report concludes that:

1. Peak post development flow rates can be kept near to or below pre-development flow rates in all storm events up to and including the 1% AEP storm with the proposed onsite detention system.
2. Water quality requirements can be met with the proposed treatment train.
3. The design generally satisfies the requirements of Central Coast Council DCP 2022, Chapter 3.1.

Supporting design drawings are contained at **Appendix A**.

Yours Faithfully,

Prepared by

Doug Black
**Design Engineer**

# 2 Background Information

This document presents the WCMP to support the complying development certification submission to the Central Coast Council for the proposed industrial development at Lot 3 DP712505, 125 Somersby Falls Road, Somersby.

# 3 Site Context

The proposed development site is bound to the east by Somersby Falls Rd and surrounded by vegetation from all other sides.

The proposed development site has an area of approximately 1.01 ha and is generally sloping, generally falling at a grade of approximately 6.5 percent from the northwest corner of the property to the southeast corner of the property frontage on Somersby Falls Rd. Based on soil samples from nearby sites, the underlying soils are predominantly sandy soils with low run off.

Aerial photography of the existing site is presented in Figure 3-1 below.

**Figure 3-1 Existing Site (Source – SIX Maps)**

# 4 Proposed Development

The proposed development is an asphalt processing facility with offices and parking.

Proposed plans for the site are contained at **Appendix A**.

# 5 Stormwater Plan

This WCMP has been developed to align with the objectives in Central Coast Council's Chapter 3.1 (Floodplain Management and Water Cycle Management) from DCP 2022. These include to:

1) Maintain and restore natural water balance whilst reducing the cost of providing and maintaining water infrastructure in a sustainable and efficient manner.
2) Reduce risk to life and damage to property by restricting and controlling building and other development so that it minimises risks to residents and those involved in rescue operations during floods.
3) Reduce nuisance and high-level flooding and the cost of providing and maintaining flood mitigation infrastructure whilst improving water quality in streams and groundwater.
4) Reduce potable water demand by using stormwater as a resource.
5) Protect and enhance natural water systems (creeks, rivers, wetlands, estuaries, lagoons and groundwater systems).
6) Protect and enhance the water quality, by improving the quality of stormwater runoff from the urban catchments.
7) Integrate stormwater management systems into the landscape in a manner that provides multiple benefits, including water quality protection, stormwater retention and detention, public open space and recreational and visual amenity.

## 5.1 Site Constraints

Site constraints include the following:

- The legal point of connection to discharge stormwater from the site is via an interalotment drainage pit in the south-east corner of the property.
- Stormwater runoff from properties to the north and west should be diverted by swales within the boundaries of the property.

## 5.2 Water Conservation Target

In accordance with DCP 2022, Section 3.1.11.1 the target for potable water reduction is 40%.

It is recommended that the additions and alterations incorporate the following WELS rated devices to meet the 40% reduction in potable water:

- 4-star dual-flush toilets
- 3-star showerheads
- 4-star taps (for all taps other than bath outlets and garden taps)
- Water efficient washing machines and dishwashers, wherever possible.

**Dual Plumbing**

As noted in Section 5.3.1 of this report, rainwater reuse is proposed for landscape irrigation and toilet flushing within the office facilities and caretaker's accommodation.

## 5.3 Water Retention Target

The minimum Stormwater Retention Volume (SRV) as required by DCP 2022, Section 3.1.11.2.4 is calculated from the following formula.

$SRV = 0.01A(0.02F)^2$ where: SRV = stormwater retention volume ($m^3$)

A = total site area ($m^2$) – 10,100 $m^2$

F = fraction impervious (%) – 93%

Developed site imperviousness is estimated to be 93%, thus the required stormwater retention volume is as follows:

***Stormwater Retention Volume (SRV) = 292 $m^3$***

The proposed development will have a 338$m^3$ detention basin. This will ensure the Central Coast Council Water Retention Target is met.

### 5.3.1 Rainwater Tank

DCP 2022 Section 3.1.11.2.4 recommends water usage for residential households to be 5 L/day per square metre of roof area. As the development includes a 280$m^2$ building containing an Office, Driver amenities and Caretaker Facilities, by using the gross floor area for the unit as a surrogate value for roof area, it provides a better estimate of potential water usage.

The roof area of the office and amenities building is 280 $m^2$. This equates to 1,400 L of water usage per day. Based on Table 3 of DCP 2022 Section 3.1.11.2.4, toilet flushing, and landscape irrigation are estimated to each account for 20% of the total water usage, 280 L/day each, 40% in total or 3,920L/week.

The total roof area of the proposed development directed to the rainwater tank is approximately 280 $m^2$. Based on an average annual rainfall at Somersby of 1,140 mm, the available daily rainwater supply is 874 L.

A 5kL rainwater tank will provide water for 7 days (from full). The rainwater tank will need to be installed with a mains water top up system and should include a first flush device. All downpipes should be connected to the rainwater tank.

## 5.4 Site Discharge Index (SID)

The Site Discharge Index (SID) as described in Section 6.7.7.3.3 of DCP 2013 is calculated from the following equation for:

$$SID = \frac{\text{Area of Impervious Site Directly Connected to Street} - (50\ m^2)}{\text{Total Site Area} - 10{,}100\ (m^2)}$$

The proposed development connects the almost entire paved area of the developed site to the proposed site treatment devices. Only the front portion of the vehicle access crossing within front boundary setback drains directly to the street, This portion of the driveway has a total area of approximately 50$m^2$.

The development's SID is therefore:

***Site Development Index (SID) = 0.5%***

DCP 2022, Section 3.1.11.3.3 requires the SID to be less than 10%. The development's SID is therefore in compliance with this requirement.

## 5.5 MUSIC Model

A MUSIC model (set up shown in Figure 5-1) was prepared for the development site to determine the pollutant reduction of the treatment train.

**Figure 5-1 MUSIC model arrangement**

Central Coast Council requires, as a minimum, the following reductions in total pollutant load, compared to untreated runoff from the predeveloped site.

**Table 5-1 Minimum pollutant reduction targets**

| Pollutant | Minimum Reduction |
|---|---|
| Total Suspended Solids (TSS) | 80% |
| Total Phosphorus (TP) | 45% |
| Total Nitrogen (TN) | 45% |
| Gross Pollutants | 80% |

### 5.5.1 Base Information

The MUSIC model was prepared in computer model Version 6.3.0.

MUSIC modelling parameters were adopted using the Central Coast Council Lowland MUSIC-link data. The model was run using Sydney rainfall data over a rainfall period of 20 years (January 1974 to December 1993) at a time-step of 6 minutes.

Areas for each input node were as follows:

- Carpark (Urban Sealed Roads) to treatment train – 650 $m^2$
- Paved Site (Urban Industrial) to treatment train – 8,360 $m^2$
- Landscaping (Revegetated Land) – 1,090 $m^2$

### 5.5.2 Treatment Nodes

The treatment nodes proposed as part of the water cycle treatment train include:

1. Pit Insert Baskets (Spel Stormsacks)
2. Detention Basin
3. GPT (Spel Vortceptor SV).096

### 5.5.3 Pit Insert Baskets

The model includes pit insert baskets in each pit in the paved areas, ATLAN (formerly SPEL) Stormsacks. The Stormsack collects litter, sediment, and bound oils at the pit. The product brochure has been included in Appendix D.

### 5.5.4 Detention Basin

A detention basin has been included in the MUSIC model as part of the rainwater tank with volume based on the information in Section 5.6.4.

### 5.5.5 GPT

A GPT has been modelled at the end of the treatment train, in this case an ATLAN (formerly SPEL) Vortceptor SVO.096. This unit collects various pollutants that make it through the stormsacks, and treats flows of up to 96L/s. The product Brochure has been included in Appendix D.

### 5.5.6 Results

Results of the MUSIC model are summarised in the table below. The full MUSIC-link report is contained at **Appendix B**.

**Table 5-2 Summary of MUSIC model results**

| Pollutant | Minimum Reduction | Achieved Reduction | Comments |
|---|---|---|---|
| Flow | | 0.01% | |
| Total Suspended Solids (TSS) | 80% | 87.7% | Treatment is greater than target |
| Total Phosphorus (TP) | 45% | 49.4% | Treatment is greater than target |
| Total Nitrogen (TN) | 45% | 43.0% | Treatment is close to target |
| Gross Pollutants | 80% | 100% | Treatment is greater than target |

The results show that the treatment train generally meets all the pollutant reduction targets for required by Central Coast Council.

## 5.6 DRAINS Model

A DRAINS model has been developed for the site based on the stormwater plan (see **Appendix A**) to ensure the development meets Central Coast Council site discharge requirements.

### 5.6.1 Model Parameters

The model was set up in DRAINS version 2023.06.8578.17142 based on the following parameters:

| Parameter | Value |
|---|---|
| Paved (impervious area depression storage | 1 mm |
| Supplementary area depression storage | 1 mm |
| Grassed (pervious) area depression storage | 5 mm |
| Soil Type | 2 |
| Rainfall | Specific to the site |
| Antecedent Moisture Condition | 3 |

### 5.6.2 Catchments

The existing site was modelled as pervious with a time of concentration estimated using the Kinematic Wave equation based on the following parameters:

$$t_c = \frac{6.94(L.n^*)^{0.6}}{I^{0.4}.S^{0.3}}$$

where: $t_c$ is the time of concentration
$L$ is the overland flow path length = 70 m of pervious and 30 m for impervious
$n^*$ is the surface roughness coefficient = 0.1 for grassed areas and 0.012 for impervious areas
$S$ is the site slope = variable between 1% and 30%
$I$ is the rainfall intensity in mm/hr, this is set during each run of the DRAINS model

The predeveloped site was estimated to be 0% impervious. The post-developed site used the following total impervious and pervious areas:

- Impervious area = 9,385 m$^2$
- Pervious area = 722 m$^2$

The full roof area of the developed site is assumed to drain to the rainwater tank then to the on-site detention system.

### 5.6.3 Results

Results of the DRAINS model are contained in **Appendix C**. The peak outflows from the DRAINS model are summarised in Table 5-3 below.

**Table 5-3 Summary of DRAINS peak outflows**

| Storm Event | Predeveloped Flows (L/s) | Developed Flows (L/s) | Comments |
|---|---|---|---|
| 1EY | 95 | 97 | Developed close predeveloped flows |
| 50% | 146 | 104 | Developed flows less than predeveloped flows |
| 20% | 250 | 127 | Developed flows less than predeveloped flows |
| 10% | 362 | 142 | Developed flows less than predeveloped flows |
| 5% | 445 | 159 | Developed flows less than predeveloped flows |
| 2% | 554 | 173 | Developed flows less than predeveloped flows |
| 1% | 666 | 207 | Developed flows less than predeveloped flows |

The results show that the proposed OSD meets the Central Coast Council requirements of restricting post-development flows to within pre-development flows.

These results comply with the DCP 2022 and achieve the intent of restricting peak flows.

### 5.6.4 On-Site Detention Tank

The proposed OSD volume will be provided by the detention basin. The proposed OSD will have the following:

- Invert level = 224.5 m AHD
- Top water level of 226.49 m AHD (1%AEP).

Outlet controls will be downstream of the detention basin at Pit ½, which will have:

- 155 mm diameter low level outlet at IL 222.65 m AHD directing low flows to the ATLAN Vortceptor
- 150mm orifice at invert level 224.5 m AHD allowing some flows in events greater than X to bypass the GPT
- An overflow weir at IL 226.2 for extreme events.

Details of the detention basin are contained in **Appendix A**.

## 5.7 Overland Drainage Target

### 5.7.1 Upstream Catchment

Topographical conditions suggest little of the upstream catchment will flow through the site. on street kerb and gutter will prevent flows from entering the site.

## 5.8 Flooding Target

the site is outside flood affected areas.

# 6 Operation and Maintenance Plan

Operations and maintenance of the polltuion control measures should be carried out to manufacturers specifications.

# 7 References

BMT WBM Pty Ltd. (August 2010). *Draft New South Wales MUSIC Modelling Guidelines*.

Central Coast Council. (2022). *Development Control Plan 2022*

# 8 Appendices

# APPENDIX A

**A. Cubo Drawings**

# APPENDIX B

**B. MUSIC Model Outputs**

# APPENDIX C

**C. DRAINS Model Outputs**

# APPENDIX D

**D. Third Part Product Brochures**

DEVICE NAME : _AUTOCAD PDF (GENERAL DOCUMENTATION).PC3

# PROPOSED ASPHALT PROCESSING PLANT
# For: STATELINE ASPHALT PTY LTD
# 133 SOMERSBY FALLS ROAD, SOMERSBY NSW

| DRAWING REGISTER - CIVIL WORKS | |
|---|---|
| 23053-CI-000 | COVER SHEET, DRAWING REGISTER & LOCALITY PLAN |
| 23053-CI-010 | CIVIL SITE PLAN |
| 23053-CI-050 | YARD CROSS SECTIONS |
| 23053-CI-051 | NORTH BOUNDARY CUT - LONG SECTION |
| 23053-CI-052 | SOUTH BOUNDARY CUT & FILL - LONG SECTION |
| 23053-CI-055 | STORMWATER DRAINAGE - LONG SECTIONS SHEET 1 |
| 23053-CI-056 | STORMWATER DRAINAGE - LONG SECTIONS SHEET 2 |
| 23053-CI-057 | ALTERNATIVE RETAINING WALL - OPTION |
| 23053-CI-150 | SWEPT PATHS - HEAVY RIGID DELIVERY VEHICLE |
| 23053-CI-152 | SWEPT PATHS - ARTICULATED DELIVERY VEHICLE |
| 23053-CI-154 | SWEPT PATHS - ASPHALT DELIVERY VEHICLE |
| 23053-CI-156 | SWEPT PATHS - TRUCK & DOG DELIVERY VEHICLE |
| 23053-CI-158 | SWEPT PATHS - PASSENGER VEHICLE ENTRY & EXIT |
| 23053-CI-200 | SEDIMENT AND EROSION CONTROL PLAN |
| 23053-CI-210 | SEDIMENT AND EROSION CONTROL DETAILS |
| 23053-CI-215 | BLUE BOOK CALCULATIONS |

LOCALITY PLAN
NTS

| REV | DATE | REVISIONS | DRN | CHK |
|---|---|---|---|---|
| 1 | 1/11/23 | PRELIMINARY | IB | DB |

DESIGNED: DB
DRAWN: IB
CHECKED: VC
RECOMMENDED: ..... PROJECT MANAGER DATE
DATUM: AHD A1
COORDINATE SYSTEM:
APPROVED: ..... PROJECT DIRECTOR DATE

CUBO CONSULTING PTY LTD
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STATELINE ASPHALT PTY LTD
PROPOSED ASPHALT PROCESSING FACILITY
133 SOMERSBY FALLS ROAD
SOMERSBY
COVER SHEET, LOCALITY PLAN AND DRAWING REGISTER

DRAWING STATUS: FOR APPROVAL
FOR CONSTRUCTION PURPOSES WHEN STAMPED

DRAWING NUMBER: 23053-CI-000 REV 1

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm A1 ON ORIGINAL

DEVICE NAME : AUTOCAD PDF (GENERAL DOCUMENTATION).PC3
DATE PLOTTED: 01 November, 2023 - 9:36pm

ALL STORMWATER PITS TO BE FITTED WITH ATLAN STORMSACK WITH OIL BOOMS(TYP)

OSD BASIN
* IL 224.5mAHD
* STORAGE VOLUME = 244 $m^3$
* 1.5m DEEP.
* MAX.1:4 BATTERS.
* OVERFLOWS ALONG SOUTH BOUNDARY DRIVEWAY.

VEHICLE ACCESS CROSSING MODIFIED TO ASSIST WITH VEHICLE SWEPT PATHS - SEE DRAWINGS 23053-CI-150,152,154,156,158.

CONNECT Ø300 OUTLET PIPE FROM SITE STORMWATER SYSTEM INTO EXISTING IAD PIT AND MAKE GOOD

DRAINAGE CONTROL PIT WITH Ø150 SHARP EDGED ORIFICE IL 222.65. PIT TO BE INSTALLED WITH ATLAN 'VORTCEPTOR' MODEL SVO.096 - REFER MANUFACTURER'S DETAILS.

EXISTING IAD PIPE

PROPOSED PROCESSING FACILITY

FFL= 226.75

SOMERSBY FALLS RD

1/050

2/050

PIT 1/10 SL226.50 IL224.964
PIT 1/11 SL226.50 IL225.03
PIT 1/12 SL226.50 IL225.10
PIT 1/13 SL226.50 IL225.43
PIT 1/14 SL226.50 IL 225.75
Ø300 AT 1% GRADE
150.75m

PIT 3/2 OSD IL224.50
Ø450 AT 1% GRADE
PIT 3/1 SL226.30 IL224.44
Ø375 AT 1% GRADE
PIT 1/9 SL226.50 IL224.26
PIT 1/8 SL226.50 IL224.06
PIT 1/7 SL226.50 IL223.86
PIT 1/6 SL226.50 IL223.66
PIT 1/5 SL226.50 IL223.46
PIT 1/4 SL226.50 IL223.26
PIT 1/3 SL226.30 IL223.06
PIT 1/2 SL226.30 IL222.63
3.m SETBACK 214.80m

PIT 2/2 SL226.50 IL 225.80
Ø225 AT 1% GRADE
PIT 2/1 SL226.60 IL 225.58
68.58m
LANDSCAPE BUFFER

Ø300 AT 4.6% GRADE
EXISTING IAD PIT LL 222.57 INLET IL 221.71 OUTLET IL221.29

SL226.75
SL226.74
SL226.65

TRUCK PARKING BAY
AISLE WAY 1
AISLE WAY 2
AISLE WAY 3
AISLE WAY 4
AISLE WAY 5

RAP 40%
WASTE / RAW 60%
STORMWATER DETENTION BASIN
4.m SETBACK

SURFACE WATER FLOW DIRECTION

## CIVIL SITE PLAN
SCALE 1:400

0 10 20 30 40m
SCALE 1:400 @A1

| REV | DATE | REVISIONS | DRN | CHK |
|---|---|---|---|---|
| 1 | 1/11/23 | PRELIMINARY | IB | DB |

DESIGNED: IB
DRAWN: DB
CHECKED: VC
RECOMMENDED: PROJECT MANAGER DATE
DATUM: AHD
A1
COORDINATE SYSTEM:
APPROVED: PROJECT DIRECTOR DATE

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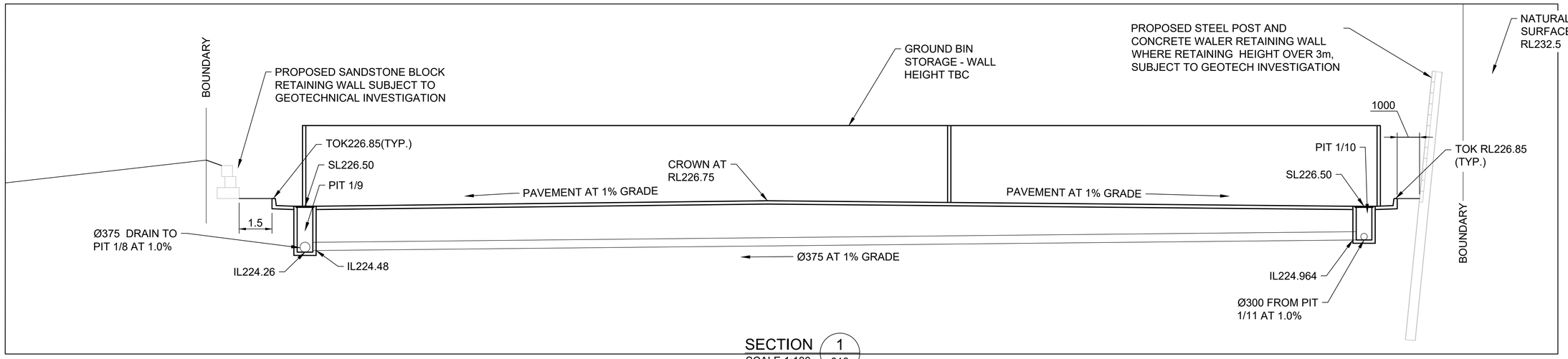
STATELINE ASPHALTS PTY LTD
PROPOSED ASPHALT PROCESSING FACILITY
133 SOMERSBY FALLS ROAD
SOMERSBY
CIVIL SITE PLAN

DRAWING STATUS: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES
DRAWING NUMBER: 23053-CI-010
REV 1

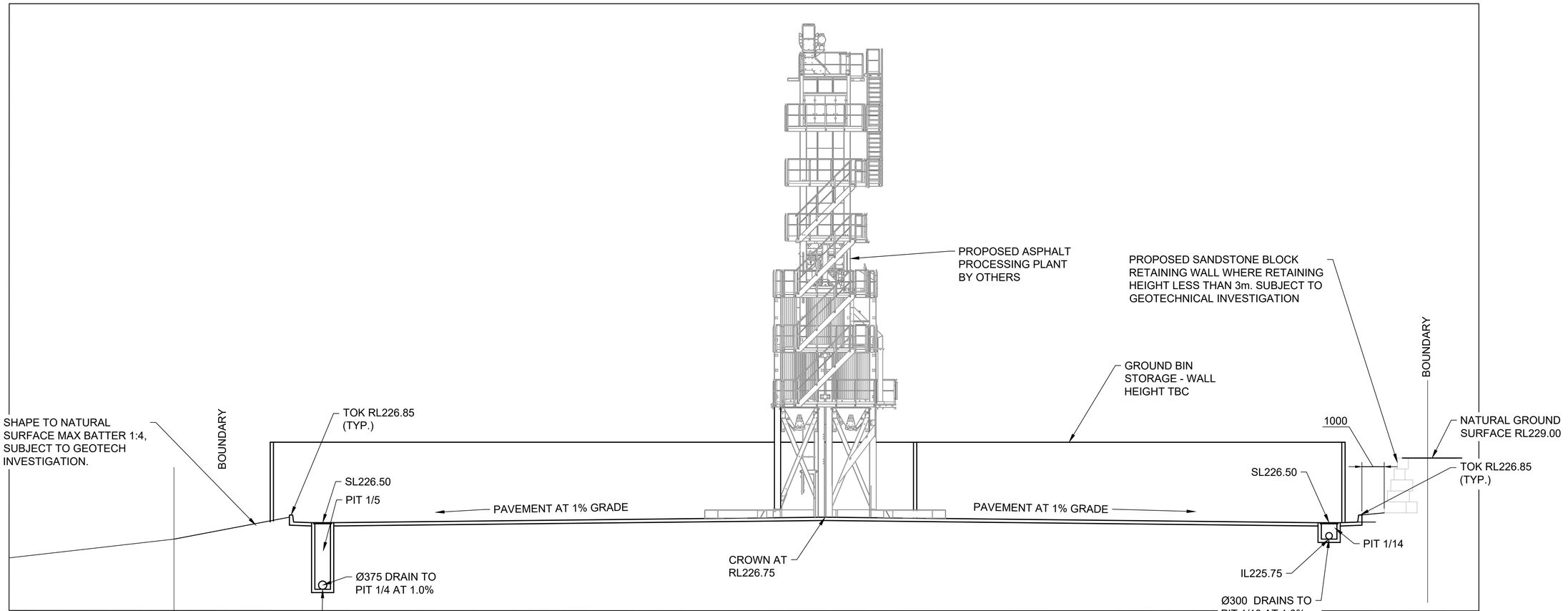
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm A1 ON ORIGINAL

XREFs: X:\2053\CIVIL_X\2053\SURVEY\
CAD FILE: G:\Projects\23 P\2053 133 Somersby Falls Rd Somersby\Drawings\Civil\23053-CI-010 Site Plan.dwg

DEVICE NAME : _AUTOCAD PDF (GENERAL DOCUMENTATION).PC3




SECTION 1
SCALE 1:100
010




SECTION 2
SCALE 1:100
010

| REV | DATE | REVISIONS | DRN | CHK |
|---|---|---|---|---|
| 1 | 1/11/23 | PRELIMINARY | IB | DB |

0 1 2 4 6 8 10m
SCALE 1:100 @A1

| | | | |
|---|---|---|---|
| DESIGNED: IB | DATUM: AHD | A1 | |
| DRAWN: DB | | | |
| CHECKED: VC | COORDINATE SYSTEM: | | |
| RECOMMENDED: | APPROVED: | | |
| PROJECT MANAGER DATE | PROJECT DIRECTOR DATE | | |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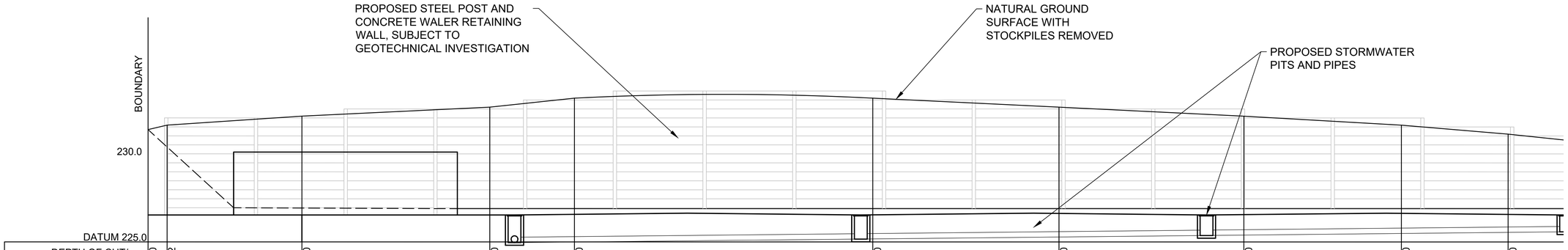
STATELINE ASPHALTS PTY LTD
PROPOSED ASPHALT PROCESSING FACILITY
133 SOMERSBY FALLS ROAD
SOMERSBY
YARD CROSS SECTIONS

DRAWING STATUS: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

DRAWING NUMBER: 23053-CI-050 REV 1

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm A1 ON ORIGINAL

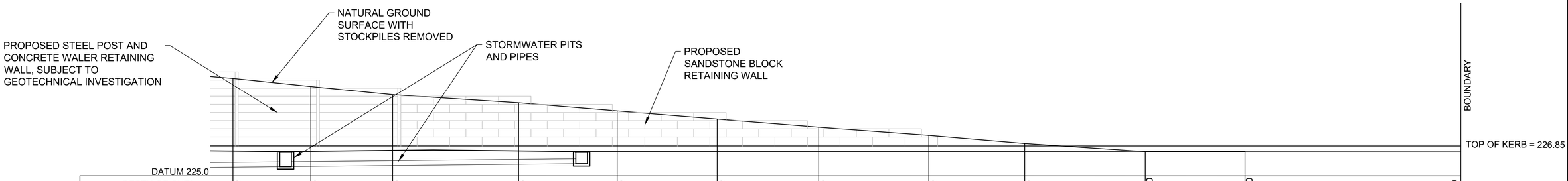
DEVICE NAME : _AUTOCAD PDF (GENERAL DOCUMENTATION).PC3




| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEPTH OF CUT/ RETAINING WALL HEIGHT | 0.000 | 1.062 | 5.100 | 5.600 | 6.100 | 6.100 | 5.600 | 5.100 | 4.600 | 4.100 | | |
| TOP OF WALL/ NATURAL SURFACE | 231.25 | 231.5 | 232.0 | 232.5 | 233.0 | 233.0 | 232.5 | 232.0 | 231.5 | 231.0 | | |
| DESIGN BASE OF WALL LEVEL | 231.25 | 226.90 | 226.90 | 226.90 | 226.90 | 226.90 | 226.90 | 226.90 | 226.90 | 226.90 | | |
| CHAINAGE ALONG NORTH BOUNDARY | 0.000 | 1.06 | 8.57 | 19.04 | 23.76 | 40.38 | 50.76 | 61.06 | 69.84 | 75.79 | | |

## NORTH BOUNDARY CUT - LONG SECTION

SCALE 1:125 AT A1




| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEPTH OF CUT/ RETAINING WALL HEIGHT | 4.100 | 3.600 | 3.100 | 2.600 | 2.100 | 1.600 | 1.100 | 0.600 | 0.100 | -0.400 | -0.400 | 0.000 |
| TOP OF WALL/ NATURAL SURFACE | 231.0 | 230.5 | 230.0 | 229.5 | 229.0 | 228.5 | 228.0 | 227.5 | 227.0 | 226.5 | 226.5 | 0.000 |
| DESIGN BASE OF WALL LEVEL | 226.90 | | 226.90 | 226.90 | 226.90 | 226.90 | 226.90 | 226.90 | 226.90 | 226.90 | 226.90 | 226.90 |
| CHAINAGE ALONG NORTH BOUNDARY | 75.79 | 80.57 | 85.60 | 93.35 | 99.40 | 105.56 | 111.80 | 118.57 | 124.46 | 131.87 | 138.01 | 151.27 |

## NORTH BOUNDARY CUT - LONG SECTION

SCALE 1:125 AT A1

PROPOSED RETAINING WALL SUMMARY - NORTHERN BOUNDARY:

1. CH 0.917 AND CH 86.107 - VARIABLE HEIGHT STEEL POST AND CONCRETE WALER WALL TO STRUCTURAL ENG DETAILS
2. CH 86.107 AND CH 119.107 - VARIABLE HEIGHT SANDSTONE BLOCK WALL TO STRUCTURAL ENG DETAILS
3. CH 119.107 AND CH 151.268 - MAX 1:4 BATTER TO NATURAL GROUND SURFACE

| REV | DATE | REVISIONS | DRN | CHK |
|---|---|---|---|---|
| 1 | 1/11/23 | PRELIMINARY | IB | DB |

0 2.5 5 7.5 10 12.5m
SCALE 1:125 @A1

DESIGNED: IB
DRAWN: DB
CHECKED: VC
RECOMMENDED: PROJECT MANAGER DATE

DATUM: AHD A1
COORDINATE SYSTEM:
APPROVED: PROJECT DIRECTOR DATE

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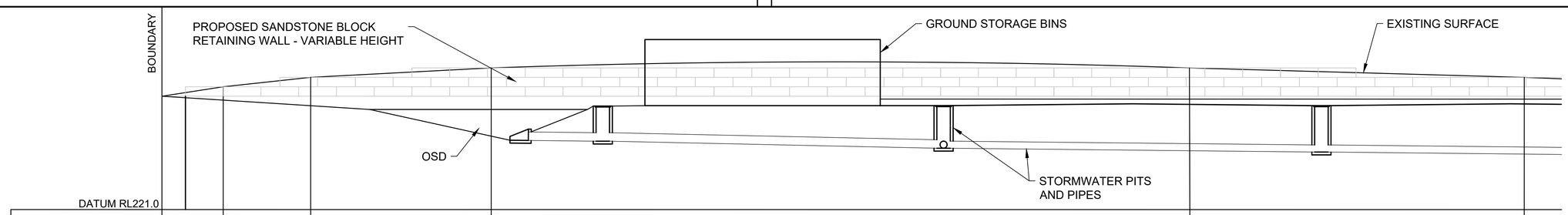
STATELINE ASPHALTS PTY LTD
PROPOSED ASPHALT PROCESSING FACILITY
133 SOMERSBY FALLS ROAD
SOMERSBY
NORTH BOUNDARY CUT - LONG SECTION

DRAWING STATUS: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

DRAWING NUMBER: 23053-CI-051 REV 1

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm A1 ON ORIGINAL

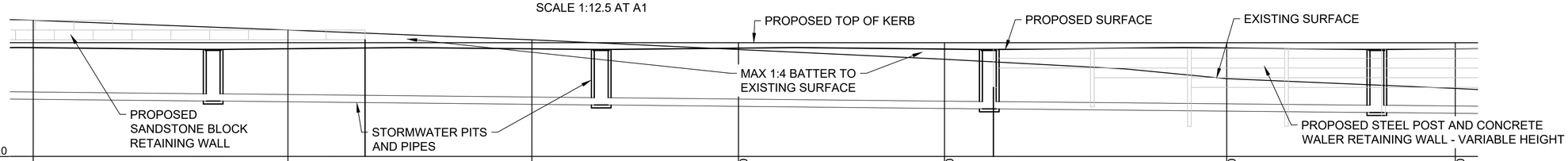
DEVICE NAME : _AUTOCAD PDF (GENERAL DOCUMENTATION).PC3




| DATUM RL221.0 | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEPTH OF CUT(+) HEIGHT OF FILL(-) | 0.000 | | 0.500 | | 1.000 | | 1.500 | | 1.600 | | 1.100 | | | |
| TOP OF WALL/ NATURAL SURFACE | 227.00 | | 227.50 | | 228.00 | | 228.50 | | 228.50 | | 228.00 | | | |
| DESIGN BASE OF WALL LEVEL | 227.00 | | 227.00 | | 227.00 | | 227.00 | | 226.90 | | 226.90 | | | |
| CHAINAGE ALONG SOUTH BOUNDARY | 0.000 | | 3.25 | | 7.88 | | 17.44 | | 54.47 | | 72.15 | | | |

## SOUTH BOUNDARY - LONG SECTION CH 0.00 TO 72.154

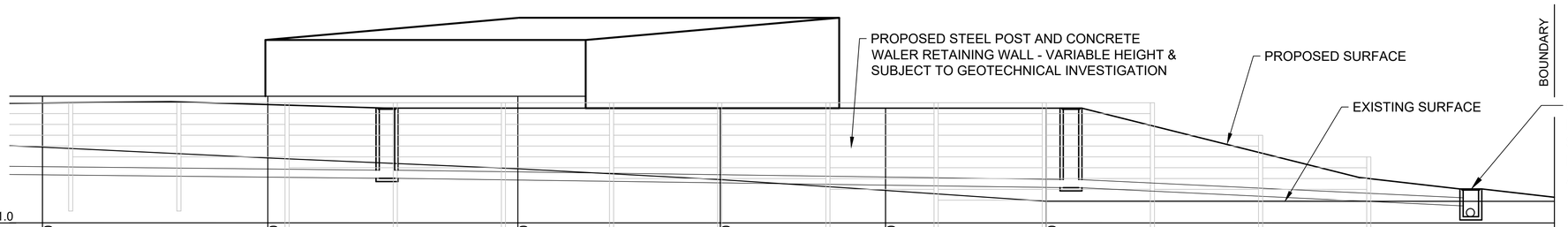
SCALE 1:12.5 AT A1




| DATUM RL221.0 | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEPTH OF CUT(+) HEIGHT OF FILL(-) | 1.100 | | 0.600 | | 0.100 | | -0.400 | | -0.900 | | -1.400 | | -1.900 | |
| TOP OF WALL/ NATURAL SURFACE | 228.00 | | 227.50 | | 227.00 | | 226.50 | | 226.00 | | 225.50 | | 225.00 | |
| DESIGN BASE OF WALL LEVEL | 226.90 | | 226.90 | | 226.90 | | 226.90 | | 226.90 | | 226.90 | | 226.90 | |
| CHAINAGE ALONG SOUTH BOUNDARY | 72.15 | | 85.28 | | 97.84 | | 108.48 | | 119.09 | | 133.63 | | 145.40 | |

## SOUTH BOUNDARY - LONG SECTION CH 72.154 TO 145.40

SCALE 1:125 AT A1




| DATUM RL221.0 | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEPTH OF CUT(+) HEIGHT OF FILL(-) | -1.900 | | -2.400 | | -2.900 | | -3.250 | | -3.750 | | -4.250 | | 0.000 | |
| TOP OF WALL/ NATURAL SURFACE | 225.00 | | 224.50 | | 224.00 | | 223.50 | | 223.00 | | 222.50 | | 222.40 | |
| DESIGN BASE OF WALL LEVEL | 226.90 | | 226.90 | | 226.90 | | 226.75 | | 226.75 | | 226.75 | | | |
| CHAINAGE ALONG SOUTH BOUNDARY | 145.40 | | 155.82 | | 167.38 | | 176.74 | | 184.37 | | 191.80 | | 215.38 | |

PROPOSED RETAINING WALL SUMMARY - SOUTHERN BOUNDARY:

1. CH1.246 AND CH89.246 - VARIABLE HEIGHT SANDSTONE BLOCK WALL
2. CH89.246 AND CH121.615 - MAX 1:4 BATTER TO NATURAL GROUND SURFACE
3. CH121.615 AND CH206.805 - VARIABLE HEIGHT STEEL POST AND CONCRETE WALER WALL TO STRUCTURAL ENG DETAILS

## SOUTH BOUNDARY - LONG SECTION CH 145.40 TO 349.03

SCALE 1:125 AT A1

ALL RETAINING WALLS SUBJECT TO GEOTECHNICAL ENGINEERS RECOMMENDATIONS

| REV | DATE | REVISIONS | DRN | CHK |
|---|---|---|---|---|
| 1 | 1/11/23 | PRELIMINARY | IB | DB |

0 2.5 5 7.5 10 12.5m
SCALE 1:125 @A1

DESIGNED: IB
DRAWN: DB
CHECKED: VC
RECOMMENDED: PROJECT MANAGER DATE

DATUM: AHD A1
COORDINATE SYSTEM:
APPROVED: PROJECT DIRECTOR DATE

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STATELINE ASPHALTS PTY LTD

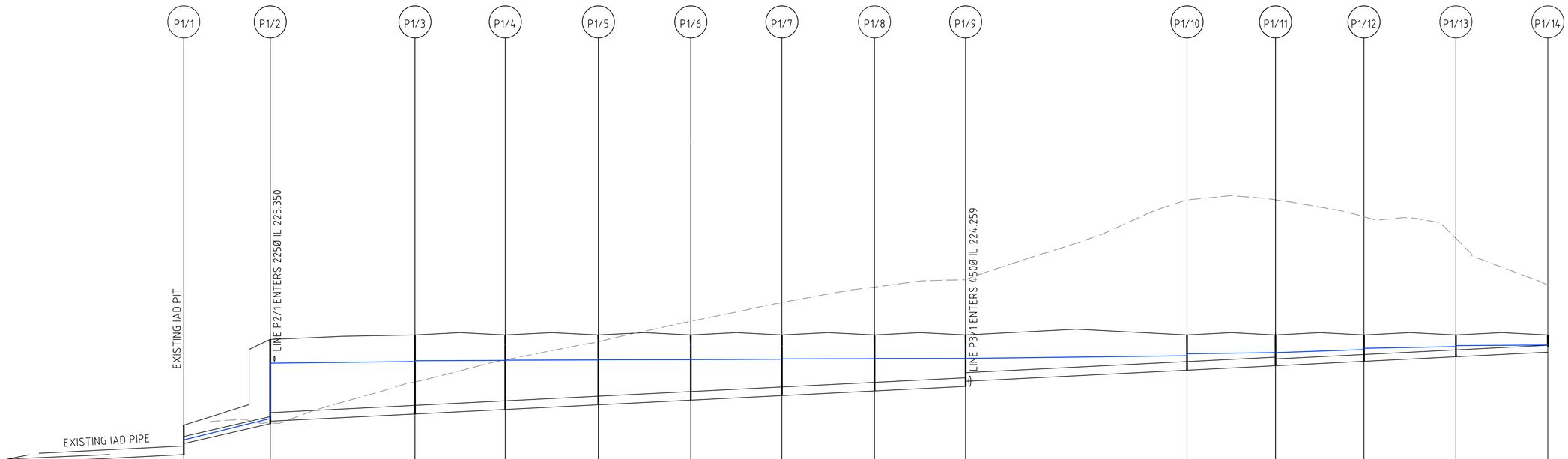
PROPOSED ASPHALT PROCESSING FACILITY
133 SOMERSBY FALLS ROAD
SOMERSBY
SOUTH BOUNDARY CUT & FILL - LONG SECTION

DRAWING STATUS: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

DRAWING NUMBER: 23053-CI-052 REV 1

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm A1 ON ORIGINAL

DEVICE NAME : _AUTOCAD PDF (GENERAL DOCUMENTATION).PC3




| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FLOW RATE 10%AEP (l/sec) VELOCITY (m/s) | 131 1.2 | 107 1.0 | 104 0.9 | 103 0.9 | 102 0.9 | 102 0.9 | 101 0.9 | 101 0.9 | 135 1.2 | 114 1.0 | 92 1.3 | 72 1.0 | 51 0.7 | |
| PIPE DETAILS SLOPE/GRADE | 300Ø PVC 4.6% | 375Ø PVC 1.0% | 375Ø PVC 1.0% | 375Ø PVC 1.0% | 375Ø PVC 1.0% | 375Ø PVC 1.0% | 375Ø PVC 1.0% | 375Ø PVC 1.0% | 375Ø PVC 1.0% | 375Ø PVC 1.0% | 300Ø PVC 1.0% | 300Ø PVC 1.0% | 300Ø PVC 1.0% | |
| DATUM RL 217.5 | | | | | | | | | | | | | | |
| HGL | 221.930 | 222.860<br>225.268 | 225.340<br>225.376 | 225.389<br>225.400 | 225.410<br>225.418 | 225.423<br>225.427 | 225.443<br>225.456 | 225.466<br>225.475 | 225.477<br>225.479 | 225.595<br>225.681 | 225.731<br>225.771 | 225.864<br>225.918 | 225.993<br>226.035 | 226.059 |
| DEPTH TO INVERT | 0.800 | 3.665<br>3.558 | 3.441 | 3.244 | 3.041 | 2.839 | 2.641 | 2.439 | 2.241<br>2.019 | 1.536 | 1.344 | 1.15 | 0.951 | 0.750 |
| INVERT LEVEL | 221.770 | 222.636<br>222.743 | 223.059 | 223.256 | 223.459 | 223.661 | 223.859 | 224.061 | 224.259<br>224.481 | 224.964 | 225.156 | 225.350 | 225.548 | 225.75 |
| FINISHED SURFACE | 222.57 | 226.301 | 226.500 | 226.500 | 226.500 | 226.500 | 226.500 | 226.500 | 226.500 | 226.500 | 226.500 | 226.500 | 226.500 | 226.500 |
| EXISTING SURFACE | 222.57 | 222.663 | 224.451 | 225.415 | 226.201 | 227.095 | 227.910 | 228.587 | 228.912 | 232.385 | 232.389 | 231.651 | 230.706 | 228.671 |
| CHAINAGE | 0.000 | 18.853<br>18.853 | 31.525<br>50.378 | 19.680<br>70.058 | 20.28<br>90.338 | 20.16<br>110.498 | 19.83<br>130.328 | 20.18<br>150.508 | 19.86<br>170.368 | 48.25<br>218.618 | 19.14<br>237.758 | 19.42<br>257.178 | 19.93<br>277.108 | 20.12<br>297.228 |

DRAINAGE LONGITUNDINAL SECTION FOR LINE 1
SCALES: HORIZONTAL 1:500 VERTICAL 1:100

| REV | DATE | REVISIONS | DRN | CHK |
|---|---|---|---|---|
| 1 | 1/11/23 | PRELIMINARY | IB | DB |

DESIGNED: IB
DRAWN: DB
CHECKED: VC
RECOMMENDED: PROJECT MANAGER DATE

DATUM: AHD
A1
COORDINATE SYSTEM:
APPROVED: PROJECT DIRECTOR DATE

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STATELINE ASPHALTS PTY LTD

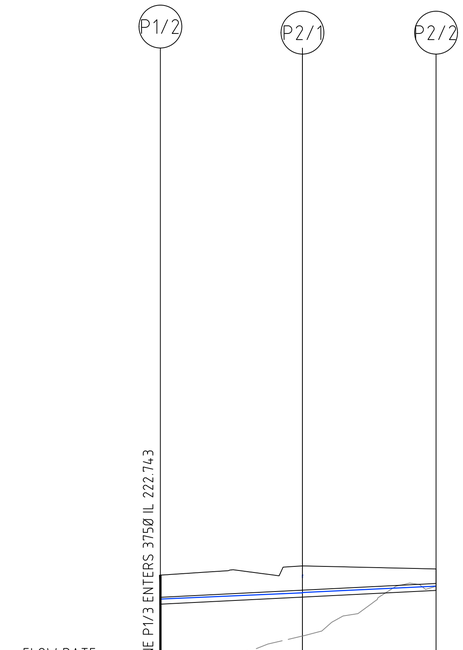
PROPOSED ASPHALT PROCESSING FACILITY
133 SOMERSBY FALLS ROAD
SOMERSBY
STORMWATER DRAINAGE - LONG SECTIONS SHEET 1

DRAWING STATUS: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

DRAWING NUMBER: 23053-CI-055
REV: 2

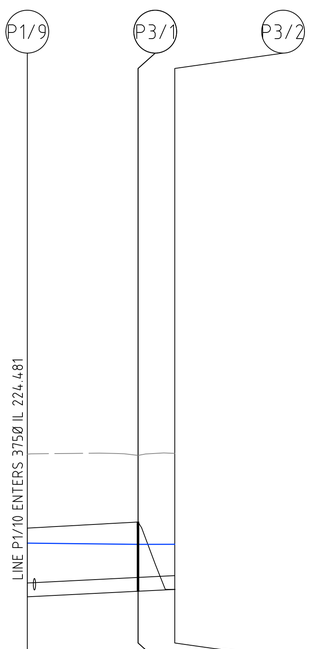
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm A1 ON ORIGINAL

DEVICE NAME : _AUTOCAD PDF (GENERAL DOCUMENTATION).PC3




| | | | |
|---|---|---|---|
| FLOW RATE 10%AEP (l/sec) | | 29 | 31 |
| VELOCITY (m/s) | | 0.72 | 0.78 |
| PIPE DETAILS | | 225Ø | 225Ø |
| SLOPE/GRADE | | 1.0% | 1.0% |
| DATUM RL 220.6 | | | |
| HGL | 225.518 | 225.720 | 225.731 / 225.938 |
| DEPTH TO INVERT | 0.951 | 1.018 | 0.700 |
| INVERT LEVEL | 225.350 | 225.582 | 225.800 |
| FINISHED SURFACE | 226.301 | 226.600 | 226.500 |
| EXISTING SURFACE | 222.663 | 224.310 | 225.933 |
| CHAINAGE | 0.000 | 23.189 | 45.000 |
| | | 23.189 | 21.811 |

DRAINAGE LONGITUNDINAL SECTION FOR LINE 2
SCALES: HORIZONTAL 1:500 VERTICAL 1:100




| | | | |
|---|---|---|---|
| FLOW RATE 10%AEP (l/sec) | | 90 | 90 |
| VELOCITY (m/s) | | 0.57 | 0.57 |
| PIPE DETAILS | | 450Ø | 450Ø |
| SLOPE/GRADE | | 1.0% | 1.0% |
| DATUM RL 219.3 | | | |
| HGL | 226.010 | 225.971 | 225.973 |
| DEPTH TO INVERT | 2.241 | 2.260 | 0.000 |
| INVERT LEVEL | 224.259 | 224.440 | 224.500 |
| FINISHED SURFACE | 226.500 | 226.700 | 224.500 |
| EXISTING SURFACE | 228.912 | 228.875 | 228.940 |
| CHAINAGE | 0.000 | 18.080 | 24.071 |
| | | 18.080 | 5.991 |

DRAINAGE LONGITUNDINAL SECTION FOR LINE 3
SCALES: HORIZONTAL 1:500 VERTICAL 1:100

| REV | DATE | REVISIONS | DRN | CHK |
|---|---|---|---|---|
| 1 | 1/11/23 | PRELIMINARY | IB | DB |

DESIGNED: IB
DRAWN: DB
CHECKED: VC
RECOMMENDED: PROJECT MANAGER DATE

DATUM: AHD
A1
COORDINATE SYSTEM:
APPROVED: PROJECT DIRECTOR DATE

CUBO CONSULTING PTY LTD
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Suite 6, 220 The Entrance Road, Erina NSW
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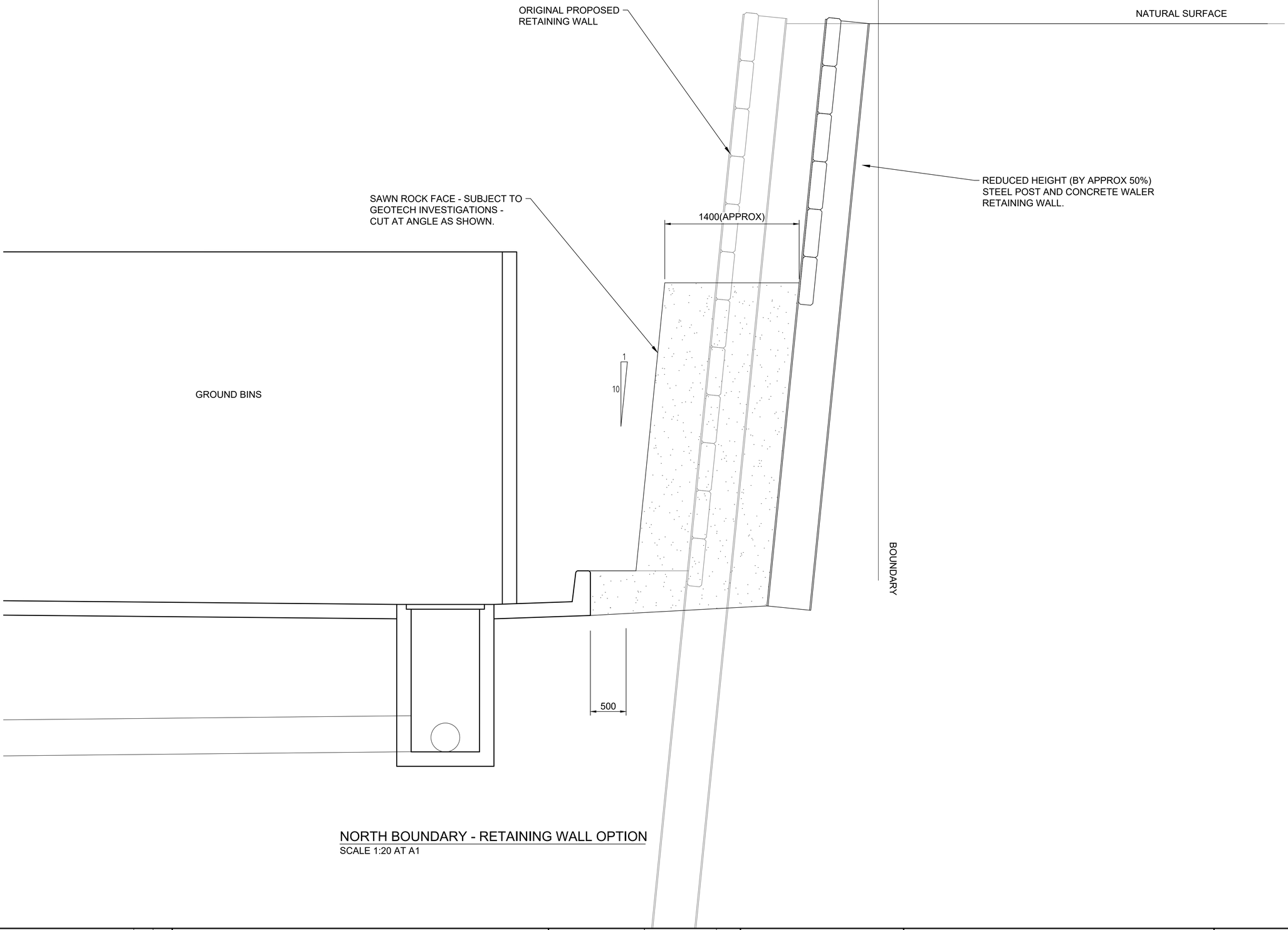
STATELINE ASPHALTS PTY LTD
PROPOSED ASPHALT PROCESSING FACILITY
133 SOMERSBY FALLS ROAD
SOMERSBY
STORMWATER DRAINAGE - LONG SECTIONS SHEET 2

DRAWING STATUS: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

DRAWING NUMBER: 23053-CI-056
REV: 1

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm A1 ON ORIGINAL

DEVICE NAME : _AUTOCAD PDF (GENERAL DOCUMENTATION).PC3




NORTH BOUNDARY - RETAINING WALL OPTION
SCALE 1:20 AT A1

| REV | DATE | REVISIONS | DRN | CHK |
|---|---|---|---|---|
| 1 | 1/11/23 | PRELIMINARY | IB | DB |

0 0.5 1 1.5 2m
SCALE 1:20 @A1

DESIGNED: IB
DRAWN: DB
CHECKED: VC
RECOMMENDED: PROJECT MANAGER DATE

DATUM: AHD A1
COORDINATE SYSTEM:
APPROVED: PROJECT DIRECTOR DATE

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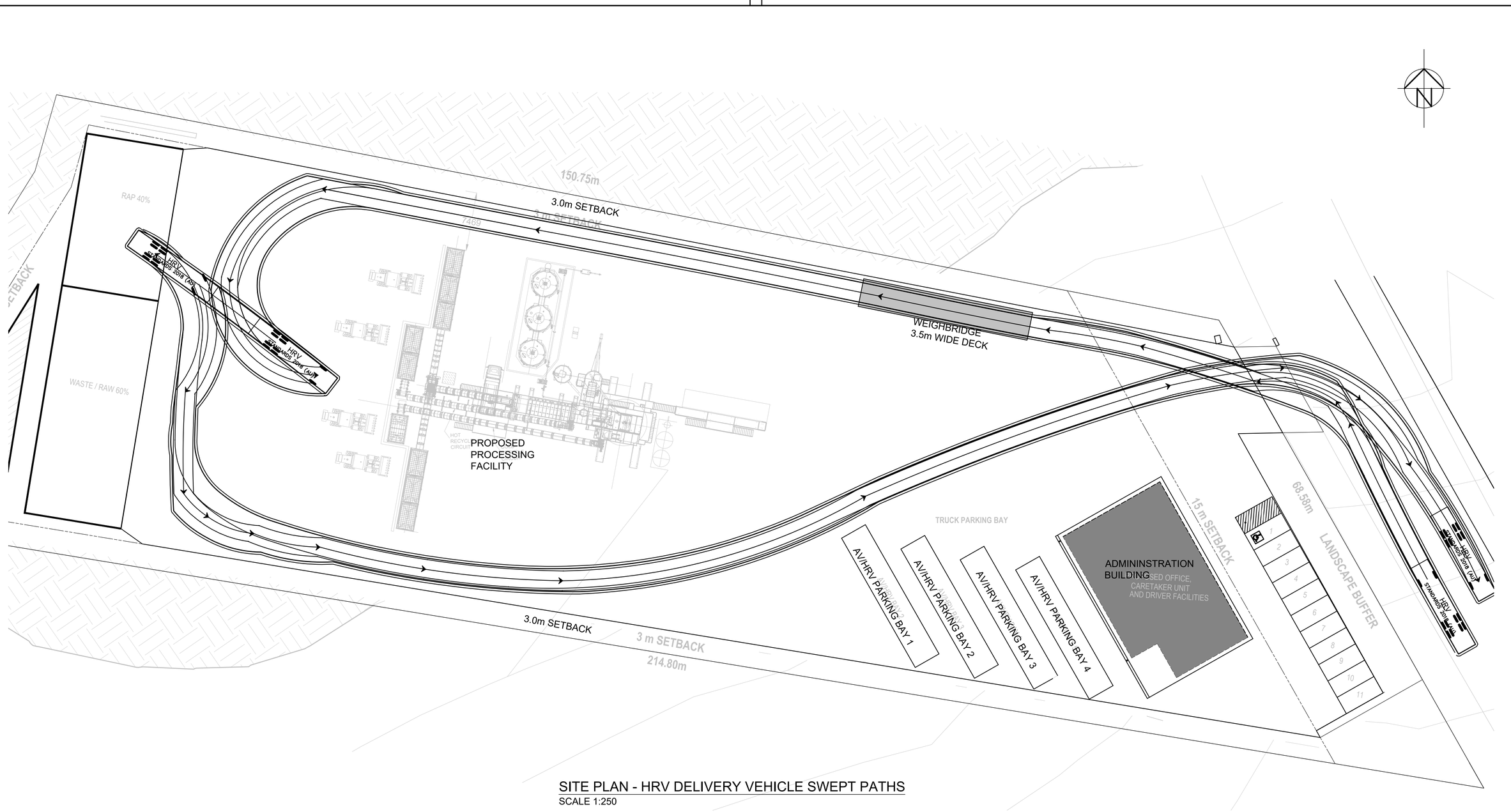
STATELINE ASPHALTS PTY LTD
PROPOSED ASPHALT PROCESSING FACILITY
133 SOMERSBY FALLS ROAD
SOMERSBY
ALTERNATIVE RETAINING WALL

DRAWING STATUS:
PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

DRAWING NUMBER: 23053-CI-057
REV: 1

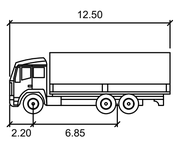
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm A1 ON ORIGINAL

DEVICE NAME : _AUTOCAD PDF (GENERAL DOCUMENTATION).PC3




## SITE PLAN - HRV DELIVERY VEHICLE SWEPT PATHS

SCALE 1:250




HRV

| | meters |
|---|---|
| Width | : 2.50 |
| Track | : 2.50 |
| Lock to Lock Time | : 6.0 |
| Steering Angle | : 36.7 |

| REV | DATE | REVISIONS | DRN | CHK |
|---|---|---|---|---|
| 1 | 1/11/23 | PRELIMINARY | IB | DB |

0 5 10 15 20 25m
SCALE 1:250 @A1

DESIGNED: IB
DRAWN: DB
CHECKED: VC
RECOMMENDED:
PROJECT MANAGER DATE

DATUM: AHD
A1
COORDINATE SYSTEM:
APPROVED:
PROJECT DIRECTOR DATE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STATELINE ASPHALTS PTY LTD

PROPOSED ASPHALT PROCESSING FACILITY
133 SOMERSBY FALLS ROAD
SOMERSBY
SWEPT PATHS - HEAVY RIGID DELIVERY VEHICLE

DRAWING STATUS:
PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

DRAWING NUMBER: 23053-CI-150
REV 1

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm A1 ON ORIGINAL

DEVICE NAME : _AUTOCAD PDF (GENERAL DOCUMENTATION).PC3

STORAGE BIN

STORAGE BIN

RAP 40%

WASTE / RAW 60%

3.0m SETBACK

150.75m

3.0m SETBACK

7469

WEIGHBRIDGE
3.5m WIDE DECK

PROPOSED PROCESSING FACILITY

HOT RECYCLE CIRCUIT

TRUCK PARKING BAY

AV/HRV PARKING BAY 1

AV/HRV PARKING BAY 2

AV/HRV PARKING BAY 3

AV/HRV PARKING BAY 4

ADMININSTRATION BUILDING
OFFICE, CARETAKER UNIT AND DRIVER FACILITIES

15 m SETBACK

68.58m

LANDSCAPE BUFFER

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.

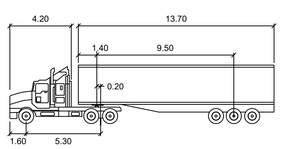
3 m SETBACK

214.80m

3.0m SETBACK

# SITE PLAN - ARTICULATED DELIVERY VEHICLE SWEPT PATHS

SCALE 1:250




S ARTICULATED 19M

meters

| | | | |
|---|---|---|---|
| Tractor Width | : 2.50 | Lock to Lock Time | : 6.0 |
| Trailer Width | : 2.50 | Steering Angle | : 27.7 |
| Tractor Track | : 2.50 | Articulating Angle | : 70.0 |
| Trailer Track | : 2.50 | | |

| REV | DATE | REVISIONS | DRN | CHK |
|---|---|---|---|---|
| 1 | 1/11/23 | PRELIMINARY | IB | DB |

0 5 10 15 20 25m

SCALE 1:250 @A1

DESIGNED: IB
DRAWN: DB
CHECKED: VC
RECOMMENDED:
PROJECT MANAGER DATE

DATUM: AHD
A1
COORDINATE SYSTEM:
APPROVED:
PROJECT DIRECTOR DATE

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STATELINE ASPHALTS PTY LTD

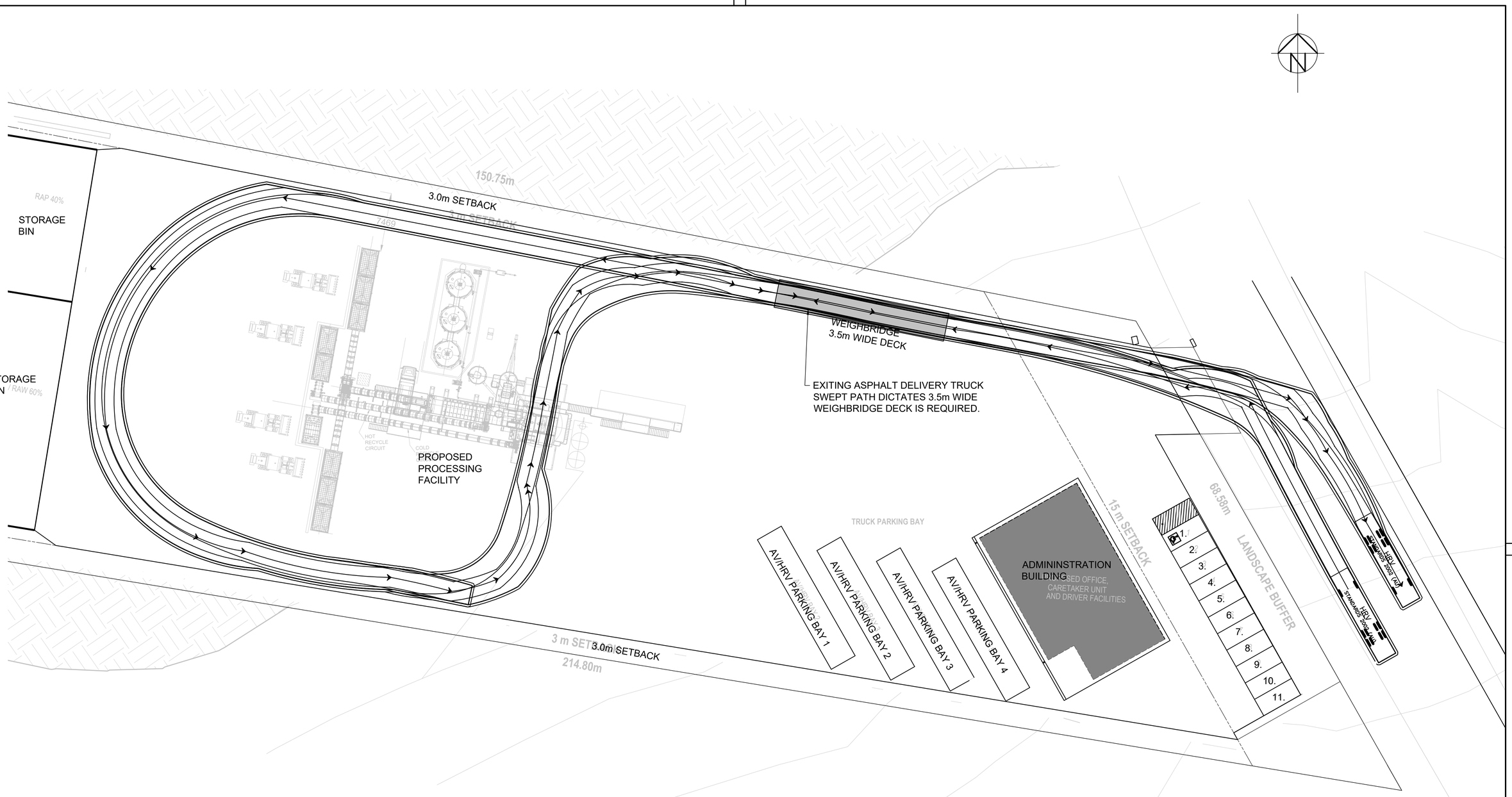
PROPOSED ASPHALT PROCESSING FACILITY
133 SOMERSBY FALLS ROAD
SOMERSBY
SWEPT PATHS - ARTICULATED DELIVERY VEHICLE

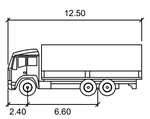
DRAWING STATUS: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

DRAWING NUMBER: 23053-CI-152
REV 1

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm A1 ON ORIGINAL

DEVICE NAME : _AUTOCAD PDF (GENERAL DOCUMENTATION).PC3




HRV

| | meters |
|---|---|
| Width | : 2.50 |
| Track | : 2.50 |
| Lock to Lock Time | : 6.0 |
| Steering Angle | : 35.2 |

## SITE PLAN - ASPHALT DELIVERY VEHICLE SWEPT PATHS

SCALE 1:250

| REV | DATE | REVISIONS | DRN | CHK |
|---|---|---|---|---|
| 1 | 1/11/23 | PRELIMINARY | IB | DB |

0 5 10 15 20 25m

SCALE 1:250 @A1

| | | | |
|---|---|---|---|
| DESIGNED: IB | DATUM: AHD | A1 | |
| DRAWN: DB | COORDINATE SYSTEM: | | |
| CHECKED: VC | | | |
| RECOMMENDED: | APPROVED: | | |
| PROJECT MANAGER DATE | PROJECT DIRECTOR DATE | | |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STATELINE ASPHALTS PTY LTD

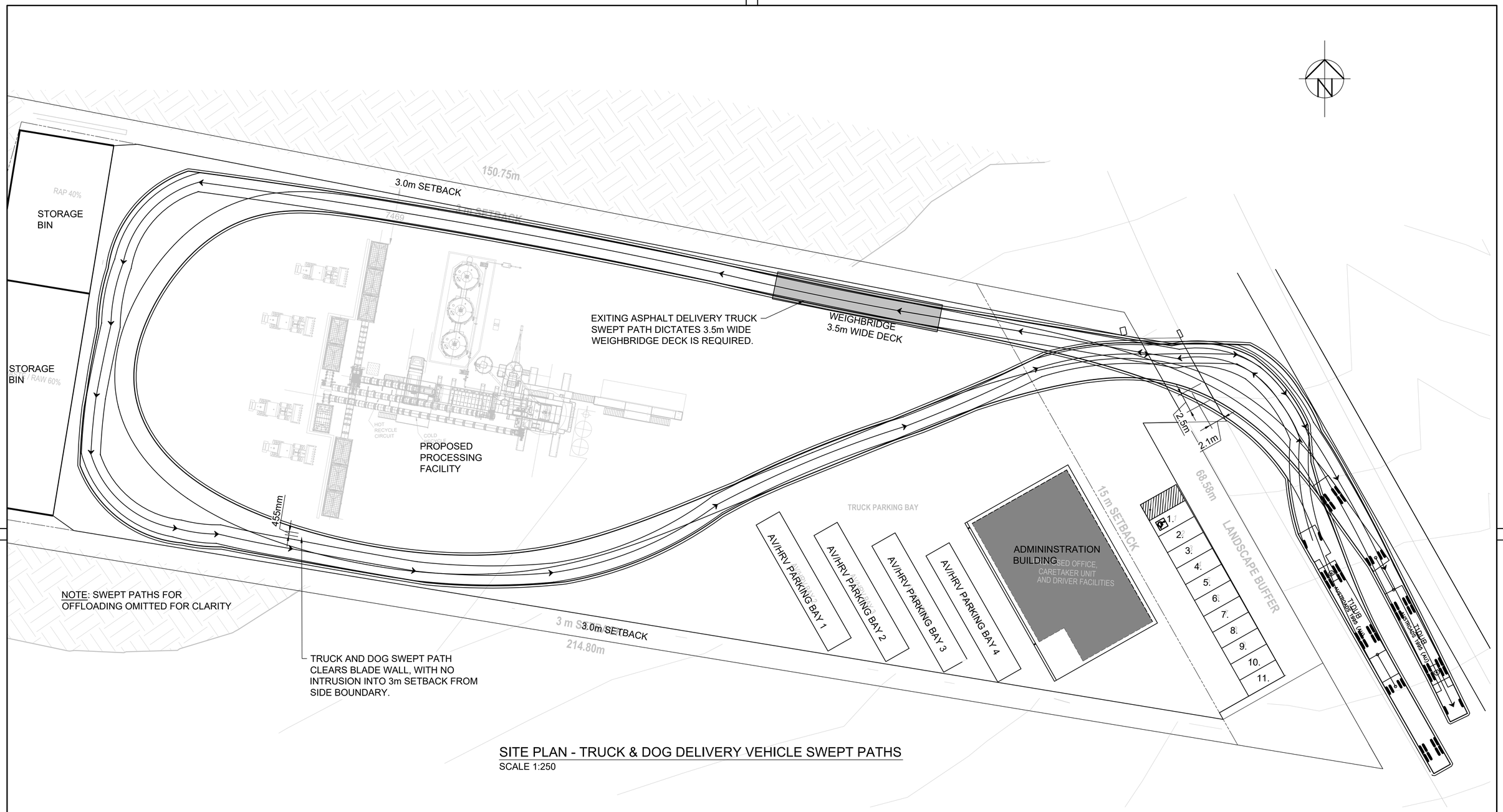
PROPOSED ASPHALT PROCESSING FACILITY
133 SOMERSBY FALLS ROAD
SOMERSBY
SWEPT PATHS - ASPHALT DELIVERY VEHICLE

DRAWING STATUS: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

DRAWING NUMBER: 23053-CI-154 REV 1

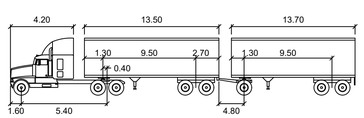
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm A1 ON ORIGINAL

DEVICE NAME : _AUTOCAD PDF (GENERAL DOCUMENTATION).PC3




## SITE PLAN - TRUCK & DOG DELIVERY VEHICLE SWEPT PATHS

SCALE 1:250




T1DUB

meters

| | | | |
|---|---|---|---|
| Tractor Width | : 2.50 | Lock to Lock Time | : 6.0 |
| Trailer Width | : 2.50 | Steering Angle | : 23.0 |
| Tractor Track | : 2.50 | Articulating Angle | : 70.0 |
| Trailer Track | : 2.50 | | |

| REV | DATE | REVISIONS | DRN | CHK |
|---|---|---|---|---|
| 1 | 1/11/23 | PRELIMINARY | IB | DB |

0 5 10 15 20 25m
SCALE 1:250 @A1

DESIGNED: IB
DRAWN: DB
CHECKED: VC
RECOMMENDED:
PROJECT MANAGER DATE

DATUM: AHD
A1
COORDINATE SYSTEM:
APPROVED:
PROJECT DIRECTOR DATE

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STATELINE ASPHALTS PTY LTD

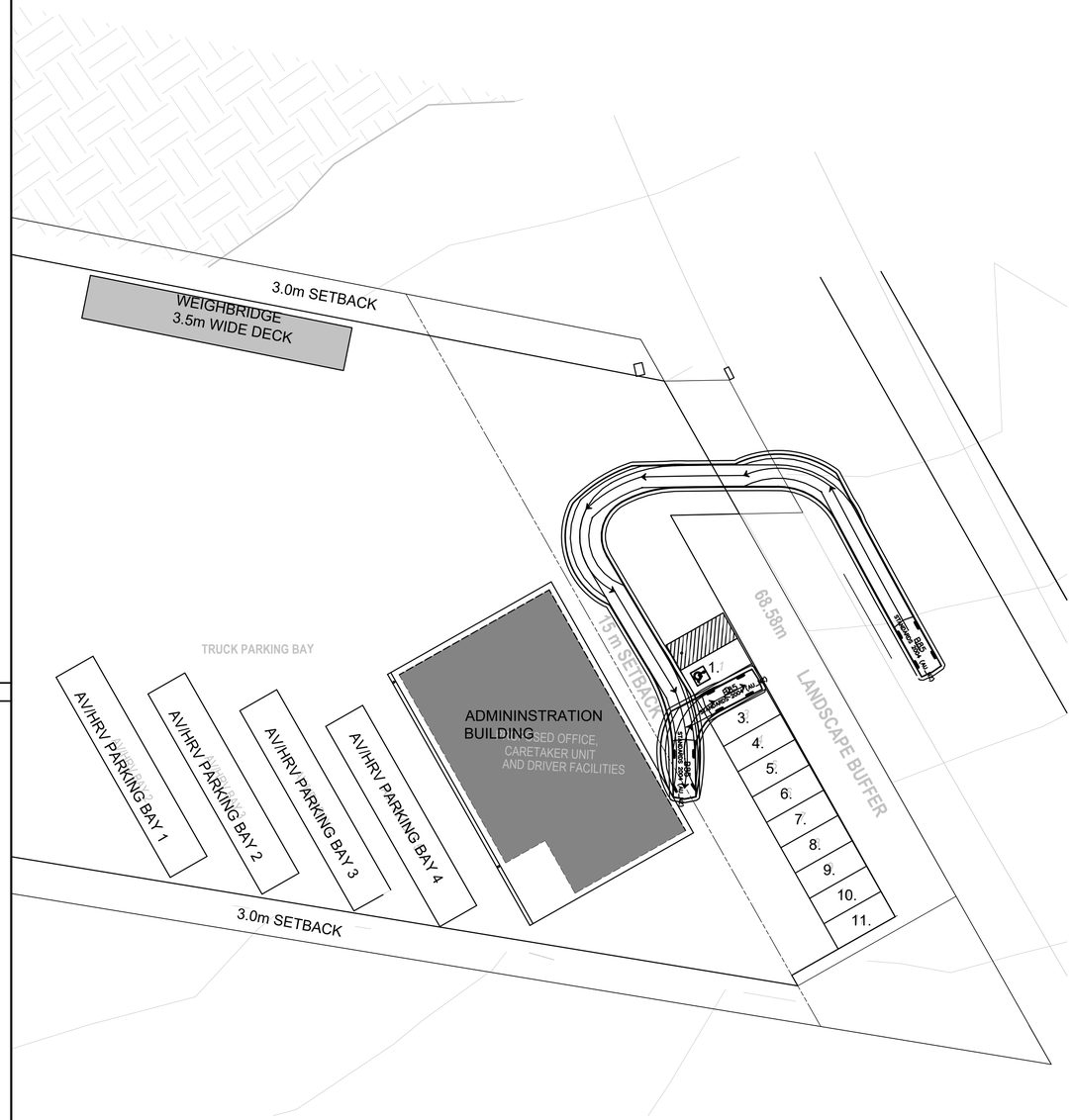
PROPOSED ASPHALT PROCESSING FACILITY
133 SOMERSBY FALLS ROAD
SOMERSBY
SWEPT PATHS - TRUCK & DOG DELIVERY VEHICLE

DRAWING STATUS:
PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

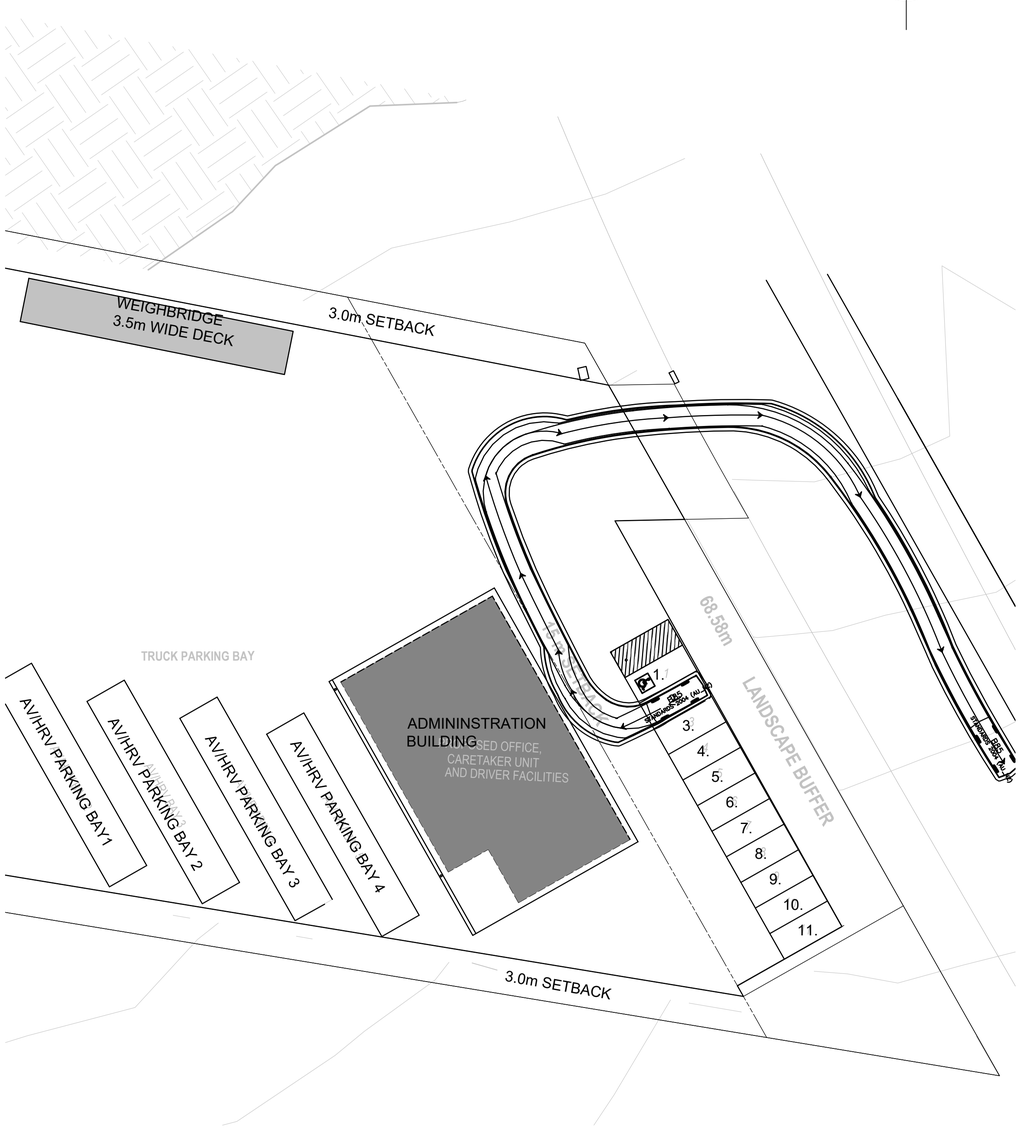
DRAWING NUMBER: 23053-CI-156
REV 1

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm A1 ON ORIGINAL

DEVICE NAME : _AUTOCAD PDF (GENERAL DOCUMENTATION).PC3




SITE PLAN - PASSENGER VEHICLE - DRIVING IN SWEPT PATH
SCALE 1:250




SITE PLAN - PASSENGER VEHICLE - DRIVING OUT SWEPT PATH
SCALE 1:250

B85

| | meters |
|---|---|
| Width | : 1.87 |
| Track | : 1.77 |
| Lock to Lock Time | : 6.0 |
| Steering Angle | : 34.1 |

| REV | DATE | REVISIONS | DRN | CHK |
|---|---|---|---|---|
| 1 | 1/11/23 | PRELIMINARY | IB | DB |

0 5 10 15 20 25m
SCALE 1:250 @A1

| | | | |
|---|---|---|---|
| DESIGNED: IB | | DATUM: AHD | A1 |
| DRAWN: DB | | COORDINATE SYSTEM: | |
| CHECKED: VC | | | |
| RECOMMENDED: | | APPROVED: | |
| PROJECT MANAGER | DATE | PROJECT DIRECTOR | DATE |

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STATELINE ASPHALTS PTY LTD
PROPOSED ASPHALT PROCESSING FACILITY
133 SOMERSBY FALLS ROAD
SOMERSBY
SWEPT PATHS - PASSENGER VEHICLE ENTRY & EXIT

DRAWING STATUS: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

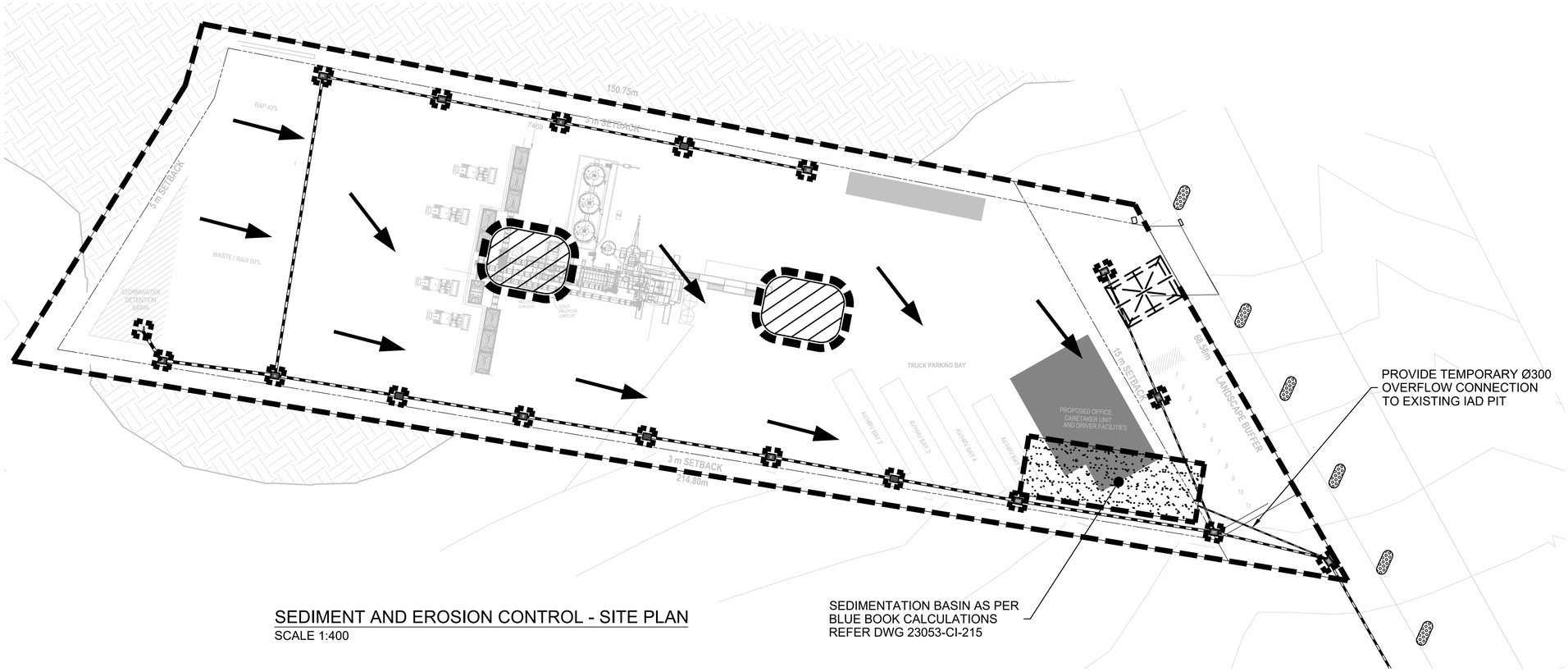
DRAWING NUMBER: 23053-CI-158 REV 1

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm A1 ON ORIGINAL

DEVICE NAME : _AUTOCAD PDF (GENERAL DOCUMENTATION).PC3

LEGEND :

- TEMPORARY SURFACE INLET SEDIMENT TRAP OR GROSS POLLUTANT TRAP TO BE PROVIDED
- SILT FENCE
- TEMPORARY CONSTRUCTION VEHICLE EXIT
- TEMPORARY STOCKPILE OF TOPSOIL SURROUNDED WITH SILT FENCE
- SURFACE RUNOFF
- DIVERSION BANK AND CHANNEL
- GRAVEL FILLED SAUSAGE




## SEDIMENT AND EROSION CONTROL - SITE PLAN

SCALE 1:400

| REV | DATE | REVISIONS | DRN | CHK |
|---|---|---|---|---|
| 1 | 1/11/23 | PRELIMINARY | IB | DB |

0 10 20 30 40m

SCALE 1:400 @A1

| | | | |
|---|---|---|---|
| DESIGNED: IB | DATUM: AHD | A1 | |
| DRAWN: DB | | | |
| CHECKED: VC | COORDINATE SYSTEM: | | |
| RECOMMENDED: | APPROVED: | | |
| PROJECT MANAGER DATE | PROJECT DIRECTOR DATE | | |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STATELINE ASPHALTS PTY LTD

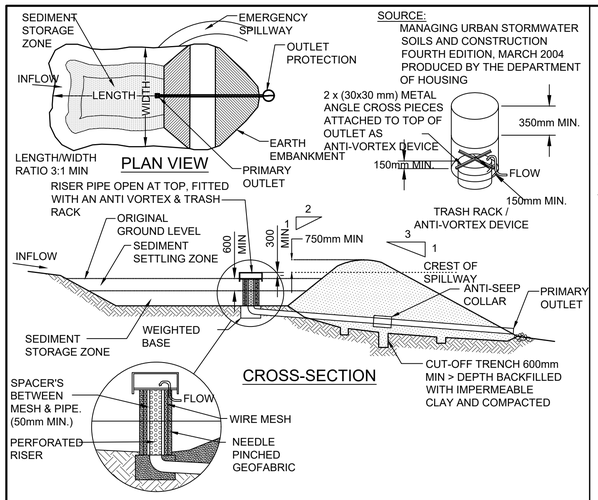
PROPOSED ASPHALT PROCESSING FACILITY
133 SOMERSBY FALLS ROAD
SOMERSBY
SEDIMENT AND EROSION CONTROL PLAN

DRAWING STATUS: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES

DRAWING NUMBER: 23053-CI-200 REV 1

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm A1 ON ORIGINAL

DEVICE NAME : _AUTOCAD PDF (GENERAL DOCUMENTATION).PC3



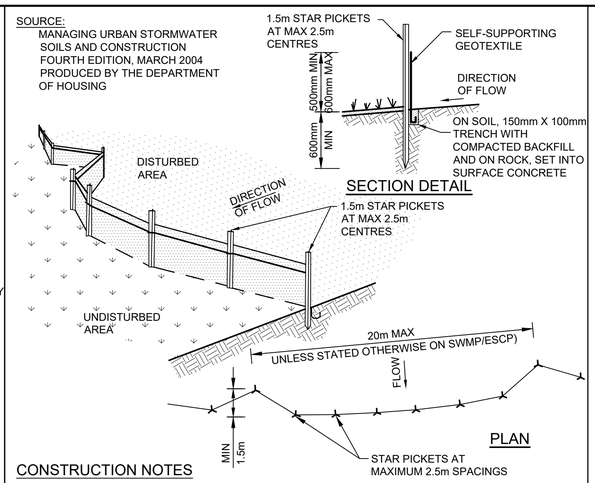

SOURCE:
MANAGING URBAN STORMWATER SOILS AND CONSTRUCTION FOURTH EDITION, MARCH 2004 PRODUCED BY THE DEPARTMENT OF HOUSING

## CONSTRUCTION NOTES:

1. REMOVE ALL VEGETATION AND TOPSOIL FROM UNDER THE DAM WALL AND FROM WITHIN THE STORAGE AREA.
2. FORM A CUT OFF TRENCH UNDER THE CENTRELINE OF THE EMBANKMENT 600mm DEEP & 1200mm WIDE, EXTENDING TO A POINT ON THE WATERCOURSE WALL ABOVE THE RISER SILL LEVEL.
3. MAINTAIN THE TRENCH FREE OF WATER AND RECOMPACT THE MATERIALS WITH EQUIPMENT AS SPECIFIED IN THE SWMP TO 95 PER CENT STANDARD PROCTOR DENSITY.
4. SELECT FILL ACCORDING TO THE SWMP THAT IS FREE FROM ROOTS, WOOD, ROCK, LARGE STONE OR FOREIGN MATERIAL.
5. PREPARE THE SITE UNDER THE EMBANKMENT BY RIPPING TO AT LEAST 100 MM TO HELP BOND COMPACTED FILL TO THE EXISTING SUBSTRATE.
6. SPREAD THE FILL IN 100 MM TO 150 MM LAYERS AND COMPACT IT AT OPTIMUM MOISTURE CONTENT FOLLOWING THE SWMP.
7. INSTALL THE PIPE OUTLET WITH SEEPAGE COLLARS AS SPECIFIED IN THE SWMP & STANDARD DRAWING 6-3b.
8. FORM BATTER GRADES AT 2(H):1(V) UPSTREAM & 3(H):1(V) DOWNSTREAM OR AS SPECIFIED IN THE SWMP.

# EARTH BASIN - DRY SD 6-3
(APPLIES TO TYPE 'C' SOILS ONLY)

SOURCE:
MANAGING URBAN STORMWATER SOILS AND CONSTRUCTION FOURTH EDITION, MARCH 2004 PRODUCED BY THE DEPARTMENT OF HOUSING

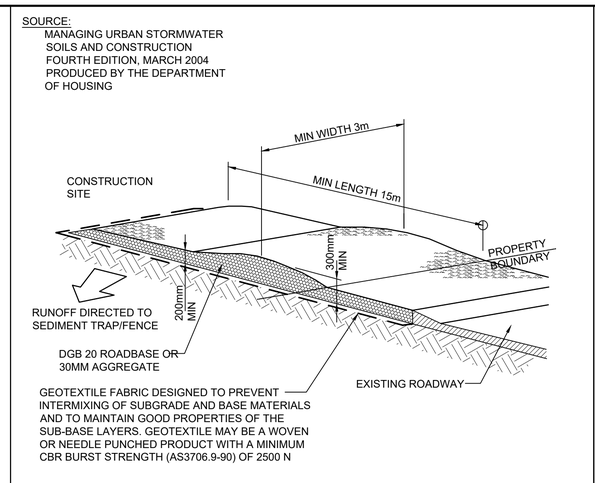



## CONSTRUCTION NOTES

1. CONSTRUCT SEDIMENT FENCES AS CLOSE AS POSSIBLE TO BEING PARALLEL TO THE CONTOURS OF THE SITE, BUT WITH SMALL RETURNS AS SHOWN IN THE DRAWING TO LIMIT THE CATCHMENT AREA OF ANY ONE SECTION. THE CATCHMENT AREA SHOULD BE SMALL ENOUGH TO LIMIT WATER FLOW IF CONCENTRATED AT ONE POINT TO 50 LITRES PER SECOND IN THE DESIGN STORM EVENT, USUALL THE 10 YEAR EVENT.
2. CUT A 150 MM DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
3. DRIVE 1.5 METRE LONG STAR PICKETS INTO GROUNDAT 2.5 METRE INTERVALS (MAX) AT THE DOWNSLOPE EDGE OF THE TRENCH. ENSURE ANY STAR PICKETS ARE FITTED WITH SAFETY CAPS.
4. FIX SELF-SUPPORTING GEOTEXTILE TO THE UPSLOPE SIDE OF THE POSTS ENSURING IT GOES TO THE BASE OF THE TRENCH, FIX THE GEOTEXTILE WITH WIRE TIES OR AS RECOMMENDED BY THE MANUFACTURER. ONLY USE GEOTEXTILE SPECIFICALLY PRODUCED FOR SEDIMENT FENCING. THE USE OF SHADE CLOTH FOR THIS PURPOSE IS NOT SATISFACTORY.
5. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150 MM OVERLAP.
6. BACKFILL TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT THOROUGHLY OVER THE GEOTEXTILE

# SEDIMENT FENCE SD 6-8

SOURCE:
MANAGING URBAN STORMWATER SOILS AND CONSTRUCTION FOURTH EDITION, MARCH 2004 PRODUCED BY THE DEPARTMENT OF HOUSING

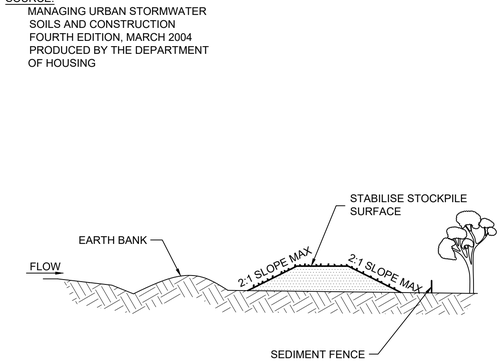



## CONSTRUCTION NOTES:

1. STRIP THE TOPSOIL, LEVEL THE SITE AND COMPACT THE SUBGRADE.
2. COVER THE AREA WITH NEEDLE-PUNCHED GEOTEXTILE.
3. CONSTRUCT A 200MM THICK PAD OVER THE GEOTEXTILE USING ROAD BASE OR 30MM AGREGATE.\
4. ENSURE THE STRUCTURE IS AT LEAST 15 METRES LONG OR TO BUILDING ALIGNMENT AND AT LEAST 3 METRES WIDE.
5. WHERE A SEDIMENT FENCE JOINS ONTO THE STABILISED ACCESS, CONSTRUCT A HUMP IN THE STABILISED ACCESS TO DIVERT WATER TO THE SEDIMENT FENCE

# STABILISED SITE ACCESS SD 6-14

SOURCE:
MANAGING URBAN STORMWATER SOILS AND CONSTRUCTION FOURTH EDITION, MARCH 2004 PRODUCED BY THE DEPARTMENT OF HOUSING

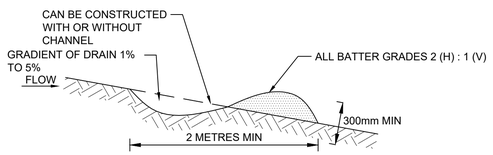



## CONSTRUCTION NOTES:

1. PLACE STOCKPILES MORE THAN 2 (PREFERABLY 5 ) METRES FROM EXISTING VEGETATION, CONCENTRATED WATER FLOW, ROADS AND HAZARD AREAS.
2. CONSTRUCT ON THE CONTOUR AS LOW, FLAT, ELONGATED MOUNDS.
3. WHERE THERE IS SUFFICIENT AREA, TOPSOIL STOCKPILES SHALL BE LESS THAN 2 METERS IN HEIGHT.
4. WHERE THEY ARE TO BE IN PLACE FOR MORE THAN 10 DAYS, STABILISE FOLLOWING THE APPROVED ESCP OR SWMP TO REDUCE THE C-FACTOR TO LESS THAN 0.10.
5. CONSTRUCT EARTH BANKS (STANDARD DRAWING 5-5) ON THE UPSLOPE SIDE TO DIVERT WATER AROUND STOCKPILES AND SEDIMENT FENCSE (STANDARD DRAWING 6-8) 1 TO 2 METRES DOWNSLOPE.

# STOCKPILES SD 4-1

SOURCE:
MANAGING URBAN STORMWATER SOILS AND CONSTRUCTION FOURTH EDITION, MARCH 2004 PRODUCED BY THE DEPARTMENT OF HOUSING



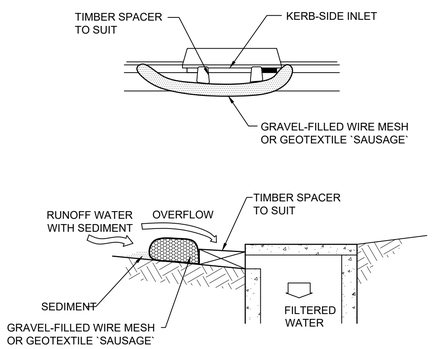

NOTE: ONLY TO BE USED AS A TEMPORARY BANK WHERE MAXIMUM UPSLOPE LENGTH IS 80 METRES.

## CONSTRUCTION NOTES:

1. BUILD WITH GRADIENTS BETWEEN 1% AND 5%.
2. AVOID REMOVING TREES AND SHRUBS IF POSSIBLE - WORK AROUND THEM
3. ENSURE THE STRUCTURES ARE FREE OF PROJECTIONS OR OTHER IRREGULARITIES THAT COULD IMPEDE WATER FLOW.
4. BUILD THE DRAINS WITH CIRCULAR, PARABOLIC OR TRAPEZOIDAL CROSS SECTIONS, NOT V SHAPED
5. ENSURE THE BANKS ARE PROPERLY COMPACTED TO PREVENT FAILURE
6. COMPLETE PERMANENT OR TEMPORARY STABILISATION WITHIN 10 DAYS OF CONSTRUCTION.

# EARTH BANK (LOW FLOW) SD 5-5

SOURCE:
MANAGING URBAN STORMWATER SOILS AND CONSTRUCTION FOURTH EDITION, MARCH 2004 PRODUCED BY THE DEPARTMENT OF HOUSING



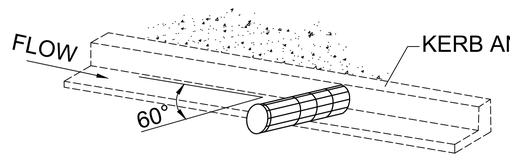

NOTE: THIS PRACTICE ONLY TO BE USED WHERE SPECIFIED IN AN APPROVED SWMP/ESCP.

## CONSTRUCTION NOTES:

1. INSTALL FILTERS TO KERB INLETS ONLY AT SAG POINTS.
2. FABRICATE A SLEEVE MADE FROM GEOTEXTILE OR WIRE MESH LONGER THAN THE LENGTH OF THE INLET PIT AND FILL IT WITH 25mm TO 50mm GRAVEL.
3. FORM AN ELLIPTICAL CROSS-SECTION ABOUT 150MM HIGH X 400MM WIDE.
4. PLACE THE FILTER AT THE OPENING LEAVING AT LEAST A 100mm SPACE BETWEEN IT AND THE KERB INLET. MAINTAIN THE OPENING WITH SPACER BLOCKS.
5. FORM A SEAL WITH THE KERB TO PREVENT SEDIMENT BYPASSING THE FILTER.
6. SANDBAGS FILLED WITH GRAVEL CAN SUBSTITUTE FOR THE MESH OR GEOTEXTILE PROVIDING THEY ARE PLACED SO THAT THEY FIRMLY ABUT EACH OTHER AND SEDIMENT - LADEN WATERS CANNOT PASS BETWEEN.

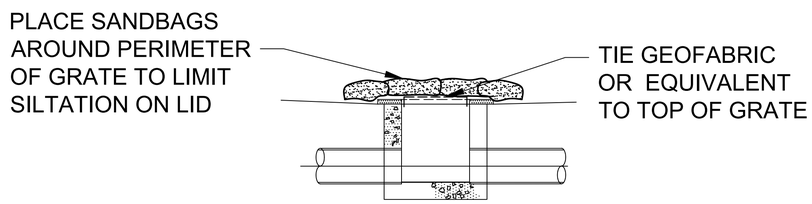
# MESH AND GRAVEL INLET FILTER SD 6-11

NOTE:
SEDIMENT BARRIERS TO BE USED ONLY WHERE ROAD WIDTHS PERMITS AND WHERE SAFETY TO PASSING TRAFFIC IS NOT AFFECTED




# GRAVEL FILLED SAUSAGE TEMPORARY GUTTER GROSS POLLUTANT/SEDIMENT TRAP

COARSE GRAVEL ROLLED IN NETTING MATERIAL TOTALING 200mm HIGH & PLACED HARD AGAINST FACE OF KERB




# TEMPORARY SURFACE INLET SEDIMENT TRAP OR GROSS POLLUTANT TRAP

WHEN USED AS A GROSS POLLUTANT TRAP STRUCTURE SHALL BE REGULARLY DESILTED

| REV | DATE | REVISIONS | DRN | CHK |
|---|---|---|---|---|
| 1 | 1/11/23 | PRELIMINARY | IB | DB |

0 10 20 30 40m
SCALE 1:400 @A1

DESIGNED: IB
DRAWN: DB
CHECKED: VC
RECOMMENDED: PROJECT MANAGER DATE
DATUM: AHD A1
COORDINATE SYSTEM:
APPROVED: PROJECT DIRECTOR DATE


CUBO CONSULTING PTY LTD
ABN: 46 610 277 462
Suite 6, 220 The Entrance Road, Erina NSW
Phone: (02) 4326 0990 Email: admin@cubo.net.au


STATELINE ASPHALTS PTY LTD
PROPOSED ASPHALT PROCESSING FACILITY
133 SOMERSBY FALLS ROAD
SOMERSBY
SEDIMENT AND EROSION CONTROL DETAILS

DRAWING STATUS: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES
DRAWING NUMBER: 23053-CI-210
REV 1

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm A1 ON ORIGINAL

DEVICE NAME : _AUTOCAD PDF (GENERAL DOCUMENTATION).PC3

| Site area | Sub-catch | Notes |
|---|---|---|
| | All | |
| Total catchment area (ha) | 1.01 | |
| Disturbed catchment area (ha) | 1.01 | |

## Soil analysis (enter sediment type if known, or laboratory particle size data)

| | | |
|---|---|---|
| Sediment Type (C, F or D) if known: | C | From Appendix C (if known) |
| % sand (fraction 0.02 to 2.00 mm) | | Enter the percentage of each soil fraction. E.g. enter 10 for 10% |
| % silt (fraction 0.002 to 0.02 mm) | | |
| % clay (fraction finer than 0.002 mm) | | |
| Dispersion percentage | | E.g. enter 10 for dispersion of 10% |
| % of whole soil dispersible | 0 | See Section 6.3.3(e). Auto-calculated |
| Soil Texture Group | C | Automatic calculation from above |

## Rainfall data

| | | |
|---|---|---|
| Design rainfall depth (no of days) | 5 | See Section 6.3.4 and, particularly, Table 6.3 on pages 6-24 and 6-25. |
| Design rainfall depth (percentile) | 75 | |
| x-day, y-percentile rainfall event (mm) | 27.9 | |
| Rainfall R-factor (if known) | | Only need to enter one or the other here |
| IFD: 2-year, 6-hour storm (if known) | 10.3 | |

## RUSLE Factors

| | | |
|---|---|---|
| Rainfall erosivity (*R*-factor) | 2330 | Auto-filled from above |
| Soil erodibility (*K*-factor) | 0.017 | RUSLE LS factor calculated for a high rill/interrill ratio. |
| Slope length (m) | 75 | |
| Slope gradient (%) | 5 | |
| Length/gradient (*LS*-factor) | 1.14 | |
| Erosion control practice (*P*-factor) | 1.3 | |
| Ground cover (*C*-factor) | 1 | |

## Structure Details

| | | |
|---|---|---|
| **Structure Name** | **All** | Auto-filled from Worksheet 1 |
| **Catchment Area (ha)** | 1.01 | Auto-filled from Worksheet 1 |
| **Time of concentration (tc)** | 4 | Auto-calculated assuming tc is halved |

## Rainfall Intensities (IFD Values)

| | | |
|---|---|---|
| **1 year, tc** | 72.1 | Enter the relevant rainfall intensities (in mm/hr) for each of the nominated rainfall events. |
| **2 year, tc** | 82.1 | The time of concentration (tc) determines the duration of the event to be used |
| **5 year, tc** | 116 | |
| **10 year, tc** | 142 | |
| **20 year, tc** | 169 | |
| **50 year, tc** | 208 | |
| **100 year, tc** | 241 | |

| | | |
|---|---|---|
| **$C_{10}$ runoff coefficient** | 0.8 | Use AR&R or Table F3, pg F-6 |

| | | |
|---|---|---|
| **Design ARI event (select):** | 1 | Select design ARI (years) from dropdown |
| **Frequency Factor** | 0.8 | Auto-filled based on selected ARI |
| **Flow Calculation** | 0.13 | Auto-calculated based on selected ARI |

## Type C Basin Design Criteria

| | | |
|---|---|---|
| **Structure Name** | **All** | Auto-filled from Worksheet 1 |
| **Catchment Area (ha)** | 1.01 | Auto-filled from Worksheet 1 |
| **Sediment type (C, F or D)** | C | Auto-filled from Worksheet 1 |
| **Design rainfall event** | 0.5 | Choose design event from dropdown |
| **Flow volume ($m^3/s$)** | 0.065 | Calculated from IFD values above |
| **Area Factor** | 4100 | Default is 4,100. See pg 6-12 |
| **Depth of settling (water zone) (m)** | 0.6 | Minimum is 0.6m (pg 6-12) |

## Type C Basin Volume Calculations

| | | |
|---|---|---|
| **Basin Surface Area ($m^2$)** | 266.5 | Auto-calculated |
| **Settling (water) zone volume ($m^3$)** | 159.9 | Auto-calculated |
| **Storage (soil) zone volume ($m^3$)** | 0 | Auto-calculated |
| **Total basin volume ($m^3$)** | 159.9 | Auto-calculated |

## Basin Shape

| | | |
|---|---|---|
| **Enter length:width ratio** | 3 | E.g. for 3:1 (L:W) enter 3. |
| **Length (m)** | 28.3 | These figures should be taken as a guide only. Detailed calcs might be required. |
| **Width (m)** | 9.4 | |

| REV | DATE | REVISIONS | DRN | CHK |
|---|---|---|---|---|
| 1 | 1/11/23 | PRELIMINARY | IB | DB |

0 10 20 30 40m
SCALE 1:400 @A1

DESIGNED: IB | DRAWN: DB | CHECKED: VC | RECOMMENDED: PROJECT MANAGER DATE
DATUM: AHD | A1 | COORDINATE SYSTEM: | APPROVED: PROJECT DIRECTOR DATE

CUBO CONSULTING PTY LTD
ABN: 46 610 277 462
Suite 6, 220 The Entrance Road, Erina NSW
Phone: (02) 4326 0990 Email: admin@cubo.net.au

STATELINE ASPHALTS PTY LTD
PROPOSED ASPHALT PROCESSING FACILITY
133 SOMERSBY FALLS ROAD
SOMERSBY
BLUE BOOK CALCULATIONS

DRAWING STATUS: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION PURPOSES
DRAWING NUMBER: 23053-CI-215 | REV 1

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm A1 ON ORIGINAL

# MUSIC-*link* Report

| Project Details | | Company Details | |
|---|---|---|---|
| **Project:** | 23053 - 133 Somersby Falls Rd | **Company:** | Cubo Consulting |
| **Report Export Date:** | 29/08/2023 | **Contact:** | Doug Black |
| **Catchment Name:** | 23053 v3 | **Address:** | |
| **Catchment Area:** | 1.01ha | **Phone:** | 4326 0990 |
| **Impervious Area*:** | 85.15% | **Email:** | doug.black@cubo.au |
| **Rainfall Station:** | 66062 SYDNEY | | |
| **Modelling Time-step:** | 6 Minutes | | |
| **Modelling Period:** | 1/01/1974 - 31/12/1993 11:54:00 PM | | |
| **Mean Annual Rainfall:** | 1297mm | | |
| **Evapotranspiration:** | 1261mm | | |
| **MUSIC Version:** | 6.3.0 | | |
| **MUSIC-link data Version:** | 6.34 | | |
| **Study Area:** | Upland | | |
| **Scenario:** | Central Coast Development | | |

* takes into account area from all source nodes that link to the chosen reporting node, excluding Import Data Nodes

| Treatment Train Effectiveness | | Treatment Nodes | | Source Nodes | |
|---|---|---|---|---|---|
| **Node: Receiving Node** | **Reduction** | **Node Type** | **Number** | **Node Type** | **Number** |
| **Flow** | 0.0103% | Detention Basin Node | 1 | Urban Source Node | 3 |
| **TSS** | 87.7% | GPT Node | 3 | | |
| **TP** | 49.4% | | | | |
| **TN** | 43% | | | | |
| **GP** | 100% | | | | |

## Comments

Results within assumed margin of error for modelling

## Passing Parameters

| Node Type | Node Name | Parameter | Min | Max | Actual |
|---|---|---|---|---|---|
| GPT | 14 x SPEL Stormsacks 600sq | Hi-flow bypass rate (cum/sec) | None | 99 | 0.154 |
| GPT | 2x SPEL Stormsacks 600sq | Hi-flow bypass rate (cum/sec) | None | 99 | 0.022 |
| GPT | SPEL Vortceptor SV0.096 | Hi-flow bypass rate (cum/sec) | None | 99 | 0.096 |
| Receiving | Receiving Node | % Load Reduction | None | None | 0.0103 |
| Receiving | Receiving Node | GP % Load Reduction | 90 | None | 100 |
| Receiving | Receiving Node | TP % Load Reduction | 45 | None | 49.4 |
| Receiving | Receiving Node | TSS % Load Reduction | 80 | None | 87.7 |
| Urban | Urban | Baseflow Total Nitrogen Mean (log mg/L) | 0.11 | 0.11 | 0.11 |
| Urban | Urban | Baseflow Total Nitrogen Mean (log mg/L) | -0.05 | -0.05 | -0.05 |
| Urban | Urban | Baseflow Total Nitrogen Mean (log mg/L) | 0.11 | 0.11 | 0.11 |
| Urban | Urban | Baseflow Total Phosphorus Mean (log mg/L) | -0.85 | -0.85 | -0.85 |
| Urban | Urban | Baseflow Total Phosphorus Mean (log mg/L) | -1.22 | -1.22 | -1.22 |
| Urban | Urban | Baseflow Total Phosphorus Mean (log mg/L) | -0.85 | -0.85 | -0.85 |
| Urban | Urban | Baseflow Total Suspended Solids Mean (log mg/L) | 1.2 | 1.2 | 1.2 |
| Urban | Urban | Baseflow Total Suspended Solids Mean (log mg/L) | 1.15 | 1.15 | 1.15 |
| Urban | Urban | Baseflow Total Suspended Solids Mean (log mg/L) | 1.2 | 1.2 | 1.2 |
| Urban | Urban | Stormflow Total Nitrogen Mean (log mg/L) | 0.3 | 0.3 | 0.3 |
| Urban | Urban | Stormflow Total Nitrogen Mean (log mg/L) | 0.3 | 0.3 | 0.3 |
| Urban | Urban | Stormflow Total Nitrogen Mean (log mg/L) | 0.34 | 0.34 | 0.34 |
| Urban | Urban | Stormflow Total Phosphorus Mean (log mg/L) | -0.6 | -0.6 | -0.6 |
| Urban | Urban | Stormflow Total Phosphorus Mean (log mg/L) | -0.66 | -0.66 | -0.66 |
| Urban | Urban | Stormflow Total Phosphorus Mean (log mg/L) | -0.3 | -0.3 | -0.3 |
| Urban | Urban | Stormflow Total Suspended Solids Mean (log mg/L) | 2.15 | 2.15 | 2.15 |
| Urban | Urban | Stormflow Total Suspended Solids Mean (log mg/L) | 1.95 | 1.95 | 1.95 |
| Urban | Urban | Stormflow Total Suspended Solids Mean (log mg/L) | 2.43 | 2.43 | 2.43 |

Only certain parameters are reported when they pass validation

## Failing Parameters

| Node Type | Node Name | Parameter | Min | Max | Actual |
|---|---|---|---|---|---|
| Receiving | Receiving Node | TN % Load Reduction | 45 | None | 43 |

Only certain parameters are reported when they pass validation

PIT / NODE DETAILS Version 15

| Name | Type | Family | Size | Ponding Volume (cu.m) | Pressure Change Coeff. Ku | Surface Elev (m) | Max Pond Depth (m) | Base Inflow (cu.m/s) | Blocking Factor | x | y | Bolt-down lid | id | Part Full Shock Loss | Inflow Hydrograph | Pit is | Internal Width (mm) | Inflow is Misaligned | Minor Safe Pond Dept (m) | Major Safe Pond Depth (m) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P1/14 | Sag | SIP | 600 mm Sc | 6 | 18 | 226.5 | 0.1 | 0 | 0 | 339834 | 6301986 | No | 1 | 1 x Ku | No | New | | | 0.05 | 0.25 |
| P1/13 | Sag | SIP | 600 mm Sc | 6 | 1 | 226.5 | 0.1 | 0 | 0 | 339814 | 6301990 | No | 8556883 | 1 x Ku | No | New | | | 0.05 | 0.1 |
| P1/12 | Sag | SIP | 600 mm Sc | 6 | 1 | 226.5 | 0.1 | 0 | 0 | 339794 | 6301994 | No | 3 | 1 x Ku | No | New | | | 0.05 | 0.15 |
| P1/11 | Sag | SIP | 600 mm Sc | 6 | 1 | 226.5 | 0.1 | 0 | 0 | 339775 | 6301997 | No | 8556885 | 1 x Ku | No | New | | | 0.05 | 0.15 |
| P1/10 | Sag | SIP | 600 mm Sc | 6 | 2.3 | 226.5 | 0.1 | 0 | 0 | 339756 | 6302001 | No | 5 | 1 x Ku | No | New | | | 0.05 | 0.15 |
| P1/9 | Sag | SIP | 600 mm Sc | 6 | 1 | 226.5 | 0.1 | 0 | 0 | 339749 | 6301953 | No | 6 | 1 x Ku | No | New | | | 0.05 | 0.15 |
| P1/8 | Sag | SIP | 600 mm Sc | 2 | 1 | 226.5 | 0.15 | 0 | 0 | 339768 | 6301950 | No | 8556886 | 1 x Ku | No | New | | | 0.15 | 0.2 |
| P1/7 | Sag | SIP | 600 mm Sc | 6 | 1 | 226.5 | 0.1 | 0 | 0 | 339788 | 6301947 | No | 7 | 1 x Ku | No | New | | | 0.05 | 0.15 |
| P1/6 | Sag | SIP | 600 mm Sc | 6 | 1 | 226.5 | 0.1 | 0 | 0 | 339808 | 6301944 | No | 8556887 | 1 x Ku | No | New | | | 0.05 | 0.15 |
| P1/5 | Sag | SIP | 600 mm Sc | 6 | 1 | 226.5 | 0.1 | 0 | 0 | 339828 | 6301940 | No | 9 | 1 x Ku | No | New | | | 0.05 | 0.15 |
| P1/4 | Sag | SIP | 600 mm Sc | 6 | 1 | 226.5 | 0.1 | 0 | 0 | 339848 | 6301937 | No | 8556888 | 1 x Ku | No | New | | | 0.05 | 0.15 |
| P1/3 | OnGrade | SIP | 1200 mm sqre | SIP | 1 | 226.5 | | 0 | 0 | 339867 | 6301934 | No | 11 | 1 x Ku | No | New | | | | |
| P1/2 | OnGrade | SIP | 1200 mm sqre | SIP | 1 | 226.301 | | 0 | 0 | 339898 | 6301928 | No | 1111 | 1 x Ku | No | New | | | | |
| P2/2 | Sag | SIP | 600 mm Sc | 4 | 18 | 226.6 | 0.1 | 0 | 0 | 339881 | 6301970 | No | 8 | 1 x Ku | No | New | | | 0.05 | 0.15 |
| P2/1 | Sag | SIP | 600 mm Sc | 4 | 1 | 226.5 | 0.1 | 0 | 0 | 339889 | 6301950 | No | 10 | 1 x Ku | No | New | | | 0.05 | 0.15 |
| P3/1 | OnGrade | SIP | 600 mm Sqre | SIP | 1 | 226.7 | | 0 | 0 | 339731 | 6301956 | No | 4 | 1 x Ku | No | New | | | | |
| N DS | Node | | | | | 222 | | 0 | | 339941 | 6301912 | | 50 | | No | | | | | |
| N PreDev | Node | | | | | 223 | | 0 | | 339940 | 6301959 | | 1207811 | | No | | | | | |
| N18 | Node | | | | | 227 | | 0 | | 339923 | 6301931 | | 48 | | No | | | | | |
| P1/1 | Node | | | | | 225.01 | | 0 | | 339936 | 6301927 | | 13 | | No | | | | | |

DETENTION BASIN DETAILS

| Name | Elev | Surf. Area | Not Used | Outlet Type | K | Dia(mm) | Centre RL | Pit Family | Pit Type | x | y | HED | Crest RL | Crest Lengt | id |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OSD | 224.5 | 75 | | Culvert | 0.5 | | | | | 339728 | 6301961 | No | | | 38 |
| | 226.5 | 286 | | | | | | | | | | | | | |
| | 226.6 | 429 | | | | | | | | | | | | | |
| | 226.75 | 7955 | | | | | | | | | | | | | |

SUB-CATCHMENT DETAILS

| Name | Pit or Node | Total Area (ha) | Paved Area % | Grass Area % | Supp Area % | Paved Time (min) | Grass Time (min) | Supp Time (min) | Paved Length (m) | Grass Length (m) | Supp Length (m) | Paved Slope(%) % | Grass Slope % | Supp Slope % | Paved Rough | Grass Rough | Supp Rough | Lag Time or Factor | Gutter Length (m) | Gutter Slope % | Gutter FlowFactor | Rainfall Multiplier |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C 1/14 | P1/14 | 0.1511 | 90 | 10 | 0 | 5 | 5 | 2 | | | | | | | | | | 0 | | | | 1 |
| C 1/13 | P1/13 | 0.0551 | 90 | 10 | 0 | 5 | 5 | 2 | | | | | | | | | | 0 | | | | 1 |
| C 1/12 | P1/12 | 0.0551 | 90 | 10 | 0 | 5 | 5 | 2 | | | | | | | | | | 0 | | | | 1 |
| C 1/11 | P1/11 | 0.0529 | 90 | 10 | 0 | 5 | 5 | 2 | | | | | | | | | | 0 | | | | 1 |
| C 1/10 | P1/10 | 0.0529 | 90 | 10 | 0 | 5 | 5 | 2 | | | | | | | | | | 0 | | | | 1 |
| C 1/9 | P1/9 | 0.0513 | 100 | 0 | 0 | 5 | 5 | 2 | | | | | | | | | | 0 | | | | 1 |
| C 1/8 | P1/8 | 0.0513 | 100 | 0 | 0 | 5 | 5 | 2 | | | | | | | | | | 0 | | | | 1 |
| C 1/7 | P1/7 | 0.0563 | 100 | 0 | 0 | 5 | 5 | 2 | | | | | | | | | | 0 | | | | 1 |
| C 1/6 | P1/6 | 0.0563 | 100 | 0 | 0 | 5 | 5 | 2 | | | | | | | | | | 0 | | | | 1 |
| C 1/5 | P1/5 | 0.0559 | 100 | 0 | 0 | 5 | 5 | 2 | | | | | | | | | | 0 | | | | 1 |
| C 1/4 | P1/4 | 0.0559 | 100 | 0 | 0 | 5 | 5 | 2 | | | | | | | | | | 0 | | | | 1 |
| C 1/3 | P1/3 | 0.1012 | 100 | 0 | 0 | 5 | 5 | 2 | | | | | | | | | | 0 | | | | 1 |
| C 1/2 | P1/2 | 0.0407 | 100 | 0 | 0 | 5 | 5 | 2 | | | | | | | | | | 0 | | | | 1 |
| C 2/2 | P2/2 | 0.0654 | 100 | 0 | 0 | 5 | 5 | 2 | | | | | | | | | | 0 | | | | 1 |
| C OSD | OSD | 0.0738 | 100 | 0 | 0 | 5 | 5 | 2 | | | | | | | | | | 0 | | | | 1 |
| C PreDev | N PreDev | 1.0107 | 0 | 100 | 0 | 5 | 5 | 2 | | | | | | | | | | 0 | | | | 1 |
| C 1/1 | P1/1 | 0.0357 | 0 | 100 | 0 | 5 | 5 | 2 | | | | | | | | | | 0 | | | | 1 |

PIPE DETAILS

| Name | From | To | Length (m) | U/S IL (m) | D/S IL (m) | Slope (%) | Type | Dia (mm) | I.D. (mm) | Rough | Pipe Is | No. Pipes | Chg From | At Chg | Chg (m) | Rl (m) | Chg (m) | RL (m) | etc (m) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pipe-14 | P1/14 | P1/13 | 20.121 | 226 | 225.799 | 1 | uPVC, und | 300 | 303 | 0.012 | New | 1 | P1/14 | 0 | 0.01118 | 226.5 | 0.99924 | 226.51 | 1.00747 | 226.51 | 1.99964 | 226.52 |
| Pipe-13 | P1/13 | P1/12 | 19.926 | 225.799 | 225.6 | 1 | uPVC, und | 300 | 303 | 0.012 | New | 1 | P1/13 | 0 | 0.01118 | 226.7 | 3.87902 | 226.661 | 9.87896 | 226.607 | 10.1641 | 226.609 |
| Pipe-16 | P1/12 | P1/11 | 19.42 | 225.6 | 225.406 | 1 | uPVC, und | 300 | 303 | 0.012 | New | 1 | P1/12 | 0 | 0.01118 | 226.603 | 1.85078 | 226.621 | 1.85981 | 226.591 | 5.87007 | 226.661 |
| Pipe-15 | P1/11 | P1/10 | 19.142 | 225.406 | 225.214 | 1 | uPVC, und | 375 | 386 | 0.012 | New | 1 | P1/11 | 0 | 0.01118 | 226.649 | 0.42676 | 226.645 | 0.53365 | 226.658 | 3.48958 | 226.613 |
| Pipe-3 | P1/10 | P1/9 | 48.248 | 225.214 | 224.731 | 1 | uPVC, und | 375 | 386 | 0.012 | New | 1 | P1/10 | 0 | 0.01118 | 226.5 | 0.39194 | 226.504 | 1.39151 | 226.514 | 2.39125 | 226.524 |
| Pipe-18 | P1/9 | P1/8 | 19.866 | 224.259 | 224.061 | 1 | uPVC, und | 375 | 386 | 0.012 | New | 1 | P1/9 | 0 | 0.01118 | 226.5 | 0.09026 | 226.501 | 0.91505 | 226.509 | 0.92015 | 226.509 |
| Pipe-17 | P1/8 | P1/7 | 20.176 | 224.061 | 223.859 | 1 | uPVC, und | 375 | 386 | 0.012 | New | 1 | P1/8 | 0 | 0.01118 | 226.7 | 0.04653 | 226.7 | 0.05376 | 226.7 | 0.18134 | 226.699 |
| Pipe-20 | P1/7 | P1/6 | 19.827 | 223.859 | 223.661 | 1 | uPVC, und | 375 | 386 | 0.012 | New | 1 | P1/7 | 0 | 0.01118 | 226.5 | 0.30101 | 226.503 | 0.87755 | 226.509 | 1.87576 | 226.519 |
| Pipe-19 | P1/6 | P1/5 | 20.164 | 223.661 | 223.459 | 1 | uPVC, und | 375 | 386 | 0.012 | New | 1 | P1/6 | 0 | 0.01118 | 226.7 | 0.04965 | 226.7 | 0.05064 | 226.7 | 0.07694 | 226.699 |
| Pipe-22 | P1/5 | P1/4 | 20.281 | 223.459 | 223.256 | 1 | uPVC, und | 375 | 386 | 0.012 | New | 1 | P1/5 | 0 | 0.01118 | 226.5 | 0.88705 | 226.509 | 1.88723 | 226.519 | 2.88658 | 226.529 |
| Pipe-21 | P1/4 | P1/3 | 19.681 | 223.256 | 223.059 | 1 | uPVC, und | 375 | 386 | 0.012 | New | 1 | P1/4 | 0 | 0.01118 | 226.693 | 0.60588 | 226.687 | 1.60605 | 226.667 | 1.60704 | 226.667 |
| Pipe-7 | P1/3 | P1/2 | 31.525 | 223.059 | 222.743 | 1 | uPVC, und | 375 | 386 | 0.012 | New | 1 | P1/3 | 0 | 0.01118 | 226.3 | 31.5143 | 226.301 | | | | |
| Pipe-11 | P2/2 | P2/1 | 21.811 | 225.8 | 225.582 | 1 | uPVC, und | 225 | 242 | 0.012 | New | 1 | P2/2 | 0 | 0.01077 | 226.5 | 0.99939 | 226.505 | 1.00031 | 226.505 | 1.9997 | 226.509 |
| Pipe-12 | P2/1 | P1/2 | 23.189 | 225.582 | 225.35 | 1 | uPVC, und | 225 | 242 | 0.012 | New | 1 | P2/1 | 0 | 0.01077 | 226.6 | 3.81424 | 226.276 | 11.3179 | 226.475 | 23.1777 | 226.301 |
| Pipe-9 | OSD | P3/1 | 5.991 | 224.5 | 224.44 | 1 | Concrete, u | 450 | 450 | 0.013 | New | 1 | OSD | 0 | 0.01079 | 224.5 | 0.06104 | 224.5 | 0.39995 | 224.5 | 0.79718 | 224.5 |
| Pipe-10 | P3/1 | P1/9 | 18.08 | 224.44 | 224.259 | 1 | Concrete, u | 450 | 450 | 0.013 | New | 1 | P3/1 | 0 | 0.01105 | 226.7 | 0.99876 | 226.689 | 0.99975 | 226.689 | 1.00074 | 226.689 |
| Pipe-8 | N18 | P1/1 | 13.566 | 222.636 | 222.5 | 1 | uPVC, und | 375 | 386 | 0.012 | New | 1 | N18 | 0 | | | | | | | | |

DETAILS of SERVICES CROSSING PIPES

| Pipe | Chg (m) | Bottom Elev (m) | Height of S (m) | Chg (m) | Bottom Elev (m) | Height of S (m) | Chg (m) | Bottom Elev (m) | Height of S (m) | etc etc |
|---|---|---|---|---|---|---|---|---|---|---|

CHANNEL DETAILS

| Name | From | To | Type | Length (m) | U/S IL (m) | D/S IL (m) | Slope (%) | Base Width (m) | L.B. Slope (1:?) | R.B. Slope (1:?) | Manning n | Depth (m) | Roofed |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

OVERFLOW ROUTE DETAILS

| Name | From | To | Travel Time (min) | Spill Level (m) | Crest Length (m) | Weir Coeff. C | Cross Section | Safe Depth Major Stor (m) | SafeDepth Minor Stor (m) | Safe DxV (sq.m/sec) | Bed Slope (%) | D/S Area Contributing % | id | U/S IL | D/S IL | Length (m) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OF47889 | P1/14 | P1/3 | 0.6 | | | | 4 m wide p | 0.3 | 0.15 | 0.4 | 0.49 | 0 | 8557015 | 226.6 | 226.55 | 61.7 |
| OF47887 | P1/13 | P1/14 | 0.3 | | | | 7.5 m road | 0.3 | 0.15 | 0.4 | 0.25 | 0 | 8557009 | 226.6 | 226.55 | 19.9 |
| OF47886 | P1/12 | P1/13 | 0.3 | | | | 7.5 m road | 0.3 | 0.15 | 0.4 | 0.25 | 0 | 8557008 | 226.6 | 226.55 | 19.9 |
| OF47885 | P1/11 | P1/12 | 0.3 | | | | 7.5 m road | 0.3 | 0.15 | 0.4 | 0.26 | 0 | 8557007 | 226.6 | 226.55 | 19.4 |
| OF47884 | P1/10 | P1/11 | 0.3 | | | | 7.5 m road | 0.3 | 0.15 | 0.4 | 0.26 | 0 | 8557006 | 226.6 | 226.55 | 19.2 |
| OF47883 | P1/9 | P1/8 | 0.3 | | | | 7.5 m road | 0.3 | 0.15 | 0.4 | 0.25 | 0 | 8557005 | 226.6 | 226.55 | 19.9 |
| B16-5 | P1/8 | P1/7 | 0.3 | | | | 7.5 m road | 0.3 | 0.15 | 0.4 | 0.25 | 0 | 8556901 | 226.6 | 226.55 | 20.176 |
| OF47881 | P1/7 | P1/6 | 0.3 | | | | 7.5 m road | 0.3 | 0.15 | 0.4 | 0.25 | 0 | 8557001 | 226.6 | 226.55 | 19.7 |
| B17-6 | P1/6 | P1/5 | 0.3 | | | | 7.5 m road | 0.3 | 0.15 | 0.4 | 0.25 | 0 | 8556900 | 226.6 | 226.55 | 20.164 |
| OF47880 | P1/5 | P1/4 | 0.3 | | | | 7.5 m road | 0.3 | 0.15 | 0.4 | 0.25 | 0 | 8557000 | 226.6 | 226.55 | 20 |
| B18-7 | P1/4 | P1/3 | 0.2 | | | | 7.5 m road | 0.3 | 0.15 | 0.4 | 1.52 | 0 | 8556899 | 226.6 | 226.55 | 19.681 |
| B7-8 | P1/3 | P1/2 | 0.6 | | | | 7.5 m road | 0.3 | 0.15 | 0.4 | 0.16 | 0 | 27 | 226.5 | 226.301 | 31.525 |
| B8-9 | P1/2 | P1/1 | 0.1 | | | | 4 m wide p | 0.3 | 0.15 | 0.4 | 0.89 | 0 | 26 | 226.301 | 225.01 | 13.566 |
| B12-13 | P2/2 | P2/1 | 0.3 | | | | 7.5 m road | 0.3 | 0.15 | 0.4 | 0.23 | 0 | 30 | 226.6 | 226.55 | 21.811 |
| B13-8 | P2/1 | P1/2 | 0.4 | | | | 7.5 m road | 0.3 | 0.15 | 0.4 | 0.22 | 0 | 28 | 226.5 | 226.301 | 23.189 |
| B10-11 | OSD | P1/9 | 0.1 | 226.7 | 2 | 2 | 7.5 m road | 0.3 | 0.15 | 0.4 | 7.14 | 0 | 36 | 226.6 | 226.5 | 5.991 |
| OF9325 | P3/1 | OSD | 0.1 | | | | Deep Swal | 1 | 0.5 | 0.6 | 4.84 | 0 | 2004956 | 226.7 | 226.5 | 6.2 |
| OF17 | P1/1 | N DS | 0.1 | | | | Deep Swal | 1 | 0.5 | 0.6 | 5 | 0 | 51 | 222.5 | 222 | 10 |

PIPE COVER DETAILS

| Name | Type | Dia (mm) | Safe Cover | Cover (m) | |
|---|---|---|---|---|---|
| Pipe-14 | uPVC, und | 303 | 0.5 | 0.19 | Unsafe |
| Pipe-13 | uPVC, und | 303 | 0.5 | 0.39 | Unsafe |
| Pipe-16 | uPVC, und | 303 | 0.5 | 0.59 | |
| Pipe-15 | uPVC, und | 386 | 0.5 | 0.7 | |
| Pipe-3 | uPVC, und | 386 | 0.5 | 0.89 | |
| Pipe-18 | uPVC, und | 386 | 0.5 | 1.85 | |
| Pipe-17 | uPVC, und | 386 | 0.5 | 2.05 | |
| Pipe-20 | uPVC, und | 386 | 0.5 | 2.25 | |
| Pipe-19 | uPVC, und | 386 | 0.5 | 2.45 | |
| Pipe-22 | uPVC, und | 386 | 0.5 | 2.65 | |
| Pipe-21 | uPVC, und | 386 | 0.5 | 2.85 | |
| Pipe-7 | uPVC, und | 386 | 0.5 | 2.85 | |
| Pipe-11 | uPVC, und | 242 | 0.5 | 0.45 | Unsafe |

| | | | | | |
|---|---|---|---|---|---|
| Pipe-12 | uPVC, undı | 242 | 0.5 | 0.49 | Unsafe |
| Pipe-9 | Concrete, ı | 450 | 0.6 | -0.49 | Unsafe |
| Pipe-10 | Concrete, ı | 450 | 0.6 | 1.75 | |
| Pipe-8 | uPVC, undı | 386 | 0.5 | 2.12 | |

This model has no pipes with non-return valves

DRAINS results prepared from Version 2023.06.8578.17142

PIT / NODE DETAILS Version 8

| Name | Max HGL | Max Pond HGL | Max Surfac Flow Arrivi (cu.m/s) | Max Pond Volume (cu.m) | Min Freeboard (m) | Overflow (cu.m/s) | Constraint |
|---|---|---|---|---|---|---|---|
| P1/14 | 226.55 | 226.6 | 0.085 | 5.1 | 0 | 0 | Outlet System |
| P1/13 | 226.29 | 226.53 | 0.031 | 1.2 | 0.21 | 0 | Inlet Capacity |
| P1/12 | 226.17 | 226.53 | 0.031 | 1.1 | 0.33 | 0 | Inlet Capacity |
| P1/11 | 226.02 | 226.53 | 0.03 | 1.1 | 0.48 | 0 | Inlet Capacity |
| P1/10 | 225.93 | 226.53 | 0.03 | 1.1 | 0.57 | 0 | Inlet Capacity |
| P1/9 | 225.73 | 226.53 | 0.029 | 1 | 0.77 | 0 | Inlet Capacity |
| P1/8 | 225.72 | 226.53 | 0.029 | 0.2 | 0.78 | 0 | Inlet Capacity |
| P1/7 | 225.71 | 226.53 | 0.032 | 1.1 | 0.79 | 0 | Inlet Capacity |
| P1/6 | 225.68 | 226.53 | 0.032 | 1.1 | 0.82 | 0 | Inlet Capacity |
| P1/5 | 225.67 | 226.53 | 0.032 | 1.1 | 0.83 | 0 | Inlet Capacity |
| P1/4 | 225.65 | 226.53 | 0.032 | 1.1 | 0.85 | 0 | Inlet Capacity |
| P1/3 | 225.63 | | 0.057 | | 0.87 | 0.001 | Inlet Capacity |
| P1/2 | 225.52 | | 0.024 | | 0.78 | 0.083 | Inlet Capacity |
| P2/2 | 226.14 | 226.64 | 0.037 | 0.9 | 0.46 | 0 | Inlet Capacity |
| P2/1 | 225.73 | 226.5 | 0 | 0 | 0.77 | 0 | None |
| P3/1 | 225.73 | | 0 | | 0.97 | 0 | None |
| N DS | 0 | | 0.165 | | | | |
| N PreDev | 0 | | 0.512 | | | | |
| N18 | 222.86 | | 0 | | | | |
| P1/1 | 222.58 | | 0.018 | | | | |

SUB-CATCHMENT DETAILS

| Name | Max Flow Q (cu.m/s) | Paved Max Q (cu.m/s) | Grassed Max Q (cu.m/s) | Paved Tc (min) | Grassed Tc (min) | Supp. Tc (min) | Due to Storm |
|---|---|---|---|---|---|---|---|
| C 1/14 | 0.067 | 0.063 | 0.004 | 5 | 5 | 2 | 10% AEP, 5 min burst, Storm 1 |
| C 1/13 | 0.024 | 0.023 | 0.001 | 5 | 5 | 2 | 10% AEP, 5 min burst, Storm 1 |
| C 1/12 | 0.024 | 0.023 | 0.001 | 5 | 5 | 2 | 10% AEP, 5 min burst, Storm 1 |
| C 1/11 | 0.023 | 0.022 | 0.001 | 5 | 5 | 2 | 10% AEP, 5 min burst, Storm 1 |
| C 1/10 | 0.023 | 0.022 | 0.001 | 5 | 5 | 2 | 10% AEP, 5 min burst, Storm 1 |
| C 1/9 | 0.024 | 0.024 | 0 | 5 | 5 | 2 | 10% AEP, 5 min burst, Storm 1 |
| C 1/8 | 0.024 | 0.024 | 0 | 5 | 5 | 2 | 10% AEP, 5 min burst, Storm 1 |
| C 1/7 | 0.026 | 0.026 | 0 | 5 | 5 | 2 | 10% AEP, 5 min burst, Storm 1 |
| C 1/6 | 0.026 | 0.026 | 0 | 5 | 5 | 2 | 10% AEP, 5 min burst, Storm 1 |
| C 1/5 | 0.026 | 0.026 | 0 | 5 | 5 | 2 | 10% AEP, 5 min burst, Storm 1 |
| C 1/4 | 0.026 | 0.026 | 0 | 5 | 5 | 2 | 10% AEP, 5 min burst, Storm 1 |
| C 1/3 | 0.047 | 0.047 | 0 | 5 | 5 | 2 | 10% AEP, 5 min burst, Storm 1 |
| C 1/2 | 0.019 | 0.019 | 0 | 5 | 5 | 2 | 10% AEP, 5 min burst, Storm 1 |
| C 2/2 | 0.03 | 0.03 | 0 | 5 | 5 | 2 | 10% AEP, 5 min burst, Storm 1 |
| C OSD | 0.034 | 0.034 | 0 | 5 | 5 | 2 | 10% AEP, 5 min burst, Storm 1 |
| C PreDev | 0.362 | 0 | 0.362 | 5 | 5 | 2 | 10% AEP, 15 min burst, Storm 5 |
| C 1/1 | 0.013 | 0 | 0.013 | 5 | 5 | 2 | 10% AEP, 15 min burst, Storm 5 |

PIPE DETAILS

| Name | Max Q (cu.m/s) | Max V (m/s) | Max U/S HGL (m) | Max D/S HGL (m) | Due to Storm |
|---|---|---|---|---|---|
| Pipe-14 | 0.051 | 0.7 | 226.309 | 226.285 | 10% AEP, 5 min burst, Storm 1 |
| Pipe-13 | 0.072 | 0.99 | 226.243 | 226.168 | 10% AEP, 5 min burst, Storm 1 |
| Pipe-16 | 0.092 | 1.27 | 226.114 | 226.021 | 10% AEP, 5 min burst, Storm 1 |
| Pipe-15 | 0.114 | 0.97 | 225.981 | 225.931 | 10% AEP, 5 min burst, Storm 1 |
| Pipe-3 | 0.135 | 1.15 | 225.845 | 225.729 | 10% AEP, 5 min burst, Storm 1 |
| Pipe-18 | 0.101 | 0.86 | 225.727 | 225.725 | 10% AEP, 5 min burst, Storm 1 |
| Pipe-17 | 0.101 | 0.86 | 225.716 | 225.706 | 10% AEP, 5 min burst, Storm 1 |
| Pipe-20 | 0.102 | 0.87 | 225.693 | 225.677 | 10% AEP, 5 min burst, Storm 1 |
| Pipe-19 | 0.102 | 0.87 | 225.673 | 225.668 | 10% AEP, 5 min burst, Storm 1 |
| Pipe-22 | 0.103 | 0.88 | 225.66 | 225.65 | 10% AEP, 5 min burst, Storm 1 |
| Pipe-21 | 0.104 | 0.89 | 225.639 | 225.626 | 10% AEP, 5 min burst, Storm 1 |
| Pipe-7 | 0.107 | 0.91 | 225.59 | 225.518 | 10% AEP, 5 min burst, Storm 1 |
| Pipe-11 | 0.029 | 1.06 | 225.938 | 225.731 | 10% AEP, 5 min burst, Storm 1 |
| Pipe-12 | 0.029 | 1.06 | 225.72 | 225.518 | 10% AEP, 5 min burst, Storm 1 |
| Pipe-9 | 0.09 | 0.56 | 225.736 | 225.735 | 10% AEP, 5 min burst, Storm 1 |
| Pipe-10 | 0.09 | 0.56 | 225.732 | 225.729 | 10% AEP, 5 min burst, Storm 1 |
| Pipe-8 | 0.131 | 1.89 | 222.86 | 222.721 | 10% AEP, 5 min burst, Storm 1 |

CHANNEL DETAILS

| Name | Max Q (cu.m/s) | Max V (m/s) | Due to Storm |
|---|---|---|---|

OVERFLOW ROUTE DETAILS

| Name | Max Q U/S | Max Q D/S | Safe Q | Max D | Max DxV | Max Width | Max V | Due to Storm |
|---|---|---|---|---|---|---|---|---|
| OF47889 | 0 | 0 | 0.636 | 0 | 0 | 0 | 0 | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| OF47887 | 0 | 0 | 0.154 | 0 | 0 | 0 | 0 | |
| OF47886 | 0 | 0 | 0.154 | 0 | 0 | 0 | 0 | |
| OF47885 | 0 | 0 | 0.157 | 0 | 0 | 0 | 0 | |
| OF47884 | 0 | 0 | 0.157 | 0 | 0 | 0 | 0 | |
| OF47883 | 0 | 0 | 0.154 | 0 | 0 | 0 | 0 | |
| B16-5 | 0 | 0 | 0.154 | 0 | 0 | 0 | 0 | |
| OF47881 | 0 | 0 | 0.154 | 0 | 0 | 0 | 0 | |
| B17-6 | 0 | 0 | 0.154 | 0 | 0 | 0 | 0 | |
| OF47880 | 0 | 0 | 0.154 | 0 | 0 | 0 | 0 | |
| B18-7 | 0 | 0 | 0.379 | 0 | 0 | 0 | 0 | |
| B7-8 | 0.001 | 0.001 | 0.123 | 0.014 | 0 | 0.17 | 0 | 10% AEP, 5 min burst, Storm 1 |
| SPEL Vorce | 0.083 | 0.083 | | | | | | 10% AEP, 5 min burst, Storm 1 |
| Weir | | | | | | | | |
| Ori ML | 0.048 | 0.048 | | | | | | 10% AEP, 5 min burst, Storm 1 |
| B8-9 | 0 | 0 | 0.857 | 0 | 0 | 0 | 0 | |
| B12-13 | 0 | 0 | 0.147 | 0 | 0 | 0 | 0 | |
| B13-8 | 0 | 0 | 0.144 | 0 | 0 | 0 | 0 | |
| B10-11 | 0 | 0 | 0.593 | 0 | 0 | 0 | 0 | |
| OF9325 | 0 | 0 | 1.162 | 0 | 0 | 0 | 0 | |
| OF17 | 0.142 | 0.142 | 1.161 | 0.078 | 0.11 | 1.62 | 1.41 | 10% AEP, 5 min burst, Storm 1 |

DETENTION BASIN DETAILS

| Name | Max WL | MaxVol | Max Q Total | Max Q Low Level | Max Q High Level |
|---|---|---|---|---|---|
| OSD | 225.74 | 158.2 | 0.09 | 0.09 | 0 |

Run Log for 23053 v4

{\colortbl;\red0\green0\blue0;\red192\green0\blue0;}Run Log for 23053 v4.drn - DRAINS run at 10:17:29 on 15/9/2023 using Watercom Drains v2023.06.8578.17142

No water upwelling from any pit.
Freeboard was less than 0.15m at P1/14
Flows were safe in all overflow routes.
These sag pits have unsafe water levels for minor storms: P1/14

DRAINS results prepared from Version 2023.06.8578.17142

PIT / NODE DETAILS Version 8

| Name | Max HGL | Max Pond HGL | Max Surfac Flow Arrivi (cu.m/s) | Max Pond Volume (cu.m) | Min Freeboard (m) | Overflow (cu.m/s) | Constraint |
|---|---|---|---|---|---|---|---|
| P1/14 | 226.64 | 226.66 | 0.135 | 5.1 | 0 | 0.043 | Outlet System |
| P1/13 | 226.61 | 226.63 | 0.055 | 5.1 | 0 | 0 | Outlet System |
| P1/12 | 226.59 | 226.61 | 0.055 | 5.1 | 0 | 0 | Outlet System |
| P1/11 | 226.56 | 226.58 | 0.052 | 5.1 | 0 | 0 | Outlet System |
| P1/10 | 226.55 | 226.57 | 0.052 | 3.4 | 0 | 0 | Outlet System |
| P1/9 | 226.48 | 226.54 | 0.051 | 1.7 | 0.02 | 0 | Inlet Capacity |
| P1/8 | 226.49 | 226.53 | 0.051 | 0.3 | 0.01 | 0 | Inlet Capacity |
| P1/7 | 226.49 | 226.54 | 0.056 | 3 | 0.01 | 0 | Inlet Capacity |
| P1/6 | 226.5 | 226.55 | 0.056 | 3.7 | 0 | 0 | Outlet System |
| P1/5 | 226.5 | 226.55 | 0.056 | 3.6 | 0 | 0 | Outlet System |
| P1/4 | 226.5 | 226.55 | 0.056 | 3.2 | 0 | 0 | Inlet Capacity |
| P1/3 | 226.47 | | 0.117 | | 0.03 | 0.002 | Inlet Capacity |
| P1/2 | 226.26 | | 0.042 | | 0.04 | 0.093 | Inlet Capacity |
| P2/2 | 226.68 | 226.72 | 0.065 | 3.4 | 0 | 0.002 | Outlet System |
| P2/1 | 226.32 | 226.5 | 0.008 | 0.3 | 0.18 | 0 | Inlet Capacity |
| P3/1 | 226.49 | | 0 | | 0.21 | 0 | None |
| N18 | 222.93 | | 0 | | | | |
| P1/1 | 222.6 | | 0.034 | | | | |

SUB-CATCHMENT DETAILS

| Name | Max Flow Q (cu.m/s) | Paved Max Q (cu.m/s) | Grassed Max Q (cu.m/s) | Paved Tc (min) | Grassed Tc (min) | Supp. Tc (min) | Due to Storm |
|---|---|---|---|---|---|---|---|
| C 1/14 | 0.12 | 0.111 | 0.009 | 5 | 5 | 2 | 1% AEP, 5 min burst, Storm 1 |
| C 1/13 | 0.044 | 0.04 | 0.003 | 5 | 5 | 2 | 1% AEP, 5 min burst, Storm 1 |
| C 1/12 | 0.044 | 0.04 | 0.003 | 5 | 5 | 2 | 1% AEP, 5 min burst, Storm 1 |
| C 1/11 | 0.042 | 0.039 | 0.003 | 5 | 5 | 2 | 1% AEP, 5 min burst, Storm 1 |
| C 1/10 | 0.042 | 0.039 | 0.003 | 5 | 5 | 2 | 1% AEP, 5 min burst, Storm 1 |
| C 1/9 | 0.042 | 0.042 | 0 | 5 | 5 | 2 | 1% AEP, 5 min burst, Storm 1 |
| C 1/8 | 0.042 | 0.042 | 0 | 5 | 5 | 2 | 1% AEP, 5 min burst, Storm 1 |
| C 1/7 | 0.046 | 0.046 | 0 | 5 | 5 | 2 | 1% AEP, 5 min burst, Storm 1 |
| C 1/6 | 0.046 | 0.046 | 0 | 5 | 5 | 2 | 1% AEP, 5 min burst, Storm 1 |
| C 1/5 | 0.045 | 0.045 | 0 | 5 | 5 | 2 | 1% AEP, 5 min burst, Storm 1 |
| C 1/4 | 0.045 | 0.045 | 0 | 5 | 5 | 2 | 1% AEP, 5 min burst, Storm 1 |
| C 1/3 | 0.082 | 0.082 | 0 | 5 | 5 | 2 | 1% AEP, 5 min burst, Storm 1 |
| C 1/2 | 0.033 | 0.033 | 0 | 5 | 5 | 2 | 1% AEP, 5 min burst, Storm 1 |
| C 2/2 | 0.053 | 0.053 | 0 | 5 | 5 | 2 | 1% AEP, 5 min burst, Storm 1 |
| C OSD | 0.06 | 0.06 | 0 | 5 | 5 | 2 | 1% AEP, 5 min burst, Storm 1 |
| C PreDev | 0.666 | 0 | 0.666 | 5 | 5 | 2 | 1% AEP, 10 min burst, Storm 1 |
| C 1/1 | 0.024 | 0 | 0.024 | 5 | 5 | 2 | 1% AEP, 10 min burst, Storm 1 |

PIPE DETAILS

| Name | Max Q (cu.m/s) | Max V (m/s) | Max U/S HGL (m) | Max D/S HGL (m) | Due to Storm |
|---|---|---|---|---|---|
| Pipe-14 | 0.052 | 0.73 | 226.612 | 226.609 | 1% AEP, 5 min burst, Storm 1 |
| Pipe-13 | 0.089 | 1.23 | 226.602 | 226.59 | 1% AEP, 5 min burst, Storm 1 |
| Pipe-16 | 0.104 | 1.45 | 226.579 | 226.562 | 1% AEP, 5 min burst, Storm 1 |
| Pipe-15 | 0.125 | 1.07 | 226.555 | 226.548 | 1% AEP, 5 min burst, Storm 1 |
| Pipe-3 | 0.146 | 1.25 | 226.521 | 226.485 | 1% AEP, 10 min burst, Storm 6 |
| Pipe-18 | 0.12 | 1.02 | 226.485 | 226.485 | 1% AEP, 45 min burst, Storm 3 |
| Pipe-17 | 0.12 | 1.02 | 226.485 | 226.494 | 1% AEP, 45 min burst, Storm 3 |
| Pipe-20 | 0.12 | 1.02 | 226.494 | 226.505 | 1% AEP, 45 min burst, Storm 3 |
| Pipe-19 | 0.12 | 1.03 | 226.504 | 226.502 | 1% AEP, 45 min burst, Storm 3 |
| Pipe-22 | 0.12 | 1.03 | 226.5 | 226.498 | 1% AEP, 45 min burst, Storm 3 |
| Pipe-21 | 0.12 | 1.03 | 226.487 | 226.473 | 1% AEP, 45 min burst, Storm 3 |
| Pipe-7 | 0.137 | 1.17 | 226.402 | 226.259 | 1% AEP, 20 min burst, Storm 2 |
| Pipe-11 | 0.041 | 0.9 | 226.363 | 226.317 | 1% AEP, 5 min burst, Storm 1 |
| Pipe-12 | 0.047 | 1.03 | 226.302 | 226.259 | 1% AEP, 5 min burst, Storm 1 |
| Pipe-9 | 0.114 | 0.72 | 226.487 | 226.487 | 1% AEP, 1 hour burst, Storm 4 |
| Pipe-10 | 0.114 | 0.72 | 226.486 | 226.485 | 1% AEP, 1 hour burst, Storm 5 |
| Pipe-8 | 0.187 | 1.99 | 222.925 | 222.793 | 1% AEP, 20 min burst, Storm 3 |

CHANNEL DETAILS

| Name | Max Q (cu.m/s) | Max V (m/s) | Due to Storm |
|---|---|---|---|

OVERFLOW ROUTE DETAILS

| Name | Max Q U/S | Max Q D/S | Safe Q | Max D | Max DxV | Max Width | Max V | Due to Storm |
|---|---|---|---|---|---|---|---|---|
| OF47889 | 0.043 | 0.034 | 1.506 | 0.055 | 0.02 | 4 | 0.44 | 1% AEP, 10 min burst, Storm 7 |
| OF47887 | 0 | 0 | 1.315 | 0 | 0 | 0 | 0 | |
| OF47886 | 0 | 0 | 1.315 | 0 | 0 | 0 | 0 | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| OF47885 | 0 | 0 | 1.341 | 0 | 0 | 0 | 0 | |
| OF47884 | 0 | 0 | 1.341 | 0 | 0 | 0 | 0 | |
| OF47883 | 0 | 0 | 1.315 | 0 | 0 | 0 | 0 | |
| B16-5 | 0 | 0 | 1.315 | 0 | 0 | 0 | 0 | |
| OF47881 | 0 | 0 | 1.315 | 0 | 0 | 0 | 0 | |
| B17-6 | 0 | 0 | 1.315 | 0 | 0 | 0 | 0 | |
| OF47880 | 0 | 0 | 1.315 | 0 | 0 | 0 | 0 | |
| B18-7 | 0 | 0 | 1.076 | 0 | 0 | 0 | 0 | |
| B7-8 | 0.002 | 0.002 | 1.052 | 0.033 | 0.01 | 0.38 | 0.28 | 1% AEP, 15 min burst, Storm 2 |
| SPEL Vorce | 0.093 | 0.093 | | | | | | 1% AEP, 5 min burst, Storm 1 |
| Weir | 0.031 | 0.031 | | | | | | 1% AEP, 20 min burst, Storm 3 |
| Ori ML | 0.063 | 0.063 | | | | | | 1% AEP, 20 min burst, Storm 3 |
| B8-9 | 0 | 0 | 1.482 | 0 | 0 | 0 | 0 | |
| B12-13 | 0.002 | 0.002 | 1.261 | 0.036 | 0.01 | 0.42 | 0.25 | 1% AEP, 10 min burst, Storm 6 |
| B13-8 | 0 | 0 | 1.233 | 0 | 0 | 0 | 0 | |
| B10-11 | 0 | 0 | 0.593 | 0 | 0 | 0 | 0 | |
| OF9325 | 0 | 0 | 1.162 | 0 | 0 | 0 | 0 | |
| OF17 | 0.207 | 0.207 | 1.161 | 0.096 | 0.15 | 1.77 | 1.6 | 1% AEP, 20 min burst, Storm 3 |

DETENTION BASIN DETAILS

| Name | Max WL | MaxVol | Max Q Total | Max Q Low Level | Max Q High Level |
|---|---|---|---|---|---|
| OSD | 226.49 | 334.6 | 0.114 | 0.114 | 0 |

Run Log for 23053 v4

{\colortbl;\red0\green0\blue0;\red192\green0\blue0;}Run Log for 23053 v4.drn - DRAINS run at 07:21:10 on 2/11/2023 using Watercom Drains v2023.06.8578.17142

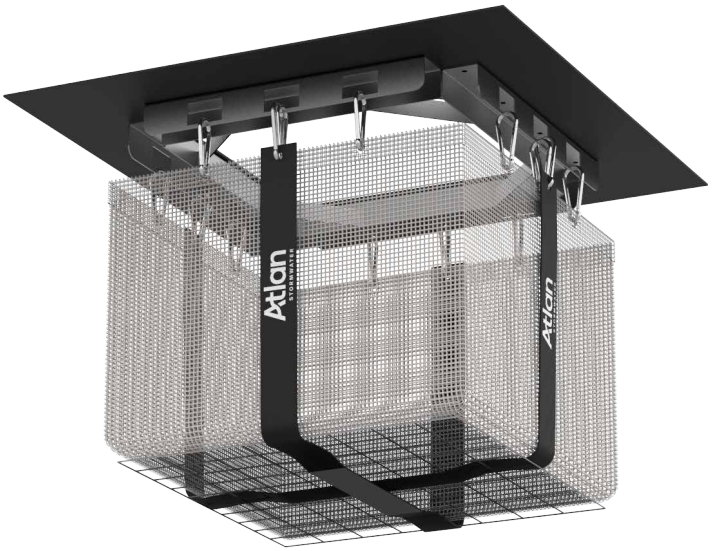
No water upwelling from any pit.
Freeboard was less than 0.15m at P1/4, P1/6, P1/8, P1/11, P1/13, P1/2, P1/3, P1/5, P2/2, P1/7, P1/9, P1/10, P1/12, P1/14
The maximum pond depth in these sag pits is unsafe: P1/13\line
Flows were safe in all overflow routes.

# StormSack

**At-Source Gross Pollutant Trap**

atlan.com.au

Atlan STORMWATER



The Atlan StormSack is specifically designed for the capture of gross pollutants, sediment, litter, and oil and grease. Ideally suited for storm drain retrofits, the StormSack's unique design allows maintenance to be performed using conventional vacuum suction equipment.

StormSack filtration solutions are highly engineered water quality devices that are deployed directly in the stormwater system to capture contaminants close the surface for ease of maintenance. Easily retrofitted into new or existing structures, StormSack filtration technology is a decentralized approach to stormwater treatment that essentially repurposes traditional site infrastructure and customizes it to meet specific site water quality goals. In this way, it satisfies important objectives of today's LID (Low Impact Development) criteria.

From an operations perspective, catch basins with StormSack filters are also easier and quicker to clean out because pollutants are trapped just under the grate.

# APPLICATIONS

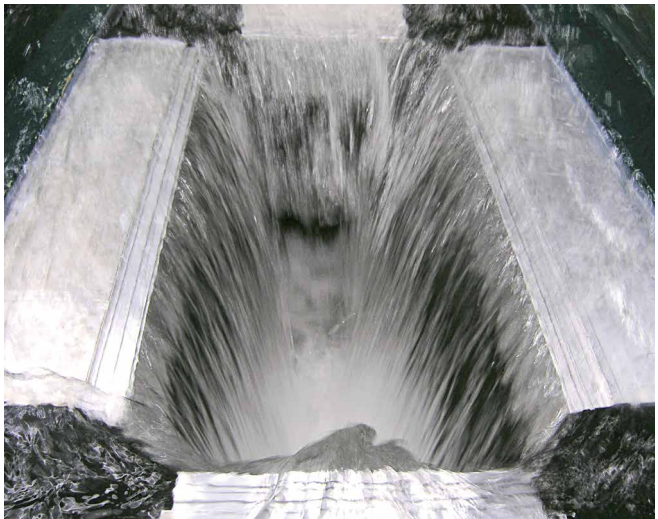
- Council storm drain retrofits
- Commercial / retail / residential
- Litter prone urban areas
- Scrap metal / solid waste / oil storage
- Part of treatment train
- Construction sediment / erosion

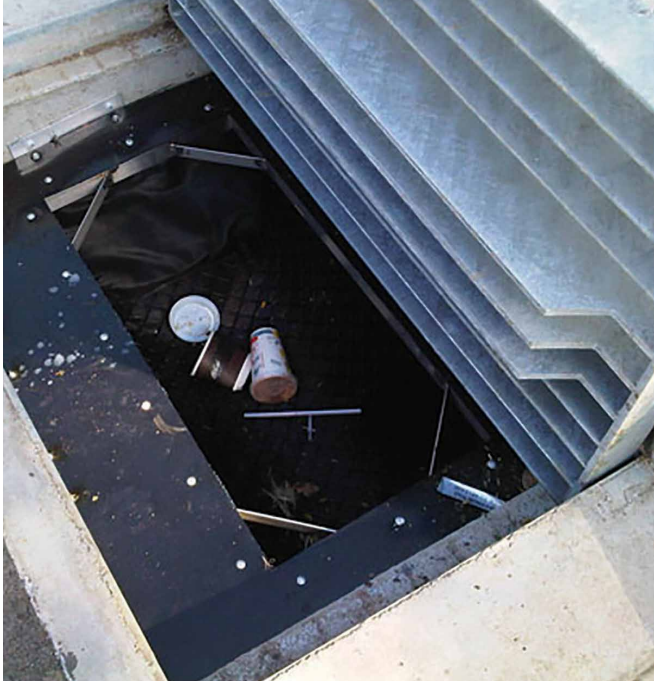
# BENEFITS

- Can be modelled in MUSIC in conjunction with bio-retention
- Low cost gross pollutant capture
- Quick & easy installation
- Simple maintenance
- At-source capture
- Adjusts to custom pit sizes

The StormSack was introduced to the Australian market in 2012 and field testing is underway at several locations in South-east Queensland. Laboratory testing has shown capture of 99.99% of gross pollutants up to the bypass flow rate. Further results will be provided as they become available.

Recommended minimum clearance from bottom of StormSack to inside bottom of vault is 50mm. Typical frame adjustability range of 127mm in each direction.





# HOW IT WORKS

This technology is a post developed stormwater treatment system. The StormSack provides effective filtration of solid pollutants and debris typical of urban runoff, while utilising existing or new storm drain infrastructure. The StormSack is designed to rest on the flanges of conventional catch basin frames and is engineered for most hydraulic and cold climate conditions.

Installation procedures shall include removing the storm grate, cleaning the ledge of debris and solids, measuring catch basin clear opening and adjusting flanges to rest on the grate support ledge. Install StormSack with splash guard under curb opening so the adjustable flanges are resting on the grate support ledge. Install corner filler pieces. Reinstall storm grate directly on support flanges rise shall be no more than 3mm.

# FEATURES

| POLLUTANT | EFFICIENCY |
|---|---|
| Gross Pollutants (GP) | 100% |
| Total Suspended Solids (TSS) | 61% |
| Total Phosphorus (TP) | 28% |
| Total Nitrogen (TN) | 45% |

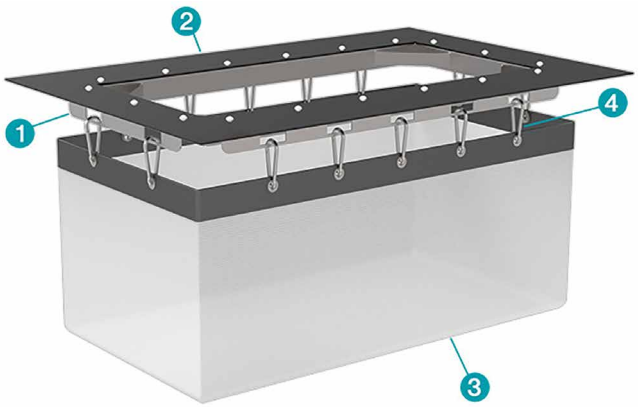
*Contact Atlan to confirm approved performance for the project LGA

# MAINTENANCE

Typically the StormSack is serviceable from the street level, and therefore maintenance does not require confined space entry into the catch basin structure. The unit is designed to be maintained in place with a vacuum hose attached to a sweeper or a vactor truck. Use only Atlan replaceable parts.

| Application | Regulatory Issue | Target Pollutants |
|---|---|---|
| Council Storm Drain Retrofits | At-source litter capture | Sediment, Litter, O&G |
| Commercial/Retail/Residential | Stormwater Compliance | Sediment, Litter, O&G |
| Litter Prone Urban Areas | Cost effective litter control | Litter ≥ 5 mm |
| Scrap Metal/Solid Waste/Oil Storage/Etc | Industrial Multi-Sector General Permit | Gross Pollutants, O&G |
| Part of Treatment Train | Council Stormwater Quality Improvement Targets | Sediment, Litter, O&G |
| Construction Sediment/Erosion | Sediment Control Plan | Sediment/Erosion Control |

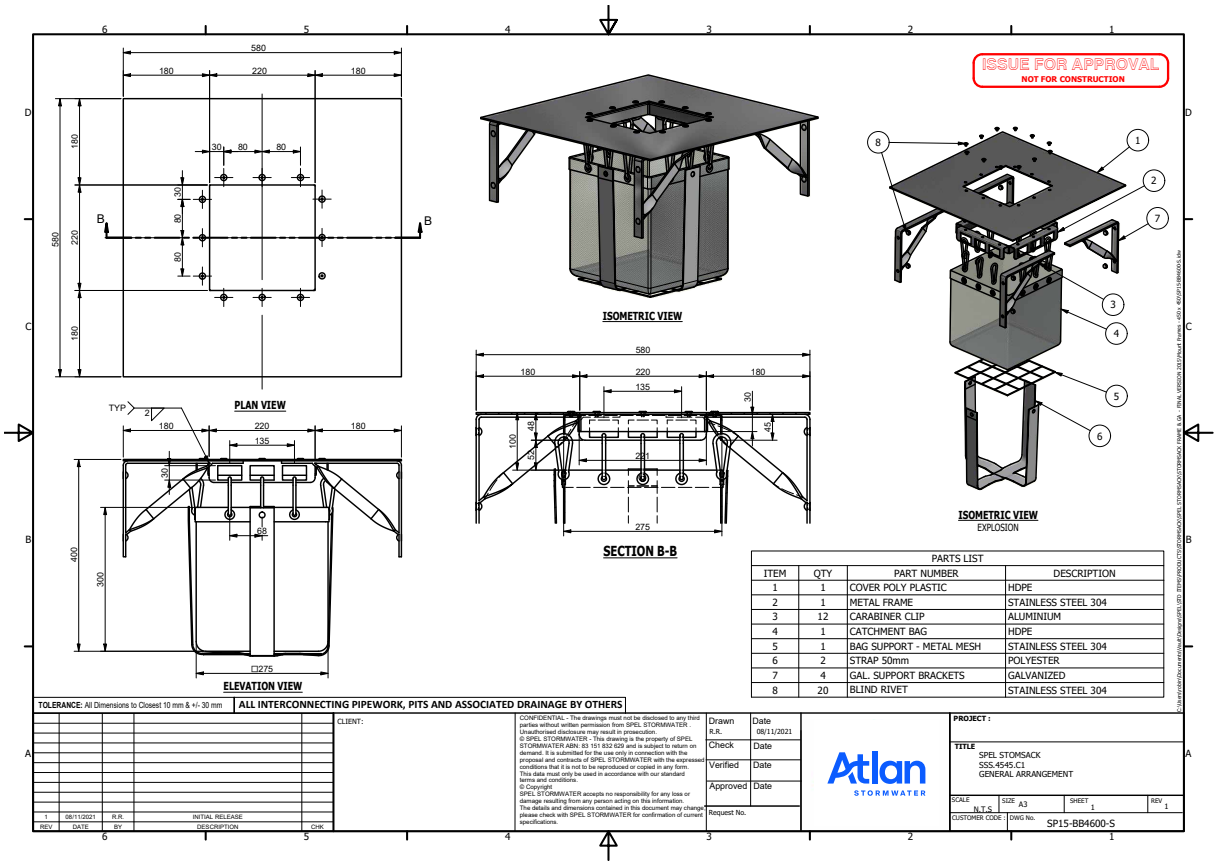
| Features | |
|---|---|
| 1. | 1. Ultra-Durable Aluminium Frame<br>• Available in 450x450mm, 600x600mm, 600x900mm and 900x900mm sizes<br>• Custom pit arrangements upon request |
| 2. | Black Poly Surround riveted to Frame<br>• Can be cut to suit on site |
| 3. | Reinforced Stormsack Bag<br>• Bag has sewed eyelets<br>• Square bottom design for even distribution |
| 4. | Karabiners attach Bag to Frame for easy service & replacement |
| 5. | 5. Aluminium Support Angles & Fixings |

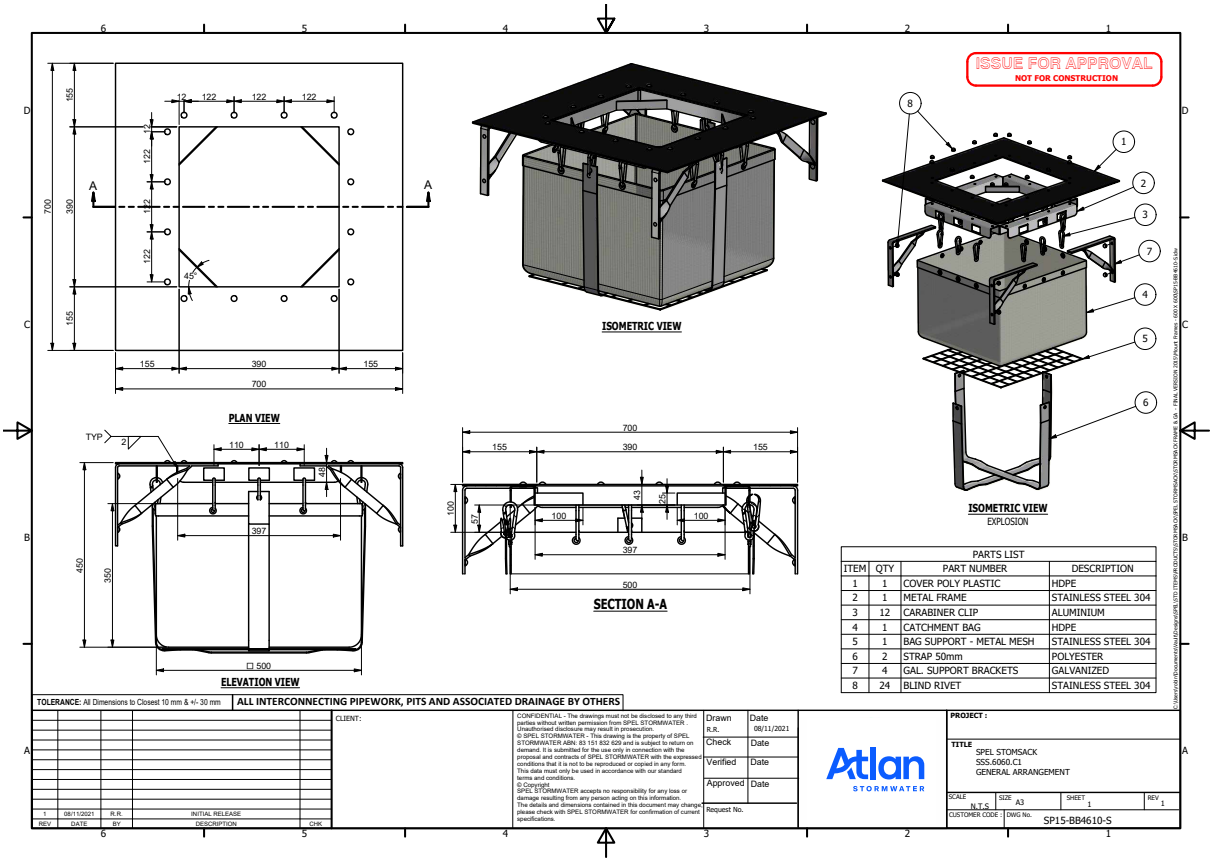



| Standard StormSack to suit Pit Sizes |
|---|
| 450x450mm |
| 600x600mm |
| 900x600mm |
| 900x900mm |

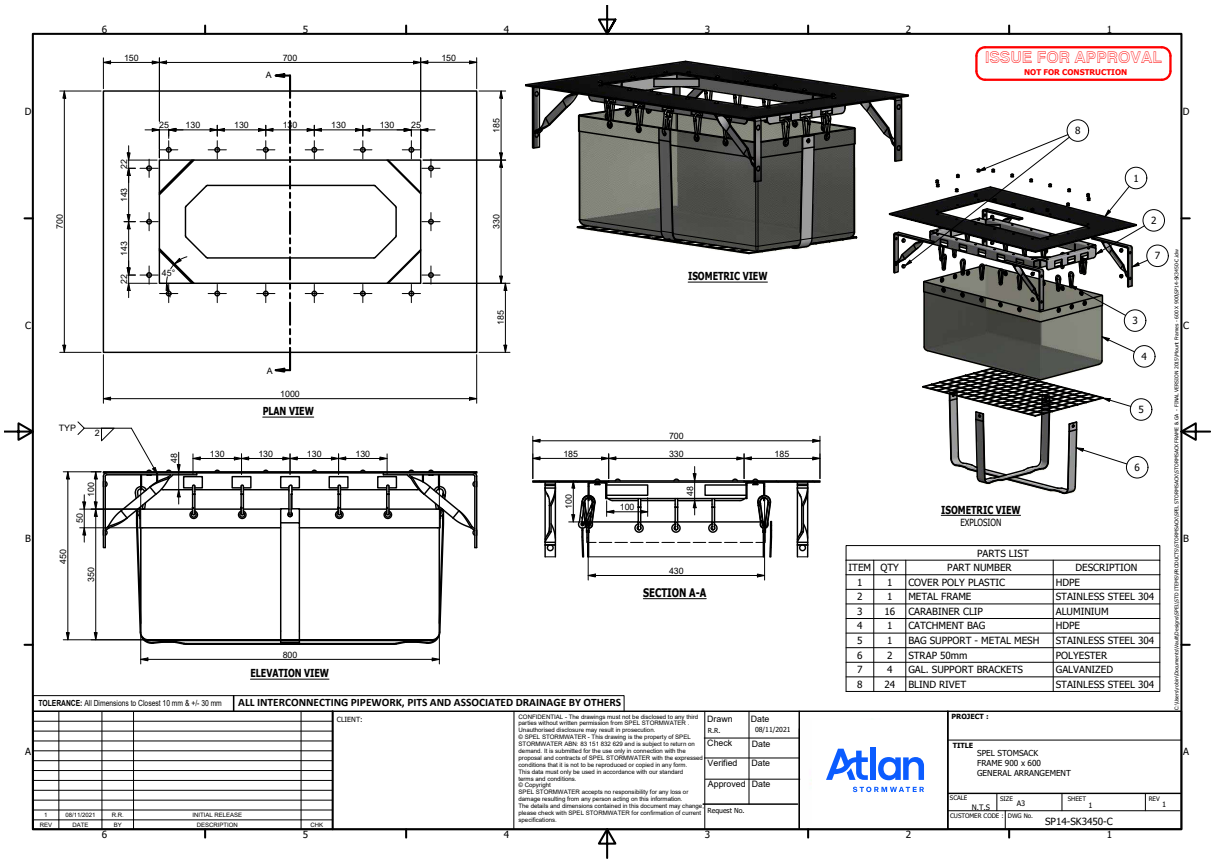
Custom sizes (i.e. 1200x900mm) can be manufactured on short lead times

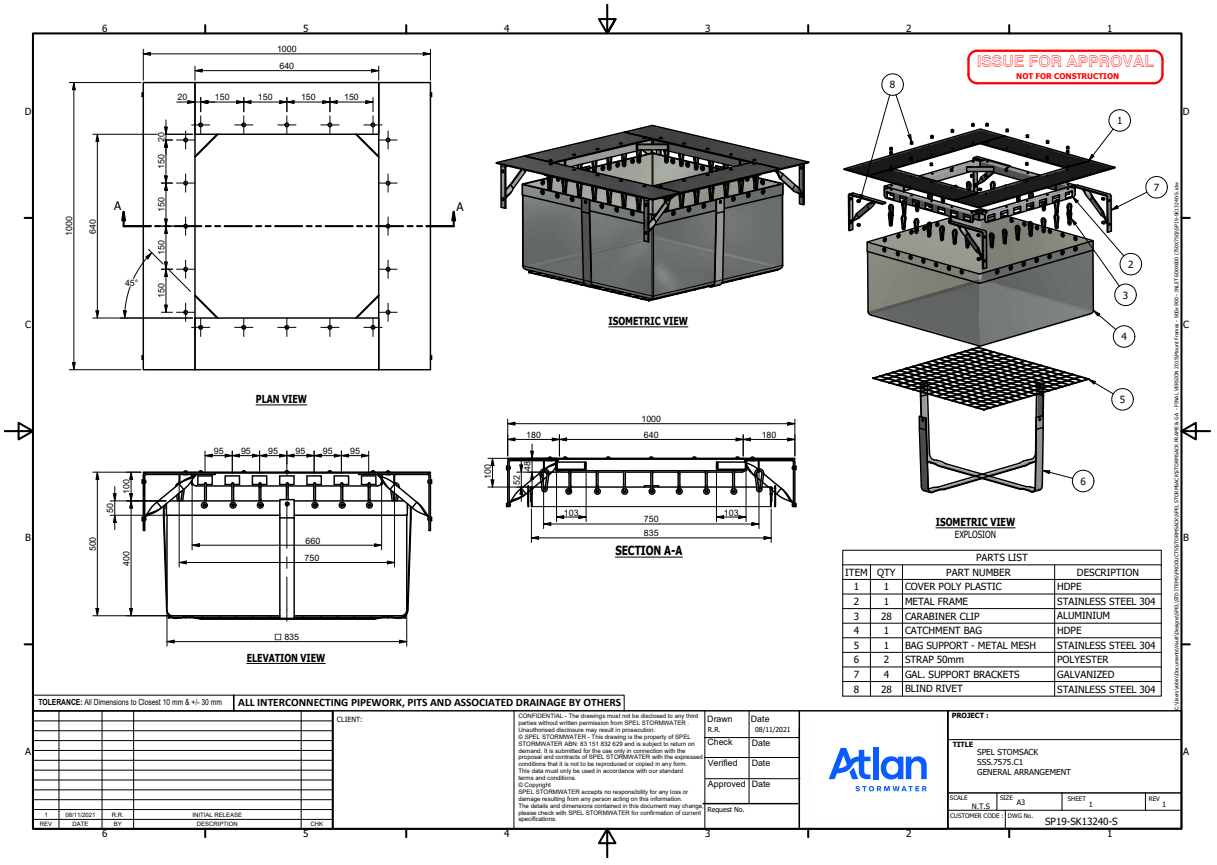
# TECHNICAL DRAWINGS



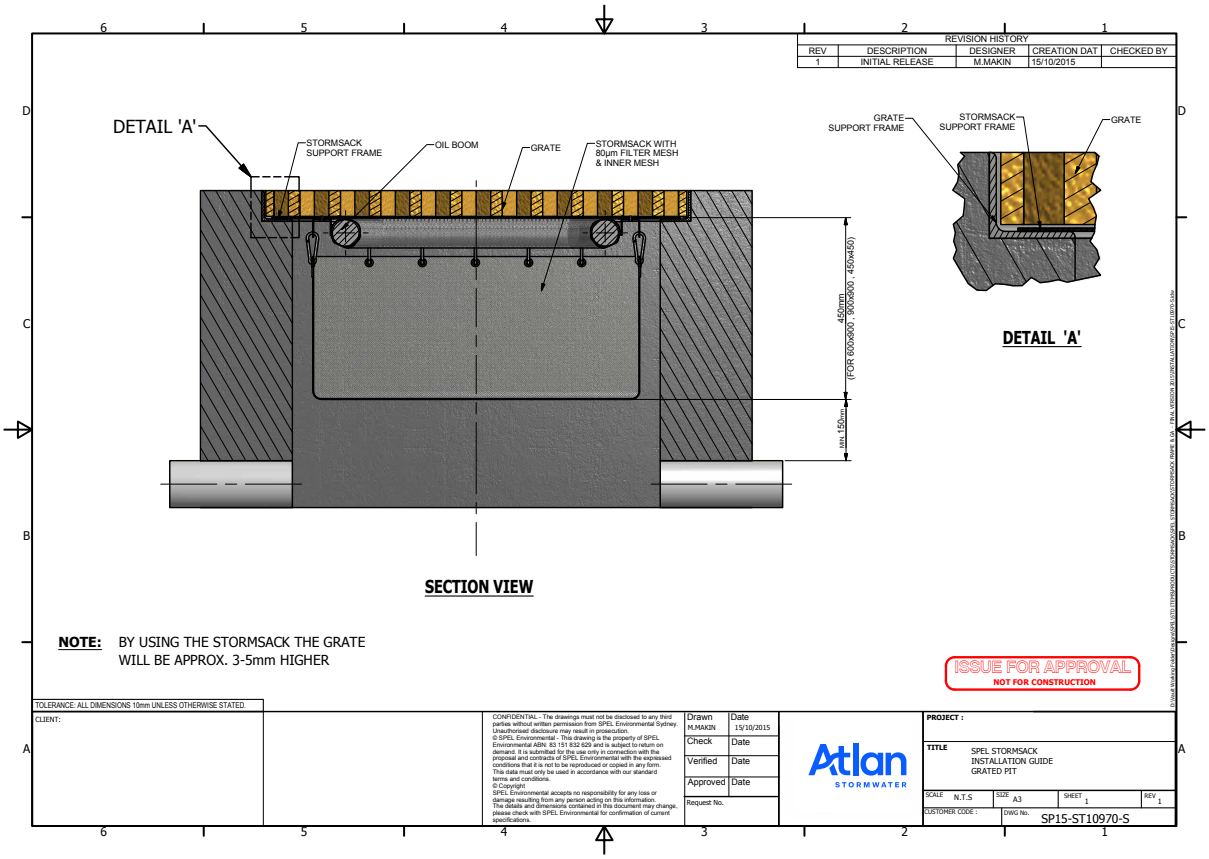



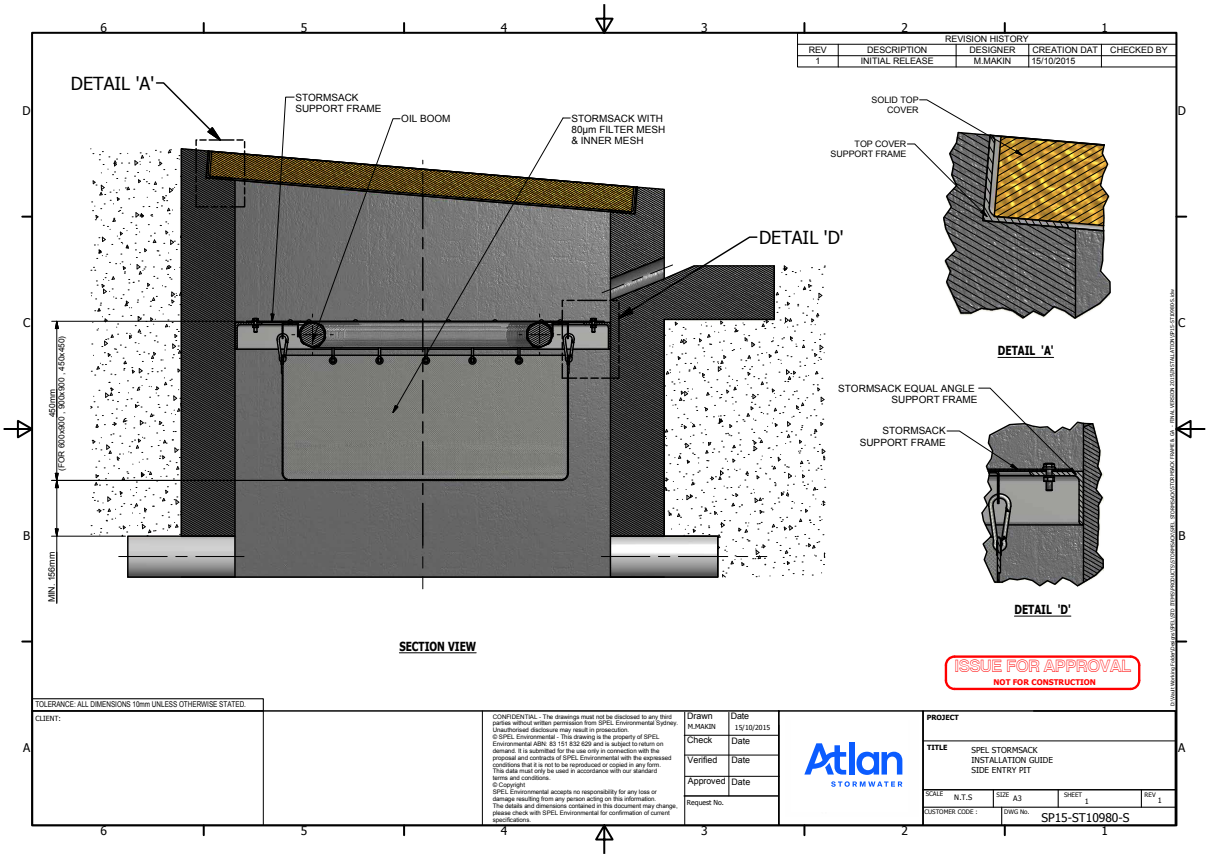
# TECHNICAL DRAWINGS



# INSTALLATION DETAILS



# StormSack

## At-Source Gross Pollutant Trap

| | | |
|---|---|---|
| **NSW HEAD OFFICE**<br>100 Silverwater Rd, Silverwater NSW 2128<br>PO Box 7138, Silverwater NSW 1811<br>P: +61 2 8705 0255<br>P: 1300 773 500<br>nsw.sales@atlan.com.au | **QLD MAIN OFFICE**<br>130 Sandstone Pl, Parkinson QLD 4115<br>P: +61 7 3271 6960<br>P: 1300 773 500<br>qld.sales@atlan.com.au | **VIC & TAS OFFICE**<br>897 Wellington Rd Rowville VIC 3178<br>P: +61 3 5274 1336<br>P: 1800 810 139<br>sales@atlan.com.au<br><br>**VIC GEELONG BRANCH**<br>70 Technology Close, Corio VIC |
| **SA OFFICE**<br>9 Hampden Road, Mount Barker SA 5251<br>P: 1300 773 500<br>sales@atlan.com.au | **QLD SUNSHINE COAST BRANCH**<br>19-27 Fred Chaplin Cct, Bells Creek, QLD 4551<br>P: 1300 773 500<br>qld.sales@atlan.com.au | **WA OFFICE**<br>2 Modal Cres Canning Vale WA 6155<br>P: +61 8 9350 1000<br>P: 1800 335 550<br>sales@atlan.com.au |
| **NZ OFFICE WANGANUI**<br>43 Heads Road Wanganu New Zealand<br>P: +64 6 349 0088<br>sales@atlan.com.au<br>atlan.co.nz | **NZ OFFICE WELLINGTON**<br>41 Raiha St Porirua Wellington New Zealand<br>P: +64 4 239 6006<br>sales@atlan.com.au<br>atlan.co.nz | **NZ OFFICE AUCKLAND**<br>100 Montgomerie Road Airport Oaks<br>P: +64 9 276 9045<br>sales@atlan.com.au<br>atlan.co.nz |

*Joy in water*

'We believe clean waterways are a right not a privilege and we work to ensure a joy in water experience for you and future generations.'

**Andy Hornbuckle**

Atlan STORMWATER

**P** 02 8705 0255 | sales@atlan.com.au
100 Silverwater Rd, Silverwater NSW 2128 Australia
**atlan.com.au**

# Vortceptor

**Hydrodynamic GPT**

atlan.com.au

Atlan
STORMWATER

## Overview

The Vortceptor Gross Pollutant Trap (GPT) is a non-blocking vortex style separator that has a unique screen and treatment action producing low vortex conditions resulting in excellent pollution removal performance and resulting high water quality outcomes.

It separates and captures gross pollutants, sediments, silt, total suspended solids, some nutrients and oil and grease.

The one piece Vortceptor GPT is delivered to site fully assembled saving on installation time and crane costs. The fibreglass design can be installed in all types of trafficable zones, including vehicular truck (Class D).^

## TESTED TREATMENT EFFICIENCIES*

| POLLUTANT | EFFICIENCY |
|---|---|
| Gross Pollutants (GP) | 99% |
| Total Suspended Solids (TSS) | 70% |
| Total Phosphorus (TP) | 30% |
| Total Nitrogen (TN)* | 0% |
| Petroleum Hydrocarbon* | 94% |

*Contact Atlan to confirm approved performance for the project LGA
Organic/particulate component of the nutrient only.

^ Subject to the installation of an engineered cast in situ concrete slab.

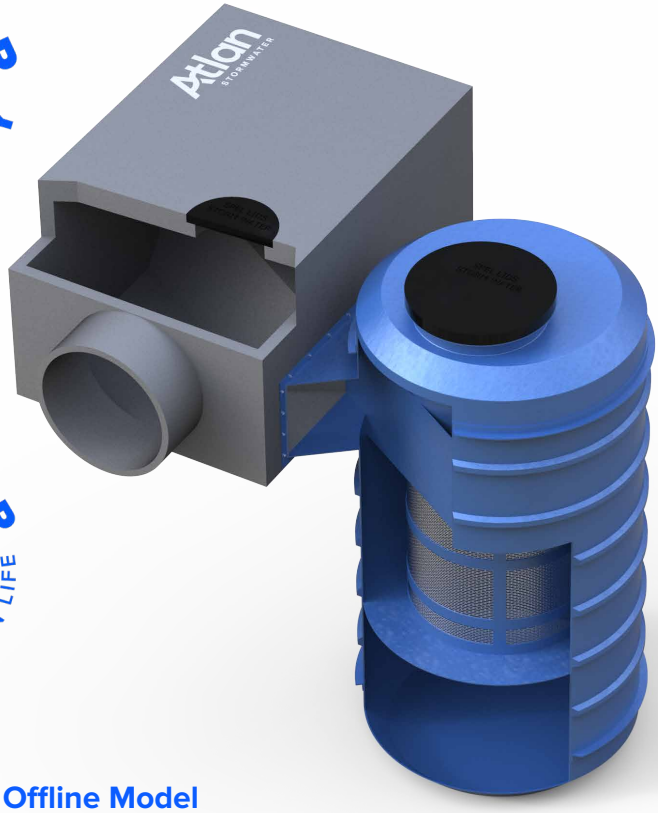
The Vortceptor is designed to meet requirements for a diverse range of applications. Designed with versatility in mind, these fibreglass reinforced polymer (FRP) GPTs are available in inline and offline configurations to meet your project specifications.

An offline configuration places the separation chamber adjacent to the diversion chamber. This allows bypass to occur and is beneficial in high flow rate applications.

In an inline treatment configuration, the diversion chamber and separation chamber are integrated – with the device situated ‘inline’ with incoming and outgoing flows. This is often beneficial for retrofit applications in existing drainage systems.

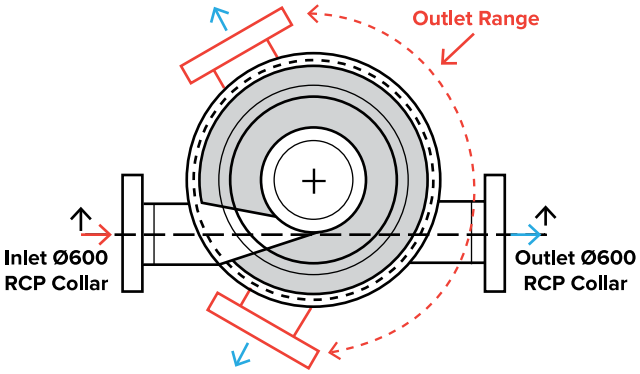
## Applications

- Shopping Precinct
- Commercial Zones
- Recreational Grounds
- Industrial Areas
- Beaches & Park
- Residential Development



## Inline Model

The Vortceptor Inline series is useful for constrained sites with a treatment flow rate that is relative to the bypass flow rates. The Inline Vortceptor has a flexible pipe configuration with the outlet pipe being able to rotate in excess of 180° around the system. The Inline Vortceptor is available with or without internal bypass to suit installation on low flow diversions.

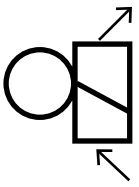



## Offline Model

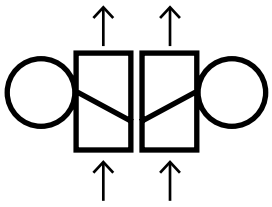
The Vortceptor Offline series is used when the bypass flows are high, or greater than the flows required to pass through the Inline range. There are various advantages of the Offline series including the ability to divert treated flow water to a tertiary asset independently to the bypassed stormwater and the ability to adjust the system to cater for trailwater and external catchments.

You can also include:

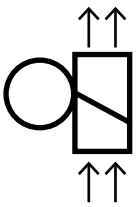
1. Angled inlet/outlet connections
2. Multiple pipes or culverts
3. Back to back twin units - for greater treatment flow requirements
4. Bifurcation or splitting of flows



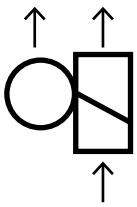
**1 / Angled up to 45°**



**3 / Back to back units**



**2 / Multiple pipes or culverts**



**4 / Split treated / bypass flow**

# Vortex Style GPT Inline Series

The Inline series is manufactured from the standard single tank dia below. Custom systems are also available.

| Models | Dimensions (mm) | | | | | Capacities | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Internal Diameter | Overall Width | Depth Below Invert | Manhole Size (mm) | Max Pipe Size (mm) | Sump Capacity ($m^3$) | Floatables Volume ($m^3$) | Treatable Flow Rate (L/s) | Max Flow Rate (L/s) |
| INLINE SERIES | | | | | | | | | |
| SVI.025 (L/R) | 1200 | 1370 | 1400 | 600x 600 | 450 | 1.2 | 0.06 | 26 | 280 |
| SVI.055 (L/R) | 1800 | 1970 | 1650 | 900x 900 | 525 | 2.7 | 0.22 | 55 | 380 |
| SVI.055.M (L/R) | 2200 | 2370 | 1585 | | 525 | 3.2 | 0.22 | 55 | 750 |
| SVI.100/15 (L/R) | 1500 | 1670 | 1900 | 1000 DIA<br><br>Internal 600x 600 | 600 | 3.1 | 0.20 | 100 | 700 |
| SVI.160/22 (L/R) | 2200 | 2370 | 2400 | | 750 | 3.4 | 0.39 | 160 | 940 |
| SVI.200/22 (L/R) | 2200 | 2370 | 2900 | | 750 | 3.1 | 0.39 | 200 | 990 |
| SVI.300/22 (L/R) | 2200 | 2370 | 3100 | | 750 | 4.5 | 0.83 | 300 | 1050 |
| SVI.400/22 (L/R) | 2200 | 2370 | 3000 | | 750 | 3.4 | 0.83 | 400 | 1180 |
| SVI.400/25 (L/R) | 2500 | 2670 | 2900 | | 900 | 5.5 | 0.83 | 400 | 1650 |
| SVI.400/30 (L/R) | 3000 | 3170 | 3500 | | 900 | 10 | 1.5 | 400 | 2500 |
| SVI.500/30 (L/R) | 3000 | 3170 | 3500 | | 1050 | 10 | 1.5 | 500 | 1650 |
| SVI.500/35 (L/R) | 3500 | 3670 | 4000 | | 1050 | 10 | 1.5 | 500 | 1900 |

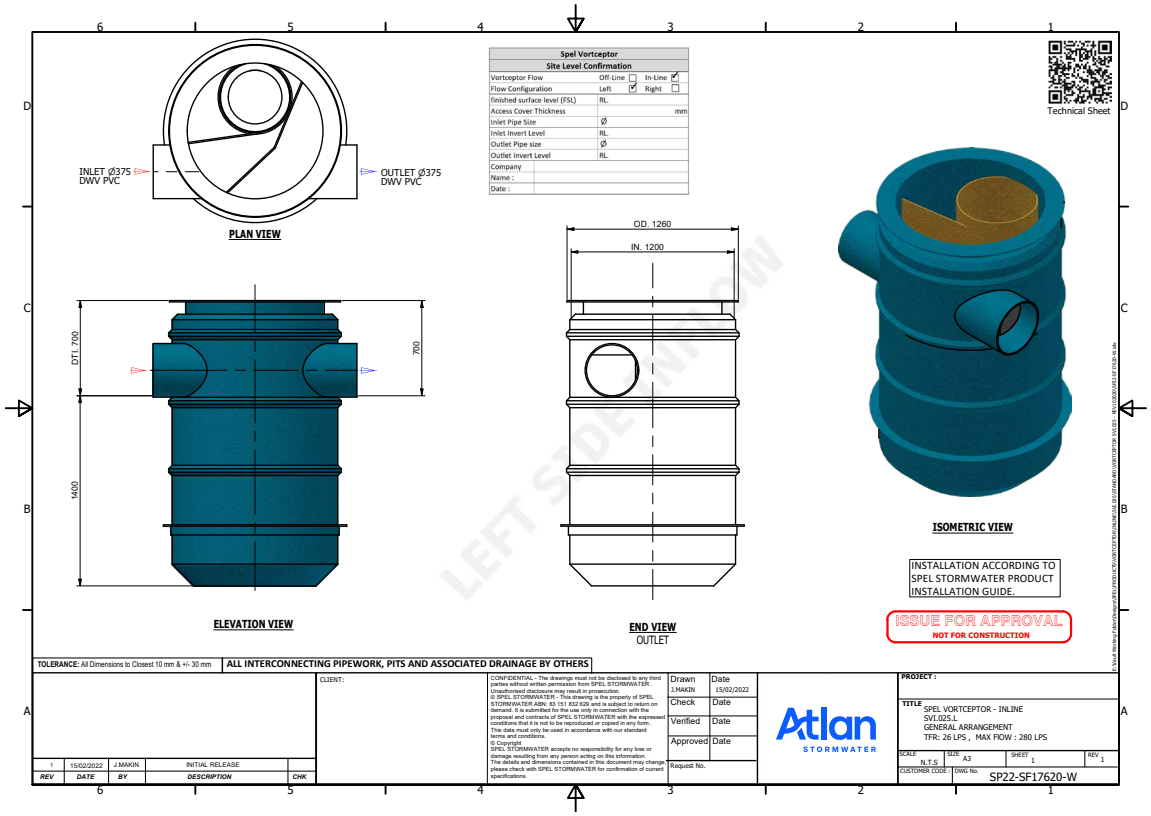
# Vortex Style GPT Offline Series

The Offline series is manufactured from the standard single tank dia below. Custom systems are also available.

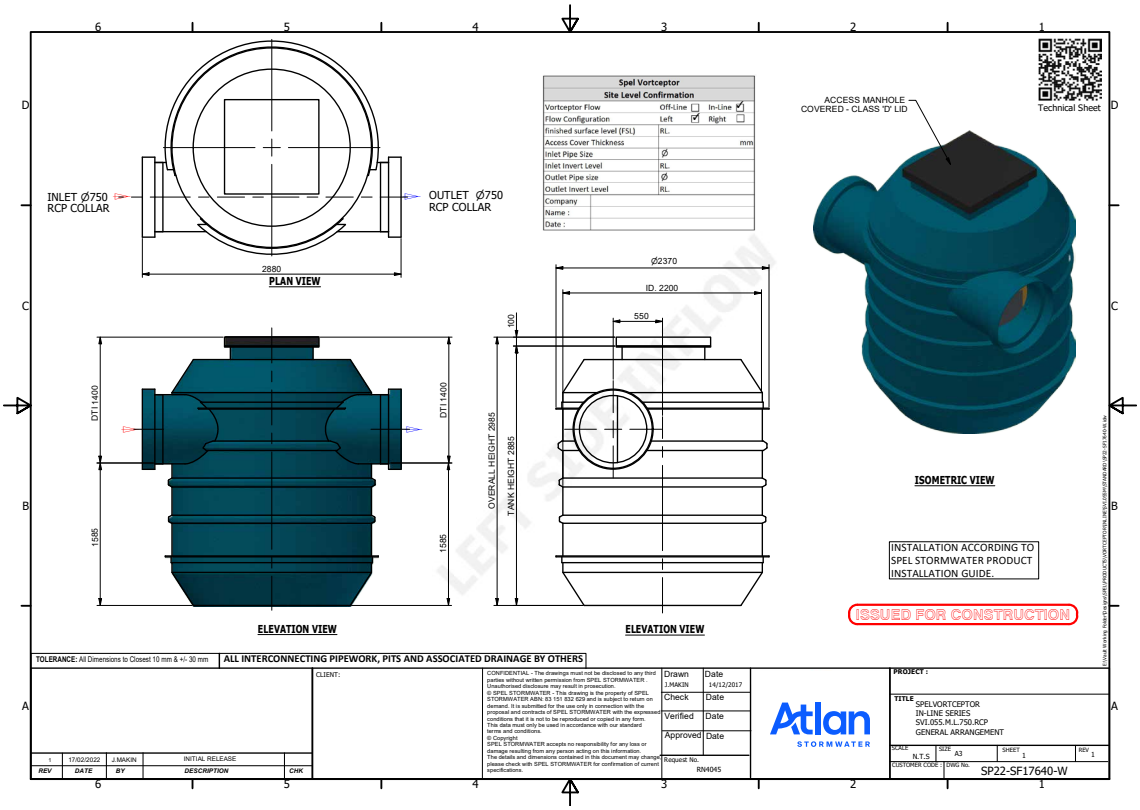
| Models | Dimensions (mm) | | | | Capacities | | | |
|---|---|---|---|---|---|---|---|---|
| | Internal Diameter | Overall Width | Depth below invert | Manhole Size (mm) | Sump Capacity ($m^3$) | Floatables Volume ($m^3$) | Treatable Flow Rate (L/s) | Bypass Flow Rate (L/s) |
| OFFLINE SERIES | | | | | | | | |
| SVO.096 (L/R) | 1500 | 1670 | 1725 | 1000 DIA<br>Internal 600x600 | 2.0 | 0.35 | 96 | PROJECT SPECIFIC DESIGN |
| SVO.140 (L/R) | 1500 | 1670 | 2025 | | 2.3 | 0.35 | 140 | |
| SVO.180 (L/R) | 1500 | 1670 | 2325 | | 3.0 | 0.35 | 180 | |
| SVO.220 (L/R) | 2200 | 2350 | 2800 | | 4.5 | 1.1 | 220 | |
| SVO.360 (L/R) | 2200 | 2350 | 3080 | | 6.0 | 1.1 | 360 | |
| SVO.530 (L/R) | 3000 | 3150 | 3200 | | 8.5 | 2.8 | 530 | |
| SVO.800 (L/R) | 3000 | 3150 | 4200 | | 8.5 | 2.8 | 800 | |
| SVO.810 (L/R) | 4000 | 4150 | 3400 | | 19.3 | 5.65 | 800 | |
| SVO.1200 (L/R) | 4000 | 4150 | 4000 | | 19.3 | 5.65 | 1200 | |
| SVO.1600 (L/R) | 4000 | 4150 | 4600 | | 19.3 | 5.65 | 1600 | |

# INLINE DRAWINGS

## Inline Model SVI.025

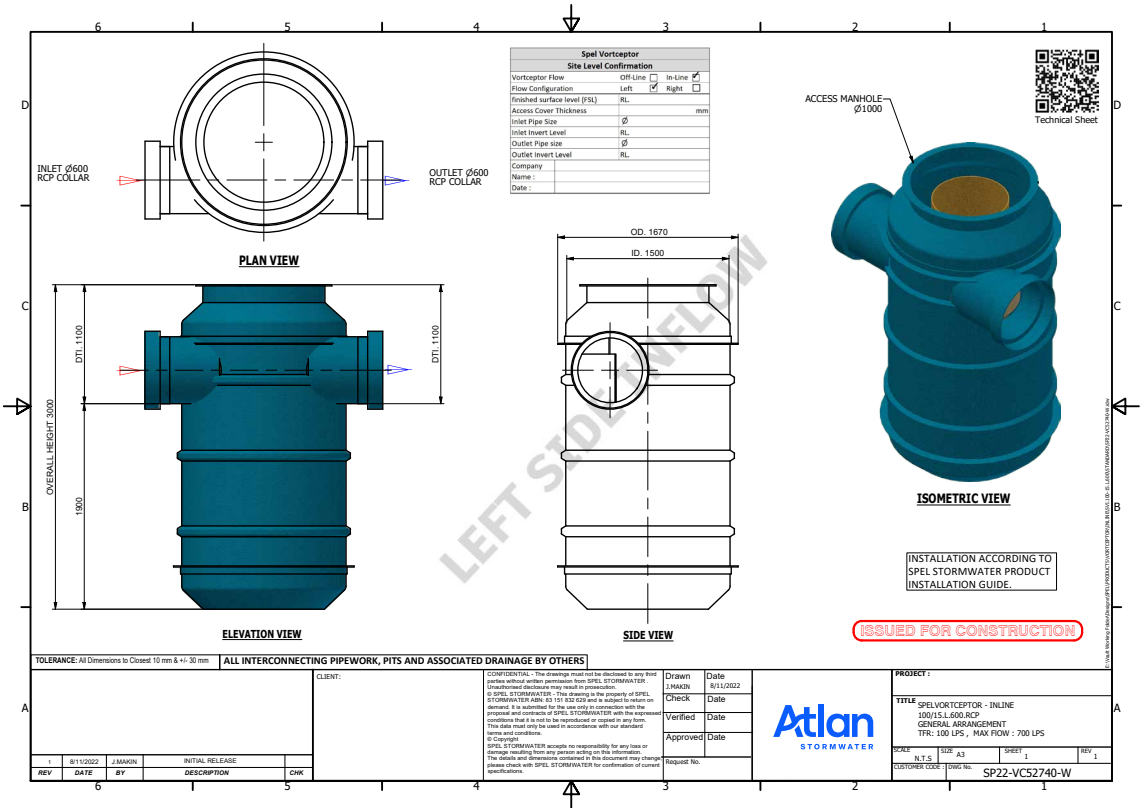



## Inline Model SVI.055

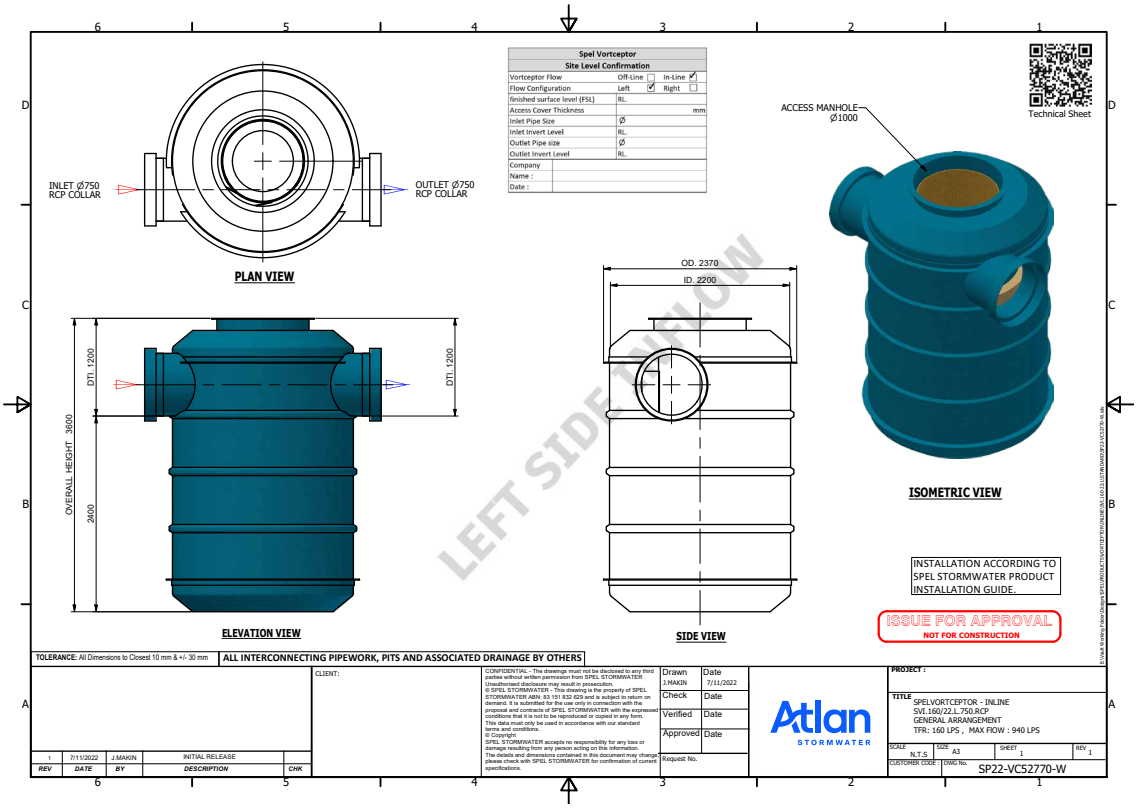


# INLINE DRAWINGS

## Inline Model SVI.100/15

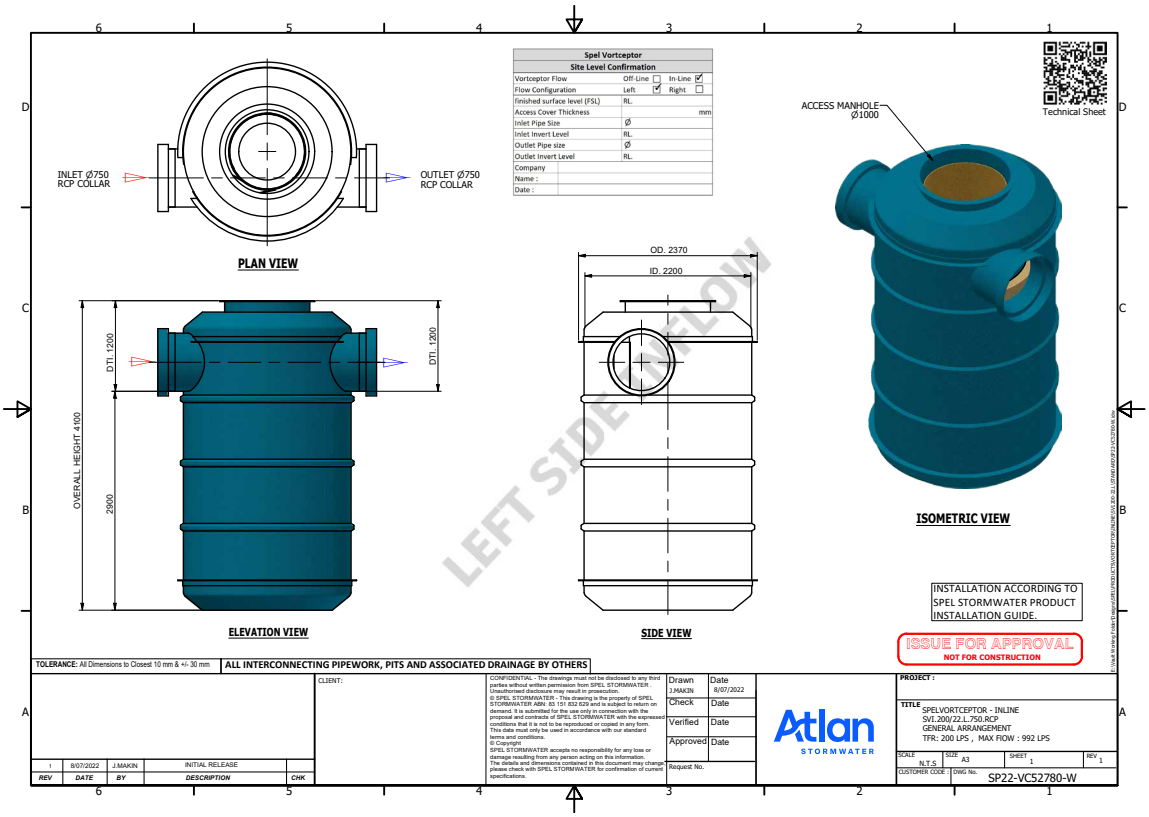



## Inline Model SVI.160/22

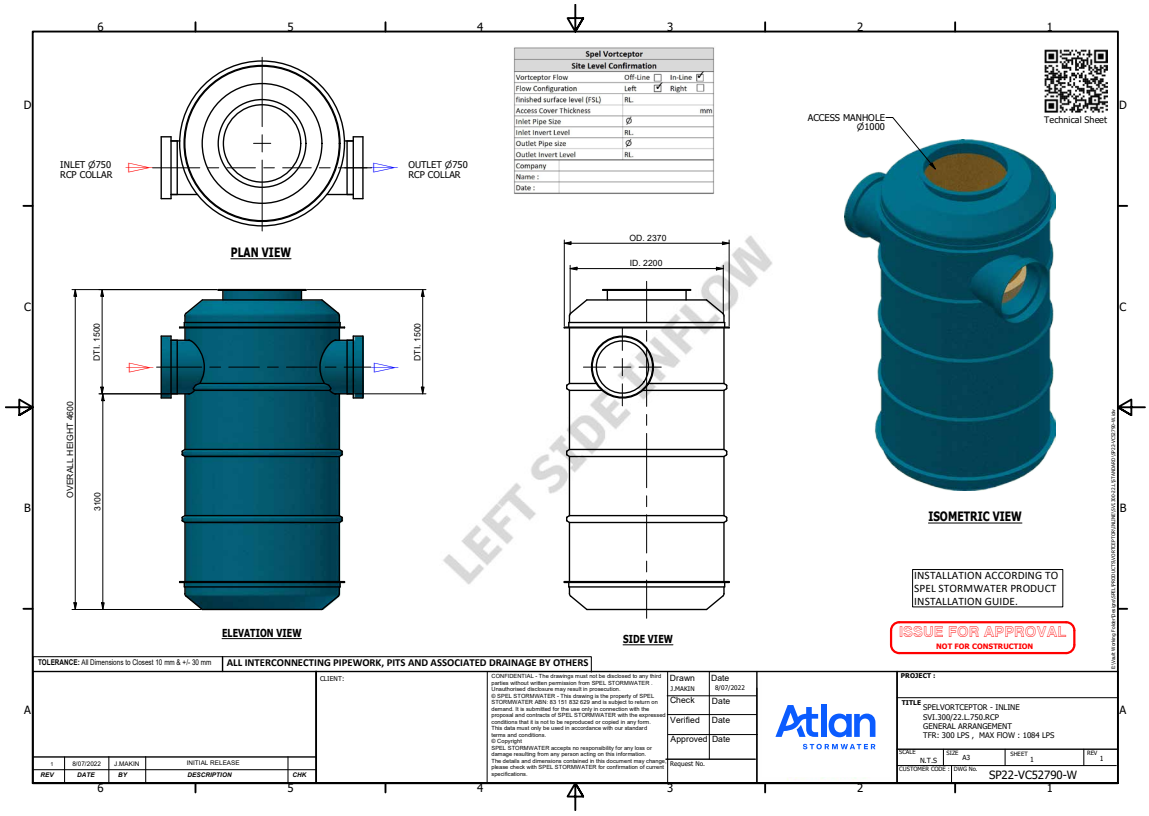


# INLINE DRAWINGS

## Inline Model SVI.200/22

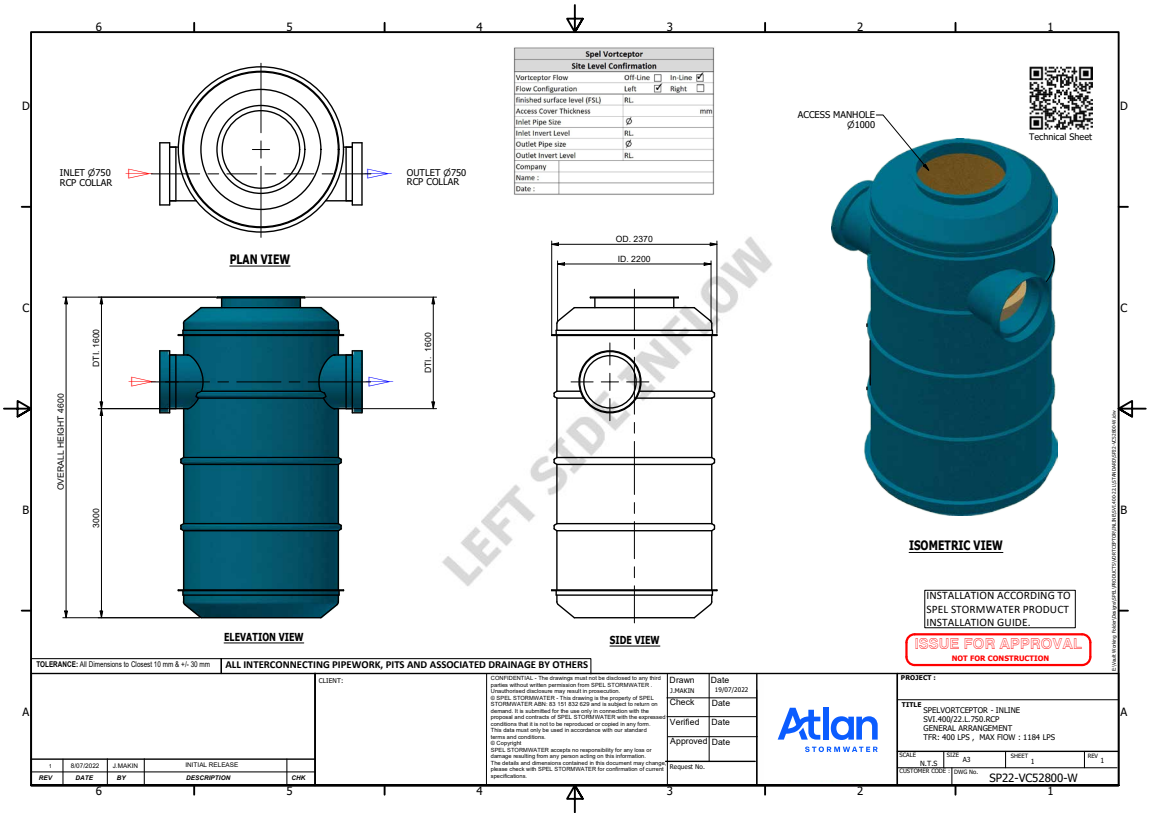



## Inline Model SVI.300/22

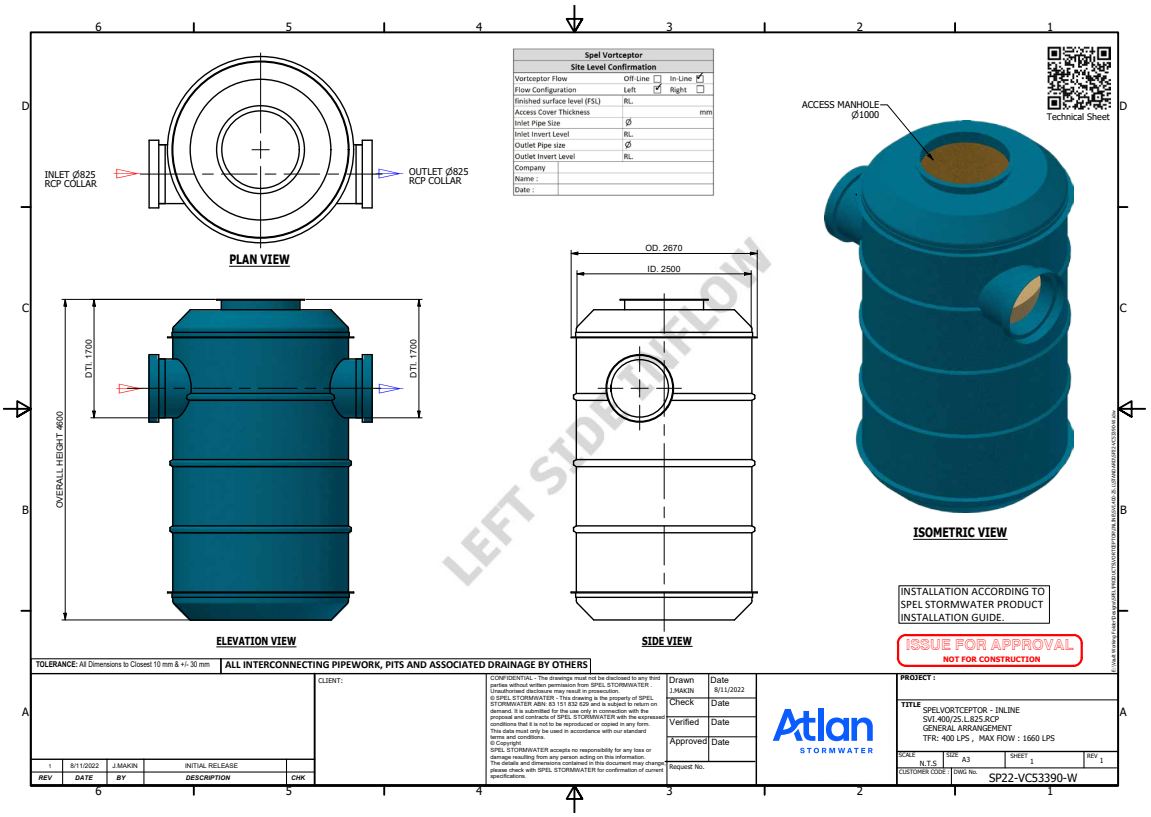


# INLINE DRAWINGS

## Inline Model SVI.400/22

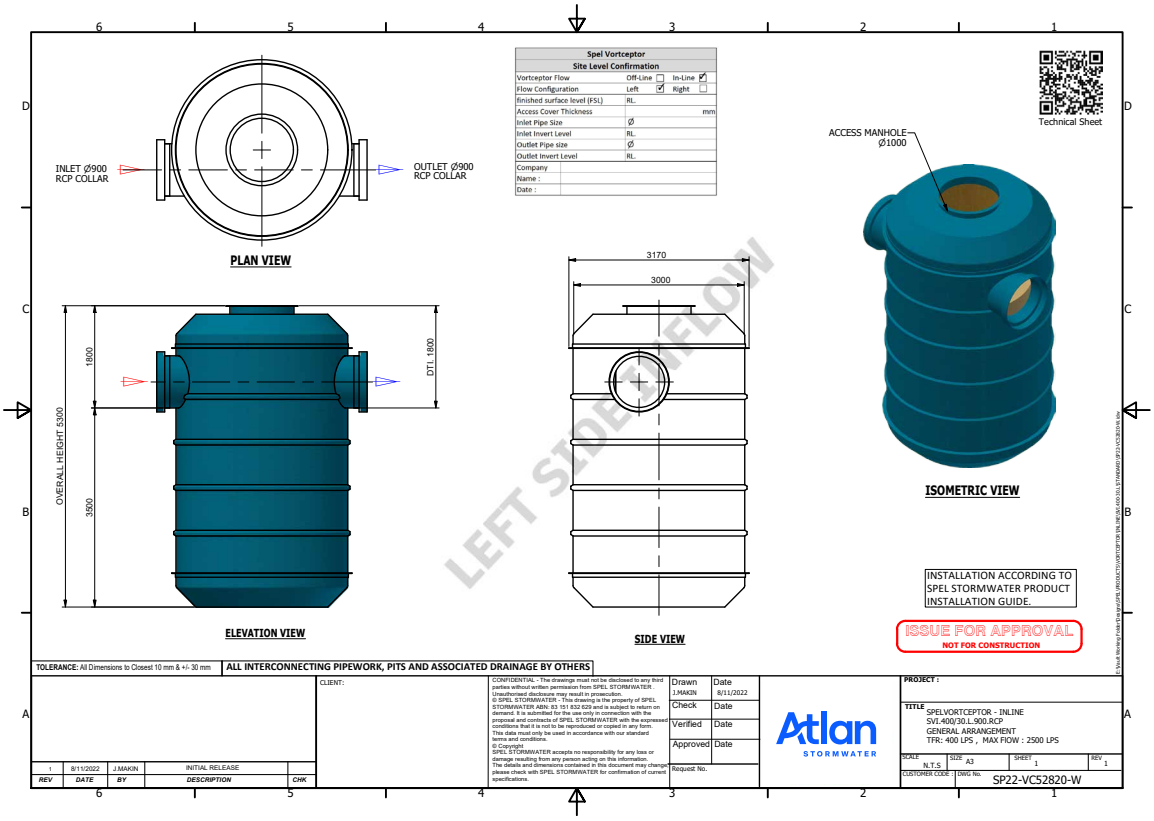



## Inline Model SVI.400/25

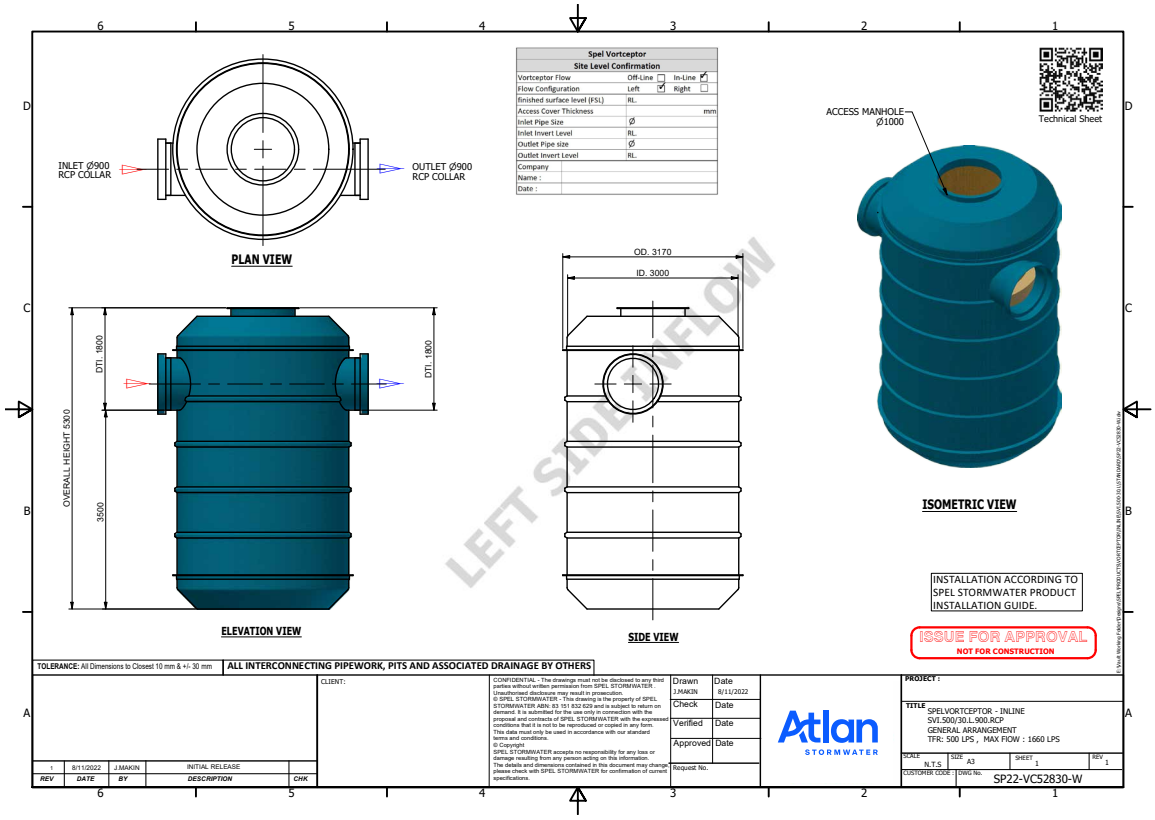


# INLINE DRAWINGS

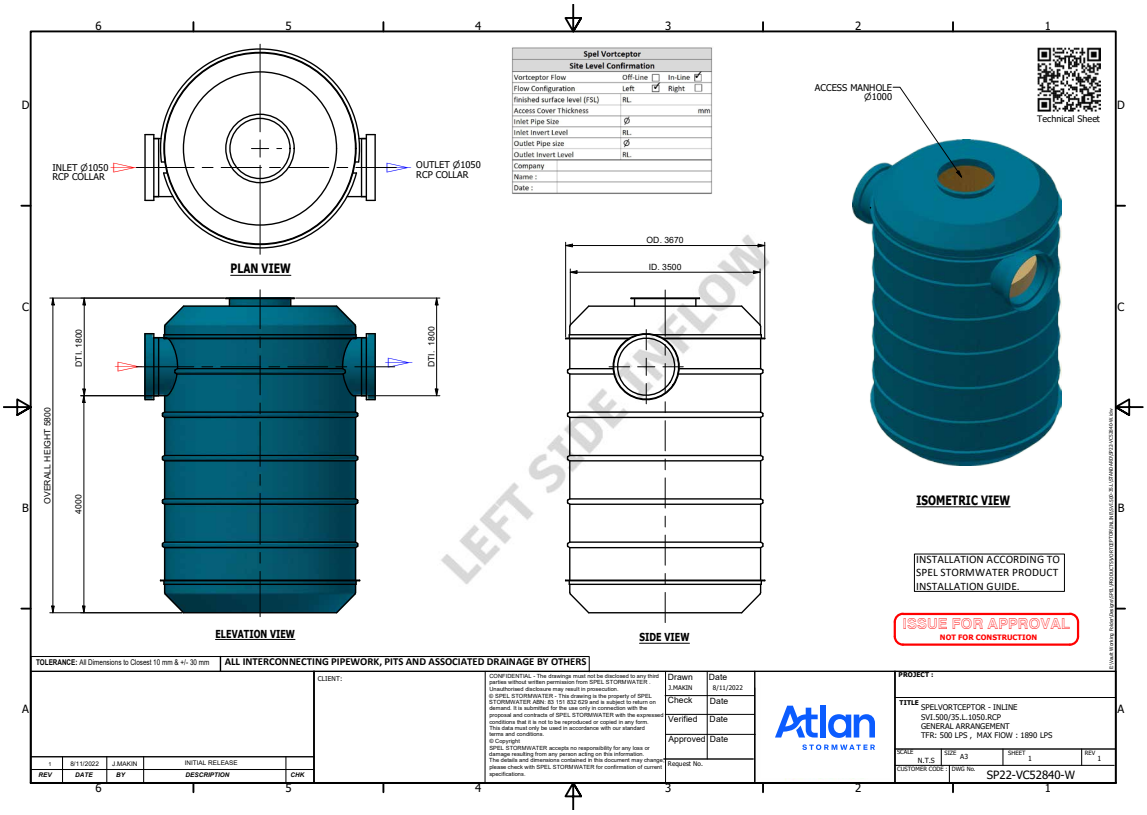
## Inline Model SVI.400/30




## Inline Model SVI.500/30

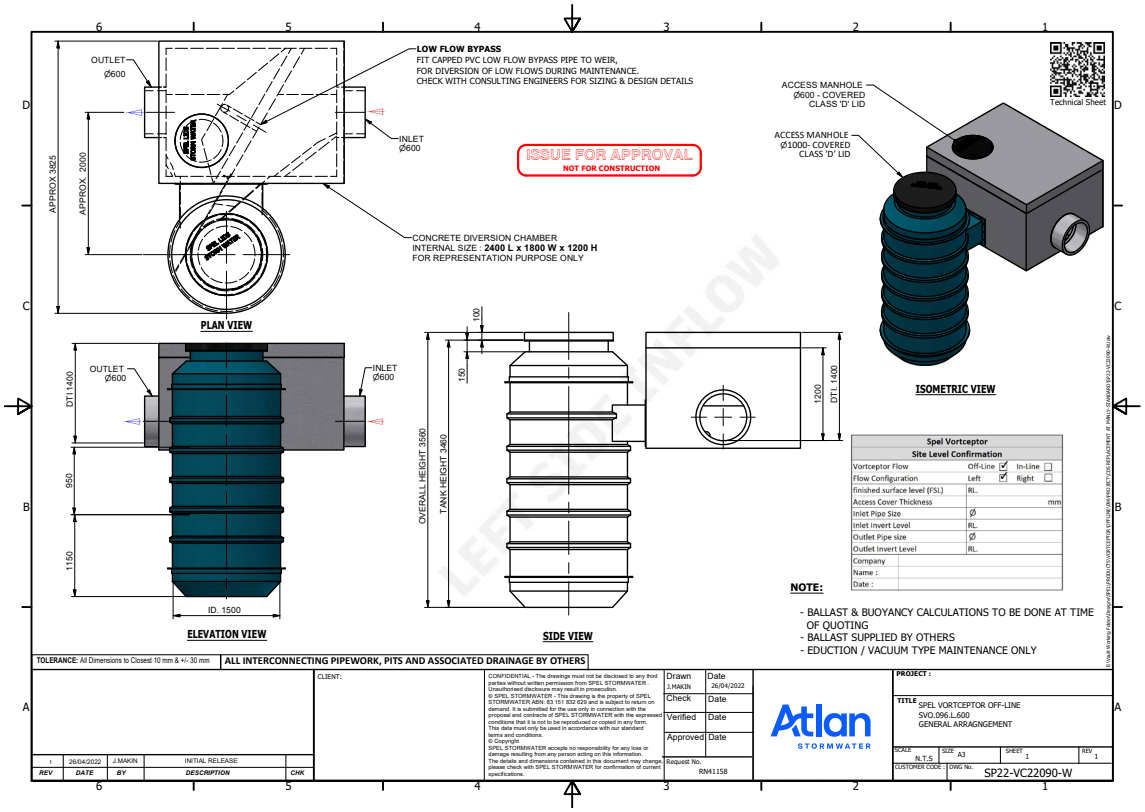


## Inline Model SVI.500/35

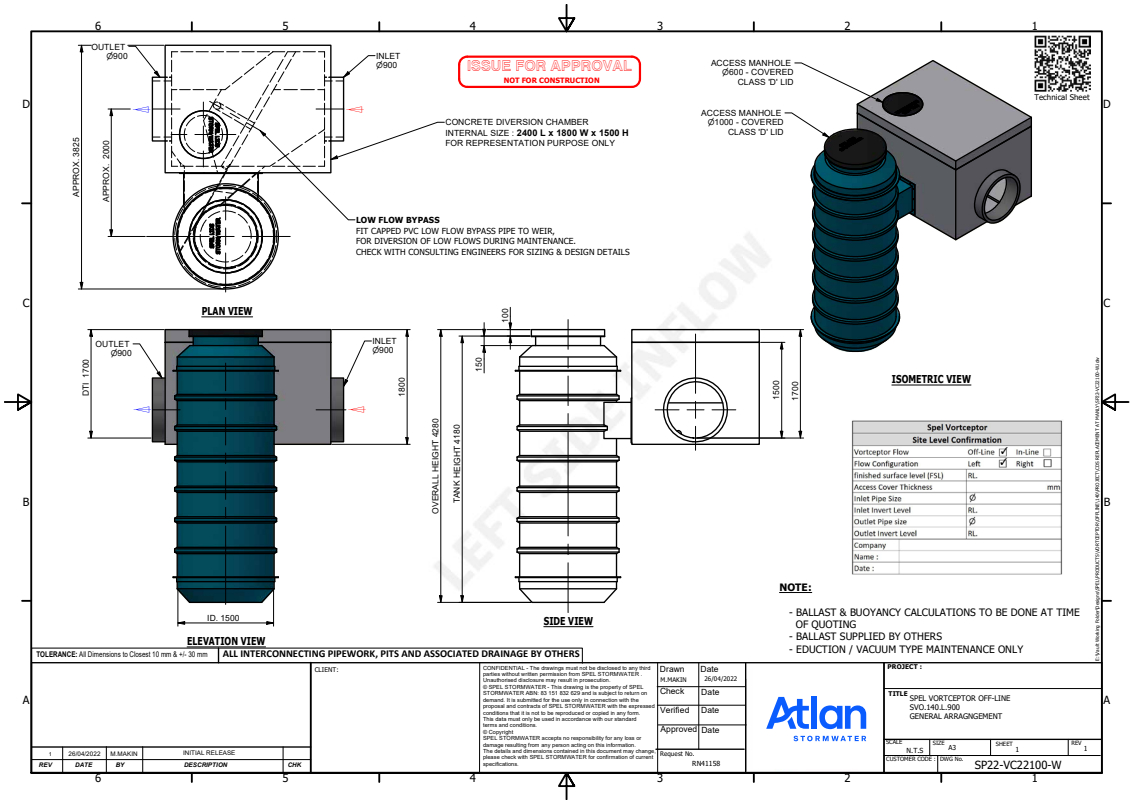


# OFFLINE DRAWINGS

## Offline Model SVO.096

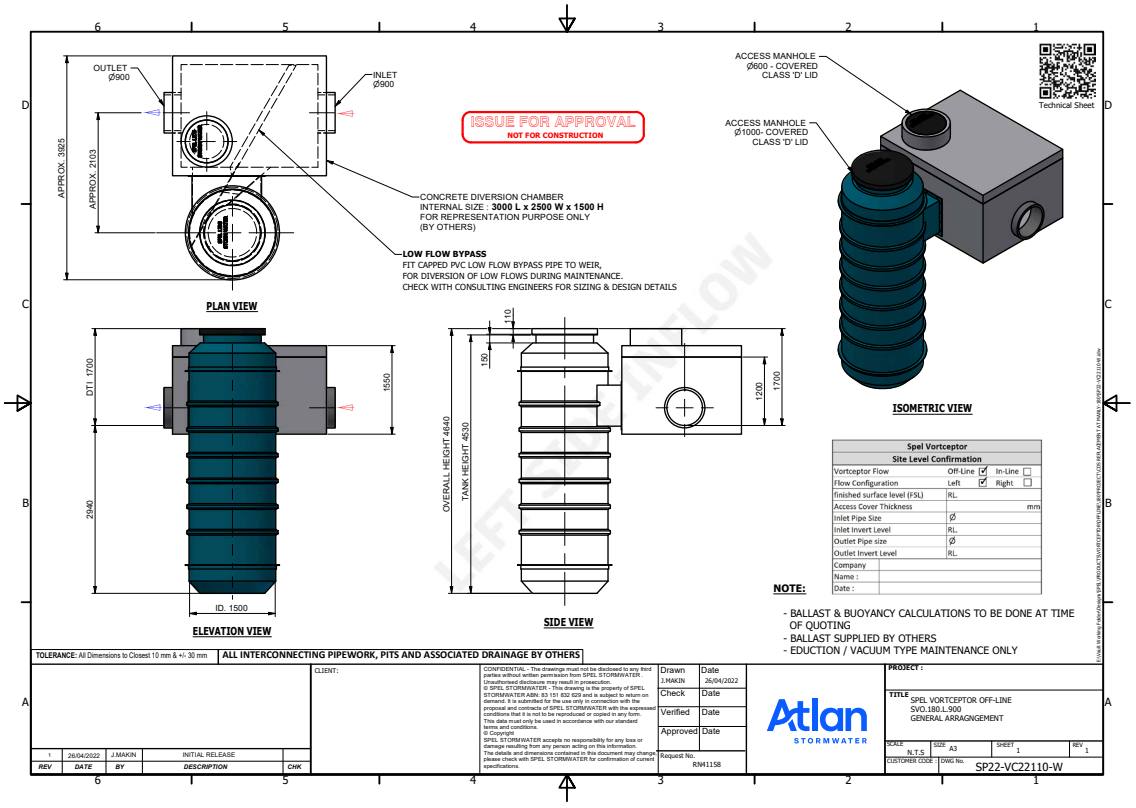



## Offline Model SVO.140

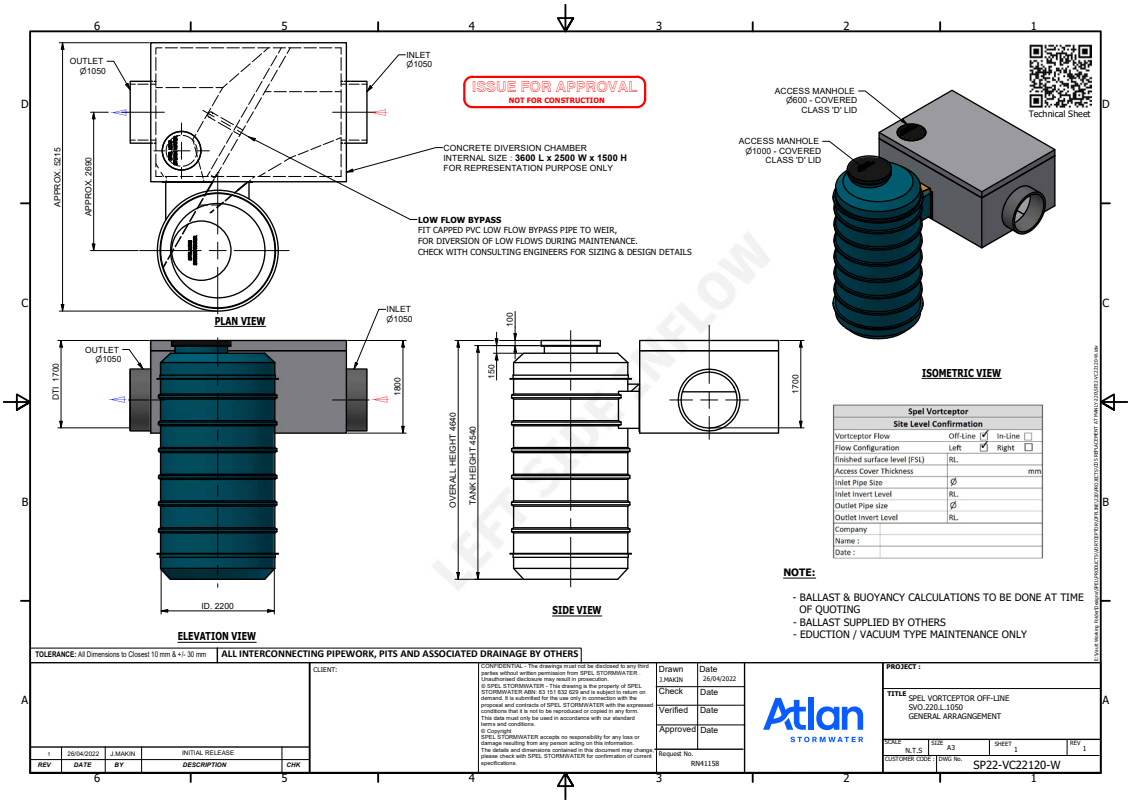


# OFFLINE DRAWINGS

## Offline Model SVO.180

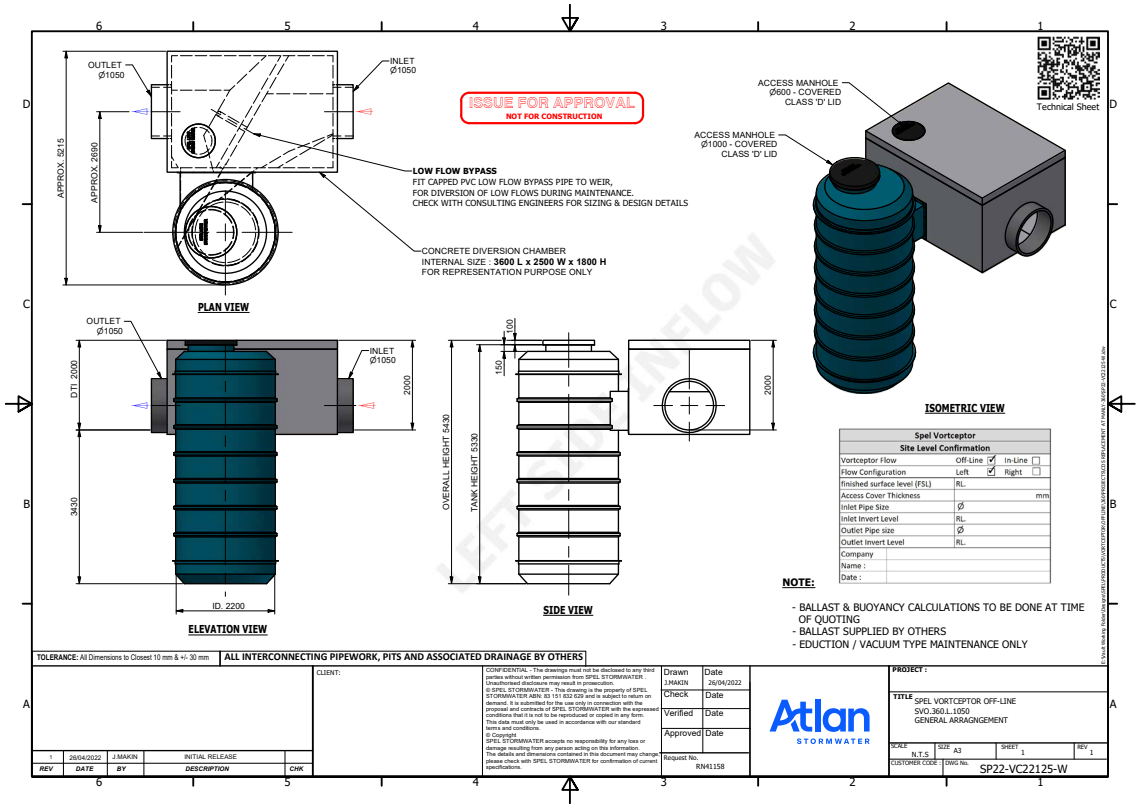



## Offline Model SVO.220

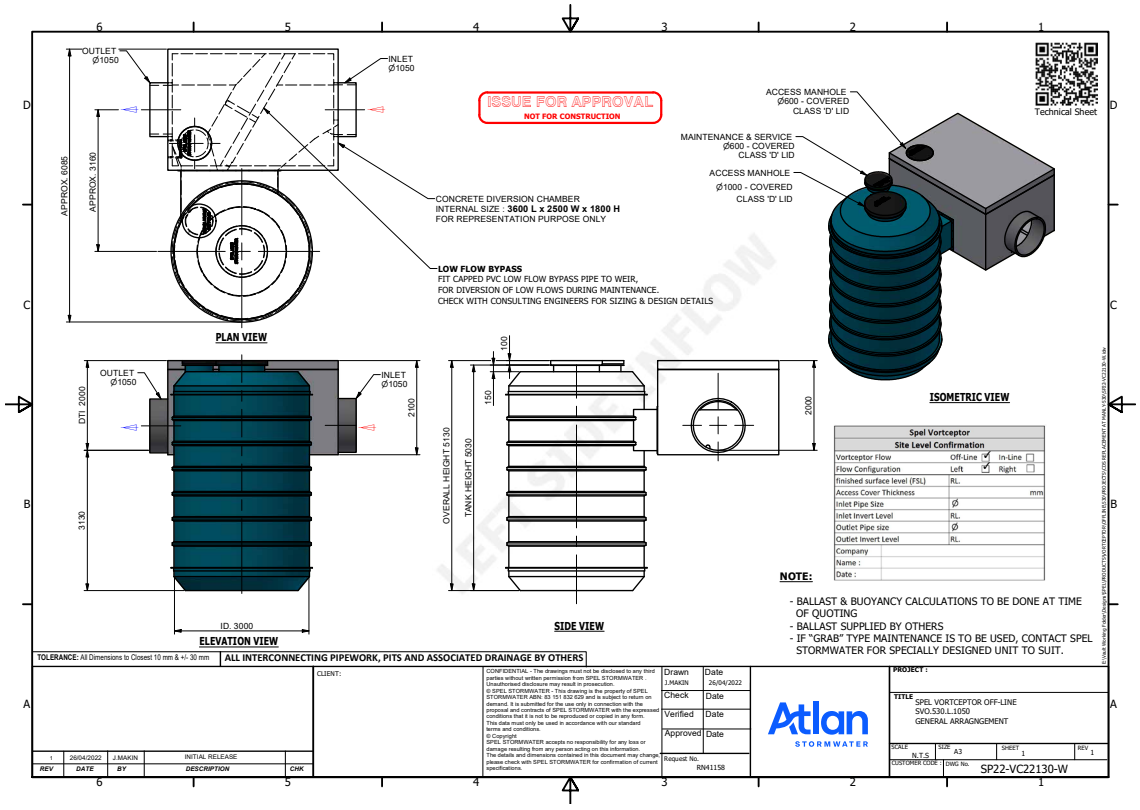


# OFFLINE DRAWINGS

## Offline Model SVO.360

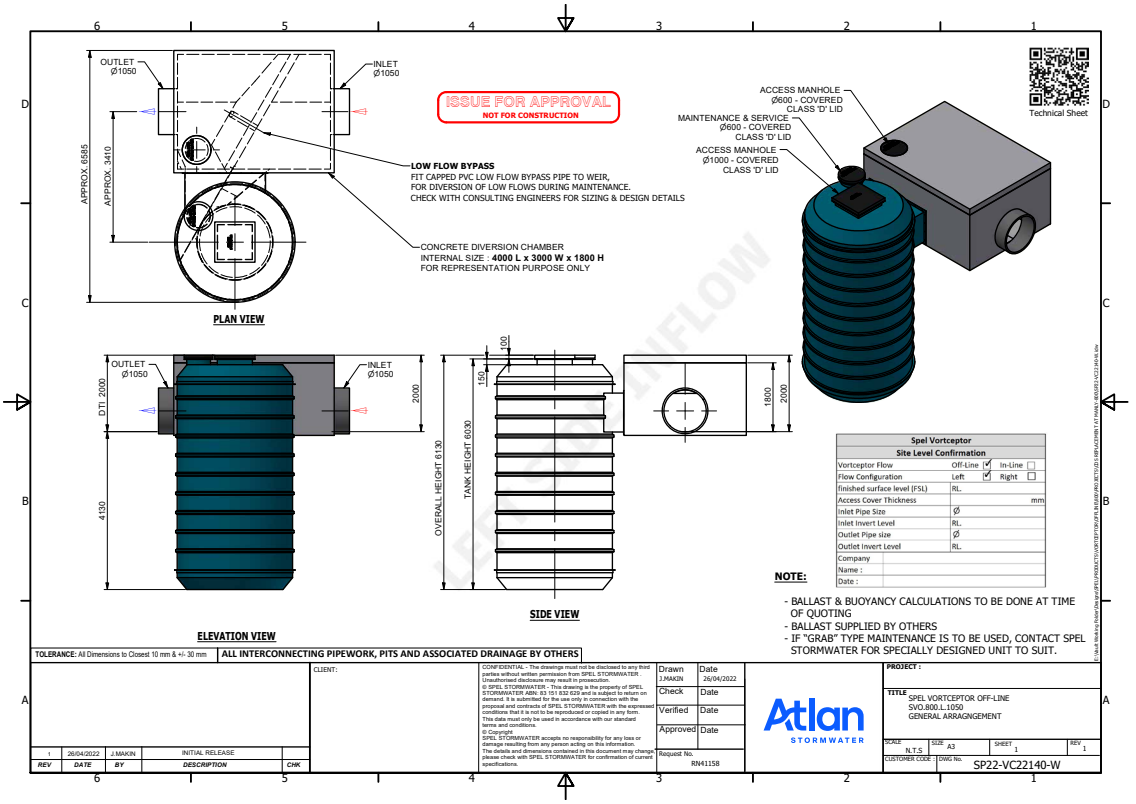



## Offline Model SVO.530

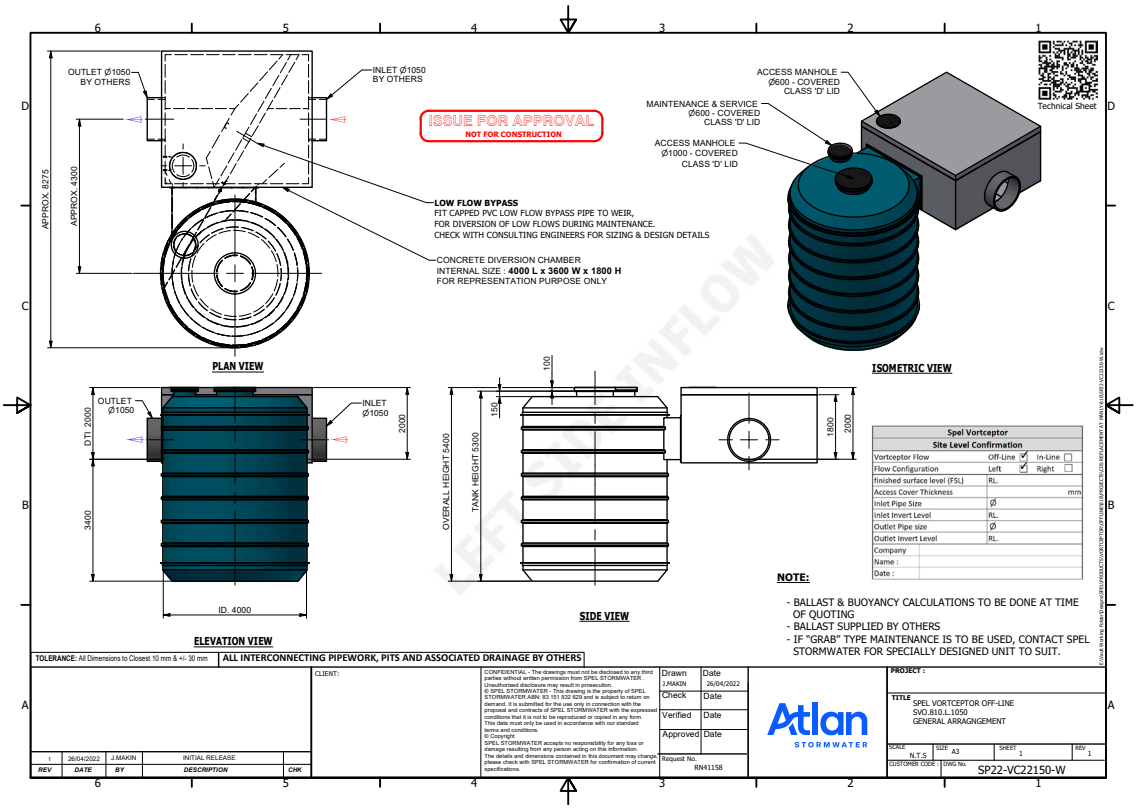


# OFFLINE DRAWINGS

## Offline Model SVO.800

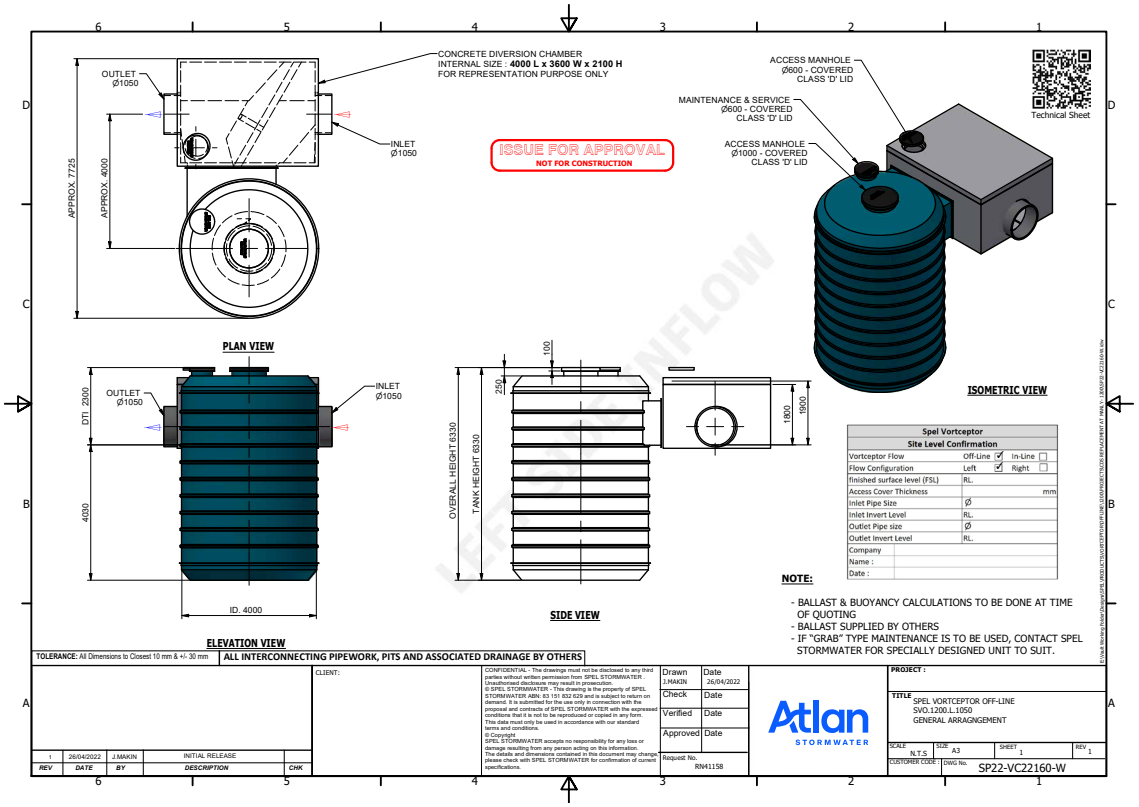



## Offline Model SVO.810

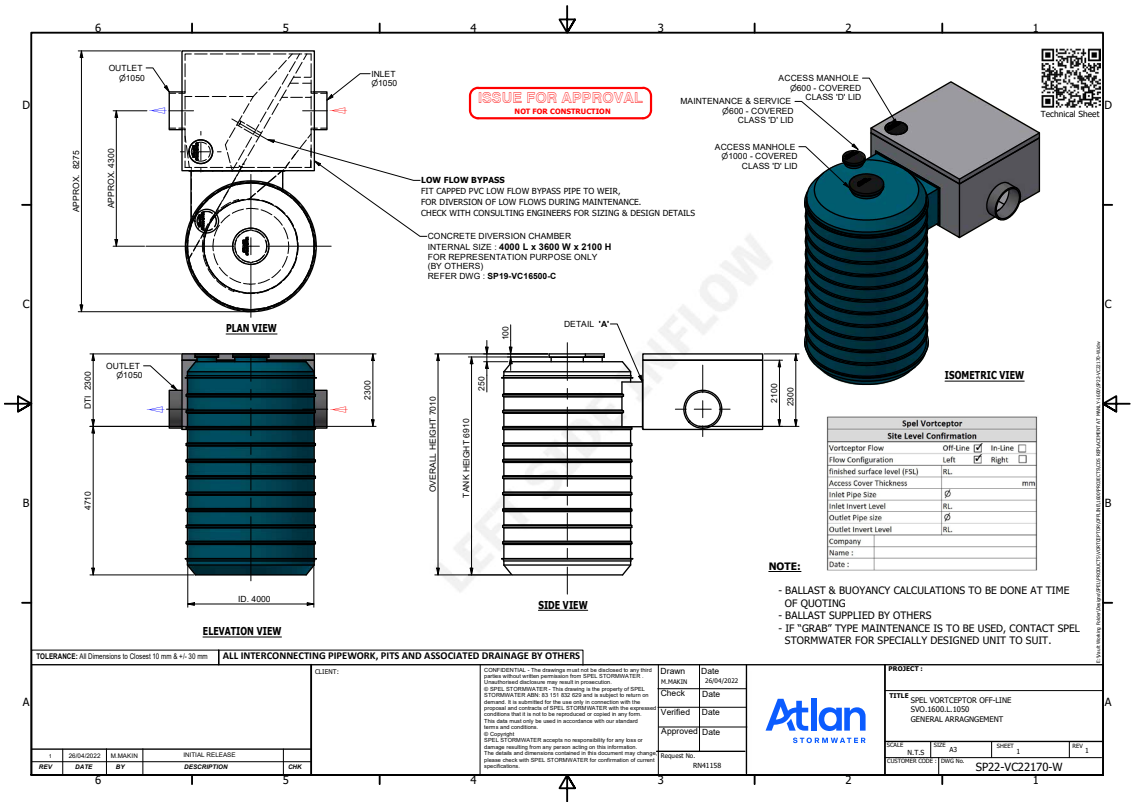


# OFFLINE DRAWINGS

## Offline Model SVO.1200




## Offline Model SVO.1600



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## Hydrodynamic GPT

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*Joy in water*

'We believe clean waterways are a right not a privilege and we work to ensure a joy in water experience for you and future generations.'

**Andy Hornbuckle**

Atlan STORMWATER

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