



Sustainability
Workshop

Nassif Civil Resource Recovery Facility - Soil and Water Impact Assessment

Report Prepared for: Nassif Civil

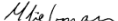
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Prepared by:
Sustainability Workshop Ltd

Head Office
Suite 1/124 Station Street
Blackheath
NSW 2785
mark@sustainabilityworkshop.com
M: 0468 423 299
www.sustainabilityworkshop.com

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EXECUTIVE SUMMARY

A Soil and Water Impact Assessment study has been completed to understand and evaluate the potential impacts of a proposed expansion of an existing waste processing facility at 29-37 Plasser Crescent North St Marys (Lots 15 & 16 DP263353).

The site (Lot 16) is currently a Resource Recovery Facility owned and operated by Nassif Civil, and which processes about 30,000 tonne per annum (tpa). Nassif Civil are proposing to expand their operations to process up to 99,000 tpa.

The proposed upgrade involves some minor modifications to the existing infrastructure, including the partial demolition of one building to create six additional carparking spaces and the construction of a new shed over existing concrete hardstand.

Central to the environmental risk mitigation strategy for this project is the fact that all waste sorting, processing and storage will be undertaken under cover, within the existing and proposed buildings. This removes the material risk of waste washing into stormwater, or contaminants leaching from saturated stockpiles.

While the site will see an increase in the number of daily truck movements, the proposed traffic movements are in line with typical industrial activities and would not cause a detectable difference in water quality leaving the site.

The construction of a new shed on what is currently trafficable open-to-air hardstand will see an improvement in the quality of runoff from the site, as roof catchments are notably cleaner than trafficable catchments.

Since the new shed is being built on what is currently impervious area, the additional building will not cause an increase in peak flow from the site. The site is currently 94% impervious with a proposed increase to 96% due to the removal of a small amount of landscaping. The addition of a 10kL rainwater tank to supply the non-potable demands of the site (staff facilities and irrigation) will further aid in reducing the volume of runoff discharged.

Because the site is to be fully covered with a roof, the principal risk to stormwater quality is the potential for waste to be tracked out of the building on truck tyres, which could potentially lead to a higher export of pollutants from the site.

This is proposed to be mitigated as follows:

- 1) Work practices which will keep the work site clean and aim to prevent pollution in the first instance.
- 2) Through the use of an existing, sensor activated wheel wash.
- 3) And finally, through the retrofitting of 200-micron proprietary litter baskets into all pits on the site to trap suspended solids and gross pollutants and separate them from stormwater to prevent pollution.

A MUSIC model of the site demonstrates a minor improvement to water quality through the application of the new roof, rainwater tank and litter baskets.

With these mitigation strategies in place, the proposed development is unlikely to pose a risk to stormwater quality.

Furthermore, since the site, in its predevelopment state is already entirely impervious and the imperviousness will only be increased by 2% or 86m² there are no likely impact to hydrology, peak flows, soils or groundwater.

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1.0 INTRODUCTION

1.1. Background and Scope

Sustainability Workshop was engaged by Nassif Civil to prepare a Soil and Water Impact Assessment report in relation to a development application to expand an existing resource recovery facility.

The purpose of this report is to assess the likely soil and water impacts of the proposal, and to determine what, if any, modifications are required to the existing soil and water management at Nassif Civil to mitigate any additional impacts.

The scope of works includes addressing the SEARs that have been provided for this project. These generally include describing the existing environment and hydrology, assessing the impacts of the proposal, describing any mitigation measures and assessing any residual risk on receiving waters or ground water.

1.1. Existing Site Description

The proposed development site is located at 29-37 Plasser Crescent North St Marys (Lots 15 & 16 DP263353) in the E4 General Industrial zoned area of St Marys within the Penrith City Council region. The site is currently a Resource Recovery Facility owned and operated by Nassif Civil, processing around 30,000 tonnes per year (tpa).

The total site area of the combined lots is 4295m², with Lot 15 making up approximately 2016m² and Lot 16 making up 2280m². Each lot has a shed with office facilities, bin storage areas, car parking area and truck parking area.

Concrete hardstand surrounds the sheds with some gravel areas and limited landscaping along the western fence line. A fence also borders the south and west site boundaries whilst buildings form the northern and eastern boundaries. Additionally, 33-37 Plasser Crescent has a weighbridge and wheel wash system installed on-site for the existing operations.

The site drains to the rear (north) of the site via a stormwater network consisting of down pipes, pits and underground piping. The site's stormwater network connects to an interallotment drainage line which ultimately discharges to a tributary draining northwest to South Creek located approximately 2km from the site.



Figure 1: Development site (outlined red), surrounding environment and receiving water.

A closer view of the existing site is shown below in Figure 2



Figure 2 Close up view of the site

2.0 PROJECT DESCRIPTION

Nassif Civil proposes to upgrade their existing operations to a best practice construction and demolition (C&D) Resource Recovery Facility (RRF) at 29-37 Plasser Crescent North St Marys (Lots 15 & 16 DP263353). The RRF will have an annual waste throughput of up to 99,000 tpa. Waste received at the RRF will consist of construction and demolition waste in skip bins collected from the Greater Metropolitan region.

Waste will be received in skip bins collected by Nassif Civil and other collection contractors servicing building sites. The general community will not have access to the Site and the facility will not accept waste from the public.

All waste receipt and processing will occur inside the warehouse. There will be no outdoor storage of waste.

2.1. Proposed Site Modifications

A site plan for the Proposed Development is shown in Figure 3.

To ensure that the development complies with contemporary standards for waste and transfer stations, a number of site upgrades are proposed as part of the development application. These include:

- Partial demolition of the existing structure on Lot 15, DP263353;
- Construction of a new shed on Lot 15, DP263353;
- Installation of an additional 20 m pit style weighbridge inside the site entrance of Lot 15, DP263353;
- Installation of processing equipment, including:
 - A vibratory finger screen;
 - Two elevated manual picking stations;
 - Density separator;
 - Magnetic separator; and
 - Timber shredder.
- Installation of conveyor belts to transfer materials between sorting equipment and storage bays;
- Conveyor belts will traverse both indoors and outdoors, and where outdoors, conveyors will be enclosed to avoid dust generation and reduce noise levels;
- Separate waste storage bays to separate and store sorted waste prior to being loaded onto trucks for off-site recycling and reuse;
- Upgrades to site office, lunchroom, and amenities for staff, truck drivers and visitors; and

- Improvements to landscaping provided to the site.

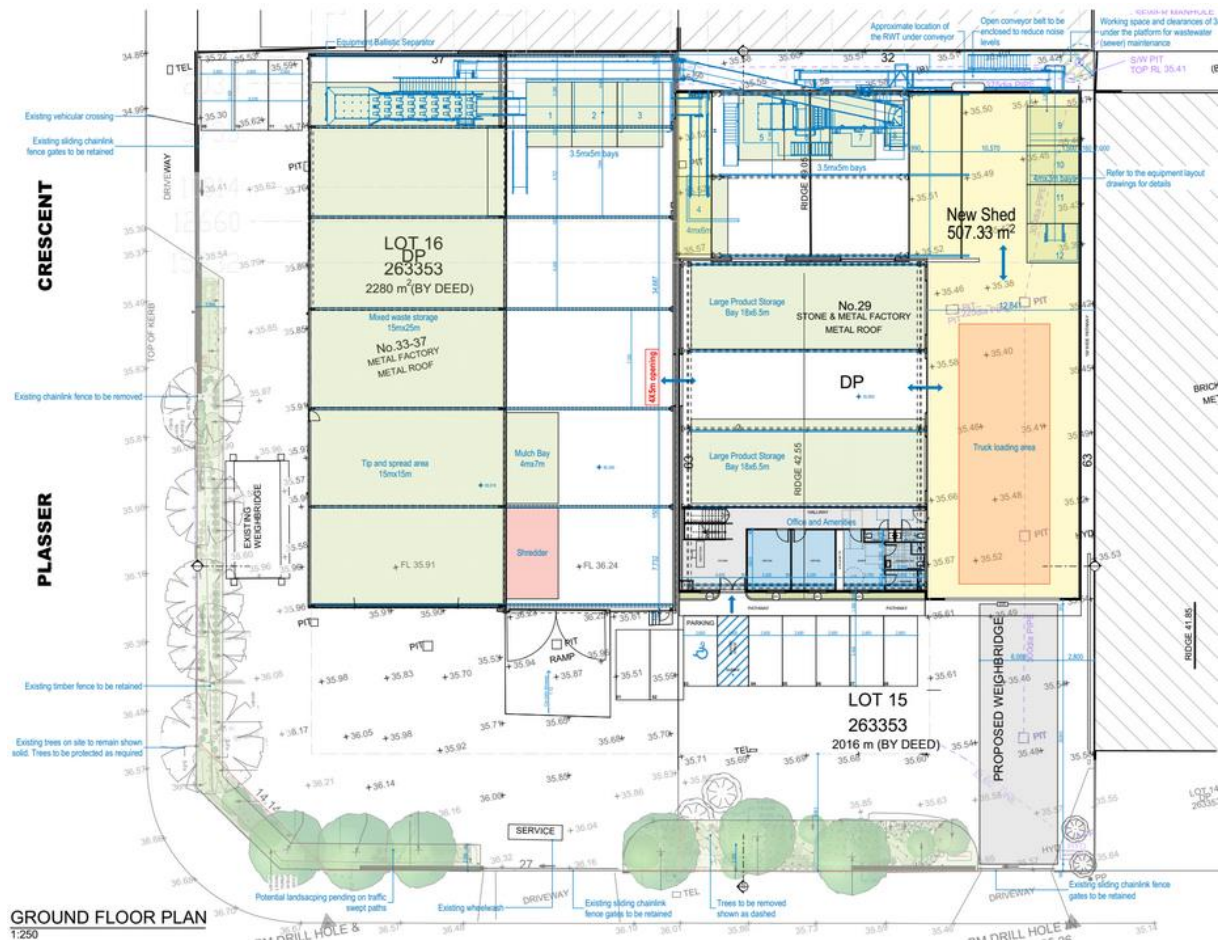


Figure 3: Proposed site layout, showing portion of existing building to be demolished in red dashed, and new shed in yellow shading.

2.2. Proposed Operations

2.2.1. Waste Deliveries

Waste deliveries will occur via skip bins delivered on 12.5m rigid trucks or hook lift trucks. Skip bin sizes will vary between 2m³ and 12m³ and hook lift bins between 15m³ and 30m³.

Vehicles will access the site via Plasser Crescent on the western side of the existing building on Lot 16 DP263353. Vehicles will pass over the weighbridge for inspection of non-compliant waste and for assessing the net weight of materials before reversing into the warehouse via the western roller door for tipping of waste.

2.2.2. Waste tipping, spreading and inspection

Once inside the warehouse, vehicles will be directed to the dedicated “tip and spread area” and inspected for non-compliant waste in accordance with the Standards for Managing Construction Waste in NSW (NSW EPA, 2019).

Rejected waste will be re-loaded for off-site transport and disposal at an appropriate licensed facility.

Upon tipping of waste (or in the case of rejected load – after being re-loaded), vehicles will exit the warehouse and exit the site in a forward direction using the western driveway on the south side of the of the existing building on Lot 16 DP263353.

The waste will include the following:

- Concrete, brick and tile;
- Clean timber;
- Engineered/treated timber;
- Ferrous metals;
- Stainless steel;
- Aluminium;
- Copper;
- Plasterboard;
- Recovered fines (as GSW CT₁); and
- Residual waste.

The following wastes will not be accepted at the RRF:

- Special waste;
- Liquid waste;
- Hazardous waste;
- Restricted solid waste; and
- General solid waste (putrescible).

2.2.3. Waste processing

Accepted waste will be stored in the mixed waste storage bay. This bay is used for the temporary storage of waste materials requiring further sorting and to ensure the “tip and spread area” remains clear for the next waste deliveries. An excavator will load waste into a feed hopper before entering a vibratory finger screen.

The vibratory finger screen will separate the 2-dimensional wastes (flat waste) from the 3-dimensional wastes (bulky waste). Separated to 2D waste will then be conveyed to a picking station elevated above designated storages bays. 2D waste will be manually separated and stored as follows:

- Bay 1 - Cardboard;
- Bay 2 - Timber; and

- Bay 3 - Other recovered materials such as gyprock and metals (ferrous and non-ferrous) as required; and
- Bay 4 - Residual waste

3D waste from the finger screen will be conveyed to a density separator. The 3D conveyor will traverse from the existing building on Lot 16 DP263353 to the new shed on Lot 15 DP263353. The conveyor will be enclosed where it traverses externally between the buildings to mitigate noise and dust issues. The 3D waste will then be sorted by an elevated density separator with storage bays beneath. The elevated density separator will size separate materials and deposit in the corresponding storage bays as follows:

- Bay 5 - <10mm (recovered fines)
- Bay 6 - 10-50mm (lights)
- Bay 7 - 10-50mm (heavies)

Oversized materials (>50mm) which will predominantly include timber, masonry (concrete, brick and tile) and metals will then be conveyed to a second elevated picking station. The oversized materials conveyor will be enclosed where it traverses along the external back side of the new shed on Lot 15 DP263353 to mitigate noise and dust issues. The oversized materials conveyor will also contain a magnet to separate ferrous materials from the oversized portion. These ferrous materials will be stored in Bay 8 which is a 25m³ skip bin.

Within the picking station, oversized materials will be manually separated and stored as follows:

- Bay 9 - Timber
- Bay 10 - Concrete, brick and tile
- Bay 11 - Other recovered material waste such as metals (non-ferrous) or rigid plastics as required; and
- Bay 12 - Residual waste.

Clean, separated timber stored in Bay 2 and 9 may be further processed into mulch using a shredder within the existing building on Lot 16 DP263353 and stored in the designated mulch bay. An articulated loader will be used to transfer materials between the designated bays and will also be used for loading trucks with outgoing products and residual waste.

Separated waste materials are stored in the designated storage bays within the warehouse as shown in Figure 2.

2.2.4. Waste storage

Sorted waste / products will be stored in temporary bays throughout the RRF. When the bays are full, the bays will be emptied using an articulated loader. Two "large product storage bays" will be utilised for storing waste / product as required so that designated bays retaining sufficient capacity. The "large product storage bays" may also be used for temporarily storing product prior to loading out.

There are multiple storage bays located within the Facility, however sorted and recoverable wastes will be collected daily to manage the quantity of waste stored on the Site.

Sorted materials and residual waste will be transported off-site daily during operational hours, with loads removed when a sufficient volume has accumulated to maximise transport efficiency.

2.2.5. Sorted waste collection

Sorted waste for further off-site processing / recovery will be collected in 19m semi-trailers on a daily basis for lawful recovery / disposal at other NSW EPA licensed facilities. All waste loading will occur inside the warehouse within the “truck loading area”. Wastes that are compliant with applicable Resource Recovery Orders and Exemptions such as mulch, aggregates, and recovered fines will be transported to customers for on-sale or reuse. Retail sale of these products will not occur on the site.

Vehicles collecting sorted waste will access the Site via the eastern driveway on Plasser Crescent on the south side of the new shed on Lot 15 DP263353. All trucks accessing the site do so via the traffic signal-controlled intersection of Glossop Street and Kurrajong Road. Therefore, vehicles will enter Plasser Crescent from the western intersection of Plasser Crescent and Kurrajong Road.

Vehicles will reverse into the warehouse via the eastern roller door for loading of waste / products.

After loading, vehicles will pass over the weighbridge for assessing net weight.

Upon being loaded with waste, vehicles will exit the warehouse through the eastern roller door in the forward direction and return to the weighbridge. Following weighing, vehicles will exit the Site in the forward direction and turn right on to Plasser Crescent.

3.0 SEARS

The Secretary's Environmental Assessment Requirements (SEARs), as they relate to the soil and water management of the proposed development, are listed in Table 1 below with a reference to the relevant section of this report.

Table 1: SEARS pertaining to water issues & where they're addressed in report.

SEARs	Relevant report section	Summary Comment
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:		
a description of local soils, topography, drainage and landscapes	Section 5.3	The local soil type is of no relevance given the site is currently sealed and will remain so. The site currently drains to the rear of the property to a Ø375 Interallotment drainage line and this connection is proposed to be maintained.
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	Section 6.3.1	The waste sorting and storing process does not require any input of water, no water license required.

SEARs	Relevant report section	Summary Comment
an assessment of potential impacts on floodplain and stormwater management and any impact to flooding in the catchment	Section 5.7	The site is not located in a flood prone area, as such there are no potential impacts on flooding in the catchment due to the proposal An existing driveway is to be reconstructed to prevent stormwater running into the site from Plasser Crescent.
details of sediment and erosion controls	Section 8.2.2	There will be minimal exposed soil during construction, and any occurrences can be managed with basic sediment and erosion controls compliant with the Blue Book.
a detailed site water balance	Section 7.2.1	The proposed development will result in less runoff from the site as there is proposed to be a rainwater tank capturing runoff from the new roof and supplying non-potable demands. Apart from the rainwater tank the water balance will remain unchanged as there is an increase in impervious area of 86m².

SEARs	Relevant report section	Summary Comment
an assessment of potential impacts on the quality and quantity of surface and groundwater resources	Section 6.0	The site is and will remain nearly completely sealed therefore leaving no opportunity for contaminants to infiltrate ground water. This will also mean little change to the quantity of stormwater generated. The quality of stormwater is expected to improve due to the increase in roof area instead of trafficable hardstand. Impacts on surface and groundwater are assessed as being a slight improvement in surface water quality with no change to groundwater which was negligible to start with.
details of the proposed stormwater and wastewater management systems (including sewage), water monitoring program and other measures to mitigate surface and groundwater impacts	Section 8.0	The covering of the waste sorting and storing activities is the main risk mitigation strategy for this site, however pit filter baskets are proposed to be added to trap any waste that enter the stormwater network before discharging offsite. The existing shaker pad and wheel wash will also be maintained to prevent waste migration offsite.
characterisation of the nature and extent of any contamination on the site and surrounding area	Section 5.6	No known contamination

SEARs	Relevant report section	Summary Comment
a description and appraisal of impact mitigation and monitoring measures.	Section 8.0	
NSW EPA SEARs		
It is considered best practice by the EPA for facilities to retain all water on site and not discharge any water 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.	Section 2.2.2 Section 8.0 Section 5.1 to 5-3 Section 8.0	The site is fully covered with a roof – it is therefore not practical nor necessary to retain all water on site. This section provides a list of materials that will be accepted. Proposed mitigation measures. Description of receiving water and ANZECC criteria Proposed mitigation measures.

SEARs	Relevant report section	Summary Comment
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)).	Section 6.1 Section 6.o Section 8.o	There will be no discernible difference in the discharge quality from the site compared to the existing condition as there is very little proposed change to the impervious area of the site. Therefore, there is no potential impact (in terms of discharge quantity or peak flows) due to the proposal. As such, there are no measures proposed to limit volume or peak flow (it should be noted that the development is in an OSD exempt area). However, there are measures proposed to mitigate potential impacts on water quality as outlined above and in Section 8.o
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.	Section 6.3.2 & Section 8.o	A trade waste agreement is not required

SEARs	Relevant report section	Summary Comment
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.	Section 8.0	The internal floors will be graded accordingly, a bund at every entrance is proposed for existing buildings where the floor can't be regarded. The risk of waste materials being tracked out of the building is mitigated as outlined in Section 8.0, including operational practices, pit filter baskets, vehicle shaker pad and wheel wash.
Best practice waste facilities install and utilise a 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.	Section 8.0	There is an existing sensor activated shaker pad / wheel wash on the site which will be retained for use in the proposed operations.
<u>Description of the Proposal</u> 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	Section 7.2.2	

SEARs	Relevant report section	Summary Comment
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; and c) drainage works and associated infrastructure; land-forming and excavations; working capacity of structures; and water resource requirements of the proposal.	Section 8.08.1 and 8.2 Proposed Infrastructure - Section 2.1, Water resource requirements – Section 6.3.1	The main potential pollutant due to the proposal are gross pollutants which can be adequately managed. The site will result in a net improvement in water quality. The MUSIC model results are not comparable to the ANZECC guidelines as they relate to direct runoff from the site as opposed to the receiving water quality (which is far more diluted)
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.	Section 2.1	The site is not located near a water resource. Very little re-grading of the site is proposed.
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.	Section 7.2 and 8.0	There is no significant additional demand for water in the proposed operations. The proposal will have a minor positive impact on the water cycle due to the introduction of a rainwater tank lessening the annual volume of discharge.
<u>The Location</u>	Section 5.3	

SEARs	Relevant report section	Summary Comment
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.		The catchment is an industrial area located between South Creek and Ropes Creek. The site is over 2km from the nearest waterway.
<u>The Environmental Issues</u> <i>Describe baseline conditions</i> - 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:	Section 5.0 & 7.2.2 Section 5.3 & 7.2.1 Section 5.1	The existing surface water quality is as expected for an industrial site in an industrial catchment, Section 7.2.2 provides modelling results. Sampling and analysis was not undertaken as this site is not located in close proximity to a water way and the proposal is deemed very low risk. Ambient Water Quality and River Flow Objectives for the Hawksbury-Nepean are to ensure not net change in water quality, i.e. neutral or beneficial effect.

SEARs	Relevant report section	Summary Comment
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)	Section 5.2 N/A	

SEARs	Relevant report section	Summary Comment
(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: a) lake or estuary flushing characteristics; b) specific human uses (e.g. exact location of drinking water offtake); c) sensitive ecosystems or species conservation values; d) a description of the condition of the local catchment e.g. erosion levels, soils, vegetation cover, etc;	N/A N/A	

SEARs	Relevant report section	Summary Comment
e) an outline of baseline groundwater information, including, but not restricted to, depth to water table, flow direction and gradient, groundwater quality, reliance on groundwater by surrounding users and by the environment; and f) historic river flow data where available for the catchment.		
<i>Assess impacts</i> - 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).	Section 9.0 Section 7.2.2 Section 7.1 Section 6.0	All operations are occurring under cover, as such, the probability of breaching clause 120 is considered extremely low.

SEARs	Relevant report section	Summary Comment
- 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 sulphate soils and potential acid sulphate 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	Section 7.2.2 Section 6.4 Section 6.2 Section 5.4 N/A Section 7.2	There is a low risk of acid sulphate soils being present on the site. Hazardous or liquid chemicals are not proposed to be stored on site.

SEARs	Relevant report section	Summary Comment
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.	Section 9.0 Section 9.0 N/A N/A	River flow objectives for the Hawkesbury-Nepean could not be located. There is no available data on whether water quality objectives for the relevant section of South Creek are being met. No mixing zone is proposed. No licenced discharge is proposed. No licenced discharge is proposed

SEARs	Relevant report section	Summary Comment
- 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 e.g. 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).	N/A N/A	
<i>Describe management and mitigation measures.</i> - 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.	Section 8.1 Section 8.2.2 N/A	No wastewater treatment is proposed

SEARs	Relevant report section	Summary Comment
- 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; and 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	Section 8.1 and 8.2 N/A N/A	None of these are relevant to the selected site as the site is not flood affected, is impervious so there is no interaction with groundwater or potential for ongoing erosion. There are no potential impacts on groundwater so there are no proposed mitigation measures.

SEARs	Relevant report section	Summary Comment
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).	Erosion and sediment control during construction - Section - 8.2.2, everything else is N/A N/A	Ongoing monitoring is not deemed to be necessary as there is no likely impact from the development.

4.0 PENRITH COUNCIL DCP AND STORMWATER POLICY REQUIREMENTS

Penrith City Council WSUD Policy EH003 titled Waste Water Urban Design (WSUD) Policy includes standards for water quality from developments.

Given that the site is already (predevelopment) effectively fully impervious and that construction of a new roof over existing hardstand (as is proposed) would not result in a decline in water quality, Penrith Council were consulted to understand how the proposal would need to address their Policy requirements.

It was agreed with Council¹ that provided the development included a rainwater tank to meet non-potable demands and litter baskets were to be included in existing pits then it was likely that the development would achieve an improvement in water quality and therefore comply with the Policy intent.

From this discussion it was understood we needed to demonstrate neutral or beneficial effect rather than compliance with the best practice targets (85 65 45)

¹ Personal conversation with Mr. Tim Gowing from Council.

5.0 SITE CONTEXT AND BASELINE CONDITIONS

5.1. River Water Quality Objectives

The site drains (via an Interallotment drainage line) to an unnamed first order tributary which connects to South Creek approximately 2km from the site. South Creek ultimately drains to the Hawkesbury River. NSW Water Quality and River Flow Objectives are not provided for the Hawkesbury-Nepean catchment. It is understood however that a neutral or beneficial effect approach to water quality in the Hawkesbury Nepean System has been partially adopted through legislation (SEPP).

5.2. Default Guideline Trigger Values

ANZECC default guideline trigger values for the Lowland rivers (such as the Hawkesbury River) are listed below (extracted from Table 3.3.2 of the ANZECC-ARMCANZ 2000 Guidelines Vol 1):

Table 2 ANZECC Default Guideline Values

Total phosphorus	• 25 µg/L
Total nitrogen	• 350 µg/L
Chlorophyll-a	• 3 µg/L
Turbidity	• 6–50 NTU
Salinity (electrical conductivity)	• 125–2200 µS/cm (typically 200-300 µS/cm for coastal rivers)
Dissolved oxygen	• 85–110%
pH	• 6.5–8.0

5.3. Local Soils, Topography and Drainage

Soil data for this site has not been collected as there are minimal soil exposing works proposed, however publicly available data for nearby sites suggest that the soil in the area is likely to be acidic (with a of pH 4.5 – 6), with no salinity evident, with a sandy or loamy topsoil layer, underlain by medium to heavy clays.

The existing site is almost completely impervious (94%). It generally falls from the southwest to the north with a gradient of between 1.4% and 1.8% (with some locally steeper areas around the building interface). It is located at the top of an industrial catchment draining to an Interallotment stormwater line that ultimately discharges to South Creek, some 2km from the site.

South Creek is severely impacted by urbanisation, particularly the lower reaches to which this site ultimately discharges. However as this site does not discharge directly to South Creek, and the proposed development is not likely to impact the receiving water (as discussed further in Section 6.0), water quality data has not been collected and there are no EPL conditions requiring this to be done.

Based on MUSIC modelling, the site currently generates 2.41ML/yr of runoff (see Section 7.2.1), with the legal point of discharge currently the Ø375 Interallotment drainage line within a 3m wide easement (VIDE DP263353). The connection point is located in the northeastern corner of the site. This is proposed to be retained.

As there is no existing layback along the gutter line there are currently nuisance flows entering the site from Plasser Cres via the western driveway (which falls in towards the site). This will be dealt with as part of the proposal via installation of a new layback across that driveway.

5.4. Acid Sulphate Soil Potential

A review of NSW Soil data indicates that there is no risk of Acid Sulphate Soils being present on the site and furthermore there will be minimal soil disturbance.

5.5. Existing Groundwater Quality

As previously discussed, this site is almost entirely impervious, covered with a dense concrete hardstand which complies with NSW EPA requirements for working surfaces² and is proposed to remain so, resulting in no risk to ground water. Furthermore, there is no proposed interaction with groundwater (such as extraction). As such, it was not deemed necessary to collect baseline groundwater data and this is not assessed further.

5.6. Existing Site Contamination

There is no known existing site contamination.

5.7. Flooding

The site is located clear of the PMF flood extents for South Creek and Ropes Creek as shown by Figure 4 below extracted from the 'Updated South Creek Flood Study' by Worley Parsons, 2015. This shows the site is not likely to be subject to alluvial flooding under any circumstances.

² Environmental Guidelines – Composting and Related Organic Processing Facilities, NSW DEC 2003.

Figure 5 below shows the site's location with respect to flooding hazard from local catchment overland flow. While the site is located near to areas that may be affected by the PMF event, the site itself is clear of any hazard.

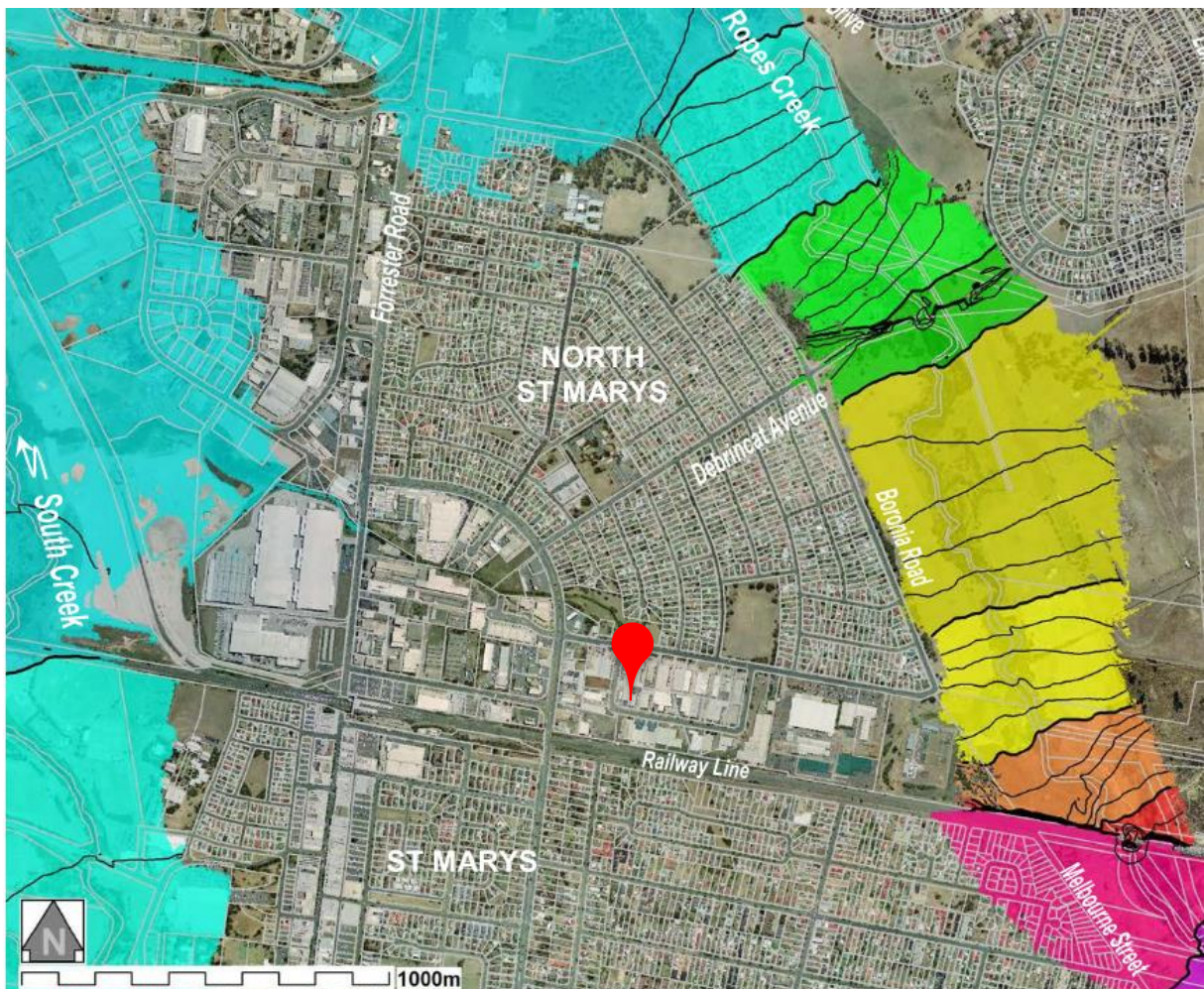


Figure 4: PMF Flood Extents (South Creek Flood Study, Worley Parsons Services Pty Ltd, 2015) with the subject site identified by the red pin.

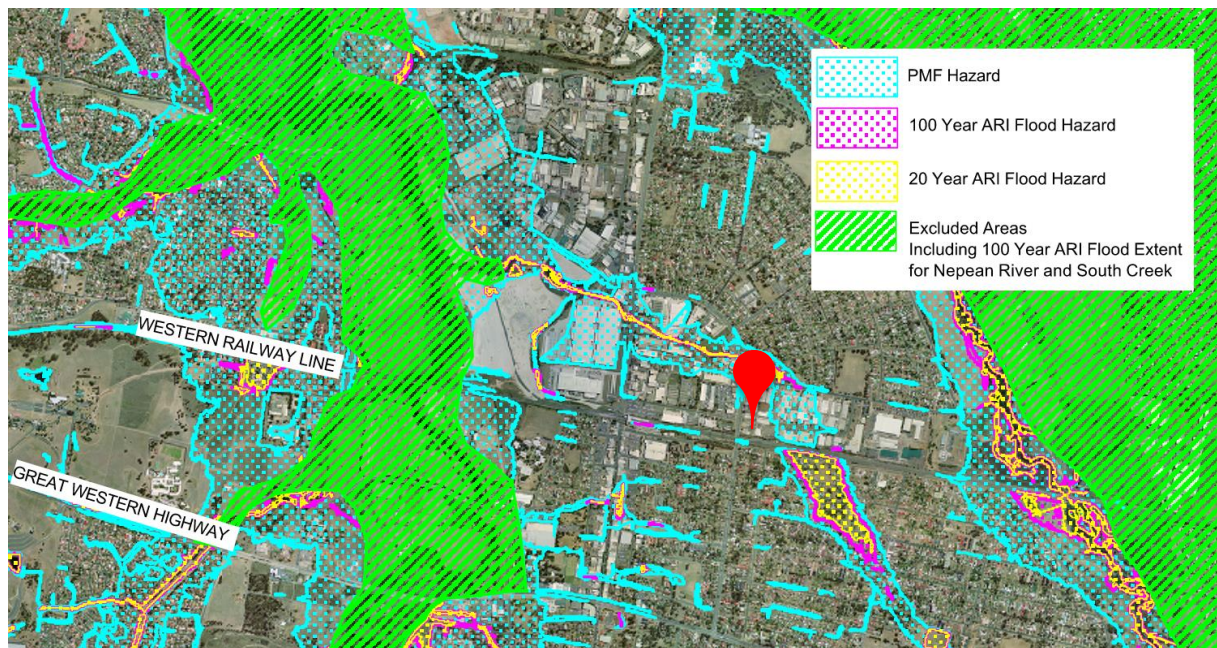


Figure 5: PMF, 100yr, and 20yr ARI Overland Flow Flood Hazard (Courtesy Penrith Council)

6.0 POTENTIAL IMPACTS OF PROPOSED DEVELOPMENT ON THE WATER CYCLE

6.1. Chronic Water Quality and Quantity Issues

Chronic or everyday water quality and quantity issues are defined as frequent and ongoing issues that are caused by the daily operation of the site, such as a decline in water quality leaving the site due to poor site practices, or an increase in peak flow discharged from the site due to an increase in impervious area.

The proposed development will see a only negligible increase in the amount of impervious area (103m²) on the site and therefore will cause no detectable increase in the amount of stormwater runoff generated on the site. The conversion of approximately 190m² (net) of hardstand into new roof area will see an improvement in the quality of runoff leaving the site, as roof catchments are cleaner than trafficable hardstand catchments.

All sorting and storage is proposed to be undertaken undercover, so there is little risk of stormwater being contaminated via mixing with stockpiled waste, or contaminants leaching from saturated stockpiles.

There is potential for transport operations (i.e. truck deliveries and collection) to cause minor ongoing pollution on site, consistent with the level expected for any industrial zoned area. Furthermore, there is a risk that these vehicle movements could track waste outside the perimeter of the sheds onto open hardstand where it would have the potential to pollute stormwater runoff, however this risk is to be mitigated as discussed in Section 8.o).

Therefore, there is a low risk for the proposed development to cause chronic water quality or quantity impacts.

6.2. Acute Water Quality Issues

Acute water quality issues are defined as infrequent contamination events, such as those caused by a chemical spill. Liquid or hazardous waste will not be stored at this facility so there is no risk of such spills.

Each of the sheds will also be bunded and so contain any fire fighting water. Following a fire emergency, eductor trucks will need to vacuum the fire fighting water and remove from the site and dispose of to a lawful facility.

In conclusion there is a negligible acute water quality risk arising from the proposal.

6.3. Impact on Site Water Balance

6.3.1. Impact on Water Demands

There is no water used in the sorting, processing or storage of waste. The only water demands for the proposed development are for the wheel wash (which is existing), and for staff facilities, including a small amount of drinking water and toilet flushing. The demand for potable water may increase very slightly due to the additional truck activities (water is used in the wheel wash) and a possible increase in staffing numbers.

While there is currently unlikely to be little use of water for irrigation, this is proposed to be supplied from the rainwater tank in order to use some harvested roof runoff from the site, thereby reducing the total volume of stormwater discharged. New toilets will also be supplied with rainwater.

There are no water licencing requirements as there is no demand for recycled water or groundwater.

6.3.2. Impact on Wastewater Generation

There is no waste water or trade waste produced in the sorting, processing or storing of waste, as such, the only wastewater leaving the site will be the small amount of sewage from staff facilities.

There are currently approximately 8 employees working at the existing site, which does not include the additional employees (which forms part of this proposal). Thus while the total amount of employees is expected to increase by 4 employees to around 12 in total, this will be across both lots. This will be disposed of via the existing Sydney Water sewage connections along the northern boundary which will be maintained.

There are no existing or proposed tradewaste agreements. The existing wheel wash is cleaned out manually on a weekly basis and soils removed are disposed of to waste.

6.4. Impact on Soil and Groundwater

All sorting, processing and storage of waste will take place entirely within the existing and proposed warehouse buildings which have a concrete slab (assumed to be a minimum 100mm thick), preventing any leachate or contaminants (although they are unlikely to be present) from entering the soil or ground water. As there is very low risk of impact to soil or groundwater due to the proposed activities, this is not considered further.

7.0 WATER BALANCE AND STORMWATER QUALITY MODELLING

7.1. MUSIC Modelling Methodology

7.1.1. Climate Data Selection

The site is located within Penrith City Council, as such, the Penrith MUSIC-Link climate data set was used. This uses a rainfall period from Jan 1999 to Dec 2008 which has a mean annual rainfall of 691mm, closely matching that of the closest weather station to the site (Orchard Hills) which has a mean of 619mm.

7.1.2. Catchment Breakup

A pre and post development model was created based on the catchment plan included in Appendix A which shows the proposed changes in land use due to the development. Table 3 below summarises the minimal proposed land use changes.

Table 3: Pre and Post Development Catchments

Catchment Type	Pre-Development	Post-Development
Roof	2178m ²	1942 m ²
Roof to Tank	0m ²	478 m ²
Landscape	251 m ²	184 m ²
Hardstand	1869 m ²	1694 m ²
TOTAL	4298 m ²	4298 m ²

Default Event Mean Concentration (EMCs) Values were used to represent the pollutant distributions for these catchments.

7.1.3. Treatment Nodes

There are no existing treatment measures on the site, therefore no treatment nodes were included in the pre-development model. In order to respond to the SEARs and industry best practice, several treatment nodes were included in the post-development model. These include the following:

Pit Filter Baskets – Pit filter baskets or litter baskets are a mesh bag that can be fitted to existing pits on the site to trap gross pollutants and large sediment particles. These will treat runoff from the hardstand and landscaped areas.

A rainwater Tank – It was assumed the new roof would be connected to a 10kL rainwater tank to provide recycled water for two staff toilets (with a daily demand of 200L/day) and to supply an outdoor tap used for irrigation of the 8m² garden beds against the building and 61m² on lot 15 fronting Plasser Cres (assumed at 0.4kL/ m²/year).

7.2. MUSIC Model Results

7.2.1. Water Balance Results

The resulting water balance can be seen below in Table 4. It shows that the post development scenario results in a reduction in annual runoff leaving the site due to the supply of non-potable demands (toilet flushing and irrigation).

Table 4: Pre and Post Development Water Balance

	Pre-Development	Post-Development
Total flow generated from the site	2.41ML/year	2.36ML/year
Non-potable demand (toilets and irrigation)	26kL/year*	101kL/year
Rainwater supplied	0kL/year	87kL/year
Demand in Sydney Water network	26 kL/year	14 kl/year
Percentage of non-potable demand met	0%	86%

* Assumed 1 staff toilet operating on weekdays only with a demand of 100L / day. No irrigation demand was assumed for the pre-development scenario as the landscaped areas appear to be poorly maintained.

7.2.2. Water Quality Results

The water quality results can be seen in Table 5. There is a reduction across all pollutants from the pre to post development scenarios and the proposal will achieve a noticeable improvement in discharge water quality.

Penrith Council DCP and Water Policy targets are technically not applicable to the site because negligible additional impervious area is being created (the proposal seeks to place a roof over existing hardstand) . This was confirmed through a conversation with Penrith Council Officers. Council indicated that if we proposed a new rainwater tank and litter baskets in existing pits were being proposed that they would be supportive of the application. Moreso if it could be demonstrated that a beneficial effect was going to be achieved as is shown below in Table 5.

Table 5: Water Quality Results- Mean Annual Loads

	Pre- Development	Post-Development	% Reduction
Total Suspended Solids (kg/yr)	238	121	49%
Total Phosphorous (kg/yr)	0.528	0.415	21%
Total Nitrogen (kg/yr)	5.29	4.71	11%
Gross Pollutants (kg/yr)	66.9	37.5	44%

8.0 PROPOSED RISK MITIGATION MEASURES

8.1. Stormwater Management (Mitigating Chronic Risk to Water Quality)

Mitigation measures are shown on the proposed plan which is included in Appendix B.

The main stormwater quality risk mitigation strategy for this site is the confining of all activities (apart from transport) to be within a covered building. This means that the majority of the site is covered by roof, which is typically clean compared to runoff from hardstand.

The strict management of waste storage bays within the building will minimise the risk of waste being tracked out of the building extents on vehicle tyres. However, secondary mitigation measures, being an existing shaker pad and a wheel wash will ensure that if waste is caught up in vehicle tyres, it can be removed prior to the vehicles leaving the site. The wastewater from the wheel wash will not be disposed of to stormwater, and the solids that accumulate in the sump will be cleaned out weekly.

The existing hard stand to the south of the existing shed on Lot 16 currently falls away from the street towards three stormwater pits just in front of the building line. This grading adequately contains runoff onsite and is therefore proposed to be retained. These pits will be retrofitted with gas tight solid lids to prevent waste from entering the pits and to prevent any possibility of stormwater surcharging into the building.

The majority of the hardstand on Lot 15 will become roof area (and therefore collected in downpipes), however there is one stormwater pit that will remain, and this too will be retrofitted with a littler basket. The littler baskets will ensure that if any waste does manage to migrate outside of the building line and get caught up in the stormwater runoff, it will be filtered out and collected in the baskets, prior to the stormwater leaving the site. Littler baskets can be maintained by site staff and do not require specialist maintenance contracts. An Operation and Maintenance plan will be required as part of the Occupation Certification which will include maintenance requirements to ensure the stormwater management system functions adequately at all times.

A rainwater 10kL tank will be installed to capture runoff from the new portion of roof. This has a positive impact on water quality by reducing the quantity of water discharged offsite. This combined with the measures outlined above will ensure that the development has a net positive impact on water quality and quantity when compared with the pre-developed site.

8.2. Mitigating Acute Risk to Water Quality

8.2.1. Managing Contamination

The internal floors of the existing and proposed building are to fall inwards to a collection sump pit (that is not to be connected to the stormwater network). If this is not achievable for the existing building, then trafficable bunding is to be applied to the openings of the building. As such, any contaminants that may leach from stored waste materials (although this is highly unlikely) will be prevented from mixing with surface water. The internal grading / bunding will also act to contain any fire water in the event the sprinklers are deployed. Fire water would be temporarily stored on the floor and within bunding or sump pit and would be pumped out and transported off site to be disposed of at lawful treatment facility.

8.2.2. Erosion and Sediment Control During Construction

There is very little soil-exposing construction work proposed as part of the development so this risk of erosion and sediment exportation due to construction work is very low. Works that may expose topsoil during construction are limited to:

- The installation of the new weighbridge
- Earthworks associated with the demolition of pavement and construction of the new shed slab
- Earthworks associated with the construction of 7 new parking spaces and installation of pavement where the existing building is proposed to be demolished
- Minor landscaping

During such works, erosion and sediment control measures will be implemented in accordance with 'the blue book', the industry standard for the management of site runoff during construction. The proposed works will not result in more than 2,500m² of soil being exposed, as such, a temporary sediment basin is unlikely to be required. Alternative measures of erosion and sediment management are likely to include, sediment fencing downstream of works and temporary stockpiles, dust suppression, and filter sausages around inlet pits or geofabric grate filters (which is already standard practice on the site). It should be noted that the site falls away from the street to the rear corner of the property where runoff during construction can easily be contained and prevented from entering the stormwater or overland flow network.

A detailed Erosion and Sediment Control Plan (ESCP) will be prepared as part of the construction documentation, depending on the final amount of area proposed to be exposed during construction.

8.3. Monitoring

Stormwater quality monitoring is not deemed to be necessary for this site as the discharge is largely from roof areas and the measures proposed will adequately mitigate the risk of stormwater pollution.

Groundwater monitoring is also not deemed to be necessary as the site is almost fully sealed (96%), and hardstand areas fall away from landscaped areas therefore leaving very little risk that contaminants will infiltrate to groundwater.

9.0 CONCLUSION

A primary concern in the SEARs is the potential for the project to impact on the receiving waterway and its health in relation to River Water Quality objectives and ANZECC guidelines.

The proposal should also meet Penrith City Council requirements to ensure the existing impervious area achieves a beneficial effect on water quality.

The proposed resource recovery operations will take place entirely under cover of an existing and proposed building which results in little risk of waste material mixing with stormwater and polluting waterways. What little risk there is (resulting from the possibility of waste being tracked outside of the building line on vehicle tyres) is proposed to be adequately mitigated through the use of:

- Site management practices that ensure waste is contained in dedicated storage bays
- The use of an existing shaker pad and wheel wash that will wash down delivery truck tyres on exit
- The installation of pit filter baskets to all stormwater pits, which will trap any gross pollutants before stormwater is discharged from the site.

MUSIC modelling indicates that water quality will improve as a result of the proposed mitigation measures.

The proposed development will therefore have a positive impact on stormwater quality and no quantity impact and poses little risk of pollution. Furthermore, it has a negligible impact on the water cycle as a whole and it is recommended that it can be approved without risk to the receiving water.

10.0 REFERENCES

The following documents have informed this report:

- a) Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Volume 1 "The Guidelines" (Chapters 1-7), October 2000;
- b) E-Spade V2.2 (<https://www.environment.nsw.gov.au/eSpade2Webapp/#>)

APPENDIX A

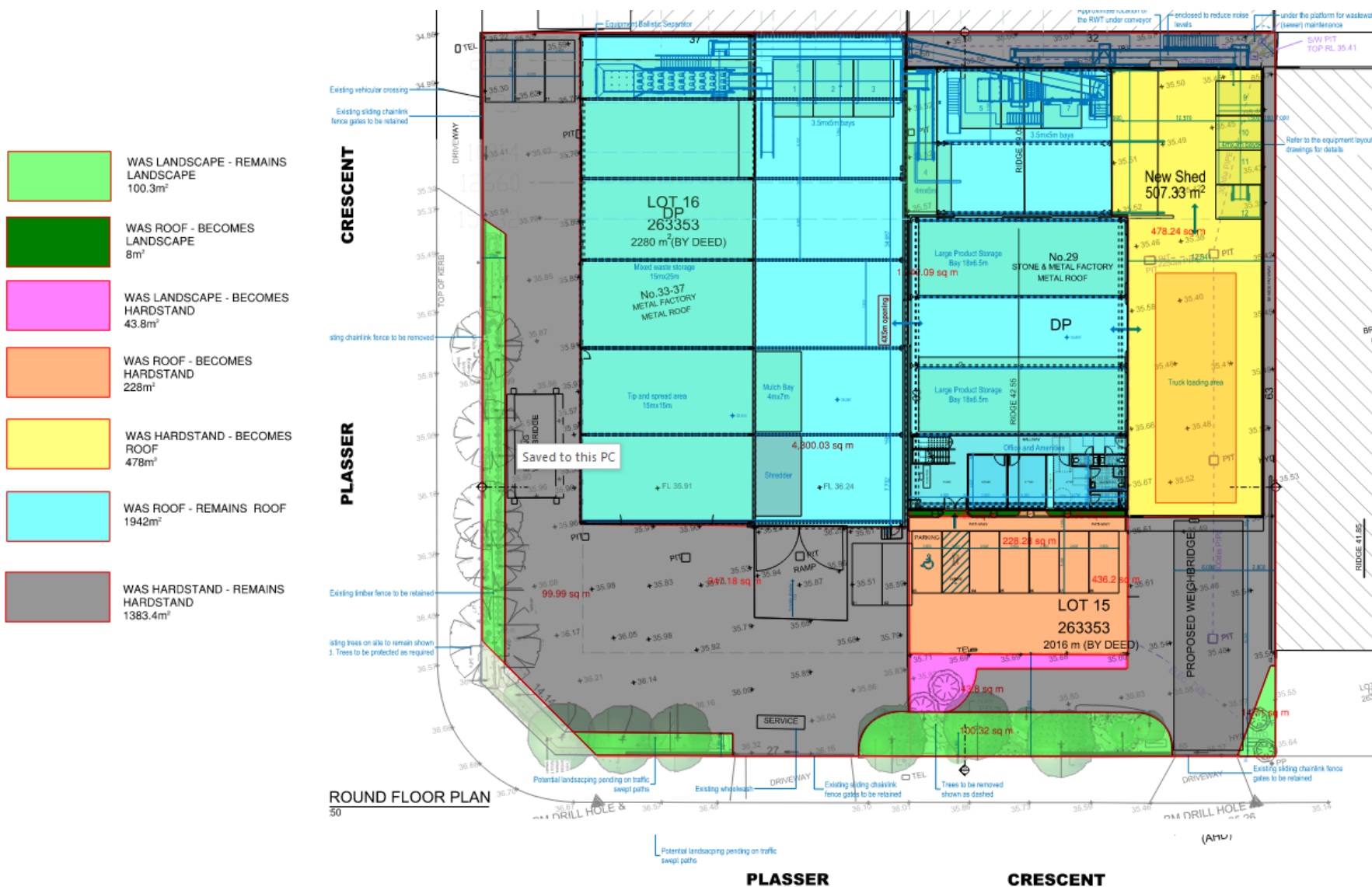


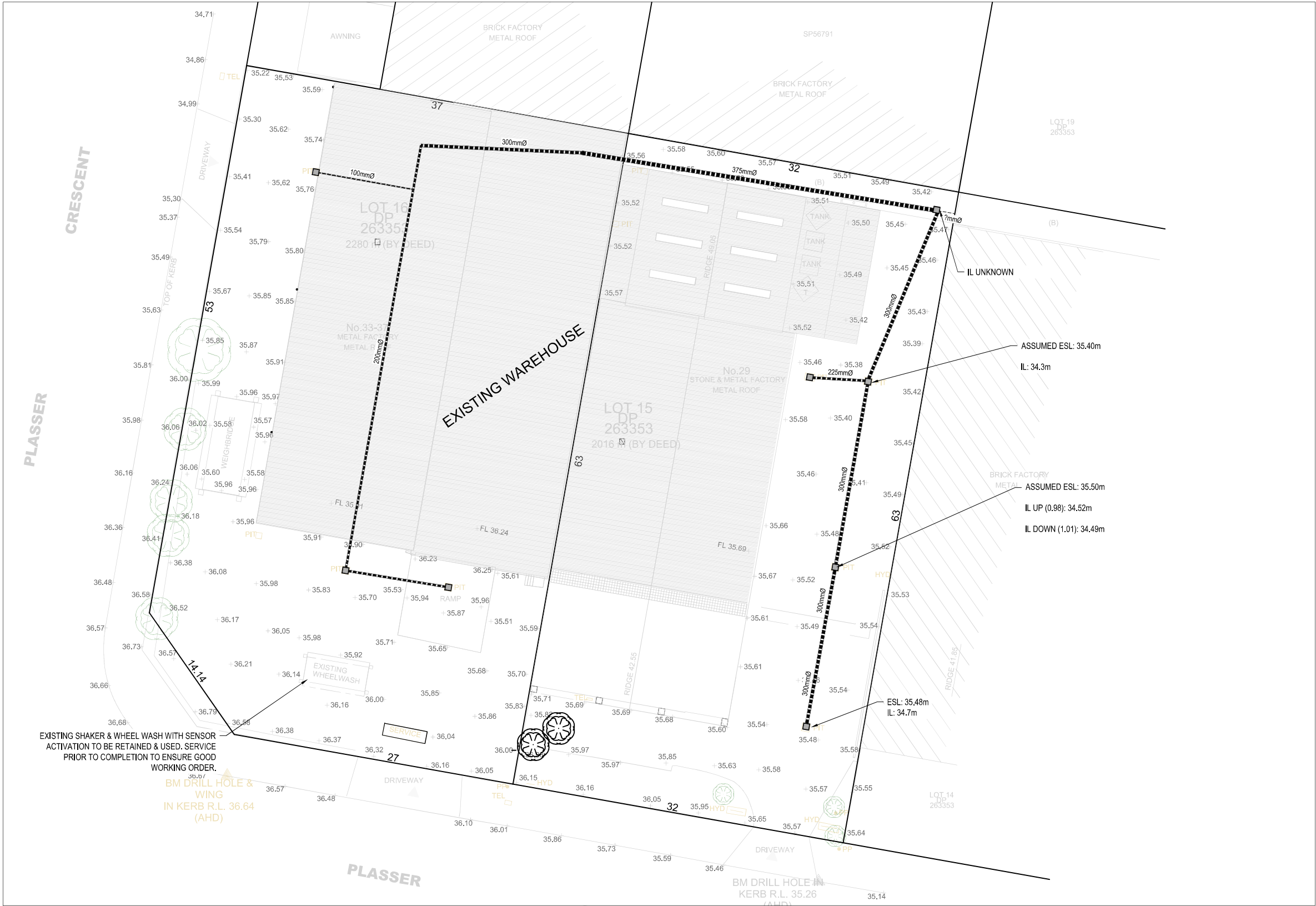
Figure 6: MUSIC Modelling Catchment Plan

APPENDIX B

PROPOSED CIVIL AND STORMWATER PLAN

29 & 33-37 PLASSER CRESCENT, NORTH ST MARYS

PROPOSED EXPANSION OF RESOURCE RECOVERY FACILITY



LEGEND

- EXISTING STORMWATER PIPE
- EXISTING INLET PITS

NOTES:

- ACRONYMS:
ESL - EXISTING SURFACE LEVEL
IL - INVERT LEVEL

PLAN
SCALE 1:200



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SCALE 1:200 (A1)
SCALE 1:400 (A3)



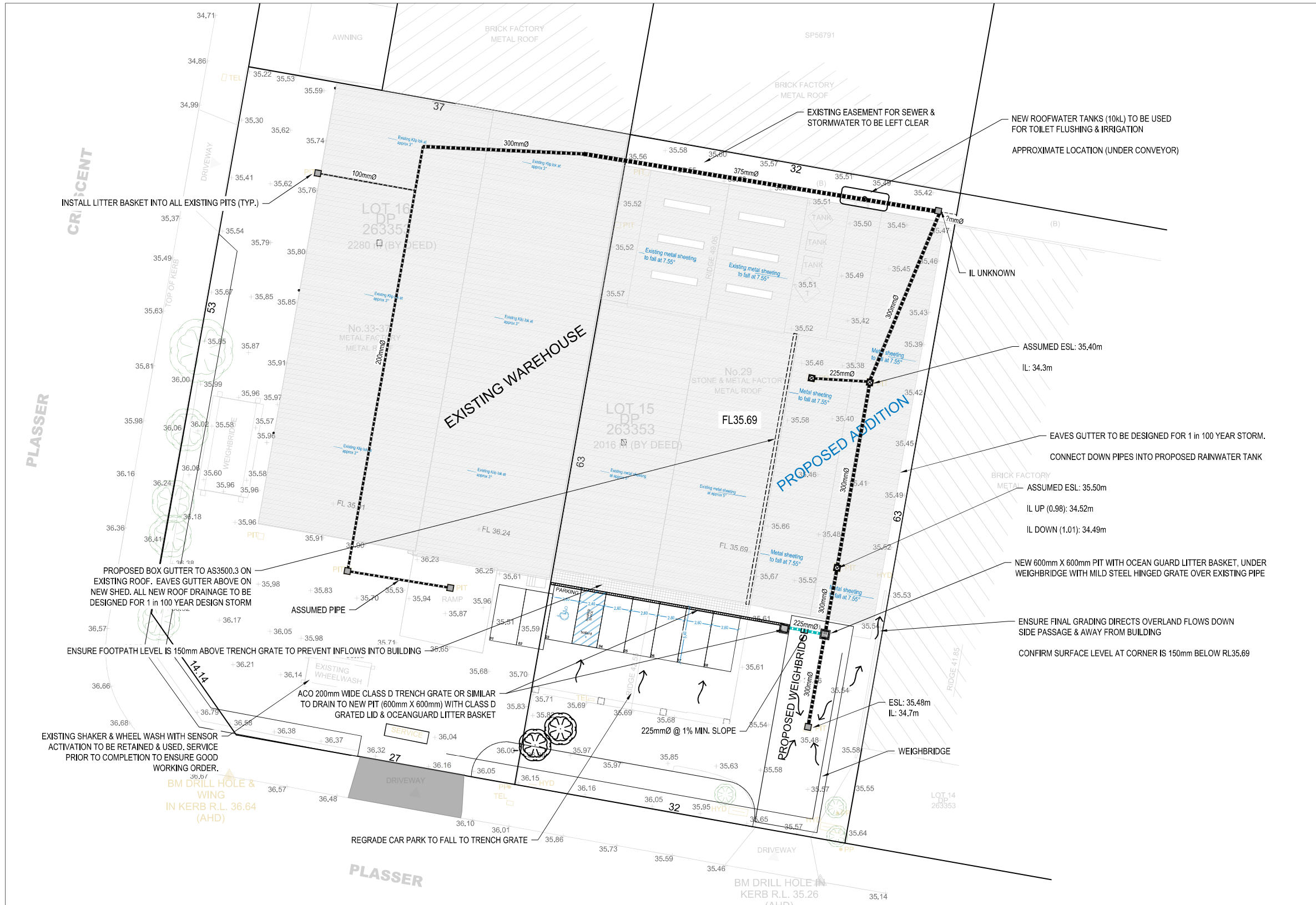
REV	DATE	DESCRIPTION	BY	CHKD
2	30/07/2024	REVISED FOR DA - UPDATED ARCHITECTUALS	GA	ML
1	08/06/2024	DA	GA	ML



Sustainability
Workshop

T: +61 (0) 247878428
M: 0468 423 299
4 Park Ave, Blackheath, NSW
www.sustainabilityworkshop.com

PROJECT: 29 & 33-37 PLASSER CRESCENT, NORTH ST MARYS PROPOSED EXPANSION OF RESOURCE RECOVERY FACILITY		DESIGNED: G. ABDELAHAD	CHECKED: M. LIEBMAN	DATE: 08/06/2024
CLIENT: NASSIF CIVIL		DRAWN: G. ABDELAHAD	SHEET: C01	SIZE: A1
JOB REF No: 321		SHEET DESCRIPTION: EXISTING SITE PLAN		SHEET No: 1 OF 3
		COORD. ORIGIN: MGA ZONE 56		DATUM: AHD



PLAN
SCALE 1:200

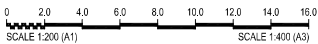
LEGEND

- EXISTING STORMWATER PIPE
- PROPOSED STORMWATER PIPE @ MIN. 1% SLOPE & 300mm COVER
- OCEAN GUARD LITTER BASKET (200 MICRON) PLACED INTO ALL EXISTING SURFACE WATER PITS
- ADJUST EXISTING LID LEVELS & REPLACE LIDS WITH SOLID CLASS D GAS TIGHT, BOLT DOWN COVERS
- DIRECTION OF SURFACE GRADING
- RECONSTRUCT EXISTING LAYBACK TO PREVENT FLOWS FROM PLASSER CRESCENT ENTERING SITE. PAVEMENT DESIGN TBC PRIOR TO CC BUT MUST CONSIDER APPLICABLE TRUCK LOADING FOR THIS SITE.

IMPERVIOUS AREA CHANGE TABLE (%)		AREA (m ²)
PRE-DEVELOPMENT	94.00%	4038
POST-DEVELOPMENT	96.00%	4124
INCREASE (PRE-DEV TO POST-DEV)	~2.00%	~103
TOTAL	100.00%	4296

NOTES:

- ACRONYMS:
ESL - EXISTING SURFACE LEVEL
IL - INVERT LEVEL
FL - FLOOR LEVEL
- ROOF DRAINAGE TO BE DESIGNED FOR 1 in 100 YEAR STORM
 - ROOF AND SURFACE DRAINAGE TO BE DESIGNED TO AS3500.3 AND PENRITH CITY COUNCIL STORMWATER POLICY REQUIREMENTS.
 - ADDITIONAL STORMWATER PITS MAY BE REQUIRED TO ACCEPT NEW ROOF DRAINAGE FROM NEW SHED CONSTRUCTION - TBC PRIOR TO CC
 - FLOOR LEVEL OF NEW SHED ASSUMED TO BE RL35.69 TO MATCH EXISTING SHED FLOOR LEVEL. THIS IS TO BE A MIN. 150mm ABOVE EXTENRAL SURROUNDING SURFACE LEVEL.
 - SURFACE LEVELS UNDER WEIGHBRIDGE NEED ADJUSTMENT TO ENSURE FOUNDATION OF WEIGHBRIDGE CROSS BEAM (500mm DEEP) IS CLEAR OF TOP OF PIPE WHICH RUNS BELOW. SLIGHT RAMPING ON WEIGHBRIDGE IS REQUIRED TO ACHIEVE THIS CLEARANCE.
 - EXISTING STORMWATER PIPE IS ASSUMED TO HAVE SUFFICIENT STRUCTURAL STRENGTH. THIS SHALL BE CHECKED PRIOR TO CONSTRUCTION CERTIFICATE AND IF REQUIRED THE AFFECTED PIPE SHALL BE REPLACED WITH A HIGHER CLASS PIPE.
 - BASIC CALCULATIONS FOR DA HAVE BEEN UNDERTAKEN TO CONFIRM THE CAPACITY OF THE EXISTING 300mm DIA STORMWATER PIPE TO ACCEPT 1 IN 100 YEAR FLOWS FROM EXISTING AND NEW ROOF AREAS AS WELL AS GROUND SURFACE CATCHMENTS.



REV	DATE	DESCRIPTION	BY	CHKD
2	30/07/2024	REVISED FOR DA - UPDATED ARCHITECTUALS	GA	ML
1	08/06/2024	DA	GA	ML



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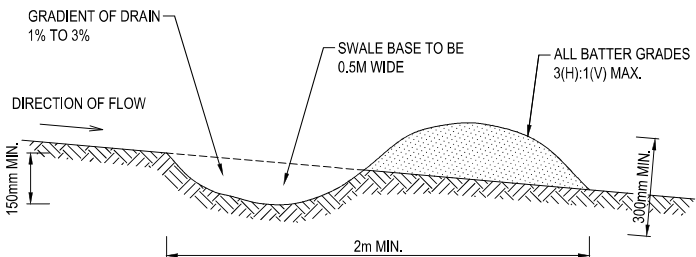
T: +61 (0) 247878428
M: 0468 423 299
4 Park Ave, Blackheath, NSW
www.sustainabilityworkshop.com

PROJECT: 29 & 33-37 PLASSER CRESCENT, NORTH ST MARYS PROPOSED EXPANSION OF RESOURCE RECOVERY FACILITY		DESIGNED: G. ABDELAHAD	CHECKED: M. LIEBMAN	DATE: 08/06/2024
DRAWN: G. ABDELAHAD		SHEET: C02		SIZE: A1
CLIENT: NASSIF CIVIL		SHEET DESCRIPTION: PROPOSED WORKS PLAN		DATUM: AHD
JOB REF No: 321		COORD. ORIGIN: MGA ZONE 56		



LEGEND

- + — SEDIMENT FENCE
- ⌋ WIRE MESH AND GRAVEL SEDIMENT FILTER
- INTERCEPTION SWALE TO DIVERT FLOWS AWAY FROM HOUSE



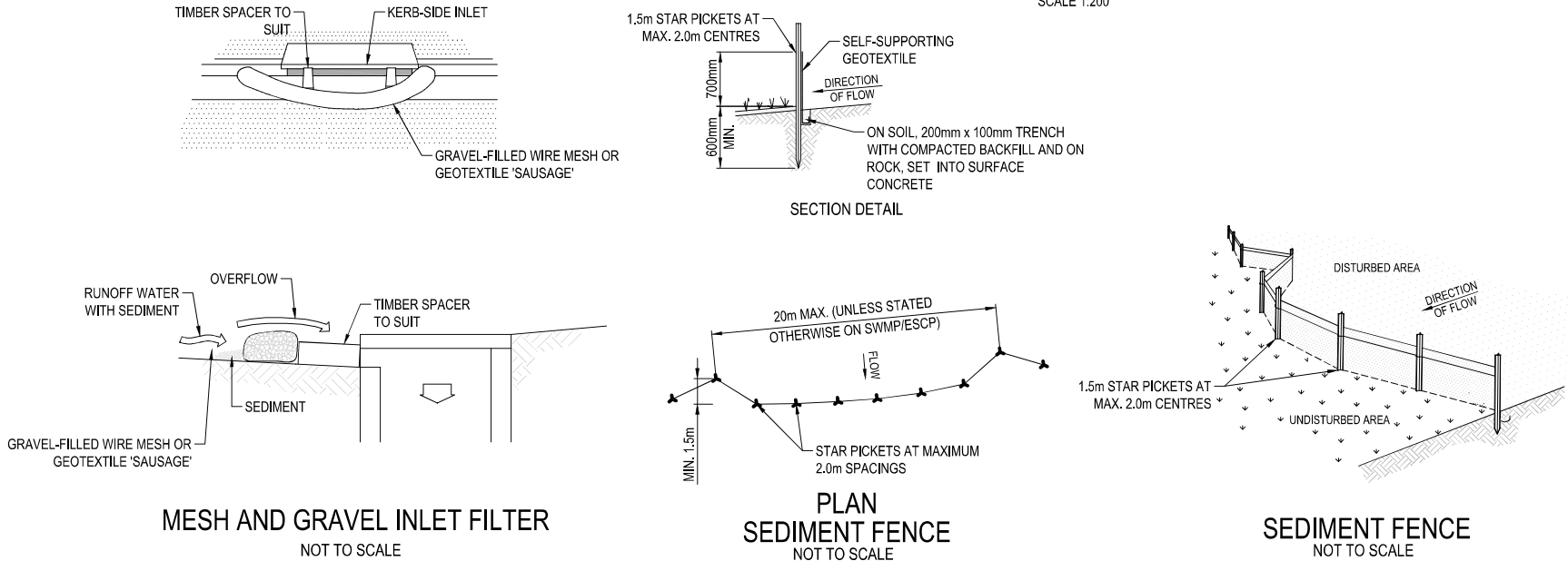
SWALE DETAIL

NOTES:

- BUILD WITH GRADIENTS BETWEEN 1% AND 3%.
- AVOID REMOVING TREES AND SHRUBS IF POSSIBLE - WORK AROUND THEM.
- ENSURE THE STRUCTURES ARE FREE OF PROJECTIONS OR OTHER IRREGULARITIES THAT COULD IMPEDE WATER FLOW.
- BUILD THE DRAINS WITH TRAPEZOIDAL CROSS SECTIONS, NOT V SHAPED.
- ENSURE THE BANKS ARE PROPERLY COMPACTED TO PREVENT FAILURE.
- STABILISE WITH TURF AND TURF REINFORCING MATT WITHIN 10 DAYS OF CONSTRUCTION.

SOIL & EROSION SEDIMENT PLAN

SCALE 1:200

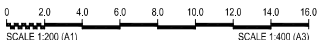


NOTES:

- 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 50L/s IN THE DESIGN STORM EVENT, USUALLY THE 10-YEAR EVENT.
- CUT A 200mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
- DRIVE 1.5m LONG STAR PICKETS INTO GROUND AT 2.0m INTERVALS (MAX) AT THE DOWNSLOPE EDGE OF THE TRENCH. ENSURE ANY STAR PICKETS ARE FITTED WITH SAFETY CAPS.
- 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.
- JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150mm OVERLAP.
- BACKFILL THE TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT THOROUGHLY OVER THE GEOTEXTILE.

NOTES:

- PLACE STOCKPILES MORE THAN 2 (PREFERABLY 5) METRES FROM EXISTING VEGETATION, CONCENTRATED WATER FLOW, ROADS AND HAZARD AREAS.
- CONSTRUCT ON THE CONTOUR AS LOW, FLAT, ELONGATED MOUNDS.
- WHERE THERE IS SUFFICIENT AREA, TOPSOIL STOCKPILES SHALL BE LESS THAN 2 METRES IN HEIGHT.
- 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.
- CONSTRUCT EARTH BANKS ON THE UPSLOPE SIDE TO DIVERT WATER AROUND STOCKPILES AND SEDIMENT FENCES 1 TO 2 METRES DOWNSLOPE.



REV	DATE	DESCRIPTION	BY	CHKD
2	30/07/2024	REVISED FOR DA - UPDATED ARCHITECTUALS	GA	ML
1	08/06/2024	DA	GA	ML



Sustainability Workshop

T: +61 (0) 247878428
M: 0468 423 299
4 Park Ave, Blackheath, NSW
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