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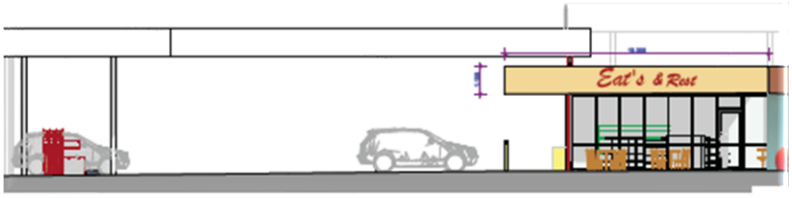

EDGEROI SERVICE STATION REDEVELOPMENT

STATEMENT OF ENVIRONMENTAL EFECTS

Edgeroi Energy Pty Ltd.
14456 Newell Highway, Edgeroi, NSW 2390

March 2024

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DOCUMENT CONTROL

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Proponent	Edgeroi Energy Pty Ltd
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Revision History

Version Number	Date	Authority	Details
0	January 2023	P. Taylor	Initial Issue to Client
1	March 2024	P. Taylor	Additional land included

Executive Summary

This report has been prepared by SMK Consultants on behalf of Edgeroi Energy Pty Ltd. (the Applicant) to support a development application to the Narrabri Shire Council for the upgrade of an existing service station at 14456 Newell Highway, Edgeroi NSW 2390. Following completion, the development will include a service station, kitchen, dining area, packaged liquor licence, truck driver rest rooms with ancillary vehicle parking and landscaping.

Applicant: Edgeroi Energy Pty Ltd
4 Waxflower Street
Denham Court NSW 2565

Land involved:

Lot Number	Deposited Plan
1	1269526
2	1269526
3	1269526
4	1269526
60	753952
61	753952
63	753952
66	753952
62	665543
1	311343
X	394753
Y	394753

Zoning: 'RU5' under the Narrabri LEP

Local Government Authority: Narrabri Shire Council

Proposed Development: Redevelopment of Edgeroi Service Station

Type of Development: Local and Integrated Development

Permissibility: The proposed development is permissible with the consent of the Narrabri Shire Council.

Approvals and Licences

A development approval is required from the Narrabri Shire Council under the Narrabri *Local Environmental Plan 2012.* The facility original included a takeaway liquor sales facility. This will be included in the development and therefore the proposal will require an approval from NSW Liquor and Gaming.

The Description of Proposal

The applicant for the project is Edgeroi Energy Pty Ltd. It is proposed to redevelop the existing service station and ancillary facilities at 14,456 Newell Highway in Edgeroi, NSW 2390. The proposed new service station facility and ancillary infrastructure will extend over Lots 1, 2, 3, and 4 DP1269526, Lots 60, 61, 63, and 66 DP753952, Lot 62 DP665543, Lots X and Y DP394753, and Lot 1 DP311343.

The proposal involves the demolition of the existing service station building and other ancillary buildings within the footprint of the proposed development site which includes three residential buildings and five sheds. Once this is completed, a new service station facility will be constructed on the site. The proposal is considered Local Development under the *Environmental Planning and Assessment Act 1979.* The proposed development is considered permissible with the consent of the Narrabri Shire Council under the *Narrabri Local Environmental Plan 2012.*

This environmental assessment of the proposed development has determined that if appropriate safeguards and environmental management practices are adopted on the site, the facilities could be operated with minimal harm to the environment or the amenity of residents within the local area.

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1 Introduction

SMK Consultants has been engaged by the proponent's representative, Benzina Group, to prepare this Statement of Environmental Effects (SoEE). This report will accompany a Development Application (DA) to the Narrabri Shire Council. The application seeks consent for construction of a new service station and other ancillary buildings at 14456 Newell Highway in Edgeroi. The new development would entail a service station, bottle shop, restaurant and trucker's facilities with associated car parking and landscaping. The land to be developed includes Lots 1, 2, 3, and 4 DP1269526, Lots 60, 61, 63, and 66 DP753952, Lot 62 DP665543, Lots X and Y DP394753, and Lot 1 DP311343.

The new service station will replace the old service station, bottle shop and shop which had serviced residents in the Edgeroi district and the Newell Highway. This proposal will create employment and new business opportunities within the village of Edgeroi and its surrounds during the construction and operational phases.

This SoEE has been prepared to address the proposed development in accordance with the *Narrabri Local Environment Plan 2012* (Narrabri LEP) and the Narrabri Shire Council development control plans. The SoEE addresses the matters for consideration outlined in Section 4.15 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). It focuses on the key assessment requirements and recommends mitigation measures, where possible, to reduce potential environmental impacts.

1.1 Proponent Details

The Proponent is Edgeroi Energy Pty Ltd. The contact person for the proposed development is Mr. Hewa Husain.

Table 1: Proponent Details

Proponent	**Edgeroi Energy Pty Ltd**
Contact Name	Mr. Hewa Husain
Address	PO Box 365
	Penrith NSW 2751
Email	hewa@thebenzinagroup.com
Phone	+61 414 858 858

2 Site Analysis

2.1 Authors and Guidelines

SMK Consultants have over 30-years of experience in preparing planning applications, layouts, and construction of development sites in the Narrabri area. This experience is incorporated in the design and assessment of the proposed development. The persons involved in the preparation of this Statement of Environmental Effects and its appendices are:

- **Bruno Nwokolo** B.Sc. M.Sc.
- **Peter Taylor** B.Sc. MEIANZ CIAg

2.2 Title Description and Land Tenure

The land titles and their descriptions are set out in the following table.

Table 2: Site Details and Title Description

Parameter	Value
Address	14456 Newell Highway, Edgeroi, NSW 2390
Lot and DP	Lots 1, 2, 3, and 4 DP1269526 Lots 60, 61, 63, and 66 DP753952 Lot 62 DP665543 Lots X and Y DP394753, and Lot 1 DP311343.
Owners	Edgeroi Energy Pty Ltd
Area of Property	3.61 Hectares
Local Government Area	Narrabri
Current Land Use	Service Station and residential properties
Land Use Zoning	RU5 – Village

2.3 Development Details

The Applicant has obtained development consent to demolish the existing buildings on the property. This work will include a clean-up of the area and removal of above and below ground structures. Once this is competed, a new Service Station with improved facilities will be constructed on the site. This will include reconstruction of the entry and exit intersections onto the Newell Highway, construction of one main service station building, construction of covered forecourt areas for the fuel bowsers, construction of pavement for the vehicles using the site, installation of stormwater management systems and landscaping of the site.

2.4 Site Location

The development proposal is located in the centre of Edgeroi village, approximately 25 kilometres north of Narrabri. The site has historically provided fuel to the local community and travellers. The old facility also included a shop, food sales, a bottle shop, and a post office. Traditionally, the site would have

provided a fuel depot and point of receival for a range of freight for local farmers. The site had a liquor licence which allowed the sale of alcohol to the surrounding community and was the point of community focus for this local area.

The site adjoins the Newell Highway and has been utilised by travellers as a rest stop as it included an external toilet facility and covered picnic table.

Edgeroi consists of a small village which has traditionally been a service point for the surrounding farming land. There are seven houses in the village in addition to the residence associated with the service station and two residences south of the old services station which also falls within the proposed development site.

Edgeroi also supports a grain receival facility utilised to store grain from surrounding farms. This facility was first constructed in the 1960's but has since been expanded with larger open grain bunkers. The shop and food sales in Edgeroi supported this grain operation.

Edgeroi once had a railway station, but this has been closed for some time. The rail upgrade has not redeveloped the railway station.

2.5 Development Site

The property address is 14,456 Newell Highway, Edgeroi, NSW 2390, and this will be referred to as 'the site' therein.

The site operated as a service station and shop up until about 2018 when it was the subject of a proposal for redevelopment. While the existing facilities on the site closed down at that time, the redevelopment did not proceed. The residences on the site remain occupied, however, Figure 1 shows the old service station while it was in operation.

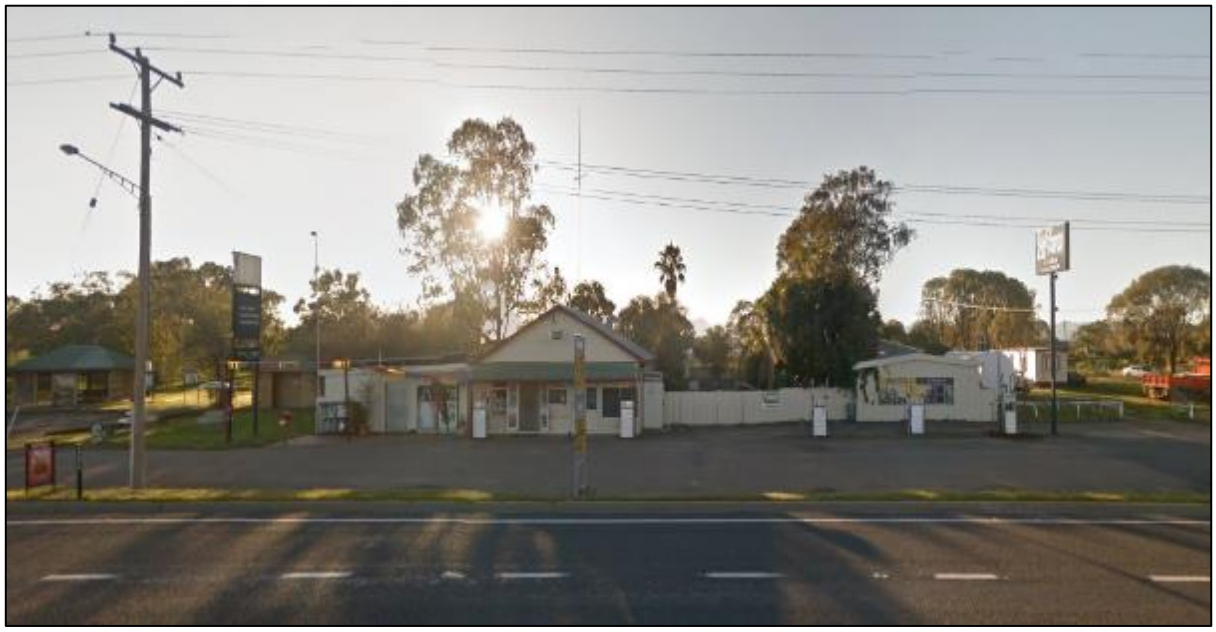
The existing shop and sales building consists of a single storey building located to the east of the Newell Highway. The service station facility originally included two unleaded petrol bowsers at the front of the shop and additional bowsers were installed to the immediate south, including a premium, unleaded and diesel bowser. The premium and unleaded fuel tanks remain below ground. The diesel tank was an above-ground tank which was removed when the site closed down in about 2017 / 2018.

Additional infrastructure on the site includes several open sheds, a residence on the east of the service station that was constructed separate to the main shop facility, and two residential buildings on the south of the service station that was acquired as part of the proposed develop. The original service station facilities for the residence included a tennis court on the southern side, and an extensive area of mown lawn along Queen Street on the eastern boundary of the site. The site also comprised an

external public toilet and shelter area used as a traveller's rest area. The shelter was demolished when it came under disrepair in about 2020.

There are three vehicle access points onto the site from the Newell Highway. The entry/exit points are located on the edge of the highway. A bitumen sealed road, which is located within the road reserve of the Newell Highway, provides the forecourt of the service station and access to the rest area.

Figure 1: Older photo of service station while it was in operation.



As a result of the closure of the service station, the site has been used for various purposes, other than a fuel station and shop. The site is currently being utilised for storage of a range of products for upgrade work on the Newell Highway. It was also used for storage of materials for the Inland Rail project. The following image shows the northern section of the site on 17 January 2023.

Figure 2: Current use of the site looking southeast from Newell Highway

2.6 Surrounding Land Uses

The site is bordered by similarly zoned properties (RU5 – Village) to the east (Lots 73, 72, 71, 70, 69, and 68 in DP 753952, and Lots 1 and 2 in DP 319145). The Newell Highway adjoins the site to the west and the Narrabri-Moree railway line is present directly west of the Newell highway.

The property to the west of the railway line comprises the Edgeroi Grain Receival facility (Lot 10 in DP819396) and is zoned RU1 – Primary Production.

The southern adjoining Lot is zoned RU1: Primary Production and supports agricultural activities (Lot 7303 DP1143134).

Land surrounding the village of Edgeroi is zoned RU1 - Primary Production and supports farmland and rural residences.

3 The Development Proposal

3.1 Proposed Development

This Development Application seeks approval for the construction of a service station at 14,456 Newell Highway in the village of Edgeroi. The development involves the replacement of an existing service station, which will require demolition works prior to construction commencing. The proposed development includes the following components:

- Demolition of existing service station site including removal of below ground fuel tanks and remediation activities in the event of contamination;
- Removal of main house and sheds at rear of site;
- Demolition and removal of the two residential buildings on the south of the old service station;
- Civil works to construct foundation and pavement areas;
- Construction of updated highway intersection/s;
- Construction of service station building and associated external covered areas;
- Installation of fuel bowsers and fuel storages;
- Installation of wastewater management system;
- Construction of onsite stormwater management system;
- Regeneration of existing bore or replacement and installation of appropriate water tanks for potable water supplies and fire-fighting water storage;
- Erection of signage for advertising and traffic flow within the site.
- Provision of onsite car and truck parking spaces for customers and staff;
- Landscaping.

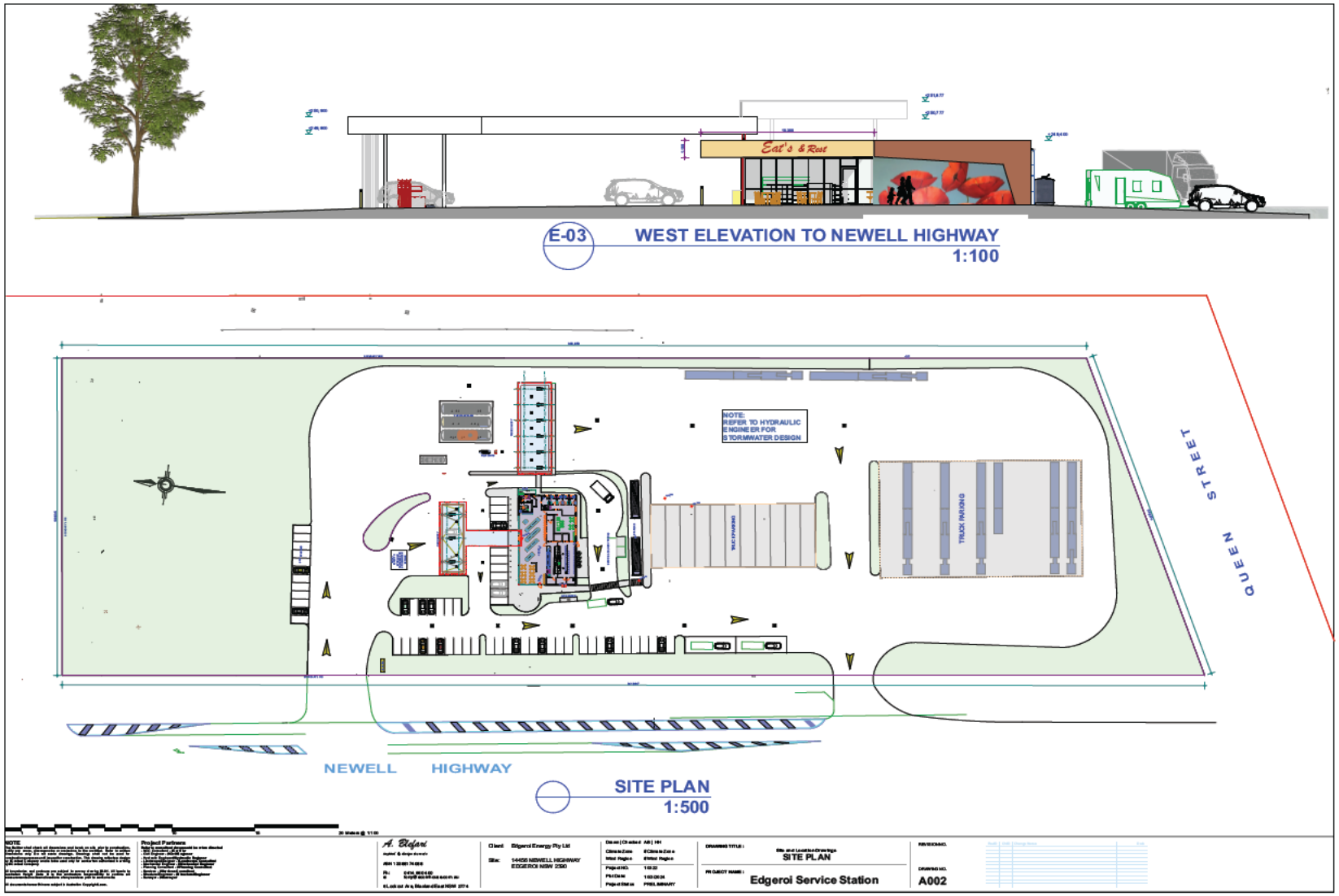
The land is not bushfire prone and therefore only limited asset protection zones are required. It is noted that there is an existing perimeter road surrounding the site to the north, south, west, and east. The bitumen sealed Queen Street borders the site to the south, east, and north, while the Newell Highway runs along the western boundary.

A stormwater management plan is being developed for the site and will form part of the construction documentation. The objective of the stormwater management plan will be to limit the rate of stormwater discharge from the site to the same or less than the existing site. The proposal will include onsite detention and settlement of stormwater in addition to the capture and reuse of this water. The stormwater system will aim to prevent any offsite discharge of water that may carry hydrocarbons from the service station forecourt.

Where required, relevant service authorities will be contacted to make the necessary arrangements for the provision of the upgrade and ancillary works. This may include provision of better communication connections to the site from the existing telecommunication lines running parallel with the Newell Highway.

The following figures provide the overall site plan of the proposed development.

Figure 3: The Site Plan and Western Elevation To Newell Highway



3.1.1 Proposed Service Station

The site aims to provide service station facilities for both light and heavy vehicles. A large part of the site will be developed to provide fuelling facilities for mainly south-bound trucks, parking areas to enable the drivers to rest and utilise the separate truckers rest rooms and lounge facility.

The proposed service station will include an underground tank system in preference to above ground tanks and fuel bowser. This will be required to include a monitoring bore network in accordance with NSW EPA recommendations.

The service station will also include a convenience store, café, bottle shop, and dining area. The old service station provided these services and therefore no change of use is occurring.

The intention is to operate the site on a 24/7 basis. This will provide for truck operators using the Newell Highway as well as drivers during grain harvest periods, with somewhere to obtain food and rest. This is necessary on the basis of requirements for mainly interstate truck drivers to maintain their rest periods.

No accommodation will be provided on this site.

The service station is expected to require between 2 and 3 people to staff the site. This will potentially require between 2 or 3 shifts per day. It is therefore expected that the site will require the equivalent of 10 or more full time staff to operate.

The following table presents the estimation of service vehicles required to operate the site.

Table 3: Service Station Deliveries

Delivery Type	Frequency	Vehicle Type	Number per week
Fuel	Weekly / Bi-Weekly	Triaxle / B-Double	3
Gas (Swap Bottles)	Quarterly	Medium Rigid Truck	1
Grocery	Monthly	Medium Rigid Truck	2
Drinks	Fortnightly	Medium Rigid Truck	2
Garbage	Weekly	Medium Rigid Truck	1
Confectionary	Fortnightly	Van	1
Milk	Daily	Small Truck / Ute	5
News Papers	Daily	Ute	1

Appendix 1 provides details plans of the proposed development.

3.1.2 Proposed Convenience Store, Cafe, and Trucker's Facilities

The convenience store will provide basic groceries for travellers and local residents. The proposed dining area will include 48 seats. There will also be a dedicated trucker's area which will include a lounge, shower facilities and ablution facilities.

Kitchen hours of operation will be from 6am until 10pm Monday to Sunday, with pre-prepared meals available outside of these hours.

3.1.3 Proposed bottle shop

The bottle shop will provide all forms of alcoholic drinks as takeaway for travellers and local residents between the trading hours of 10am to 10pm. The intent is to obtain a Packaged Liquor Licence from Liquor and Gaming NSW.

Under such a licence, alcohol consumption is not permitted within the property. Takeaway alcohol is the only option available.

The original service station had a similar licence and traded 7-days per week between 10am and 10pm and the proposed service station will operate in similar manner. This original licence was well utilised by the local community and the intent of the proponent is to continue this offering to the community.

3.1.4 Lighting

The service station site will require lighting for safety purposes and night operations. Lighting will be provided in two forms. Directional downward facing lights will be installed within the covered fuel bowser areas, illuminating refuelling areas for safety purposes. This lighting will be directed downward and will not aim to illuminate the immediate surrounds.

Softer directional lighting will be provided to mark out car parks and footpaths. This will be in the form of short post-mounted lights to illuminate areas for pedestrian use.

The proposal does not include large overhead lighting within the truck parking areas. This would have the potential to impact adjoining residences and will therefore be avoided.

3.1.5 Wastewater Management

Edgeroi does not have a sewage scheme and all existing houses and facilities dispose of wastewater via septic disposal systems. The site currently has several old septic tanks and absorption trenches in place which were sufficient for onsite wastewater disposal for the existing site. They will not be suitable for the larger service station facility that is proposed.

The applicant is proposing to utilise a packaged sewage treatment system which can be partially buried onsite. The intent is to dispose of the treated wastewater onsite. This treated wastewater can be applied to part of the surrounding landscaping as a sustainable reuse of this water.

3.1.6 Intersection onto Newell Highway

Benzina Group engaged a consulting firm specialising in traffic impact assessment to undertake a traffic impact assessment report (TIAS). The primary purpose of this report was to determine a suitable intersection upgrade for the upgraded service station facility.

The proposal service station entry and exit points to and from the Newell Highway will need to accommodate larger truck units. These units now include AB-triple road trains.

Transport for NSW were contacted and engaged in discussions to resolve the intersection requirements for the new site. The 2016-18 proposal for this site involved a northern entry using Queen Street as the entry point. This proposal has now been changed as it was determined that culvert crossing carrying Tarlee Creek under the highway to the immediate north would need to be moved and the option of making Queen Street a one way street was being considered. Further discussion with Council and Transport for NSW determined that this was unsuitable.

A revised layout has now been prepared and this is shown in the above figure 4. The revised proposal has two intersections onto the highway. The entry point will be at the northern end of the site. The exit point will be at the southern end.

The final layout of the entrance and exits have been submitted to Transport for NSW for their review. At present, an agreement in principle was reached for the entry and exit for this development proposal. The Newell highway has an 80 km/h speed limit and channelised left and right turning lanes which were developed for the old service station site. The existing left turn and right turn lanes will remain in place but alterations will be required for the road markings.

The revised intersections have been agreed to in principle with Transport for NSW. The intersections will be designed in accordance with Austroads standards for turning paths and pavement design.

At present, the old service station used part of the road reserve as the forecourt area. The new facility will be contained wholly within the property boundary. All vehicle manoeuvring will occur within the property boundary.

The existing 80 km/h speed limit within Edgeroi village area will be retained. The intersection design will be based on this speed limit in accordance with Austroad design requirements.

3.1.7 Proposed Car Parking

The proposed car parking for the development will need to include separate areas for trucks and light vehicles. The largest vehicle that may access the site at present would be an AB-Triple or a 13- axle rigid truck and two dog trailers, with a length of approximately 37m.

The proposed development includes a total of 96 on-site parking spaces, including 18 heavy vehicle parking spaces (eleven for heavy vehicles and eight for coaches). The proposal also includes six light vehicle refuelling spaces, five spaces at the high flow heavy vehicle fuel pumps and two accessible spaces. Parking areas also allow for car and trailers as well as single vehicles. Approximately 64-car parks are included. Three spaces are available for car and caravan combinations. This complies with TfNSW guidelines and the Narrabri Shire DCP.

3.1.8 Proposed Landscaping

The objective of the landscaping proposal will be to soften the impact of the proposed development on the streetscape and to present a tidy and aesthetically pleasing final development. This will be most significant in minimising the visual impact of the proposal on houses to the east within Edgeroi. Additionally, the landscaping will provide a more pleasing visual amenity, encouraging clients to stop at the site and limit the area of bitumen sealed surfaces to reduce overall heat emissions from the paved area.

As per Figure 3 (Drawing A002) presented as the overall preliminary site plan, landscaping will be carried out along the majority of the perimeter of the site. The western area between the building and the highway corridor will be landscaped with mainly short shrubs and grass to ensure that sight distances are not impeded by plant growth. Internal areas associated with the car parking area and entrance to the trucker's lounge will also be landscaped with shrubs and grass to soften these areas and limit the area of exposed pavement during hot summer periods.

3.1.9 Proposed Signage

The proposal seeks approval for advertising signage on the premises as part of the overall development. The proposed signage will reflect the service station's corporate branding. The preliminary proposal will involve:

- 9m Prime Sign - internally illuminated;
- Directional Signage for entry and exit points - not illuminated;
- Air and Water Signage - not illuminated;
- Canopy / Building Fascia Sign to show fuelling facilities - not illuminated.

The final layout of signs will be presented at the construction certificate phase of the development.

3.2 Infrastructure Requirements

3.2.1 Telecommunications and Electricity

Telephone and power services are available to the site and will continue to service the proposed upgrade. Service authorities will be contacted to obtain specific requirements once the Development Application has been lodged with and approved by Council.

3.2.2 Water Supply

Water supply needs have been calculated from guidelines utilised to determine typical wastewater design flows for various developments.

The current Australian Standard AS/NZS 1547:2012 does not provide any planning values for non-domestic wastewater flows in Australia. In view of absence of suitable planning data at a state level, the '*Code of practice – onsite wastewater management'*, issued by the EPA Victoria (2016), was utilised to determine typical wastewater design flows generated by the proposed service station.

Table 4 includes the predicted wastewater design flow calculations for the facility on a daily basis. It is noted that wastewater associated with staff is included in two categories. This has been carried out with the intent of providing conservative design flow estimates for the proposed development.

Table 4: Predicted Commercial Wastewater Flow Allowances

Facility	Source	Peak Day Usage People	Design Flow Per Person (L/day)	Total Design Flow (L/day)
Restaurant	Prepared Food / Meals	132	15	1,980
Shop	Staff	15	15	225
Staff room	Staff	15	60	900
Laundry	-	11	115	1,265
Shower Facility	-	45	40	1,800
Toilets	-	132	10	1,320
Total				**7,490**

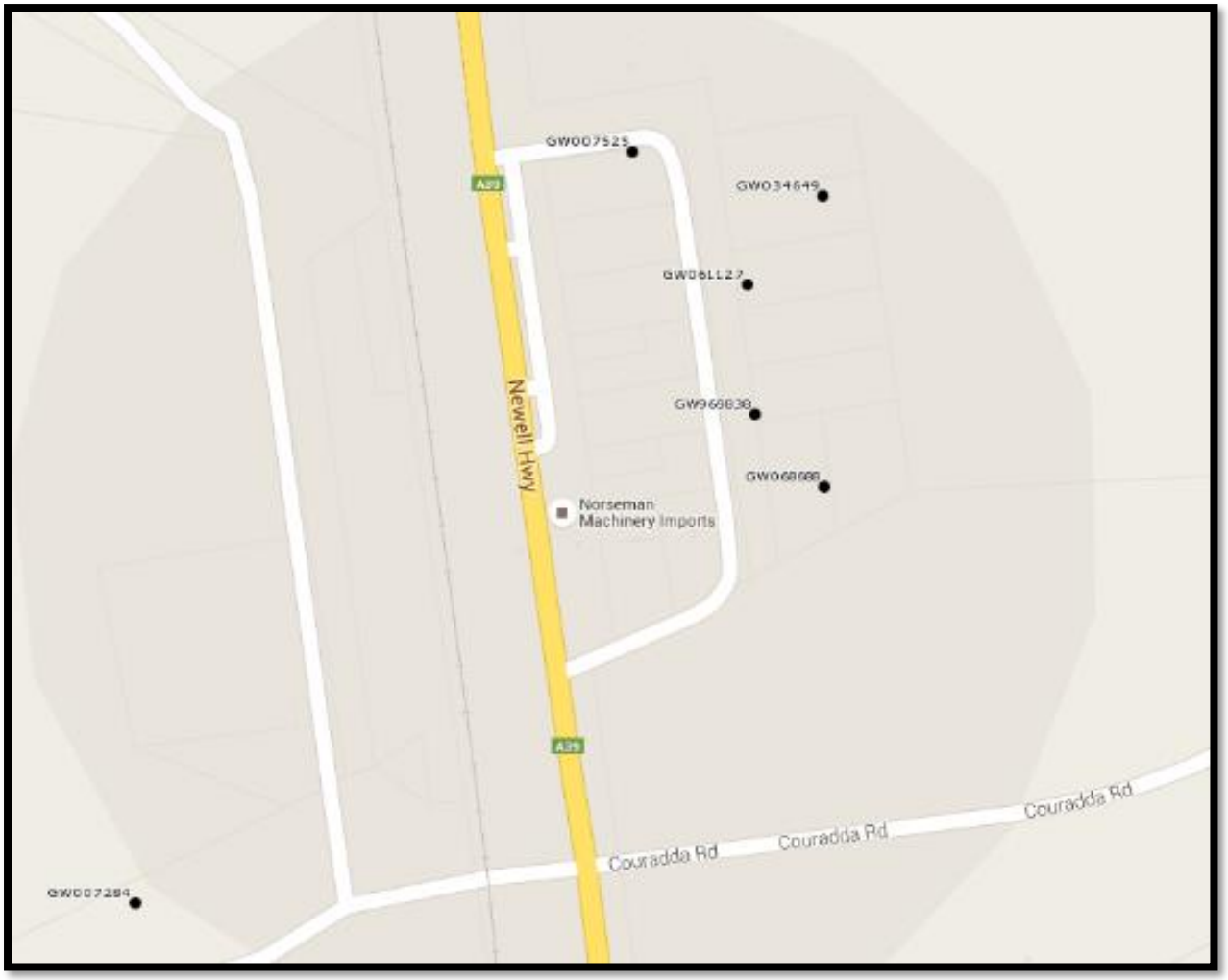
Based on the above calculations, **the maximum daily design flow for the proposed development is 7,490 L per day.** This is equivalent to 2.7 ML per annum.

While rainwater harvesting could be used to supplement supply, the primary source of water would need to be groundwater. As this facility would be referred to as a business, the use of groundwater under the provision of domestic and stock use is not permissible. The option for a water source would be to purchase a water entitlement and obtain a work approval for a new bore on the site through Water NSW.

There is currently one bore (GW007252) on the northern section site. This is an original stock and domestic bore utilised as the primary water supply for the property. No bore log data is available for this bore. There are an additional four (4) bores in the vicinity of the proposed development, as shown in Figure 8. Yield data is only available for bore GW969838 which shows a yield of 3.8 L/s. While it is impossible to exactly predict a new bore's yield, or an existing one without the appropriate data, the fact that a nearby bore has a yield potential of 328,320L/day implies another bore in the same vicinity would easily achieve the required 7,490L/day.

Groundwater is considered reliable in the local area. The primary aquifer available in the local area is the Great Artesian Basin within the Surat Groundwater Source. Bore logs shows the top aquifer starts at 90m to provide a water supply. Water quality is considered to be slightly saline but suitable for human consumption. Standing water level was recorded as 27m below ground in 2011. This may have risen as a result of the Cap and Pipe scheme which has sealed off many open flowing bores to the west, resulting in an increase in water levels across the Artesian Basin.

Figure 4: Bores in the Vicinity of the Development Site



4 Statutory Matters

This application seeks to upgrade the facilities an existing service station site.

The development proposal is considered Local Development under Part 4 of the *Environmental Planning and Assessment Act, 1979* as it does not exceed local development thresholds. The proposal therefore requires development consent from the Narrabri Shire Council without a requirement for the application to be assessed by a Joint Regional Planning Panel.

The development is also classified as 'Integrated Development' pursuant to Section 4.46 of the EP&A Act, as approvals from other government agencies are required, including Transport for NSW, Water NSW and NSW Liquor and Gaming.

4.1 Commonwealth Legislation and Regulations

4.1.1 Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act) is the Australian Government's central piece of environmental legislation. It provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities, and heritage places defined in the EPBC Act as Matters of National Environmental Significance (MNES). The EPBC Act provides guidelines for an assessment process to determine whether a development needs referral to the Federal Department of Environment, Water, Heritage, and the Arts (DEWHA) in Canberra.

The proposed development was considered in accordance with the EPBC Act. The proposal is not considered to have the potential to significantly impact on any Matters of National Environmental Significance, as the site has mostly been cleared of native vegetation and only limited clearing is required. The site does not contain any matters of National Significance. The proposal does not involve a nuclear action. The proposal does not impact any Commonwealth land.

4.2 State Legislation, Regulations and Policies

4.2.1 Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment Act 1979* provides the framework for NSW Planning Legislation. Under this Act, local Councils prepare Local Environmental Plans (LEPs) that specify planning controls for specific parcels of land. The Act also provides for State Environmental Planning Policies (SEPPs). The applicable SEPPs have been discussed in detail within this report. This SoEE has been prepared in accordance with the requirements of this Act. It provides an environmental assessment and details of how development will be

constructed and operated to protect the environment, the community and provide for ecologically sustainable development.

4.2.2 Environmental Planning and Assessment Regulation 2000

The NSW *Environmental Planning and Assessment Regulation 2000* requires that certain documents must accompany a development application. This Statement of Environmental Effects and its attachments satisfy these requirements.

Under Part 1 Clause 4, Designated Development is described as:

1) *Development described in Part 1 of Schedule 3 is declared to be designated development;*
2) *for the purposes of the Act unless it is declared not to be designated development by a provision of Part 2 or 3 of that Schedule;*
3) *Part 4 of Schedule 3 defines certain words and expressions used in that Schedule;*
4) *Part 5 of Schedule 3 prescribes how certain distances are to be measured for the purposes of that Schedule;*

   Schedule 3, as in force when a development application is made, continues to apply to and in respect of the development application regardless of any subsequent substitution or amendment of that Schedule, and the application is unaffected by any such substitution or amendment;
5) *References in subclause (4) to Schedule 3 include references to Schedule 3 to the Environmental Planning and Assessment Regulation 1994.*

Schedule 3 Designated Development Part 27 states that petroleum works are designated if;

Petroleum works:

a) *that produce crude petroleum or shale oil, or*
b) *that produce more than 5 petajoules per year of natural gas or methane, or*
c) *that refine crude petroleum, shale oil or natural gas, or*
d) *that manufacture more than 100 tonnes per year of petroleum products (including aviation fuel, petrol, kerosene, mineral turpentine, fuel oils, lubricants, wax, bitumen, liquefied gas and the precursors to petrochemicals, such as acetylene, ethylene, toluene and xylene), or*
e) *that store petroleum and natural gas products with an intended storage capacity in excess of:*
   i. *200 tonnes for liquefied gases, or*
   ii. *2,000 tonnes of any petroleum products, or*

f) that dispose of oil or petroleum waste or process or recover more than 20 tonnes of oil or petroleum waste per year, or

g) that are located:

i. within 40 metres of a natural waterbody or wetland, or

ii. in an area of high water table or highly permeable soils, or

iii. within a drinking water catchment, or

iv. on a floodplain.

The proposed service station development will store a maximum of 330 kL of flammable liquids in three underground storage tanks, divided into the components displayed below.

Table 5: Summary of Fuel storage

Fuel Type	Volume (L)	Density (kg/m^3)	Weight (Tonne)
Diesel	70,000	836	58.520
Diesel	40,000	836	33.440
Diesel	90,000	836	75.240
AdBlue	20,000	1093	21.860
UPL	80,000	735	58.800
E10	30,000	743	22.290
		Total	**270.150**

Total storage capacity on site is therefore approximately 270 tonnes, well below the designated development criteria (2,000 tonne) stated in the Regulations.

In addition to the above information, the proposed development does not pose an additional significant environmental impact relative to the existing development, and as such is not Designated, as stated in Clause 35 of Schedule 3 included below:

> *Part 2: Are alterations or additions designated development?*
> *35: Is there a significant increase in the environmental impacts of the total development?*
> *Development involving alterations or additions to development (whether existing or approved) is not designated development if, in the opinion of the consent authority, the alterations or additions do not significantly increase the environmental impacts of the total development (that is the development together with the additions or alterations) compared with the existing or approved development.*
> *Note. Development referred to in this clause is not designated development for the purposes of section 77A of the Act. This means that section 98 of the Act (Appeal by an*

objector) will not extend to any such development even if it is State significant development.

4.2.3 Biodiversity Conservation Act 2016

The BC Act outlines requirements in relation to the listing of threatened species, biodiversity impact assessment, offsetting and related offences. The assessment of biodiversity values on land and the impacts of activities on those biodiversity values are to be carried out in accordance with the Biodiversity Assessment Method (BAM). The objective of the BAM is to adopt a standard approach that will result in no net loss of biodiversity in NSW.

The Act also outlined the Biodiversity Offset Scheme (BOS). Development that is subject to the BOS scheme includes development needing consent under Part 4 of the EP&A Act (excluding complying development), activities under Part 5 of the EP&A Act, State significant development and State significant infrastructure.

Where development or an activity is "likely to significantly affect threatened species", a Biodiversity Development Assessment Report (BDAR) must be prepared, and consent authorities are required to consider the likely impact of the proposed development on biodiversity values before granting approval.

Section 7.2. of the BC Act states that an activity is "likely to significantly affect threatened species" (and therefore whether a BDAR is required) is reached if:

- The test in section 7.3 of the BC Act identifies matters that may significantly impact threatened species, populations or endangered communities;
- The Biodiversity Offset Scheme (BOS) Threshold is exceeded; and
- The development is carried out in a declared area of outstanding biodiversity value.

The subject land was assessed using the online Biodiversity Offsets Scheme Entry Tool, which provides an area clearing threshold. This relates to the maximum area of classified native vegetation which can be cleared before a BDAR is triggered. For this site, the area clearing threshold is 2,500 square metres.

The majority of the proposed development site has already been cleared of native vegetation and developed as sealed or gravelled areas, or managed lawn and garden areas in association with the previous developments. While additional vegetation will be removed as part of the proposal, the remaining vegetation is dominated by non-native species and is thus not considered to constitute a native vegetation community. Several Bimble Box and Weeping Myall trees will be retained on this site as part of the landscaping works. These area located at the northern and southern ends of the development site.

Based on preliminary site investigations, the area clearing threshold will not be exceeded.

The adjoining Tarlee Creek is mapped as a corridor of high biodiversity value. The remainder of the site is not mapped as having any high biodiversity value. The proposed development will include a range of mitigation measures to prevent impact on Tarlee Creek. These will include onsite stormwater management and prevention of potential contaminated runoff from entering the creek system.

A test of significance has been prepared and is presented in appendix 4. The test concludes that the proposed development is located within a highly modified habitat within the Village of Edgeroi. Previous and current activities within the Village have reduced the quality and extent of native vegetation and therefore habitat value in the Village. Based on this assessment, no further investigation in the form of a BDAR or SIS is required unless an area of more than 2,500 square metres of vegetation classified as containing more than 50-percent native species is cleared. The proposed development is designed to avoid clearing where possible.

4.2.4 National Parks and Wildlife Act 1974

The proposal has been prepared in accordance with the requirements of this Act. There are no national parks, nature reserves, regional parks, state conservation areas, historic sites, karst conservation areas or Aboriginal areas within the subject area.

A preliminary assessment of cultural heritage was undertaken and included in section 5.4 of this report. An inspection of the subject site was conducted in accordance with Due Diligence methodologies to assess the potential impact of the proposed development on any items or sites of cultural significance. No sites of cultural significance were observed within the footprint of the proposed development site.

These considerations protect the objectives of the Act.

4.2.5 The Heritage Act 1977

There are no known non-Indigenous heritage items identified within or near the development site.

4.2.6 Water Management Act 2000

The objects of the *Water Management Act 2000* are to provide for the sustainable and integrated management of the water sources of the State for the benefit of both present and future generations.

A small contour bank is located within the boundary of the northern section of Queens Street. The bank reduces the frequency of minor flood events in Tarlee Creek from entering Edgeroi. Larger floods in Tarlee Creek and overland flow events enter Edgeroi to a depth of approximately 400mm. The Newell Highway acts as a levee structure as it is not overtopped within Edgeroi. Flows in Tarlee Creek beneath the highway are limited by the size of the box culverts located to the immediate north of the intersection of Queen Street and the highway. This culvert may be subject to an upgrade as part of current Newell Highway upgrade projects. Any increase in size of this culvert would reduce the incidence of inundation within Edgeroi.
As a result of this issue of inundation within Edgeroi, the service station site will be constructed on a raised pad. This raised pad will not trigger a requirement for a floodwork approval under the Water Management Act 2000.

The site will require a Work Approval and water access licence (WAL) for an onsite bore. This will be subject to an application to Water NSW and purchase of a water entitlement from the open water market. At present, the proposal involves decommissioning of the existing bore and redrilling the bore to obtain a water supply for the service station. The existing bore is old and therefore considered unreliable in regard to obtaining an appropriate water supply. Once this is completed, a Water Access Licence would be obtained and linked to the approved bore to provide a legal source of potable water to the site.

Some water will be obtained from rainwater capture and storage with a detention system. This water would be recycled for landscape watering. The capture of surface runoff within the site is permissible without obtaining a licence under the Water Management Act 2000 as such works would relate to detaining potentially contaminated water onsite.

4.2.7 Environmental Planning and Assessment Amendment (Siding Spring Observatory) Regulation 2016

The aim of the *Environmental Planning and Assessment Amendment (Siding Spring Observatory) Regulation 2016* is to ensure that development in the vicinity of the Siding Spring Observatory does not impact the effectiveness of the observatory, around which the Dark Sky Region in NSW is centered.

Clause 92 of the *Environmental Planning and Assessment Amendment (Siding Spring Observatory) Regulation 2016*, under the *Environmental Planning and Assessment Act 1979*, requires consent authorities to take into consideration the Dark Sky Planning Guideline when determining a development application for Regional development, State significant development or designated development on land within 200km of the observatory.

The proposed development is 146km from the Observatory; however, it is classed as Local Development and does not constitute Regional development, State significant development

or designated development. The *Environmental Planning and Assessment Amendment (Siding Spring Observatory) Regulation 2016* is therefore not applicable to the proposed development.

4.3 State Environmental Planning Policies and Development Codes

The following table presents a summary and comment on State Environmental Planning Policies and development code relevance to the proposed development.

Table 6: State Environmental Planning Policies and Development Codes

SEPP Title	Relevance
State Environmental Planning Policy (Planning Systems) 2021	Not Relevant
State Environmental Planning Policy (Biodiversity and Conservation) 2021	Review provided below
State Environmental Planning Policy (Resilience and Hazards) 2021	Review provided below
State Environmental Planning Policy (Transport and Infrastructure) 2021	Review provided below
State Environmental Planning Policy (Industry and Employment) 2021	Review provided below
State Environmental Planning Policy (Resources and Energy) 2021	Not Relevant
State Environmental Planning Policy (Primary Production) 2021	Review provided below
State Environmental Planning Policy (Precincts – Eastern Harbour City) 2021	Not Relevant
State Environmental Planning Policy (Precincts – Central River City) 2021	Not Relevant
State Environmental Planning Policy (Precincts – Western Parkland City) 2021	Not Relevant
State Environmental Planning Policy (Precincts – Regional) 2021	Not Relevant

4.3.1 State Environmental Planning Policy (Resilience and Hazards) 2021

4.3.1.1 Hazardous and Offensive Development

Chapter 3 of the SEPP applies to proposals falling under the definition of *'potentially hazardous industry'* or *'potentially offensive industry'*. Under the SEPP, the permissibility of industrial proposals is linked to safety and pollution control performance. The SEPP aims to ensure the merit of proposals are properly assessed before being determined. It aims to ensure that developments can only proceed if they are suitably sited and can demonstrate that they will be built and operated with an adequate level of safety.

In a potentially hazardous industry, any development proposing the storage and handling of goods considered hazardous goods needs to be screened and have a risk assessment completed.

A screening process was undertaken by Fuel System Designers for the proposed development. The screening process included applying a rigorous analysis considering the hazardous materials to be stored, boundary setbacks, transportation services, external consequences, and the probability of a hazardous event. Calculations were undertaken in keeping with the Department of Planning's – Applying SEPP 33 and the Planning & Infrastructure's Assessment Guideline – Multi-level Risk Assessment.

The assessment is included in full in Appendix 3 of this report. In summary, the results of the screening process undertaken for the proposed service station development in Edgeroi indicate that it is not a potentially hazardous development. As such, no further analysis (i.e. Preliminary Hazard Analysis) is necessary.

4.3.1.2 Remediation of Land

Chapter 4 of the *Resilience and Hazards SEPP 2021* covers remediation of land and aims to promote the remediation of contaminated land for the purpose of reducing the risk of harm to human health or other aspects of the environment. Where it is proposed to rezone the land or to carry out a development that would change the use of the land a consent authority must consider whether the land is contaminated and if it is, whether the land is suitable for the proposed development in its present state or whether remediation is required. Even where no change of use is proposed a consent authority must consider whether the land is suitable for the proposed development if the land has been used for a purpose listed in Table 1 of Appendix 1 in Contaminated Land Planning Guidelines (NSW Government, 2018 (Draft)).

There is an existing service station on the development site. NEO Consulting Pty Ltd conducted a targeted Environmental Site Assessment report (included as Appendix 5) for the development site in 2021 to identify if hydrocarbon, BTEX, TRH and Metals 8 Contamination existed across the site.

On the 4th of November 2021 NEO Consulting Pty Ltd took representative soil samples from various locations and depths across the site with the intent of identifying hydrocarbon discharge from the UPSS, pipes and dispensing units. Whilst onsite NEO Consulting Pty Ltd inspected the site for water monitoring wells, no monitoring wells were located onsite at the time of the inspection.

No soil sample taken whilst doing the field work had any indication of contamination visually or aromatically. Laboratory analysis of each soil sample indicates the site is well within the acceptable contamination and had no evidence of reaching any health-based investigation levels. The site was deemed suitable for continued use as determined in accordance with the NSW EPA Guidelines for assessing Service Station Sites 2003 and Schedule NEPM 2013 B5c 5a.

Contamination from the primary source of hydrocarbons outside of the tank pit area at the site was not evident. No soil sample extracted from across the site was noted as failing against the assessment criteria.

The report concludes that the site is suitable for use provided the following recommendations are implemented:

- Considering the site has been closed, the UPSS onsite should be decommissioned in accordance with NSW SafeWork or re-commissioned for use.
- Any soils requiring excavation, on-site reuse and/or removal must be classified in accordance with "Waste Classification Guidelines Part 1: Classifying Waste" NSW EPA (2014);
- All on site structures should be assessed within a Hazardous Materials Survey prior to demolition.

4.3.2 State Environmental Planning Policy (Transport and Infrastructure) 2021

The site is located on the Newell Highway which is classified as a state road (A41) under Section 138 of the Roads Act 1993. As the proposed development has frontage to a classified road, the provisions of State Environmental Planning Policy (SEPP) (Transport and Infrastructure) 2021 apply to the site.

Part 2.3 Division 17 refers specifically to road infrastructure and is relevant to the proposed site redevelopment. Clause 2.119 states:

"The consent authority must not grant consent to development on land that has a frontage to a classified road unless it is satisfied that:

a) where practicable, vehicular access to the land is provided by a road other than the classified road, and

b) the safety, efficiency and ongoing operation of the classified road will not be adversely affected by the development as a result of:

i. the design of the vehicular access to the land, or

ii. the emission of smoke or dust from the development, or

iii. the nature, volume or frequency of vehicles using the classified road to gain access to the land, and

c) *The development is of a type that is not sensitive to traffic noise or vehicle emissions, or is appropriately located and designed, or includes measures, to ameliorate potential traffic noise or vehicle emissions within the site of the development arising from the adjacent classified road".*

The SEPP further specifies that a consent authority must consult with the road authority and have regard for its feedback in relation to traffic safety, road congestion and other matters as specified under Clause 3.58:

"(2) Before determining a development application for development to which this clause applies, the consent authority must:

a) *give written notice of the application to Transport for NSW (TfNSW) within 7 days after the application is made, and b)*
b) *take into consideration the matters referred to in subsection (3).*

(3) The consent authority must take into consideration—

a) *any submission that TfNSW provides in response to that notice within 21 days after the notice was given (unless, before the 21 days have passed, TfNSW advises that it will not be making a submission), and*
b) *the accessibility of the site concerned, including—*
    i. *the efficiency of movement of people and freight to and from the site and the extent of multi-purpose trips, and*
    ii. *the potential to minimise the need for travel by car, and*
c) *any potential traffic safety, road congestion or parking implications of the development.*

The subject site enjoys current safe access directly from the Newell Highway and its redevelopment will incorporate the provision of improved ingress and egress arrangements, suited to heavy vehicles.

A Transport Impact Assessment (TIA) has been prepared by Stantec in 2023. The Report has considered existing traffic conditions, proposed access arrangements for the site and its on-site parking provisions and has concluded that the project is capable of operating without adverse impact on traffic conditions. The 2023 investigation utilised the northern intersection of Queen Street and the Newell Highway as an entrance to the new service station site. Further discussion with Transport for NSW and Narrabri Shire Council has resulted in moving the service station site to the south. Queen Street will not be used as the entrance to the site.

The 2023 TIA provides details of the traffic impact of the proposed development only. The revised site plans provide the current location and layout of intersections for the entrance and exit to the revised service station layout. These plans are provided in appendix 1.

The traffic assessment report for proposed development is included in full in Appendix 6, and findings are summarised in Section 3.1.6 and 6.10 of this SoEE.

4.3.3 State Environmental Planning Policy (Industry and Employment) 2021

The proposed signage is consistent with the objectives of the Policy and satisfies the assessment criteria specified in Schedule 5 of the Policy. The proposed signage:

- is compatible with the character of the area and locality of the Newell Highway;
- does not detract from the amenity or visual quality of any environmentally sensitive areas, heritage areas, natural or other conservation areas, open space areas, waterways, rural landscapes or residential areas;
- does not obscure or compromise important views, dominate the skyline or reduce the quality of vistas;
- respects the viewing rights of other advertisers;
- contributes to the visual interest of the streetscape, setting and landscape;
- does not protrude above buildings, structures or tree canopies in the area;
- is compatible with the scale, proportion and other characteristics of the site and buildings;
- respects important features of the site and buildings and;
- does not reduce the safety for any public road, pedestrians, bicyclists or children by obscuring sightlines from public areas.

Furthermore, illumination will not result in unacceptable glare, affect safety for pedestrians, vehicles or aircraft or detract from the amenity of any residence or other form of accommodation. The proposed scale, proportion and form of the proposed signage is appropriate for the streetscape, setting and landscape.

Advertisements and signage to which this Part applies.
The proposed signage is business identification signage, and it is not located within an area that prohibits advertisements. The proposed development application requires approval for the proposed signage from the Consent Authority – Narrabri Shire Council.

The proposed signage is not located on transport corridor land. The application will be advertised in accordance with section 79A of the Act. As this advertisement is within 250m of a classified road, clause 18 of the act applies, accordingly, the application will be provided to TfNSW at the same time that it is advertised in accordance with section 79A of the Act. While the proposed advertisements protrude above the dominant skyline, buildings, structures or

tree canopies, the consent authority may grant consent to the display under Chapter 3 of the SEPP.

4.3.4 State Environmental Planning Policy – Primary Production and Rural Development 2021

The subject site is zoned RU5 Village under the *Narrabri Local Environmental Plan 2012*. Therefore, the proposed development is consistent with the rural development planning Policy. The site has an existing use as a service station.

4.3.5 State Environmental Planning Policy (Biodiversity and Conservation) 2021

Chapter 4 of the *SEPP (Biodiversity and Conservation) 2021* applies to land within each local government area listed in Schedule 2 of the SEPP, with certain exceptions such as land zoned RU1 – Primary Production or land dedicated or reserved under the *National Parks and Wildlife Act 1974*, for example. The Narrabri LGA is included in this schedule, and none of the exceptions listed apply to the site. The proposal is therefore to be assessed pursuant to Chapter 4 of the SEPP.

Clause 4.9 of the SEPP sets out the development assessment process where the proposal has an area of more than 1 Hectare and no approved Koala plan of management has been prepared for the land. These conditions apply to the current proposal.

An excerpt is provided below:

3) *If the council is satisfied that the development is likely to have low or no impact on koalas or koala habitat, the council may grant consent to the development application.*
4) *If the council is satisfied that the development is likely to have a higher level of impact on koalas or koala habitat, the council must, in deciding whether to grant consent to the development application, take into account a koala assessment report for the development.*
5) *However, despite subsections (3) and (4), the council may grant development consent if the applicant provides to the council—*

   (a) information, prepared by a suitably qualified and experienced person, the council is satisfied demonstrates that the land subject of the development application—

      (i) does not include any trees belonging to the koala use tree species listed in Schedule 3 for the relevant koala management area, or

      (ii) is not core koala habitat, or

   (b) information the council is satisfied demonstrates that the land subject of the development application—

      (i) does not include any trees with a diameter at breast height over bark of more than 10 centimetres, or

(ii) includes only horticultural or agricultural plantations.

The SEPP provides the following definitions:

- ***Core Koala Habitat*** *means*:
  a) an area of land which has been assessed by a suitably qualified and experienced person as being highly suitable koala habitat and where koalas are recorded as being present at the time of assessment of the land as highly suitable koala habitat, or
  b) an area of land which has been assessed by a suitably qualified and experienced person as being highly suitable koala habitat and where koalas have been recorded as being present in the previous 18 years.
- ***Koala Habitat*** means koala habitat however described in a plan of management under this Chapter or a former Koala SEPP and includes core koala habitat.

Site Assessment

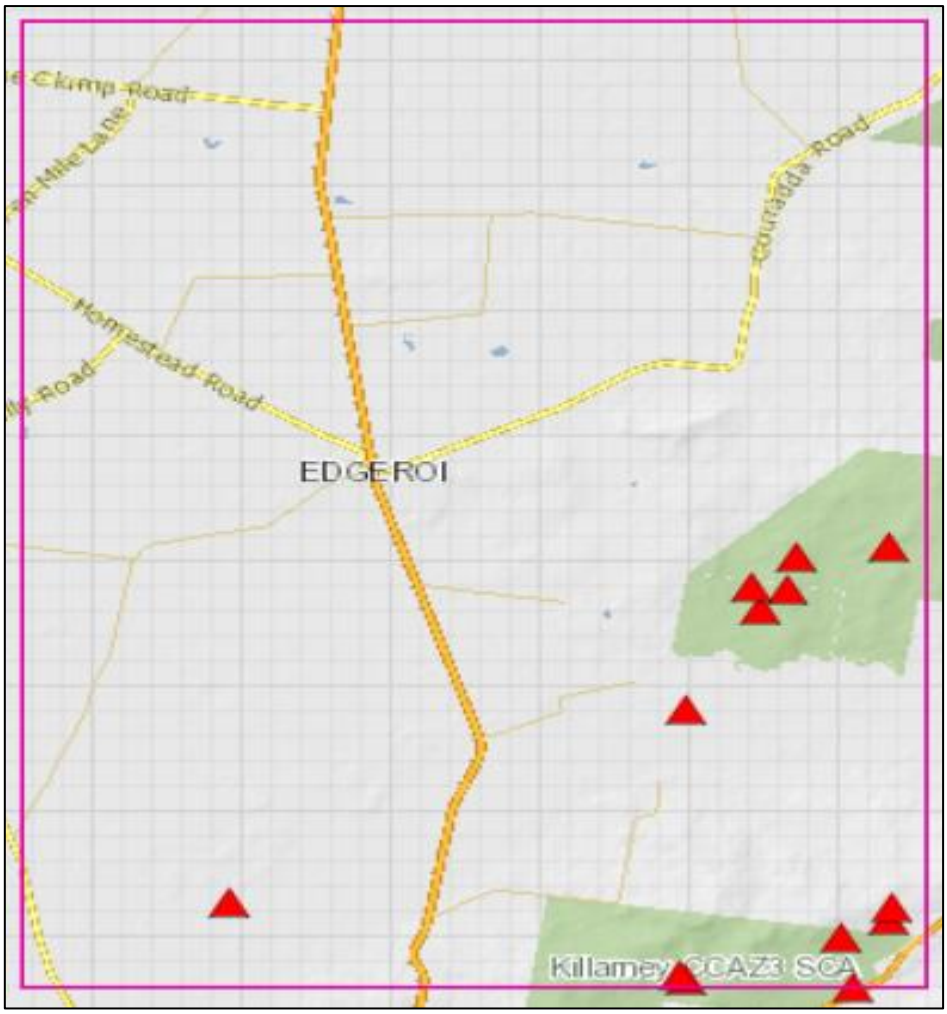
The assessment requires that the land is assessed for the presence of potential Koala habitat or core Koala Habitat.

The majority of the site has been cleared of native vegetation and has been developed or disturbed in association with the previous developments. The site includes a number of Bimble Box trees (*E. populnea*) which are a listed Koala feed tree. As such the subject area is considered as potential koala habitat.

Figure 9 includes a map of all the recorded koala sightings within the site. The red triangles indicate recorded sightings. There is no known record within 5-kilometres of the proposed development site. No historical records of a “resident population” exist for the project area. Koala records show some sightings in the Bobbiwaa Conservation area located 7.5 km to the east of Edgeroi. No Koala sighting records are noted for Edgeroi.

There is no evidence of a resident population of Koalas in the local area. No scats or tracks of Koala have been identified on or around the Bimble Box trees. This is potentially due to the disturbance within the Village area and the presence of dogs and the limited number of feed trees. There is no significant woodland corridor leading to or through the Village area to allow Koala to migrate to the few remaining feed trees within the Village area.

Figure 5: Koala Records in a 10km x 10km area centred around the subject site.



The lack of Koala habitat in Edgeroi and the lack of sightings in the town area indicate that Koala do not use the Village area. On this basis, no further investigation is required for this SEPP.

4.4 Regional Plan

4.4.1 New England Northwest Regional Plan 2036

The New England Northwest is one of the State's largest agricultural and food producers. To ensure that the region makes the most of our productive agricultural land and associated business opportunities, investment is required in infrastructure, including construction and manufacturing materials to provide the foundations for a strong and prosperous future.

The Plan outlines the following regionally focused goals:

- A strong and dynamic regional economy
- A healthy environment with pristine waterways
- Strong infrastructure and transport networks for a connected future

- Attractive and thriving communities.

The key priorities for the Narrabri LGA of relevance to this proposal include:

- better understand housing needs and help to make life more affordable for residents;
- increase the number of local jobs;
- advocate for better infrastructure and services;
- support the growth of agricultural businesses and tourism across the Shire.

The proposed development will provide jobs to support rural development and infrastructure. The development is therefore considered to align with the key priorities for the Narrabri shire.

4.5 Environmental Planning and Assessment Regulation 2000

The *Environmental Planning and Assessment Regulation 2000* requires that certain documents must accompany a development application. This Statement of Environmental Effects and its attachments satisfy these requirements.

4.5.1 Local Environmental Plan

The *Narrabri Local Environment Plan 2012* (NLEP 2012) is the current local government planning policy for the Shire. The framework of the LEP is derived from *the Environmental Planning and Assessment Act 1979*.

4.5.2 Land Use Definition

The proposed development can be defined as a 'service station' or 'highway service station'. These development types are defined in the LEP in the following manner.

> *"**Service station** means a building or place used for the sale by retail of fuels and lubricants for motor vehicles, whether or not the building or place is also used for any one or more of the following:*
>
> *(a) the ancillary sale by retail of spare parts and accessories for motor vehicles,*
> *(b) the cleaning of motor vehicles,*
> *(c) installation of accessories,*
> *(d) inspecting, repairing, and servicing of motor vehicles (other than body building, panel beating, spray painting, or chassis restoration),*
> *(e) the ancillary retail selling or hiring of general merchandise or services or both.*

> ***highway service centre** means a building or place used to provide refreshments and vehicle services to highway users. It may include any one or more of the following:*

(a) a restaurant or cafe,
(b) take away food and drink premises,
(c) service stations and facilities for emergency vehicle towing and repairs,
(d) parking for vehicles,
(e) rest areas and public amenities."

Under the *Narrabri Local Environmental Plan* 2012 (NLEP), service stations and highway service centres are not explicitly mentioned as permitted in Zone RU5 - Village, however they are 'permitted with consent', subject to approval from the Narrabri Shire Council. The site has an existing use right on the basis that it has been operating as a service station and convenience store for a period of more than 30-years.

The subject land is zoned as RU5 – Village under the *Narrabri Local Environment Plan 2012* (NLEP). The proposal meets all objectives as prescribed by the *Narrabri Local Environmental Plan 2012* for zone RU5 – Village. These are listed below:

- ***To provide for a range of land uses, services and facilities that are associated with a rural village***.

Comment: The land use will not change as there is an existing service station on the site. This type of development is vital to rural villages.

- ***To enable development of a scale compatible with the general residential character of village areas and which will not prejudice the viability of established shopping and commercial centres.***

Comment: The development will be of an appropriate size for the village and will not prejudice the viability of established shopping and commercial operations.

The proposal is therefore considered to align with the overall objectives of the zone and is permissible with consent from the Narrabri Shire Council.

4.5.3 Heritage Conservation

Part 5, Clause 5.10 of the LEP deals with heritage items and heritage conservation areas. The objectives of this clause are as follows:

a) To conserve the environmental heritage of Narrabri,
b) To conserve the heritage significance of heritage items and heritage conservation areas, including associated fabric, settings, and views,
c) To conserve archaeological sites,
d) To conserve Aboriginal objects and Aboriginal places of heritage significance.

The proposal is not in the immediate vicinity of any heritage items in accordance with the Council's Local Environmental Plan or under State or Federal legislation.

4.5.4 Bushfire Hazard Reduction

Section 5.11 of the LEP deals with land that is considered bushfire prone and may require bushfire hazard reduction work. Bushfire hazard reduction work authorised by the *Rural Fires Act 1997* may be carried out on any land without development consent.

Bushfire hazard reduction work includes the following:

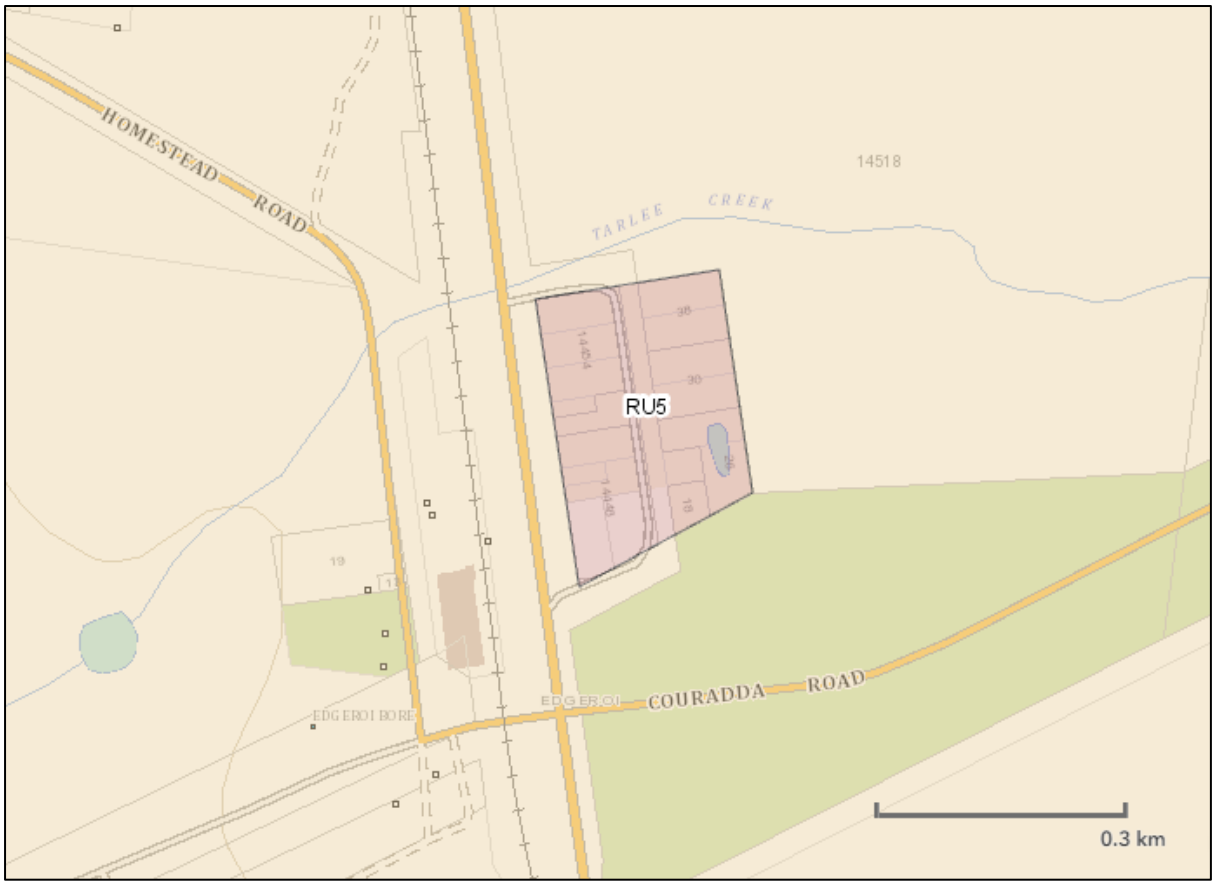
a) the establishment or maintenance of firebreak on land, and
b) the controlled application of appropriate fire regimes or other means for the reduction or modification of available fuels within a predetermined area to mitigate against the spread of a bushfire,

But does not include construction of a track, trail, or road.

The site and its surrounds are not identified as Bush Fire Prone Land on the ePlanning Spatial Viewer, as shown in Figure 10. The risk of bushfire within the subject site is therefore considered relatively low.

It is noted that there is an existing perimeter road surrounding the site to the north, west and east. The bitumen sealed Queen Street borders the site to the east and north, while the Newell Highway runs along the western boundary. The proposal involves the storage and handling of flammable and combustible liquids (e.g. diesel) on-site. A suitably qualified consultant will be engaged to prepare further details for the Construction Certificate outlining a fire protection plan for the site. These are standard procedures for new service station operations.

Figure 6: No Bush Fire Prone Land in the Vicinity of the Proposal
(Source: ePlanning Spatial Viewer)



4.5.5 Earthworks

Part 6, Clause 6.1 of the LEP deals with development requiring earthworks. The objective of this clause is to ensure that earthworks for which development consent is required will not have a detrimental impact on environmental functions and processes, neighboring uses, cultural or heritage items or features of the surrounding land. Development consent is required for earthworks unless:

a) the earthworks are exempt development under this Plan or another applicable environmental planning instrument, or
b) the earthworks are ancillary to development that is permitted without consent under this Plan or to development for which development consent has been given.

Before granting development consent for earthworks (or for development involving ancillary earthworks), the consent authority must consider the following matters:

a) the likely disruption of, or any detrimental effect on, drainage patterns and soil stability in the locality of the development,

b) the effect of the proposed development on the likely future use or redevelopment of the land,
c) the quality of the fill or the soil to be excavated, or both,
d) the effect of the proposed development on the existing and likely amenity of adjoining properties,
e) the source of any fill material and the destination of any excavated material,
f) the likelihood of disturbing relics,
g) the proximity to, and potential for adverse impacts on any watercourse drinking water catchment or environmentally sensitive area,
h) Any appropriate measures proposed to avoid, minimise, or mitigate the development.

Ancillary earthworks will be required for construction of the proposed development to achieve appropriate design standards. The proposal involves raising the service station site by a minimum of 400mm for drainage and flood inundation prevention. This fill material will be imported to the site as either Virgin Excavated Natural Material or Excavated Natural Material.

Adequate erosion and sediment control devices will be established on site prior to and during the construction works in accordance with standard sediment and erosion control requirements. An erosion and sediment control plan would be prepared as part of the construction certificate process and would be adopted as part of the contractor requirements once construction commences. This would aim to prevent adverse impacts, mainly on Tarlee Creek.

The earthworks would not extend beyond the site boundary other than construction required for the new intersections onto the Newell Highway. Local drainage would not be impacted by the service station works. Table drains within Queen Street would be retained. All drainage structures beneath the Newell Highway would be retained.

Earthworks will therefore not have a detrimental impact on environmental functions and processes, neighboring uses, cultural or heritage items or features of the surrounding land.

4.5.6 Development Contribution Plan

The Narrabri Shire Section 7.11 Contributions Plan 2016 allows Narrabri Shire Council to impose the payment of a levy as part of certain development consents where developments would result in heavy vehicular use on public roads and the existing road maintenance schedule is inadequate to carry the additional load. This contribution plan is not applicable to the proposed development, as it is not listed as a development type which may be levied a contribution, and it is not located on land shown in the Schedule of the Contributions Plan.

4.6 Development Control Plan

Narrabri Shire has 13-Development Control Plans. These are addressed below.

DCP - Exempt and Complying Development

A service station is not classified as exempt development. Additionally, according to section 2.3.d, a service station does not constitute complying development. Therefore, this DCP is not applicable.

DCP - Landfill Development

The development is not a landfill therefore this DCP is not applicable.

DCP - Medium Density Development

This DCP relates to residential development and there for is not applicable to this development.

DCP - Notification Policy

The development will undergo a notification process in accordance with this DCP. This will be overseen by Narrabri Shire Council.

DCP - Outdoor Advertising

This DCP specifies that all activities with and being part of an Outdoor Advertising structure/message will comply with the requirements of the:

- Department of Urban Affairs and Planning
- Best Practice Guidelines
- Outdoor Advertising Policy

The development and associated outdoor advertising shall comply with these requirements.

DCP - Parking Code

This DCP aims to provide a consistent guide for Council and developers for the provision of adequate parking for people using, and employed by, developments within the Shire and ensure an acceptable quality of parking areas within the Shire. This DCP relates to all proposed traffic generating developments.

The DCP parking rates are consistent with the TfNSW Guide to Traffic Generating Developments (2002) and the specific parking requirements for the proposed development included below:

Convenience Stores:	5 spaces per 100m^2 GFA of convenience store
Restaurant greater of:	15 spaces per 100m^2 GFA, or 1 space per 3 seats

The proposed convenience store has a GFA of 180m^2. It therefore requires up to 10 car park spaces. The restaurant has a GFA of 195m^2, and therefore requires up to 30 spaces. The total requirement for the proposed development is therefore 40 spaces.

The proposed development includes a total of 96 on-site parking spaces, including 18 heavy vehicle parking spaces (eleven for heavy vehicles and eight for coaches), two bus parking spaces, and therefore exceeds the minimum requirement laid out in the DCP.

DCP - Subdivision Code

The development does not include a subdivision therefore this DCP is not applicable.

DCP - Transportable Homes

The development does not include a transportable home therefore this DCP in not applicable**.**

DCP - Water Supply to Buildings

This DCP is applicable as town water is not available in Edgeroi. In accordance with DCP Water Supply to Buildings, any fitting or appliance identified as a possible source of contamination in Table 4.2 of Part 1 – AS 3500 that is connected to Council's water supply or a private supply used for human consumption, shall be fitted with a back flow prevention device as specified in AS 3500 National Plumbing and Drainage Code.

The development is not a residential building, therefore water storage requirements for domestic use do not apply.

DCP - Drainage to Buildings

In accordance with this DCP, all buildings:

- shall be fitted with roof guttering, downpipes and a drainage system;
- all soil and waste fixtures shall be connected to a sewage system;
- Effluent will be disposed of in accordance with written directions given by Council's Environmental Services Department to suit the particular conditions of the site and;
- Liquid wastes, other than from dwellings or human sanitary facilities, will receive any required pre-treatment before being discharged into the sewer.

DCP - Building Line

In accordance with this DCP all buildings will be erected a minimum of 6m from the front of boundary allotments.

DCP - Encroachment into public roads

In accordance with this DCP no building associated with this development will encroach onto a road reserve.

DCP - Building near sewer and stormwater mains

In accordance with this DCP, all structures associated with this development will be located clear of the main by a distance of minimum one (1) meter.

DCP - Industrial Development Code

This code applies to development for an industrial purpose within the Narrabri Shire and it sets out several development guidelines. The proposal is for a commercial development and the industrial development code is therefore not applicable.

4.7 Narrabri Shire Council Growth Management Strategy

The 2009 Narrabri Shire Council Growth Management Strategy supports and promotes regional and rural development in the Narrabri Shire. The proposed development aligns with this strategy.

4.8 Licence Requirements

The proposed development does not require any statutory Licences or Permits to proceed to a construction phase, other than Council consent.

Three separate licence or permit requirements have been identified for the development to operate. These include:

The Service Station will require:

- A Works Licence for a Groundwater Bore to be issued under the Water Management Act 2000;
- Registration of the fuel tanks;
- Packaged Liquor Licence for the sale all forms of alcohol as takeaway.

5 Description of Site

5.1 Meteorological and Climatic Data

The proposed location is situated in northern NSW at an elevation of approximately 178m AHD. The climate is best described at temperate.

The closest weather station to provide more comprehensive climate data is the Narrabri Airport AWS (Site: 054149). The Narrabri Airport AWS recording station is located approximately 21.8 kilometre south of the proposed development site. Table 7 provides a summary of the average monthly and annual climate conditions.

Figure 7: Average Annual Pan Evaporation across Australia

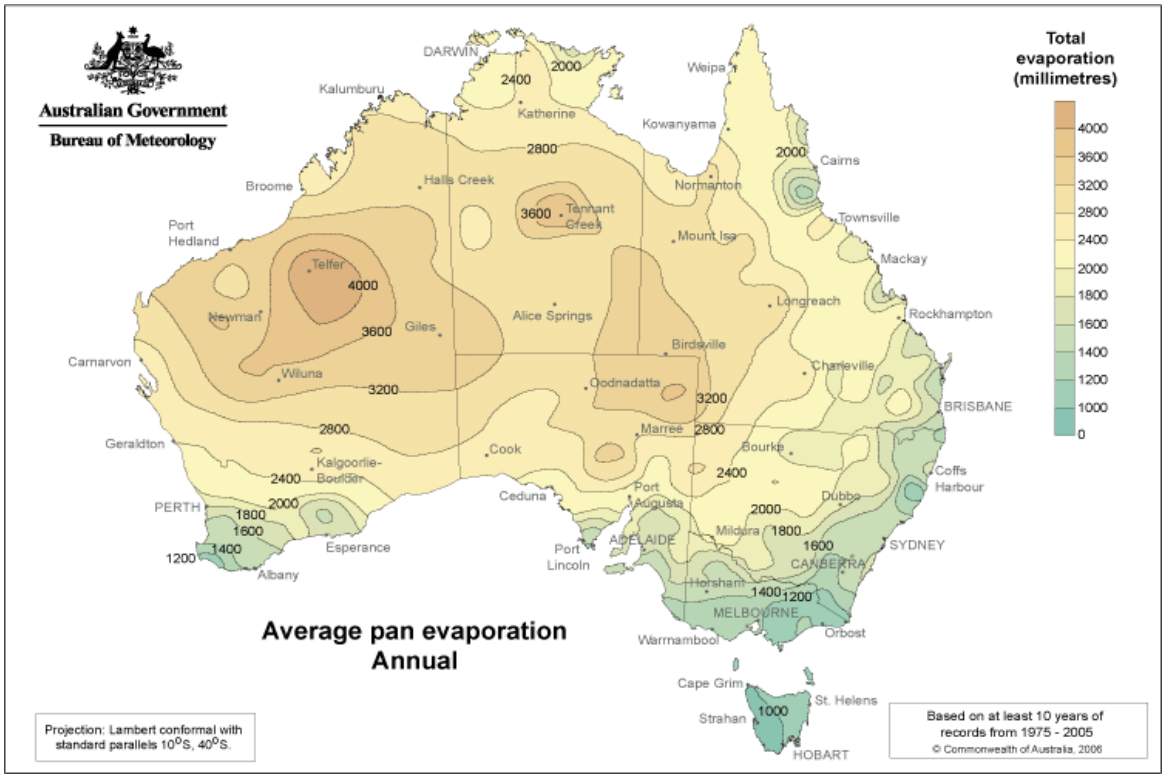


Table 4: Climatic Information – Narrabri Airport AWS 054038 (2001-2024)

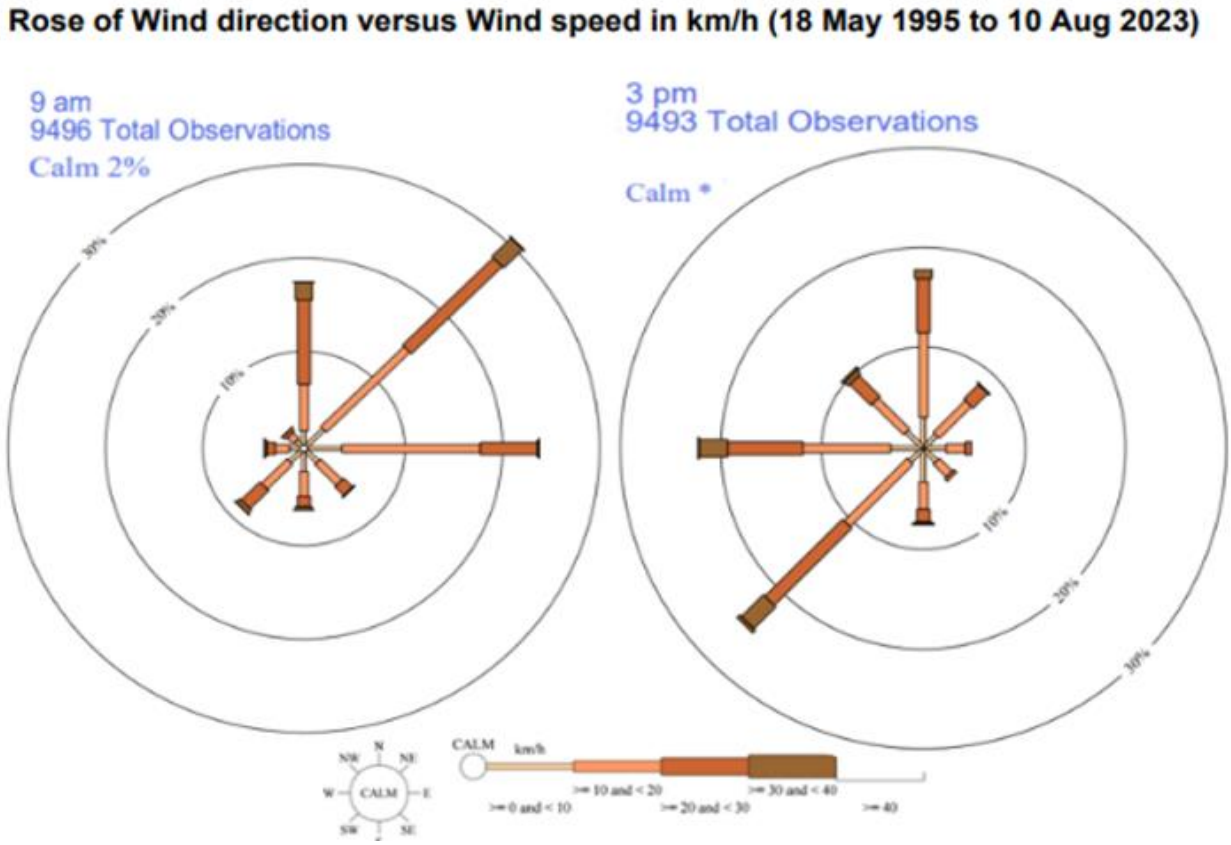
Monthly	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Av. Max Temp (°C)	34.9	33.6	30.9	26.9	22.3	18.5	18.2	20.2	24.2	28.2	31.0	33.1	26.8
Av. Min Temp (°C)	20.5	19.4	16.8	12.3	7.4	5.6	4.1	4.7	8.1	12.2	16.0	18.4	12.1
Av. Rad. (MJ/m^2)	26.4	23.6	20.6	16.5	12.9	10.8	11.9	15.0	19.1	22.6	24.5	26.6	19.2

The long-term temperature figures show an average mid-summer highest temperature of approximately 34.9°C and a mid-winter lowest temperature of approximately 4.1°C. Relative humidity is generally low.

The average wind speed and direction for the area varies according to the season and time of day. The wind roses depicting the average wind speed and direction for each month at 9am and 3pm were procured from the Bureau of Meteorology. This is shown in Figure 12.

The *New England Northwest Climate Change Snapshot* (2014) projections indicate a warmer climate will result in altered rainfall patterns and more intense bushfires, droughts and floods.

Figure 8: Wind Roses for Moree Aero (Source: BoM Data 1995-2024)



5.1.1 Design Storm IFD Data

The Bureau of Meteorology website provided Rainfall Intensity-Frequency-Duration (IFD) data for storm events at the proposed development site. A 1 in 20-year storm event with a 24-hour duration produces 125.2mm of rainfall in total. A 1 in 100-year storm event with a 1-hour storm duration produces 66.6mm of rainfall.

5.2 Topography, Soils and Geology

The development lies atop of undifferentiated colluvial and residual deposits. This sedimentary deposit composed of surface mantle that has accumulated toward the base of a slope as a result of transport by gravity and non-channelized flow. An in-depth knowledge of the foundation and geology below the development is important since the development will have foundations, although the area in and around Edgeroi is tectonically stable. The site is a clay field texture or 35% or more clay throughout the solum except for thin, surface crusty horizons 30 mm or less thick. When dry, open cracks occur at some time in most years, these are at least 5 mm wide and extend upward to the surface or to the base of any plough layer, peaty horizon, self-mulching horizon, or thin, surface crusty horizon and Slickensides and/or lenticular peds occur at some depth in the solum.

The subject site is not considered to have any existing salinity issues and the development proposal, as designed, will not increase the risk of salinity on the property. There are no acid sulphate soils present within the region.

Land slope on the property varies across the site but is essentially flat. Erosion is not considered a risk. However, given the nature of the proposed development, best practice drainage and sediment controls will be implemented on site. An erosion and sediment control plan are included in Appendix 2.

There is minimal physical alteration as result of this proposal and hence there is no chance of subsidence, slip or mass movement of the soil on site.

5.3 Water

5.3.1 Surface Water

The site is located within the Gwydir River catchment and the closest surface waterbody to the proposed development is Tarlee Creek, an ephemeral first order stream located approximately 27m north of the site boundary at its closest point. There are no other surface watercourses in the vicinity of the proposal.

5.3.2 Groundwater

The site is located over porous rock aquifers, within the Gunnedah Oxley Basin within the Gwydir Water Management Area.

The Gunnedah-Oxley Basin MDB Groundwater Source extends over an outcrop area of 1,128,000 Ha and a sub-crop area of 2,860,000 Ha. It is covered by the *Water Sharing Plan for the NSW Murray Darling Basin Porous Rock Groundwater Sources* (*2011*). The NSW Murray Darling Basin (MDB) porous rock groundwater sources are located within the NSW portion of

the MDB. In general, the plan area includes all porous rock groundwater sources that are not included in other water sharing plans. Total average annual recharge within the Gunnedah-Oxley Basin MDB Groundwater Source is estimated at 414,558 ML with 214,665 ML (just over 50%) protected for environmental use and 199,893 ML defined as the long-term average annual extraction limit. The level of connection between surface and groundwater is considered to be low to moderate in the Gunnedah-Oxley MDB and the travel time between surface and groundwater is estimated to be years to decades.

Publicly available bore data was examined for groundwater bores in the vicinity of the proposed development. Bore logs indicate spatial variation depth to water bearing zones, with a minimum depth of 35m below ground level. Water bearing zones were encountered within fractured bedrock.

The primary aquifer beneath the site is the Great Artesian Basin. Based on available mapping, Edgeroi is located over the Surat Groundwater Source and is north of the Southern Recharge Zone Groundwater Source. This water source provides extensive and reliable groundwater to the region.

Groundwater dependent ecosystems (GDE's) are defined as ecosystems which have their species composition and their natural ecological processes determined by groundwater (ARMCANZ & ANZECC, 1996). The Bureau of Meteorology's Atlas of Groundwater Dependent Ecosystems was also searched to identify ecosystems near the proposed development with potential for groundwater interaction. The Atlas did not identify any surface watercourses with potential for groundwater interaction in the vicinity of Edgeroi (based on national assessment) (Figure 13). The Belah woodland to the north of the proposal is assessed as having moderate potential for groundwater connectivity (based on regional assessment) (Figure 14).

Figure 9: Aquatic Groundwater Dependent Ecosystems Near Edgeroi

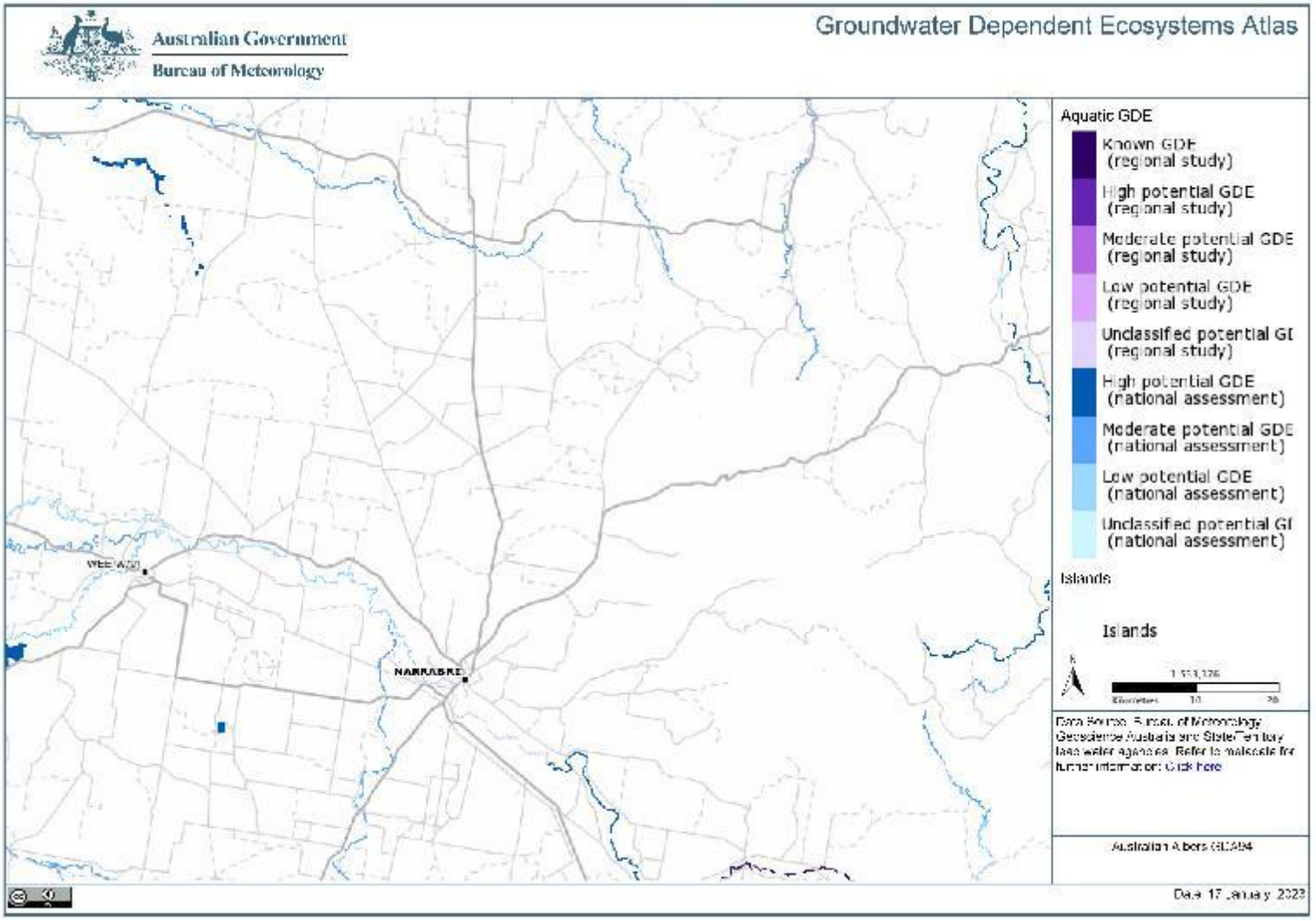
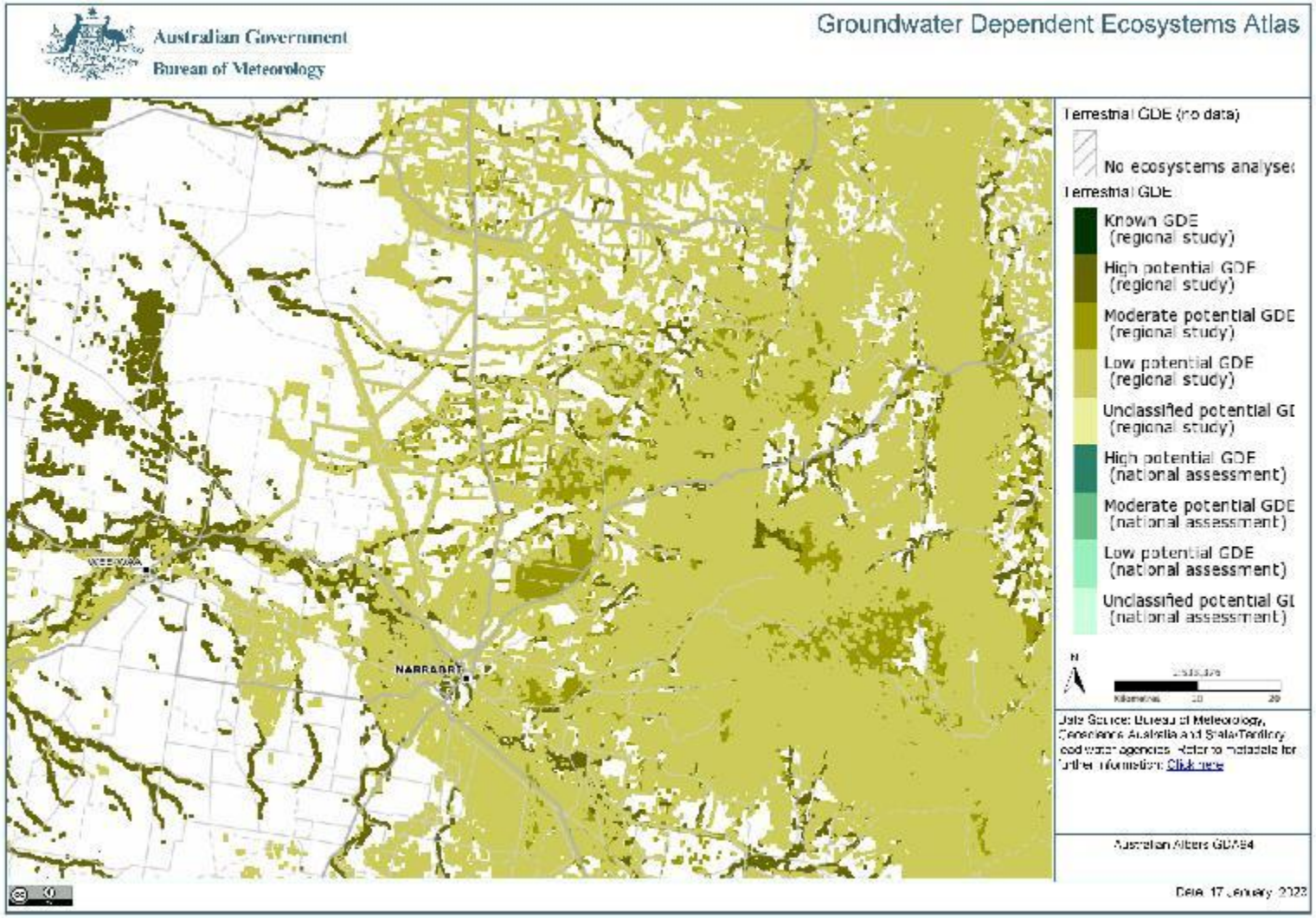


Figure 10:Terrestrial Groundwater Dependent Ecosystems Near Edgeroi



5.4 Cultural Heritage

5.4.1 Indigenous Heritage

The Aboriginal Heritage Information Management System (AHIMS) is a database operated by OEH and regulated under section 90Q of the *National Parks and Wildlife Act 1974*. AHIMS contains information and records related to registered Aboriginal archaeological sites (Aboriginal objects, as defined under the Act) and declared Aboriginal places (as defined under the Act) in NSW.

A search of AHIMS was conducted on the 14th of March 2024 to identify registered (known) Aboriginal sites or declared Aboriginal places within or in the vicinity of the subject area (i.e. Lots 1, 2, 3, and 4 DP1269526, Lots 60, 61, 63, and 66 DP753952, Lot 62 DP665543, Lots X and Y DP394753, and Lot 1 DP311343).The search revealed zero (0) recorded Aboriginal sites within or adjacent to the boundaries of the constituent lots. The search results are included as Appendix 2.

The following presents a summary of the site investigation:

- There are no known/registered archaeological sites within the subject site.
- The subject site has been modified in the past as a result of agricultural activities and the construction of the old service station and other buildings on the site.
- The potential for this site to contain sites of significance may involve rock shelters, campsites, and scarred trees. No such artefacts were identified during a site walkover.

The result of this investigation has therefore determined that the likelihood of disturbing sites or objects of Aboriginal cultural significance is extremely low in the area identified for the proposed development. On this basis, it can be concluded that there is no specific requirement to engage with the local Aboriginal community through an Archaeologist to undertake a more detailed investigation of the area. However, appropriate protocols should be adopted on the site. This involves an ***unanticipated finds protocol*** as outlined below:

> *If any Aboriginal object is discovered and/or harmed in, or under the land, while undertaking the proposed development activities, the proponent must:*
>
> - *Not further harm the object;*
> - *Immediately cease all work at the particular location;*
> - *Secure the area so as to avoid further harm to the Aboriginal object;*
> - *Notify NSW Heritage as soon as possible on 02 9873 8500, providing any detailed of the Aboriginal object and its location;*
> - *Not recommence any work at the particular location unless authorised in writing by NSW Heritage.*

If any aboriginal object is found through development of the site, all work will cease and NSW National Parks and Wildlife Services – Heritage Section will be notified. If human remains are found, work on the site will cease, the area will be secured, and both the NSW Police will need to be notified.

5.4.2 Non-Indigenous Heritage

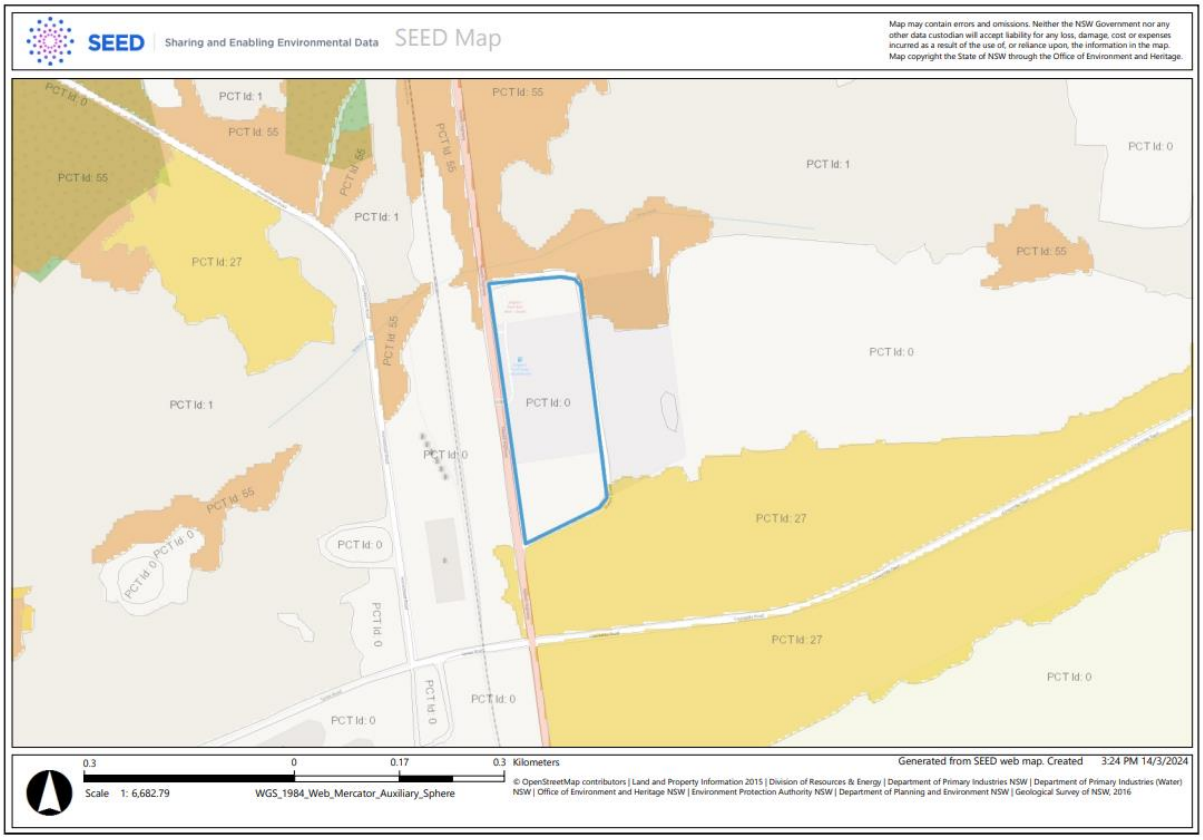
A search of the NSW State Heritage Register found no heritage listed sites on the property or surrounding properties. The *Narrabri Local Environmental Plan 2012* showed no heritage sites on the property or surrounding properties.

5.5 Fauna and Flora

The proposed development site is currently occupied by the old service station, three residential dwellings, a woodland on the south, and extensive gravel pavement storage area for Newell Highway upgrade materials. The adjoining land to the north, south and west include areas of open woodland and grassland contained within crown reserves and freehold grazing land.

Figure 15 shows the modelled plant community types (PCTs) predicted to occur within the area based on desktop information available on the SEED portal.

Figure 11: SEED Plant Community Types.



The mapping shows that the site and surrounding areas to the west and east are predicted to consist of 'PCT 0 – Non-native vegetation'. A PCT of 0 indicates that the area is either non-native vegetation or not mapped in the data base. This PCT is used extensively around and within town areas where there is no significant remnants or presence of native vegetation communities. The mapping also indicates that the area has not been the subject of a Biodiversity assessment which would result in the uploading of plant data to be included in the SEED mapping.

Areas adjoining the site to the north support 'PCT 55 - Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions, while the areas adjoining the site to the south support 'PCT 27 - Weeping Myall open woodland of the Darling Riverine Plains Bioregion and Brigalow Belt South Bioregion.

A site inspection conducted by SMK Consultants confirmed the SEED mapping results. Most of the site was historically cleared and developed for the construction and operation of the existing service station, residential properties, and rest area. These areas support areas of previously mown lawns and include gravel and bitumen surfaces. The remainder of the subject site is dominated by weed species and is therefore consistent with PCT 0 – Non-native vegetation.

Figures 16-19 show the habitat present within and around the proposed development at the time of the site inspection.

Figure 12: Open woodland south-east and upslope of the proposed development site.

Figure 13: Open woodland south woodland south-east and upslope of the proposal.

Figure 14: Open woodland south-east and upslope of the propodeal

Figure 15: Open woodland south section of the proposal

5.6 Natural Hazards

The land is geologically stable and not subject to volcanism, earthquake, or soil instability such as subsidence, slip or mass movement. Also, the land is not classified as bushfire prone land according to mapping provided by the Narrabri Shire Council. The proposed development is flood free.

5.6.1 Bushfire

The subject lot is not identified as bush fire prone land on the ePlanning Spatial viewer and Narrabri Shire Council mapping. The site is cleared of native vegetation and has been cultivated in recent times. Accordingly, no 'Bushfire Attack Level Risk Assessment' is required.

5.6.2 Flooding

The subject land is identified as flood free land on the ePlanning Spatial viewer. However, in severe overland flow events from the east of Edgeroi, the village can be inundated for a period while water drains beneath the Newell Highway to the west. The drainage structures beneath the highway are limited at present. Water depth within Edgeroi may reach up to 400mm above the natural surface level in extreme events.

Some local drainage issues are present during large rainfall events. The Edgeroi village area is located on the eastern upslope side of the Newell Highway. The highway is a raised structure and therefore obstructs the natural overland flow of local water. Several culverts have been installed beneath the highway to drain the village area. Based on the substantial number of culverts stored on the service station site at present, TfNSW's Newell Highway upgrade project will include additional culverts to improve the drainage within the village area.

6 Environmental Considerations

Items considered include matters set out under Section 79C of the *Environmental Planning and Assessment Act 1979.* A summary of the major points of that consideration follows.

6.1 Land Use Conflict

The development is permissible within the current zoning and the land use will not change significantly from existing/historical uses. At present, the old service station and associated buildings are in poor condition and dilapidating at a rapid rate. The land is not managed at present and would present an aesthetic blemish on the village as well as a local fire risk.

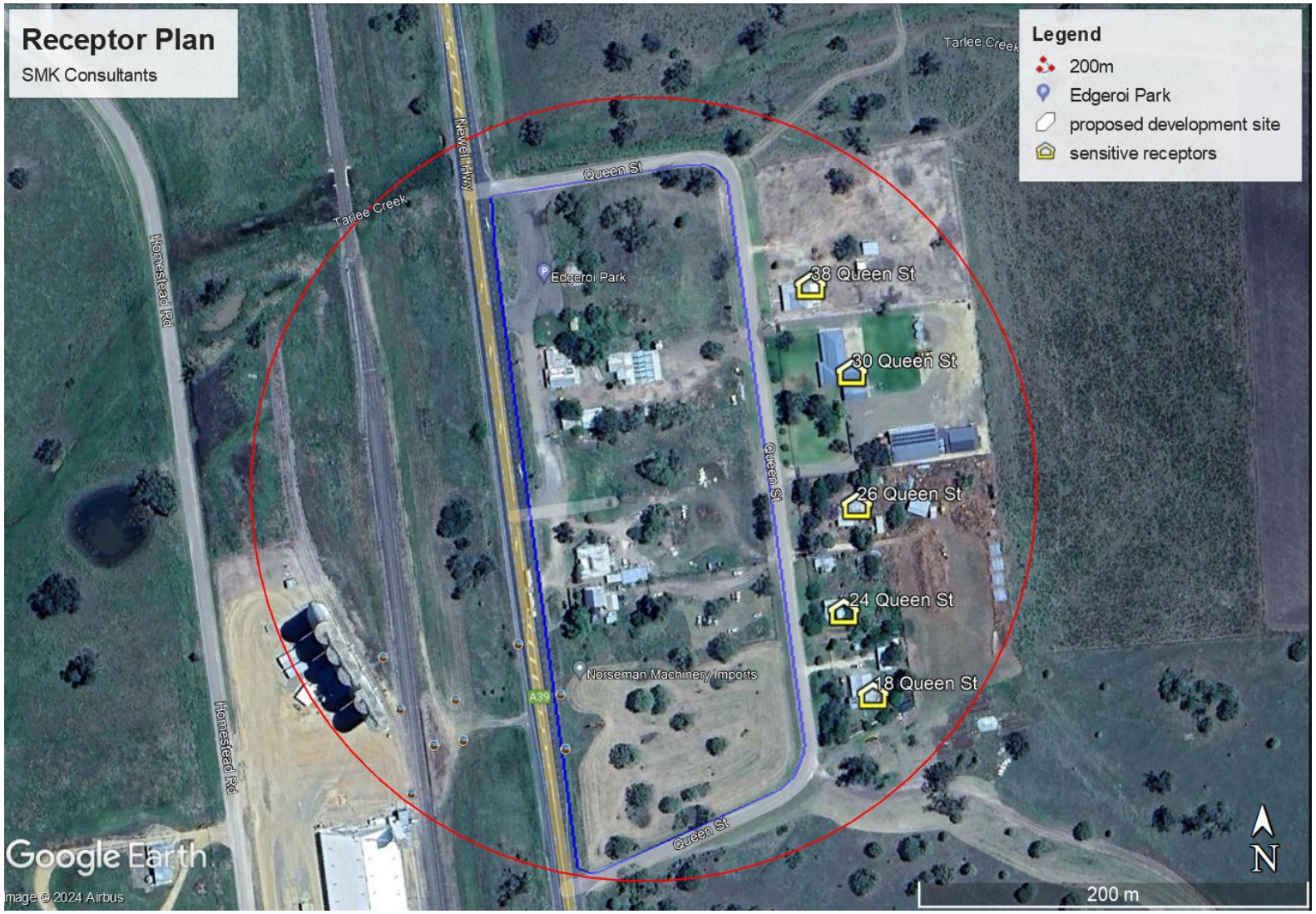
The new development intends to improve the visual amenity of the site with the construction of the proposed service station and landscaping measures. This will include a high fence between the service station and Queen Street to reduce the visual impact for residents on the eastern side of this street.

The potential for land conflict typical occurs as a result adverse dust, noise, or aesthetic impacts. There are five (5) identified sensitive receptors (rural or residential dwellings) within a 200m radius east of the proposed development site. The closest sensitive receptors are the five residences on the eastern side of Queen Street. Details of these residences are outlined in the following table.

Table 8: Separation distances from sensitive receptors to the site boundary

Receptor	Receptor Type	Address	Direction from subject Site
1.	Village Dwelling	38 Queen Street Edgeroi	East side of Queen Street
2.	Village Dwelling	30 Queen Street Edgeroi	East side of Queen Street
3.	Village Dwelling	26 Queen Street Edgeroi	East side of Queen Street
4.	Village Dwelling	24 Queen Street Edgeroi	East side of Queen Street
5.	Village Dwelling	18 Queen Street Edgeroi	East side of Queen Street

Figure 16: Nearby Sensitive Receptors



The proposal is in relatively close proximity to a number of residential dwellings; however, the new service station is not predicted to result in land use conflict due to the fact that the site was operated as a service station and convenience store for a period of more than 30-years prior to closing down in 2018.

The following management and mitigation measures would be implemented to avoid or reduce impacts on surrounding land uses;

- The development as proposed would manage stormwater within the site and ensure that the rate of discharge of stormwater is similar or the same as current peak discharges to avoid overloading of the local stormwater system;
- A sediment detention basin and drainage controls would be implemented to minimise the potential for impacts associated with siltation of waterways or dust deposition;
- Operations would be undertaken in a manner which minimises noise and dust emissions in accordance with criteria adopted in NSW.

Overall, the proposed development site is considered unlikely to result in any significant adverse impacts to sensitive receptors which would have the potential result in land use conflict in the locality. Acoustic amenity is addressed in section 6.7 of this report.

6.2 Erosion and Sediment Control

Demolition and construction work associated with the proposed service station upgrade will employ erosion and sediment controls which adhere to Council's Erosion and Sedimentation Control Policy. In summary, the keys to achieving satisfactory Erosion Sedimentation Control which will be followed are listed below:

- Minimising the amount of site disturbance to the greatest possible extent.
- Isolate the site by diverting clean upstream overland flow around or separately through the development where possible.
- Provide water quality controls by the use of approved silt fencing and run-off diversion bunds.
- Retain topsoil for effective revegetation works.
- Control run-off and sediment movement at its point source rather than only at one final point.
- Progressive revegetation of the site where possible during on-going construction to reduce the area contributing sediment. This in turn increases the efficiency and effectiveness of the entire sediment control system.

- Filtering of the sediment from site runoff via sediment traps and grated drains prior to its release to the adjoining stormwater system.
- Construction of a washdown area with provisions to restrict all silt and trafficked debris from entering the stormwater system.
- No work of stockpiling of materials to be placed outside of the site work boundary.

Details of proposed erosion and sedimentation controls have been prepared for the proposal and are included as part of the stormwater plans included as Appendix 2.

6.3 Air Quality

Air pollution can result from increased dust and/or exhaust emissions from machinery used as part of the operation of the service station. Dust from grain, roads and trucks is a pollutant and can adversely affect amenity in the area. These emissions must be controlled so there are no significant emissions from the facility.

The main potential sources of dust at the site consist of road dust as well as earthmoving equipment during the construction phase of the works.

The proposal will include the following management and mitigation measures to minimise the potential adverse impacts of dust, both on and offsite:

- Vehicle speed restrictions are limited at 10 km/h;
- Regularly inspect and maintain all machinery to reduce potential for excessive emissions;
- Keep pavements and surfaces clean of bull-dust from trucks entering the site;
- During extreme conditions, such as hot, dry, windy conditions, dust generating work should be suspended as necessary to prevent undue dust impacts; and
- Regularly apply water or dust suppression methods to un-sealed roads during the construction phase;
- Utilise a water truck to suppress dust during the construction phase;
- Construction management will include visual monitoring of dust emissions and appropriate actions to mitigate potential issues. Internal dust management is a key construction measure to maintain good health of workers and maintenance of equipment and therefore dust emission control through watering or other means of suppression will form a key component in daily operations.

Implementation of the above-mentioned control measures are considered sufficient to minimise dust emissions to ensure that there is no significant adverse impact on amenity as a result of the proposed development.

6.4 Waste

6.4.1 General waste

A waste storage area and loading area proposed at the rear of the main structure and adjacent to the drive-thru facility. The area would ensure access by all rigid trucks including 12.5m heavy rigid vehicles. Waste trucks and service vehicles would use this area as necessary, with access via a dedicated road with the area adequately separated from other on-site facilities. Pedestrian connection to the main structure ensures practical use with marked crossings where necessary.

The facility would mainly utilise skip bins for waste separation and storage onsite. These would be managed by a local waste collection contractor who would empty the bins on an as required basis and haul the waste to the Narrabri Landfill facility. Waste would be separated into putrescible and recyclable materials for disposal. These would consist of mainly food waste and drink containers, respectively.

A pedestrian path connects the coach and heavy vehicle parking areas with the main building adjacent to the loading area. A dedicated service lane at the rear of the building will allow for waste collection and loading/ unloading to occur in an area adequately separated from the general public.

6.4.2 Wastewater

The proponent has prepared an On-site Wastewater Management Plan (OWMP) and will lodge a separate Section 68 application for the proposal. The main points of the OWMP are summarised below.

Table 9 includes the predicted wastewater design flow and BOD loading rate calculations for the facility on a daily basis. The estimates were provided by the wastewater treatment system supplier. It is noted that wastewater associated with staff is included in two categories. This has been carried out with the intent of providing conservative design flow and BOD loading rate estimates for the proposed development.

Table 9: Predicted Commercial Wastewater Flow/BOD Allowances

Facility	Source	Peak Day Usage	Design Flow Per Person (L/day)	Design BOD Per Person (g/day)	Total Design Flow (L/day)	Total Design BOD Loading (g/day)
Restaurant	Prepared Food / Meals	132	15	15	1,980	1,980
Shop	Staff	15	15	15	225	225
Staff room	Staff	15	60	30	900	450
Laundry	-	11	115	55	1,265	605
Shower Facility	-	45	40	6	1,800	270
Toilets	-	132	10	12	1,320	1,584
Total					**7,490**	**5,114**

Based on the above calculations, **the maximum daily design flow for the proposed development is 7,490 L per day and the maximum daily design BOD loading rate is 5,115 g (5.12 Kg) per day.** The proposed septic system must therefore be able to support both this hydraulic and BOD loading at a minimum.

The proponent will install an on-site aerated wastewater treatment system (AWTS) which will treat the wastewater for re-use onto green areas of the site. The system selected is the Kelair-Blivet BL 2000 NR model. The model has a footprint of 7.5m x 2.27m and has a capacity to accept approximately 46,000 L / day effluent and 11 kg BOD/day. It therefore exceeds the minimum requirements for the proposal.

The Kelair-Blivet comprises of primary settlement chamber, aerobic zone, final settlement (humus tank) and sludge storage. A nutrient removal module, chlorine disinfection module and irrigation chamber with suitable filter will be added to the Kelair-Blivet to be installed at this site. The treated effluent will therefore have characteristics consistent with secondary treated wastewater at a minimum. The system can also provide tertiary treatment depending on configuration of chlorine dosing for disinfection.

Based on calculations presented for nutrient and hydraulic loads the minimum land application area for the proposed septic waste treatment system is **2,140 m^2**. Treated wastewater will be applied via a sub-surface drip irrigation system on landscaped areas of the development.

6.5 Pollution Prevention – Construction Phase

Impacts on receiving waters and surrounding areas will be minimised during the construction phase with measures outlined in the attached erosion and sediment control plan (Appendix 2).

6.5.1 Pollutants

Typical pollutants generated during the construction phase of the proposed development are shown below in Table 510.

Table 5: Pollutants Typically Generated During Construction

Pollutant	Sources
Litter	Paper, construction packaging, food packaging, cement bags, off-cuts
Sediment	Unprotected exposure soils and stockpiles during earthworks and building
Hydrocarbons	Fuel and oil spills, leaks from construction equipment
Toxic Materials	Cement slurry, asphalt prime, solvents, cleaning agents, wash-waters (e.g. from tile works)

6.5.2 Performance objectives

The objectives of the site's pollution prevention measures are:

- Minimise the amount of sediment entering the region's waterways and stormwater drains;
- Minimise or prevent environmental harm to the region's waterways and associated ecosystems;
- Minimise localised flooding caused by sediment runoff.

6.5.3 Monitoring and Maintenance

The general requirement of monitoring during the construction phase will be:

- Work activities are restricted to designated construction areas;
- Earthworks and site clearing are undertaken in accordance with the Erosion and Sediment Control Plan;
- Erosion and sediment control devices are to be constructed/installed in accordance with the Erosion and Sediment Control Plan;

- Inspection of sediment fences, erosion and sediment control structures/devices on a weekly basis as well as after any rain event exceeding 25mm in 24hrs (major storm event);
- Stormwater discharges from the site are not having any adverse effect on the downstream environment;
- Monitoring and recording of the performance of the drainage control devices including water quality testing where required;
- Any failure in the stormwater system shall be immediately rectified to prevent uncontrolled discharge from the site;
- Any failure to the stormwater system causing damage to surroundings should be rectified immediately by remedial works to the damaged area.

6.5.4 Responsibility and Reporting

- The contractor shall be responsible for monitoring the performance of all drainage control and erosion and sediment control devices;
- Records of any failures to devices should be kept and reported to the Construction Manager;
- Regular inspections of the devices shall be reported to the Construction Manager;
- Inspections of the devices after heavy rainfall shall be reported to the Construction Manager.

6.6 Pollution Prevention – Operational Phase

The identified pollution sources on this site include general waste such as litter and waste from food packaging, in addition to hydrocarbons spilt during refuelling. The general waste will be dealt with via skip bins as discuss above. The site will have a stormwater runoff collection system to process stormwater runoff from the service station forecourt area which will contain any spills of fuel. The processing system will include an oil/water separate.

There is no Australian Standard for oil/water separators. There are only guidelines for hydrocarbon discharge limits for stormwater discharge. All State and territory regulating environmental authorities (or EPA) have guidelines with varying terminology stating that hydrocarbons are not to be visual (10ppm) in stormwater receiving waters.

6.6.1 Pollutants

The key pollutants typically generated during the operational phase of service stations are shown in Table 611.

Table 6: Pollutants Typically Generated During Operation

Pollutant	Sources
Litter/Gross Pollutants	Waste materials, food, food packaging etc.
Sediments	Aggregates bins, wind deposits and car trails
Hydrocarbons	Fuel and oil spills, leaks from dispensing areas, car park
Surfactants	Detergents, cleaning agents
Nutrients	Nitrogen, Phosphorus

6.6.2 Proposed Stormwater Treatment

6.6.2.1 Stormwater Treatment Philosophy

Waterways and other aquatic environments are valued by the community for their social, cultural, economic, and environmental benefits. Urban runoff, contaminated with nutrients, sediment and other pollutants adversely impact these valued resources. Water Sensitive Urban Design (WSUD) is a holistic approach to the planning and design of urban landscapes that minimises theses negative impacts. This approach is used on this project to select the treatment options that considers the civil, landscape and ecological aspects of the site.

6.6.2.2 Source control.

Rubbish bins can be an effective source control for litter and are appropriate for most developments. Bins will be placed in appropriate areas (such as buildings and staff amenity) to encourage thoughtful waste disposal.

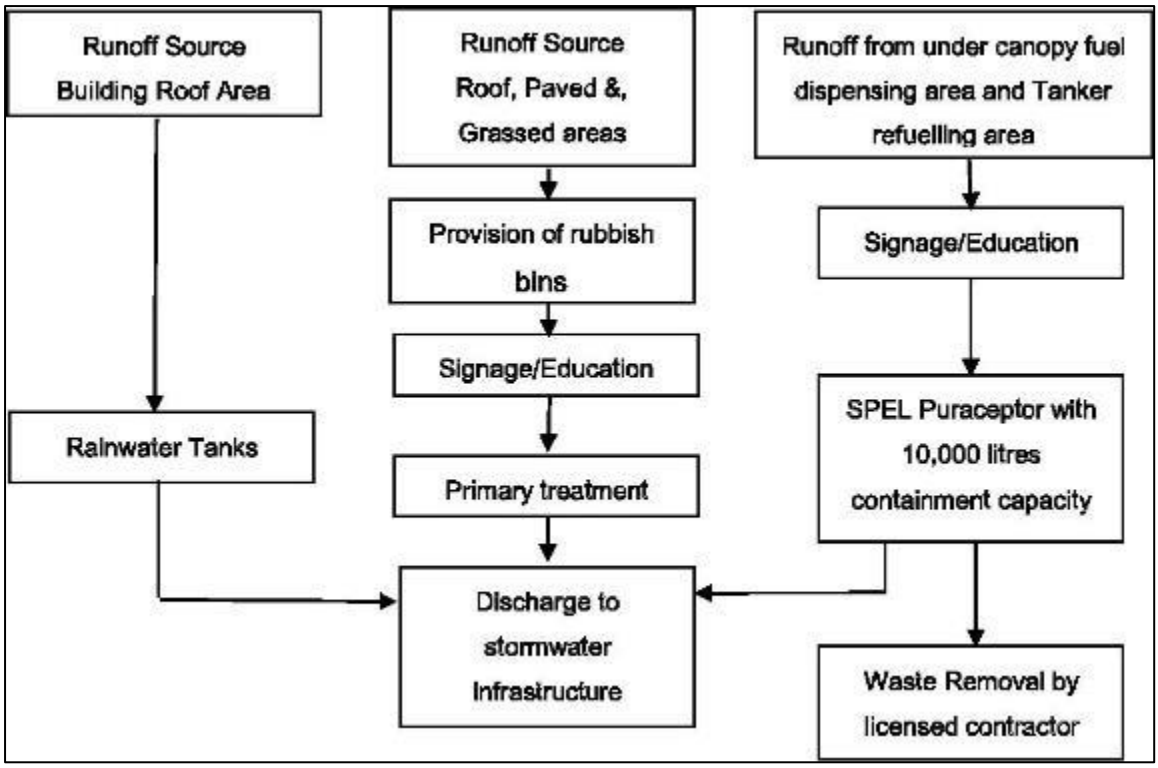
6.6.2.3 In ground proprietary treatment device

In ground, proprietary stormwater treatment devices are useful for treatment of stormwater on sites that are constrained by available area for stormwater treatment. These devices are installed underground and can remove a full range of pollutants from stormwater, including TSS, soluble heavy metals, oil, grease, and nutrients.

6.6.2.4 Fuel Related Stormwater Treatment

Key features of the fuel related stormwater treatment process are detailed in **Error! Reference source not found.**18.

Figure 17: Fuel Related Stormwater Treatment Philosophy



6.6.2.5 Fuel Dispensing Areas

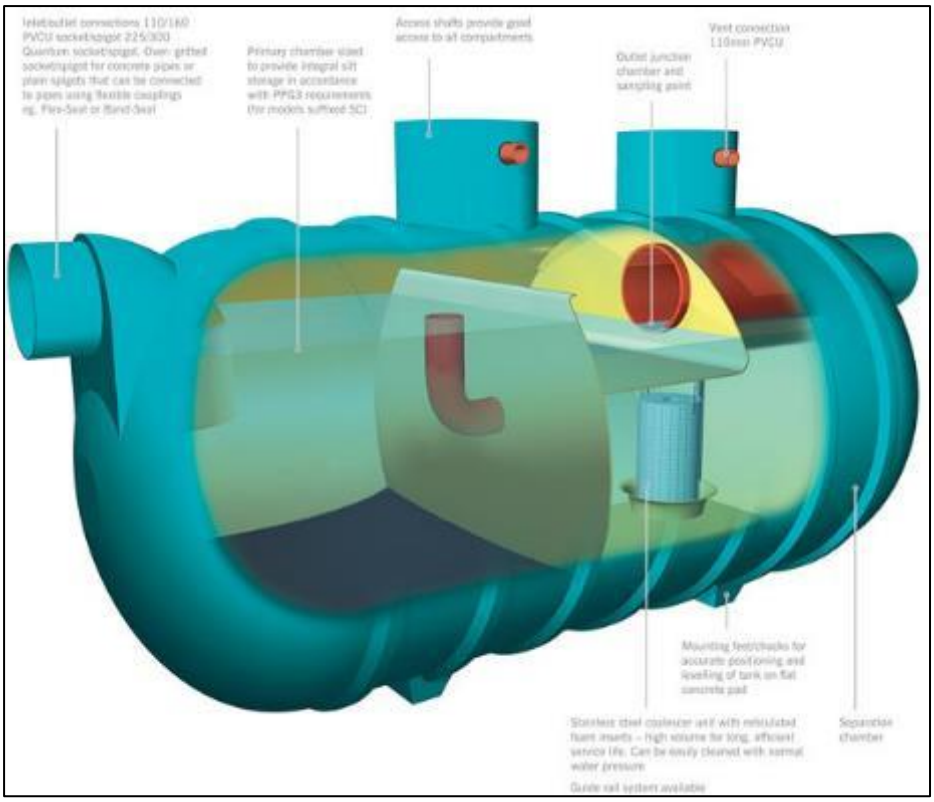
The fuel dispensing areas will be concrete surfaced and covered by a canopy. The perimeter of the canopy will overhang the dispensing containment areas by 10 degrees to reduce windblown rain into the area. The containment areas will drain to sumps that will discharge to an appropriately sized Spel® Puraceptor.

Bulk fuel transfers from a road tanker to underground tanks will take place under the canopy; any flows from the dispensing area will be directed to a Spel® Puraceptor. A spill containment box at the fill points will be used for minor fuel spills that might occur during unloading. The spilt fuel will drain from the containment box into the fuel storage tanks.

6.6.2.6 Spel® Puraceptor

The Puraceptor, illustrated in Figure 19, will have a minimum containment volume of 10,000 litres, which allows for containment of spill from an 8,000-litre tanker compartment plus allowances for wind-blown rain. The Puraceptor will remove hydrocarbons, gross pollutants and total suspended solids.

Figure 18: Spel® Puraceptor.



6.6.2.7 Underground Fuel Storage Tanks

Underground fuel storage tanks, piping and fuel dispensers will be installed in accordance with Australian Institute of Petroleum (AIP) standards.

6.6.2.8 Areas outside canopy

All driveways and concrete car parking areas will drain via gully inlet pits and trench drains. The stormwater will then flow to a detention tank for removal of pollutants, such as sediment, before discharging to the road stormwater drainage network via legal points of discharge.

Details of the proposed stormwater detention tank are included in the stormwater plans included as Appendix 2. The tank has a total capacity of 21,000L and comprises the following components:

- An oil retention chamber with an approximate capacity of 10,000L;
- A silt retention chamber with an approximate capacity of 5,000L; and
- A secondary chamber with an approximate capacity of 6,000L.

6.7 Acoustic Amenity

The site has operated as a service station for a period of more than 30-years. This had established an acoustic footprint in the village. The new facility will operate 24-hours per day

and therefore noise will be generated during the night as well as during the day. This will mainly result of trucks manoeuvring on the site to fuel up and then park for extended periods.

During the construction phase, additional noise sources are expected from the operation of earthmoving machinery.

Potential construction noise sources at the site will include trucks and construction plant. Construction plant will include graders, rollers, excavators, and water trucks for the construction of pavements and foundations. Once foundations are completed, builders' equipment such as nail guns and a range of electrical tools will be required. Other equipment such as small cranes and scissor lifts will be required for construction of the site.

An Acoustical Report was completed in 2023 for the site. The report is presented in appendix 7. The report provides an assessment of potential noise emissions from the facility in addition to recommendations for site management. The report recommends a 2.4m solid acoustical fence along the eastern side of the site to reduce the noise emissions toward the adjoining properties on the eastern side of Queen Street. The revised site layout will move some of these noise emissions sources to the south. However, the report indicates a requirement for the 2.4m high fence. This fence will extend from the northern edge of the parking areas to the southern edge. The requirement for a southern fence is removed as the service station site will extend over these houses which are to be removed. There will be no receptors to the south.

The report also provides mitigation measures for operational purposes in relation to operational hours for deliveries. This will be adopted for the site management. The report also recommends a detailed mechanical plant noise assessment to be undertaken at the construction certificate stage of the development to assess the specifics of machinery/motors being installed onsite. These would include air conditioners and air compressors for example.

6.7.1 Mitigation Measures

During construction, it is recommended that the proponent shall implement the following noise control measures:

- Establish a construction noise and vibration control plan;
- Select plant and equipment where practical on acoustic performance;
- Use plant and equipment in a manner which minimises noise impacts;
- Implement a noise monitoring program to ensure that noise levels are being controlled and that best possible practices are being implemented; and

- Initiate an information program to inform local residents of the construction program and time periods when noise levels could exceed the recommended assessment guidelines.

During operation, the proponent shall aid in minimising noise by implementing the following measures:

- All delivery vehicle companies and their respective drivers are to be instructed to operate delivery vehicles in as quiet a manner as possible whilst on site through such measures as:
    - Travel at low speeds;
    - Minimise use of excessive engine revving and no rapid acceleration;
    - Do not use exhaust breaks whilst on site;
    - Do not park external to a loading dock with engines running for extended periods of time.
    - Attend the site during hours recommended by the acoustic report.
- The operator shall erect appropriate on-site signage in the service vehicle roadways and loading dock areas advising of the necessity to minimise noise so as to protect neighbouring residents' amenity.
- Staff will be instructed to minimise noise by careful work practices (i.e. placing garbage in containers using low noise methods).
- Institute a complaint response procedure to be used in the instance of complaints regarding noise from site activities.

Truck and other drivers on the site need to be made aware of noise emissions. This is considered to be difficult as many once only users will enter the site and therefore their consideration of adjoining landowners will be limited.

For truck drivers, a system of standard signs will be placed onsite. These will include but not limited to:

- Engines to be turned off when refuelling;
- No revving of engines during manoeuvring;
- Engines to be turned off when parked;
- Vehicles to idle to highway exit.
- No exhaust brakes to be used onsite.

6.8 Site Maintenance and Management Procedures

The service station operator will have a Petrol Handling Manual, which will set out all requirements for the safe handling of combustible and flammable materials. This manual will dictate weekly, monthly, and annual checking procedures with checklists to be completed and records stored.

The manual will also set out dry cleaning methods to be employed within the fuel dispensing area in lieu of washing down to reduce possible contaminated runoff. Emergency procedures will be also clearly set out, detailing actions to be taken by site personnel in the case of varying possible emergencies such as spills, fire or risk of fire, vehicle accidents, etc.

In addition, a regular cleaning/maintenance program/contract is to be established for emptying of rubbish bins located around the site, removal of general litter from the site, inspection of stormwater gully pits and removal of any sediment or captured litter from the Spel® Puraceptor. The Spel® Puraceptor will be inspected and maintained in accordance with the manufacturer's instructions.

The maintenance plan will address the following:

- Inspection frequency;
- Maintenance frequency;
- Data collection/storage requirements;

The plan will also contain detailed cleanout and inspection procedures covering aspects such as equipment needs, maintenance techniques, occupational health and safety, public safety, environmental management considerations, disposal requirements of pollutants collected and access issues.

6.9 Maintenance Plans for Stormwater Treatment Devices

All stormwater quality improvement systems require maintenance in order to function efficiently and effectively. Table 15 details the basic maintenance requirements for each type of stormwater quality improvements system. A detailed maintenance schedule will be developed as part of the detailed design of the site.

Table 15: Maintenance Requirements

Control	Maintenance Requirement	Maintenance Period
Onsite Detention Pond	Removal of accumulated sediment	As required by inspection and monitoring

Control	Maintenance Requirement	Maintenance Period
Spel® Puraceptor	Replacement of oil separators and coalescer units, removal of oil, sediment & gross pollutants (skimmers and vacuum truck)	6 Months (inspect after major spill)

6.10 Access and Transport

A transport assessment report has been prepared for the proposed development and is included in full in Appendix 5 of this report. This report was prepared in 2024 to provide a revised site layout that is considered suitable to meet TfNSW requirements. This report is included in appendix 6.

The proposed development will involve relocation of the existing entry and exit points to the old service station and residences along the Newell Highway. This is occurring to allow appropriate entry and exit to the site that meet Austroad standards.

The traffic report provides details of the new entry and exit points. Roadwork will be required to build the two new intersections, including widening of the Highway. The report has been provided to TfNSW and correspondence from TfNSW forms part of the report.

The proposed design as outlined in this report is to be adopted for this site. This avoids traffic conflict with Queen Street and therefore limits the impact of the site on local residents and avoids traffic conflict within Edgeroi. The speed limit within Edgeroi which is currently 80 km/h will be retained once the site is operational.

6.11 Visual Impacts

The proposed development site is directly adjacent to the Newell Highway. A service station and other buildings have been present in this area for more than 30-years. On this basis, the proposal is considered to be similar as existing development of the site. While the proposed development will be more extensive, it includes landscaping to soften the visual impact of the development on the surrounding area. It is considered that the proposal will have positive impacts on visual amenity, given that the existing service station has been abandoned for several years and is in a state of disrepair.

Adjoining landowners will have their visual landscape changed as a result of the service station building. As a result of potential noise exceedances, the site will require some form of noise barrier. This will consist of a fence to a height of 2.4m. The result of this will include a reduction in the visual impact of the new service station site.

For many years, the adjoining landowners have been viewing abandoned or semi-abandoned buildings, dumped cars, a camp site, which has become overgrown by grass and weeds. At present, the adjoining landowners are viewing a material storage site which is actively used for the current Newell Highway project which is anticipated to continue for a period of up to 2-years. The site is currently being accessed by heavy machinery and trucks. The adjoining landowners are viewing stacks of box culverts and other structures to be utilised in the highway project. The historical and current views cannot be considered as proving a pristine environment or landscape view to adjoining landowners when the Newell Highway is added in to the landscape features. It is suggested that most of the adjoining houses would utilise view of the surrounding farmland and east to Mount Kaputar National Park in preference to looking at the Newell Highway and an abandoned service station site.

The proposed development will modify this view to provide a modern building, landscaping, and a tidy site, subject to good management practices. This would be considered more visually pleasing than the historical and current view of the site.

6.12 Social and Economic Impacts

The Narrabri Shire suffers from some economic and population segment decline and population ageing. The Shire's major employer is agriculture although even this sector has shown decline in worker availability. This project is expected to provide social and economic benefit at the local levels in terms of job creation. In addition, the proposal has the potential to increase economic activity in the related supply sector, transport sector, fuel supplies and associated construction, maintenance, and service industries. The facility will also provide local with a shop and service facility which was lost when the original service station and shop was closed.

6.12.1 Social Impact

The proposed development will provide additional services to the residential community of Edgeroi which is currently provided with limited services and facilities. The existing service station was well utilised by people residing in Edgeroi on trips into or out of the town or trips to other destinations. The service station is ideally located along a major highway allowing people easy access to the facility. It also allows residents a convenience shop for purchasing milk, newspapers, ice creams etc. Overall, positive social benefits will result from the proposed service station expansion.

6.12.2 Economic Impact

Economic benefits for the community will result from employment opportunities generated during the construction phase of the new buildings and additional employment opportunities

once the revamped service station facility is operational. The service station will also provide a local source of fuel for residents, farmers, grain trucks and other surrounding locals. This has been absent for an extended period and the closest sources of fuel are either Narrabri or Bellata.

The proposal will have positive economic benefits in that it will contribute to the local economy and will provide the community with additional services.

6.12.3 Scenic Values

The proposed development will improve the appearance of the site through the use of modern and current building materials and building design. The visual amenity of the area will be improved by the proposed development.

Given the nature of the proposed development, it was determined that a detailed Landscape and Visual Impact Assessment is not required. Nonetheless, the proposed development will incorporate landscaping along the front boundary of the site conducive to the proposed development. The proposed service station will also improve the aesthetics of the site when compared to the current and historical condition of the site.

6.13 Cumulative Impacts

Cumulative impacts are those that result from the successive, incremental, and/or combined effects of an action, project, or activity (collectively referred to as "developments") when added to other existing, planned, and/or reasonably anticipated future ones.

Development in Edgeroi of recent periods consisted of one new house, the Inland Rail Project and currently upgrades to the Newell Highway. No other development in the form of buildings, industry, or changes to farming intensity in the adjoining rural land is anticipated. Villages such as Edgeroi remain subject to decline as a result of isolation and a reduction in the number of people living on farms that the town services. Issues identified in Edgeroi include the lack of use and decline of the local town hall. This suggests a decline in population that utilise the immediate town area.

On this basis, there are limited cumulative impacts identified as a result of the redevelopment of this service station site, resulting from changes or development in the village area or surrounds.

7 Suitability of the Site for the Development and Report Summary

- The proposed development involves replacement of the old Edgeroi Service Station and shop facilities with a new service station, dining area and trucker's facilities in addition to restoration of the Bottle shop.
- The proposal would extend over Lots 1, 2, 3, and 4 DP1269526, Lots 60, 61, 63, and 66 DP753952, Lot 62 DP665543, Lots X and Y DP394753, and Lot 1 DP311343 at 14456 Newell Highway, Edgeroi, NSW 2390;
- The site is zoned RU5 Village under the provisions of Narrabri Shire Council's Local Environmental Plan 2012;
- The site currently supports the original but now derelict service station buildings and two houses which are in disrepair;
- The proposed development will result in a positive impact on the aesthetics and appearance of the site;
- The total area under proposed development is approximately 41,276m^2 with approximately 378m frontage on the Newell Highway;
- The revised access will be directly from the Newell Highway and will not utilise Queens Street for access;
- Utility services are currently available and are capable of supporting upgrades to service the proposed service station, if required;
- The proposed development will have no significant adverse impacts on the native flora and fauna in the surrounds;
- The proposal will require upgrades to existing site entrances; however the proposal is overall not expected to present a significant impact to the operation and safety of the Newell Highway and can be supported from a traffic and transport perspective;
- The land is not identified as bushfire or flood prone based on available online mapping provided on the ePlanning Spatial Viewer and Narrabri LEP maps;
- The service station site will be constructed on an elevated pad to raise it above local drainage and potential flooding issues from the adjacent Tarlee Creek;
- The contamination levels identified by the preliminary site inspection are considered to be minimal in relation to the site's history of commercial use. All analytical results for soil were below the relevant NEPM Assessment Criteria for Commercial and Industrial site. Potential contaminants of concern appear to be

limited to the topsoil, having little opportunity to permeate down into the underlying clay soils;

- An acoustic assessment of the proposal provides details for construction and operation of the site to ensure that noise emissions from the service station meet appropriate noise emission criteria;
- A Transport Assessment report concluded that the proposed service station upgrade is a suitable development for the site; and
- The development as proposed is considered to address the requirements of sustainable development being a key consideration under the provisions of the *Environmental Planning & Assessment Act 1979*.

7.1 Any submissions made in accordance with this Act or the Regulations

Public participation is addressed under Section 79A of the *Environmental Planning and Assessment Act 1979* for advertised development and other notifiable development.

The development was subject to a development application for similar redevelopment of the site in 2016 and 2023. Adjoining landowners provided comment on the proposal. These comments were considered in the preparation of this report.

The consent authority must ensure a development application is advertised/notified in accordance with this clause and any relevant environmental planning instrument and/or development control plan.

7.2 Public and Public Authority Submissions

Where necessary for Integrated Development, Council must notify the appropriate authorities of the proposal, under the EP&A Act. General Terms of Approval from notified government authorities should be included in the conditions of consent issued by the Council.

The proposed development is classed as Integrated Development as the proposal should be referred to TfNSW, Water NSW and potentially Liquor and Gaming NSW in relation to renewing the Packaged Liquor Licence.

The development will also require an application to Water NSW to establish appropriate approvals for use of groundwater as the primary water supply for the service station. This will require separate applications made under the Water Management Act 2000.

7.3 The Public Interest

The public's interest has been considered by the application in relation to construction and operation of the proposed development, and it is understood the application will be

notified/advertised in accordance with Schedule 1 of the *Environmental Planning and Assessment Act 1979* and any relevant environmental planning instrument and development control plan to ensure the public are notified accordingly and given their right to be heard.

Do any policy statements from Federal or State Governments have relevance?
All levels of government support economic development in rural and regional centres. The proposal is generally in accordance with the following directions as outlined in the NSW Government New England Northwest Regional Plan 2036, mainly:

- Direction 14 "Enhance transport and infrastructure networks";
- Direction 15 "Facilitate air and public transport infrastructure";
- Direction 16 "Coordinate infrastructure delivery";
- Direction 20 "Deliver greater housing diversity to suit changing needs";
- Direction 21 "Deliver well planned rural residential housing".

Are there any relevant planning studies or strategies?
The *Narrabri Shire Growth Management Strategy 2020* encourages the provision of services to the community to encourage economic development within the region. The proposal contributes to this goal through the provision of suitable amenity, employment opportunities and economic development to the area.

How will the health and safety of the public be affected?
The premises will be visited by members of the public as part of the ongoing commercial operations of the business. A number of standard safety measures will be in place to ensure the public is protected from any potential hazards of the development operations.

7.4 Justification for Approving the Proposal

The concept of sustainable development recognises the link and importance of social, economic, and ecological consequences of a proposal.

The proposal has been planned in a manner to recognise and reduce any possible adverse environmental effects as clearly outlined and demonstrated under the relevant sections of this SoEE.

The proposed service station would improve local amenity, preserve the essential character of the locality, and maintain the principles for the protection of the environment and environmental sustainability.

In conclusion, the proposed development will result in minimal environmental or amenity impacts and accordingly justifies a favourable determination by Council.

7.5 Context and Setting

The subject site is located at 14456 Newell Highway, Edgeroi, NSW 2390, along the Newell Highway. The site is located approximately 25 kilometres south of the centre of the township of Narrabri, within land zoned RU5-Village under the Narrabri Shire LEP. Adjoining lands consist of both residential buildings and agricultural lands.

The proposed site meets the recommended buffer distances from the property boundary and sensitive receptors. No shallow groundwater sources have been identified within the site's vicinity. The proposed access will ensure safe access to and from public roads. The proposal's demand on resources will be minimal as the development will only require minimal physical works for during the construction phase of the project. No additional services are required.

Overall, the proposed site is considered suitable for the construction of a service station, food and drink premises and trucker's facilities.

8 Conclusion

This Statement of Environmental Effects provides an investigation into the proposed construction of a service station, food and drink premises and truckers facilities with ancillary car parking and landscaping at 14456 Newell Hwy, Edgeroi NSW 2390. The findings of this Statement of Environmental Effects include the following:

- The proposal is considered to comply with local planning guidelines and meets the objectives of the *Narrabri Local Environmental Plan 2012*;
- The proposal is consistent with the surrounding land uses and meets all applicable setback distances; and
- The proposal is not considered to have any significant environmental impact and does not pose any significant conflict with the amenity of the area if appropriate mitigation measures are adopted, specifically to reduce noise impacts on adjoining land in the village.

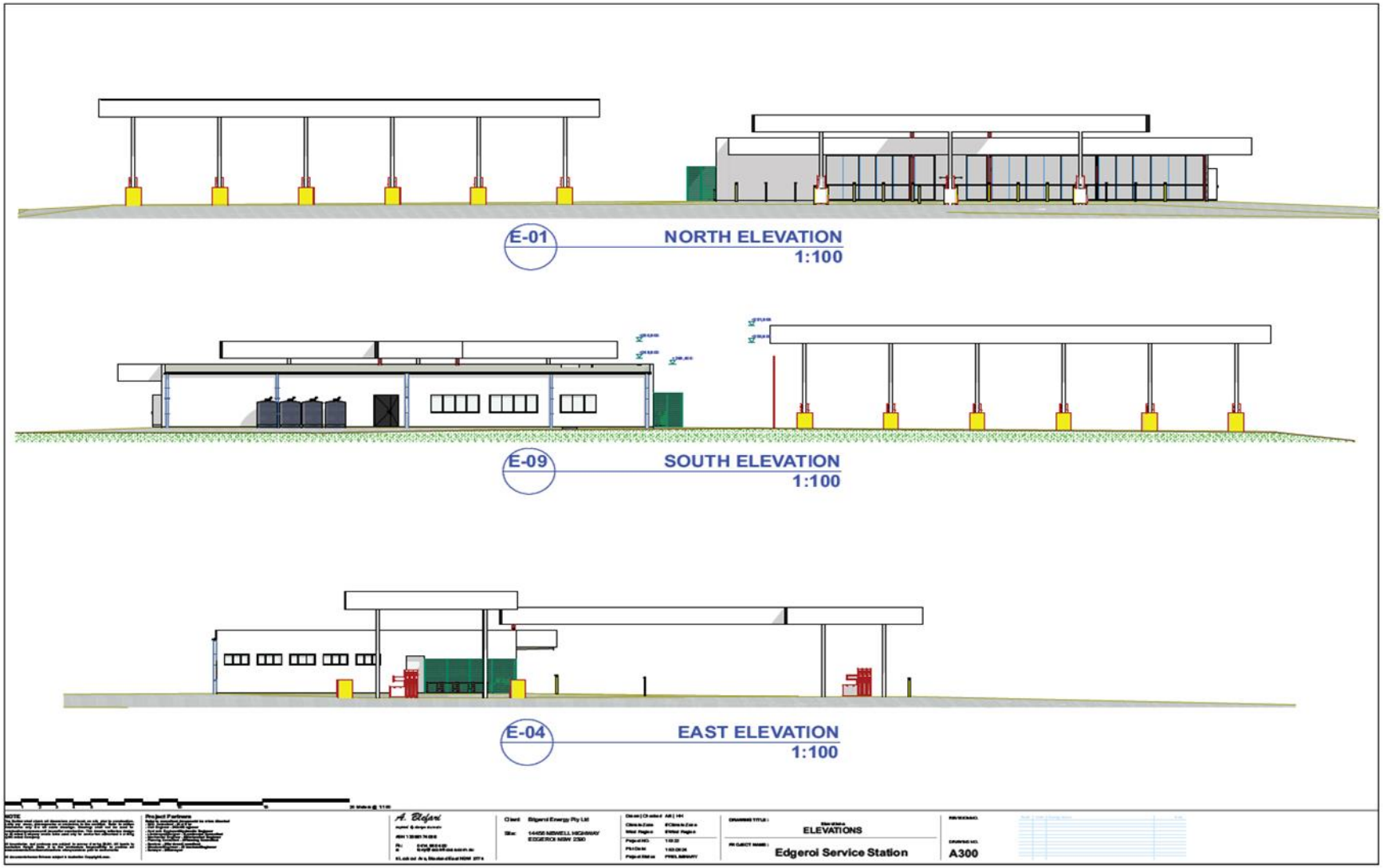
The proposal is considered to provide positive benefits by redevelopment of an abandoned fuel facility, remediation of the site and replacement of aging abandoned buildings with modern buildings. In relation to community benefit, the site will provide a shop and fuel station for the Edgeroi region and surrounding farmland.

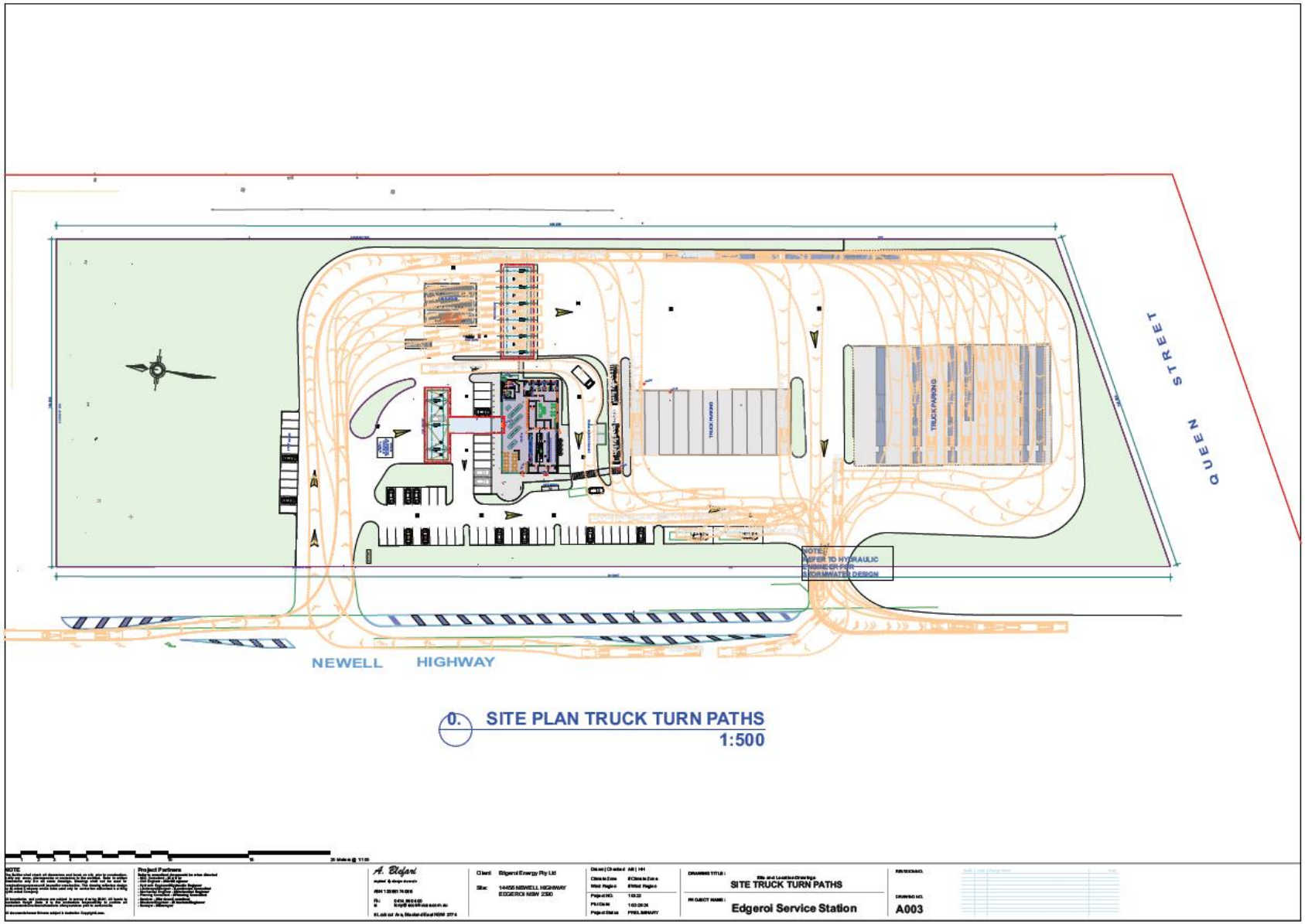
In the event that the proposal creates social unrest, the Proponent has developed several management procedures which would be used to address the situation and implement corrective actions as required. This would occur through a complaint's procedure. As the village is relatively small, the few residents that live in the village would have easy direct access to site management.

It is anticipated that the project will provide an economic stimulus for the village and, consistent with highway strategies, encourage drivers to stop and recuperate at the site, helping to mark Edgeroi as a suitable and welcoming place for highway users to rest.

Overall, this assessment finds that the proposal is well suited to the subject site and should be a welcomed addition to Edgeroi.

Appendix 1: Site Plan & Roof Plan


E-01
NORTH ELEVATION
1:100
E-09
SOUTH ELEVATION
1:100
E-04
EAST ELEVATION
1:100
ELEVATIONS
Edgeroi Service Station
A300


QUEEN STREET
TRUCK PARKING
TRUCK PARKING
NOTE:
REFER TO HYDRAULIC
ENGINEERS FOR
STORMWATER DESIGN
NEWELL HIGHWAY
0. SITE PLAN TRUCK TURN PATHS
1:500
SITE TRUCK TURN PATHS
Edgeroi Service Station
A003

Appendix 2: AHIM Search Results

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : 24-101
Client Service ID : 873336

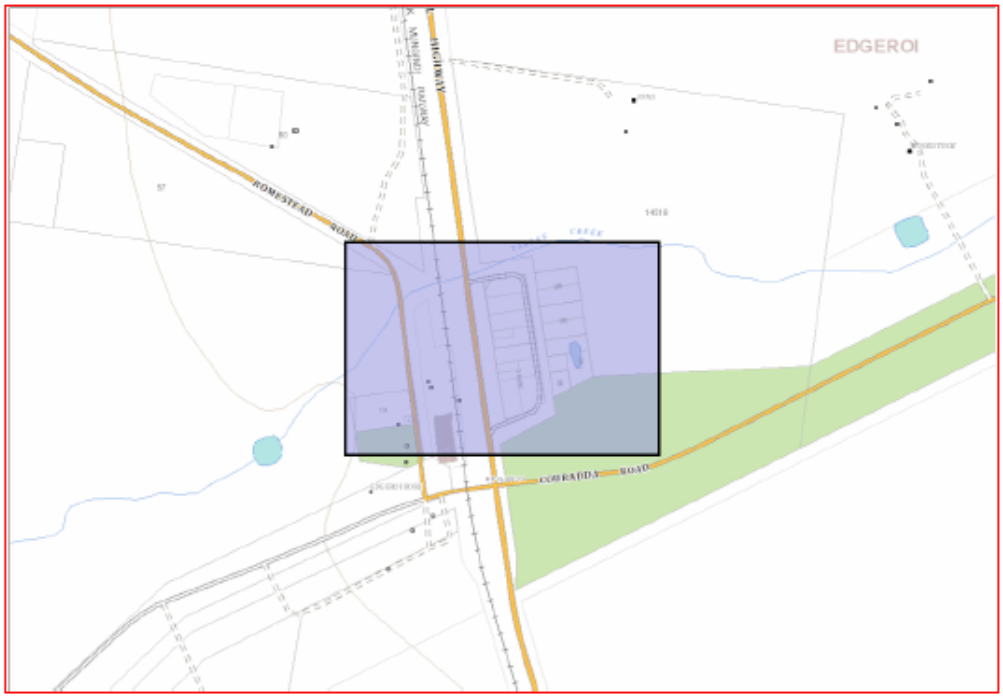
Bruno Nwokolo
39 Frome Street
moree New South Wales 2400
Attention: Bruno Nwokolo
Email: brunodsmk@gmail.com

Date: 14 March 2024

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lat, Long From : -30.1167, 149.7957 - Lat, Long To : -30.1121, 149.8034, conducted by Bruno Nwokolo on 14 March 2024.

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. *

Appendix 3: SEPP 33 Assessment

HAZARDOUS AND OFFENSIVE DEVEOPMENT

RISK SCREENING REPORT

SEPP 33

14456 Newell Highway Edgeroi NSW

Report Prepared for the

The Benzina Group

PO Box 365
Penrith NSW 2751

Fuel System Designers

ABN: **36 674 809 464**

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E: vincent@vancorp.net.au

Disclaimer

This report was prepared for the Benzina Group for use with a Development Application in relation to 14456 Newell Highway Edgeroi NSW. It was prepared on the basis of information provided by the developer and can be used for general informational purposes only. Fuel Systems Design makes no representation or warranty, express or implied, as to the validity of the report's content. Use of this report by the Benzina Group is limited to providing it to the NSW Department of Planning and it may not be used for any other purposes unless expressly agreed to by the author in writing.

Vincent A Noviello
Report Author
B App Sci (Computing), MapLAW, Professional Cert (Mechanical Engineering)

12 December 2022

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EXECUTIVE SUMMARY

In a potentially hazardous industry, any development proposing the storage and handling of goods considered hazardous goods needs to be screened and have a risk assessment completed for consideration by the Department of Planning with the development application.

A screening process was undertaken for the proposed development of a service station at 14456 Newell Highway Edgeroi NSW.

The screening process included applying a rigorous analysis taking into account the hazardous materials to be stored, boundary setbacks, transportation services, external consequences and the probability of a hazardous event.

Calculations were undertaken in keeping with the Department of Planning's – Applying SEPP 33 and the Planning & Infrastructure's Assessment Guideline – Multi-level Risk Assessment.

The report findings for the Edgeroi proposal were made with all points on the indicative societal risk curve produced from the risk classification and prioritisation being below the negligible line.

FINDINGS AND RECOMMENDATIONS

Findings

The results of the screening process undertaken for the proposed service station development in Edgeroi indicates that it is not a potentially hazardous development.

Recommendations

As such, no further analysis (i.e. Preliminary Hazard Analysis) is necessary.

SITE DESCRIPTION

The land comprises 5 individually titled parcels as follows:

Lot	59	DP753952
Lot	60	DP753952
Lot	61	DP753952
Lot	62	DP665543
Lot	01	DP311343

The site is proposed to be a truck stop and service station development comprising; truck canopy, car canopy, service station shop, fast food restaurant, eating areas, truckies lounge, toilet and shower facilities, car park and truck parking.

The property sits on the eastern side of the Newell highway meaning that southbound traffic will have direct left-in left-out access.

The total area under proposed development is 15,750m2 with a 157.5m frontage on the Newall Highway with a depth of 100m with access from Queen Street on the northern boundary.

The main function of the development will be to supply motor spirit and other combustible fluid to the general public.

Industry standard fuel systems incorporating the highest grade double walled fuel tanks,

dispensers, pipes and sumps will be used with state of the art monitoring systems to prevent spillage, leakage and harm to the environment and people.

LOCATION

The location of the development under consideration is 14456 Newell Highway Edgeroi NSW 2390.

The subject site stands alone in a rural area with no residential structures in the immediate vicinity. Across from the subject site, on the other side of the Newell Highway, there is a railway track which will exclude any residential development in future.

Figure 1 – This a street view of the subject property.

Figure 2 – This is a satellite view of the subject property. The proposed service station will have the vehicular entry from Queen Street.

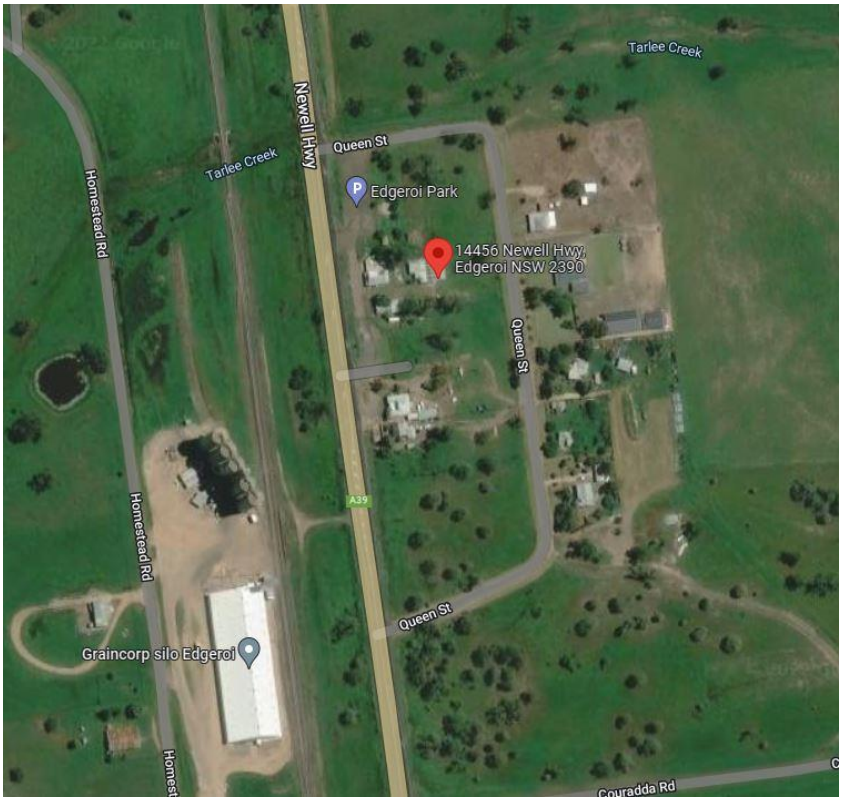
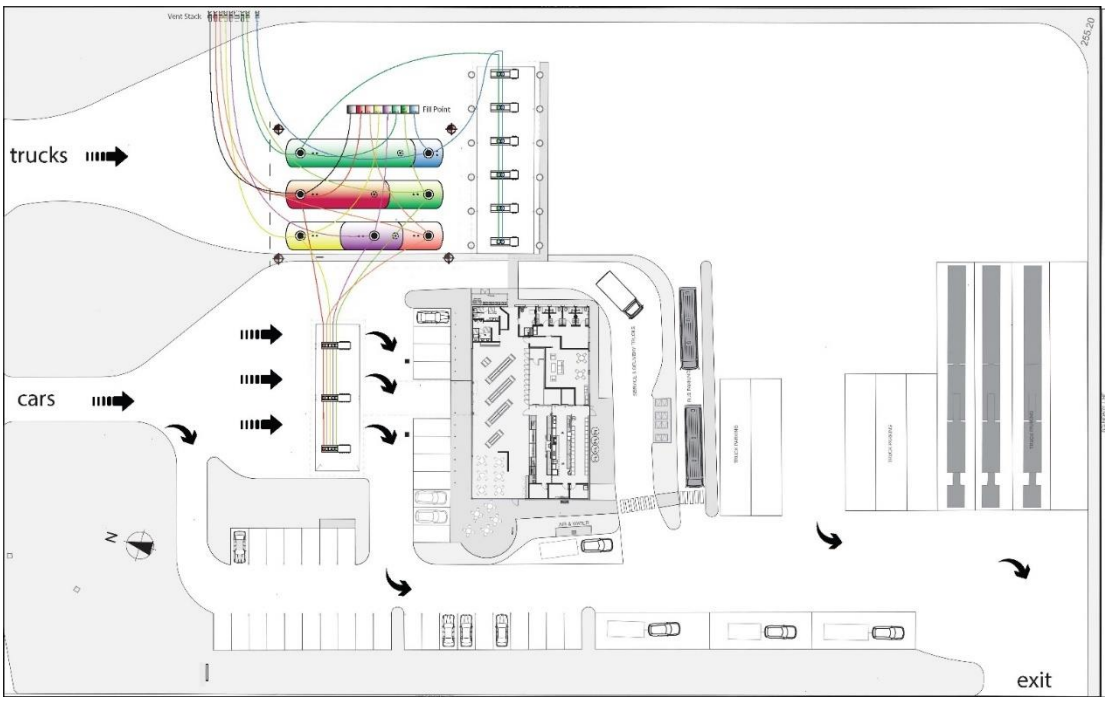


Figure 3 – Site Plan & Facility Layout (see Appendix 1 for enlarged image).



PROCESS

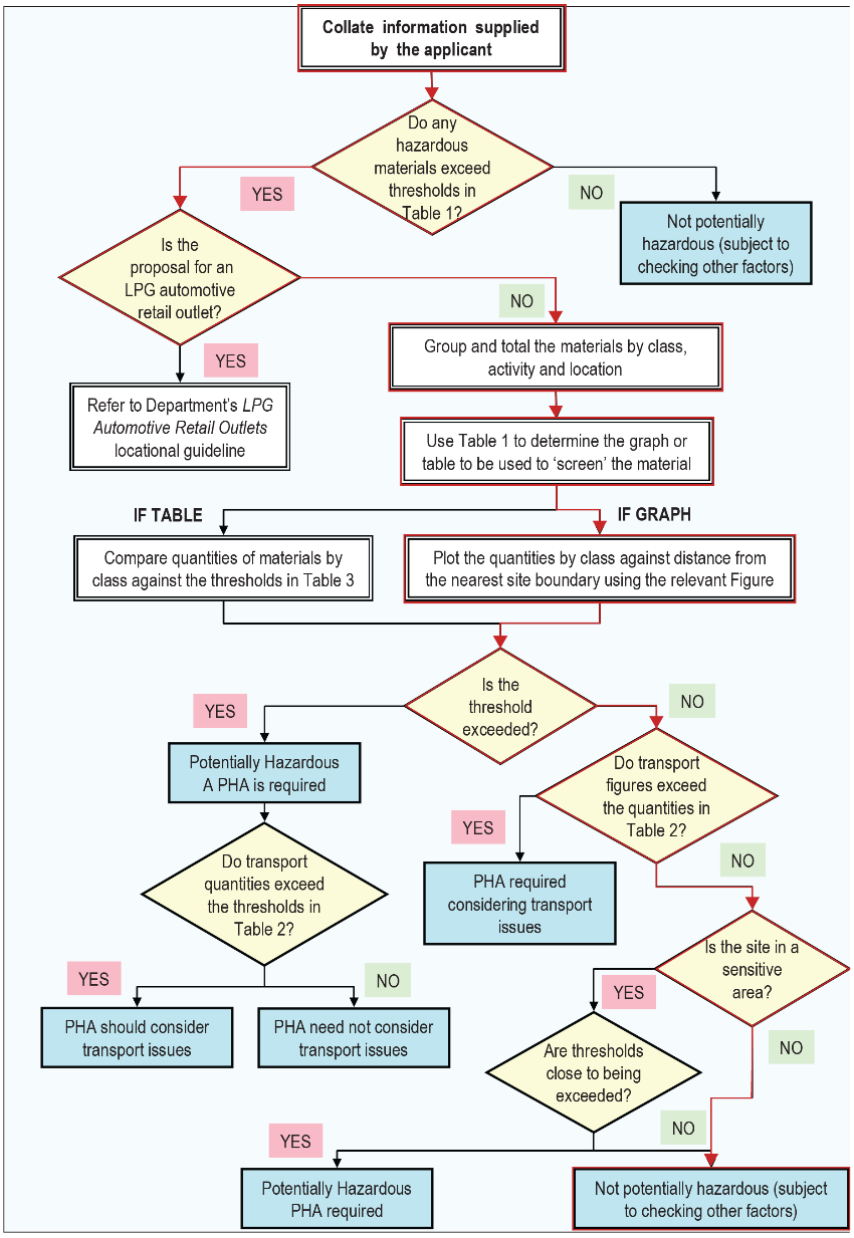
The process undertaken in this risk screening accords with the NSW Planning & Infrastructure *(Assessment Guidelines; Multi-level Risk Assessment)* guidelines. In particular, the SEPP 33 Figure 4 risk screening process as highlighted in Appendix 2.

The process identified that the quantum of hazardous materials proposed for the development exceeds the documented thresholds. The *Figure 9* graph was used to establish that after applying various factors pertaining to the storage type and distances from boundaries that the potentially hazardous region indicated in the graph is clearly avoided.

Transportation and area sensitivity were also considered per the Figure 4 process concluding that the subject site and proposed development is not potentially hazardous.

Other factors considered and analysed include hazard identification, consequence analysis and estimation of the likelihood of a hazardous event.

Figure 4 – Screening Process (see Appendix 2 for enlarged image).



Hazardous Materials

The proposed service station development will store a maximum of 330kL of flammable liquids in three underground storage tanks configured as follows:

Table 1 – Hazardous Materials.

Fuel Type	Amount	Class of Goods
95 Petrol	40,000 litres	3 PG II
98 Petrol	40,000 litres	3 PG II
E10 Petrol	30,000 litres	3 PG II
Diesel	70,000 litres	C1
Diesel	40,000	C1
Diesel	90,000	C1
Ad Blue	20,000	NDG

As Ad Blue is a water based product it is not classified under the ADG Code therefore it follows that this product does not need to be included in the total quantity of hazardous materials for the screening process.

Diesel is classified as a C1 chemical meaning it is not (in itself) considered to be a potentially hazardous product. However, the underground diesel storage tanks are placed alongside other tanks containing hazardous materials (petrol) as such, diesel has been included in the hazardous materials calculations.

PRELIMINARY SCREENING

Summary of Materials Held on Site for the Screening Process

Of the 330kL of combustible and flammable liquids to be stored in underground tanks on site; only 62kL will be considered for the screening process. This figure of 62kL has been arrived at as follows:

Table 2 below shows compartments 1 – 3 will contain 110kL of petrol including E10 in a single double walled underground tank. As this is an underground storage tank the total quantity may be divided by a factor of 5 as a reflection of the lower risk associated with underground tank systems. The resulting flammable liquid quantity for screening purposes in this tank is 22kL.

The second 110kL tank will store diesel fuel in two compartments 4 & 5 which is a combustible fuel (Class C1). However because this substance is stored alongside a Category II product, it is required to be included in the total quantity for screening purposes. As such, applying the same factor as with the first tank, (i.e. a factor of 5) the total combustible liquid quantity for screening purposes in this tank is also 22kL.

The third 110kL tank will store diesel fuel and Ad Blue also in two compartments 6 (diesel 90kL) and 7 (Ad Blue 20kL). As indicated above for tank number 2, diesel is required to be counted for screening purposes. However, Ad Blue is a water based fuel product and may be deducted from the total quantity of stored hazardous materials as it is neither flammable nor combustible. For the purposes of screening this tank contains 18kL.

Therefore, the total of hazardous material proposed to be stored on site is 62kL.

Table 2 – Summary of Materials to be Held on Site.

Tank No.	Compartment No.	Fuel Type	Dangerous Goods Classification	Total for Screening Process (Lt)
1 (110kL)	1 (40kL)	95 Petrol	3 PG II	40,000
	2 (40kL)	98 Petrol	3 PG II	40,000
	3 (30kL)	E10 Petrol	3 PG II	30,000
2 (110kL)	4 (70kL)	Diesel	C1	70,000
	5 (40kL)	Diesel	C1	40,000
3 (110kL)	6 (90kL)	Diesel	C1	90,000
	7 (20kL)	Ad Blue	NDG	Nil
Total Flammable Liquid to be stored on site				310,000
Divide by a factor of 5				/5
Total Flammable Liquid to be considered in the screening process				**62,000**

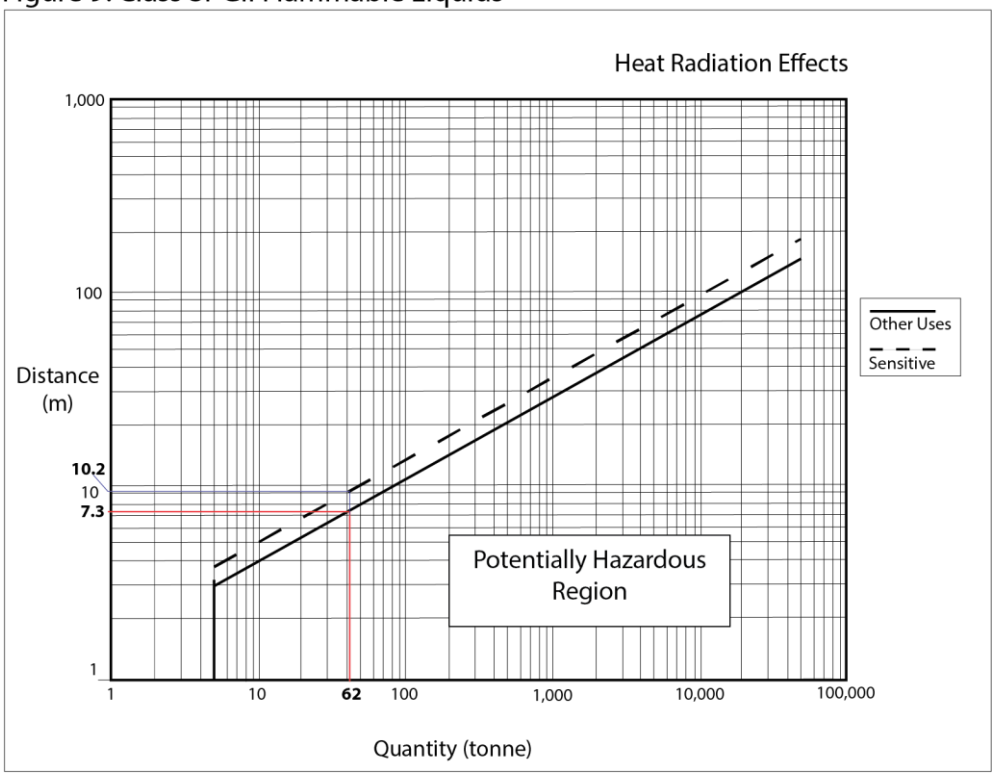
Screening Method to be Used

Given the maximum quantity of Class 3 PG II hazardous materials to be stored exceeds 5 tonnes, the screening method used is the Figure 9 graph as per *Applying SEPP 33 (January 2011).*

By utilising Figure 9 and measuring separation distances, it can be determined whether further analysis is required. The separation distances are measured from the underground tank fill points and the fuel dispensers to the site boundaries. Given only diesel (C1) will be dispensed at the truck/heavy vehicle filling canopy, only the separation distances for the car dispensers will be used.

Figure 5 – Setback Graph (see Appendix 3 for enlarged image).

Figure 9: Class 3PGII Flammable Liquids



Source: Applying SEPP 33 | January 2011

From Figure 9 we can observe that for 62kL of flammable liquid the minimum setback distance for the petrol dispensers and remote fill point is 7.3m from the site boundaries for other uses, or 10.2m for sensitive uses (i.e. residential).

The distances indicated above are the minimum distances for any boundary on the subject site. Other distances have also been calculated from each site boundary as indicated in Table 3 below.

Table 3 – Boundary Distances

Boundary	Distance to Fill Points	Distance to Diesel Dispensers	Distance to Petrol Dispensers	Distance to Tank Farm
North	57.5	75.1	49.5	41.2
South	102.5	82.4	108	100.3
East	12.8	8.65	51.5	26.8

West	86.0	68.0	37.1	72.4

Since the set back distances are in excess of 7.3m (for normal use) from boundaries to the fill points, petrol dispensers and diesel dispensers, the site is deemed to be non hazardous and there is no requirement to do a PHA for further analysis.

Table 4 – Transport Screening Thresholds (see Appendix 4 for complete table).

Vehicle Movements			**Minimum Quantity per load (tonne)**	
Class	Cumulative Annual	Peak Weekly	Bulk	Packages
3PGII	>750	>45	3	10

For the proposed service station development it is intended to retail approximately 800,000 Lt of fuel products per month. This will require a 40kL tanker to attend the site approximately 20 times per month or 240 times per year. The frequency of transport movements is well within the thresholds of 45 per week or 750 per annum as indicated above at Table 4 (sourced from *NSW Planning & Infrastructure Applying SEPP 33 (January 2011).*

CONSEQUENCE ANALYSIS

Risk Classification and Prioritisation

In order to calculate the external consequences of risk, the following equation is used:

$C_{a,s} = A \,.\, d \,.\, f_A \,.\, f_m$

$C_{a,s}$ = external consequences
A = affected area
d = population density
f_A = area correction factor for the populated area
f_m = correction factor for mitigation effects

In accordance with the *IAEA Table IV(a) (NSW Planning & Infrastructure Assessment Guidelines; Multi-level Risk Assessment)*, the classification for the type and quantity of flammable liquids under consideration is categorised as follows:

Table 5 – Incident Inventory Classification (see Appendix 5 for full table).

Material	**Site inventory (tonnes)**	**Reference no. IAEA Table IV(a)**	**Effect category IAEA Table V**
Petrol (bulk in a single tank)	62	6	CII

From the *IAEA Table V (NSW Planning & Infrastructure Assessment Guidelines; Multi-level Risk Assessment)* the effect distance and area of effect is calculated as follows:

Table 6 – Effect Distance and Area of Effect (see Appendix 6 for full table).

Material	**Effect category IAEA Table IV(a)**	**Effect area (ha) IAEA Table V**	**Maximum distance (m) from IAEA Table V**
Petrol (bulk in a	CII	1.5	50-

single tank)			100

The above table determines the effect area and maximum diameter of effect in the event of an accident involving the hazardous material (petrol).

External Consequences

From the above table it can be seen that in the event of an accident the maximum effect distance exceeds the proposed development's boundaries therefore, external consequences of such an event will impact the surrounding area and must be calculated taking account of the population within the immediate location of the proposed service station.

Figure 6 – Estimate of the Effect Distance and Area (see Appendix 7 for enlarged image).

Using Table VI *(NSW Planning & Infrastructure Assessment Guidelines; Multi-level Risk Assessment)* population density to be used follows:

Table 7 – Population Density (see Appendix 8 for full table).

Description of the area	Density (persons/ha)
Farmland, scattered houses	5

Table VII *(NSW Planning & Infrastructure Assessment Guideline; Multi-level Risk Assessment)* provides for a population correction factor calculated on the basis of estimated population distribution within the circular area (refer to Figure 6).

Table 8 – Population Correction Factor (see Appendix 9 for full table).

Effect area Category	Populated fraction (%) of circular area					
	100%	**50%**	**20%**	**15%**	**10%**	**5%**
I						
II			0.4	0.3	0.2	
III						

It is estimated that 15% of the circular area has a population distribution therefore the correction factor is 0.3.

For flammable liquids with reference numbers from 1 -12, the correction factor for mitigation is 1 as stated in Table VIII *(NSW Planning & Infrastructure Assessment Guidelines; Multi-level Risk Assessment)*.

Table 9 – Correction Factor for Mitigation (see Appendix 10 for full table).

Substance (reference number)	Factor
Flammable liquids (1 – 12)	1

It is now possible to calculate the external consequences of a major accident using the formular below and substituting the data obtained in Tables 1 – 9 above.

$C_{a,s} = A \,.\, d \,.\, f_A \,.\, f_m$

A = 1.5ha (affected area)
d = 5 (population density)
f_A = 0.3 (correction factor for the distribution of population)
f_m = 1 (correction factor for mitigation)

This translates to: $C_{a,s}$ = 1.5 x 5 x 0.3 x 1

Therefore, the external consequences of a single major accident is estimated to be 2.25 fatalities.

ESTIMATION OF THE LIKELIHOOD OF HAZARDOUS EVENTS

Probability Number

The probability of an incident occurring considering the installation and the materials being stored is arrived at using the following formular:

$N_{i,s} = N^*_{I,s} \,.\, n_I \,.\, n_f \,.\, n_o \,.\, n_p$

Where $N_{i,s}$ is the average probability number for the installation and the substance.

The relationship between probability and frequency is given by:

$N = | log10\ P$

Table IX *(NSW Planning & Infrastructure Assessment Guidelines; Multi-level Risk Assessment)* provides the Average Probability Number ($N_{i,s}$) as follows:

Table 10 – Average Probability Number ($N_{i,s}$) (see Appendix 11 for full table).

Substances	**Activity**	
(reference Nos)	**Storage**	**Plant**
Flammable liquids (1-3)	8	7

The following tables calculate the probability correction factors that may apply to the proposed development in relation to storage of flammable liquids.

Table 11 – Probability Number Correction Parameter for Loading/Unloading Operations Frequency (n_l) (see Appendix 12 for full table).

Frequency of loading/unloading (per year)	**Parameter**
500 – 2000	-2

Table 12 – Probability Number Correction Parameter for Organisational Safety (n_o) (see Appendix 13 for full table).

Frequency of loading/unloading (per year)	**Parameter**
Above average industry practice	+0.5

Table 13 – Probability Number Correction Parameter for Wind direction towards Populated Areas (n_p) (see Appendix 14 for full table).

Effect area Category	**Part of area (%) where people are living**					
	100%	**50%**	**20%**	**15%**	**10%**	**5%**
I						
II				0.5		
III						

It is now possible to calculate the probability number of a major accident using the formular below and substituting the data obtained in Tables 10 – 13 above.

$N_{i,s} = N^*_{I,s} . n_l . n_f . n_o . n_p$

$N^*_{I,s}$ = average probability number
n_l = frequency of loading/unloading
n_f = safety systems associated with flammable substances
n_o = organisational and management safety
n_p = wind direction towards populated area

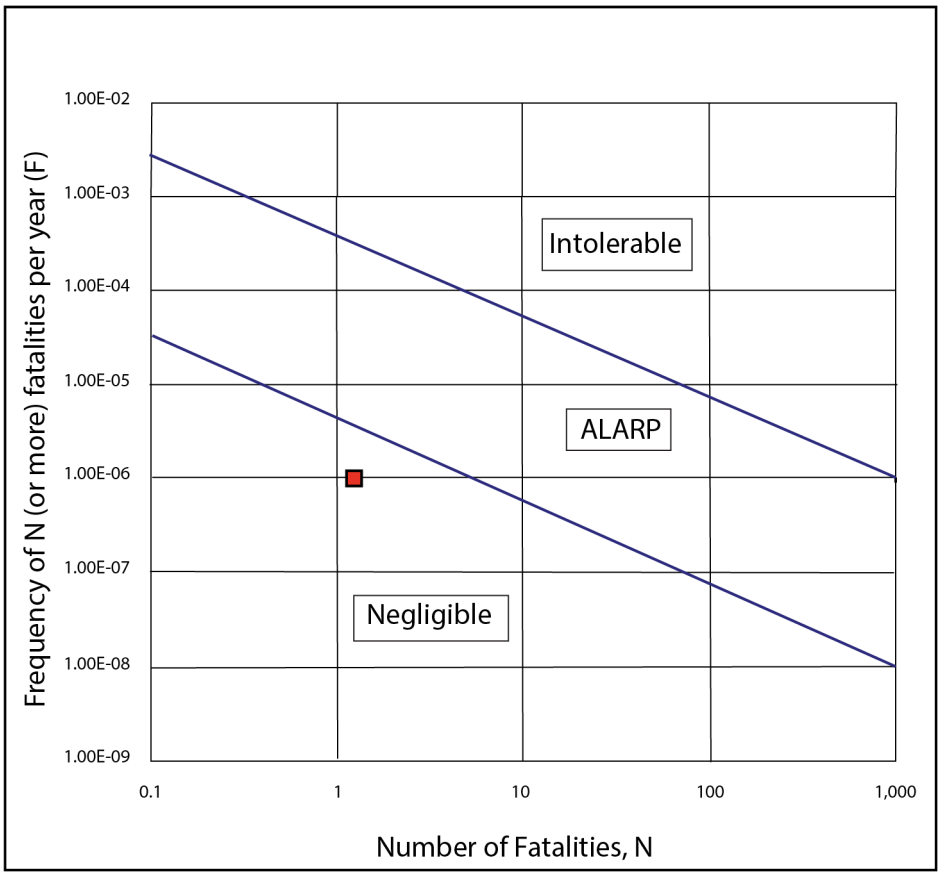
This translates to: $N_{i,s} = 8 + (-)2 + 0.5 - 0.5 = 6$

Therefore, the probability of a major accident is estimated to be 1 x 10^{-6} or 1 in 1,000,000 years.

Societal Risk

It is now possible to calculate societal risk in light of the results of the both the external consequences and the probability of an even occurring. The following graph plots the results of both calculations and demonstrates societal risk of the proposed service station development.

Figure 7 – Societal Risk (see Appendix 15 for enlarged image).



LEVEL OF ASSESSMENT

The results of both the external consequences and the probability of a major event occurring can be seen in Figure 7. The risk screening for the proposed development indicates an acceptable level of risk which falls within the acceptable parameters.

Using the principles as set out in section A1.3.1 of *(NSW Planning & Infrastructure Assessment Guidelines; Multi-level Risk Assessment)* the following analysis is provided by way of a hazard identification table.

Table 14 – Hazard Identification Word Diagram – <u>Sample Only</u> (see Appendix 16 for a more complete listing of potential Events).

Event	Cause	Consequence	Mitigating Factor
Underground tank leak	• mechanical damage • equipment failure	• dispersion underground without ignition	• use of double walled fibreglass tanks • primary and secondary leak detection

			• systems • management procedures to monitor tank levels
Underground piping leak	• mechanical damage • equipment failure	• dispersion underground without ignition	• use of multi-layer piping • leak detection systems
Tanker rupture or major leak	• mechanical damage • equipment failure • traffic accident	• release of significant quantities of fuel to the environment • dispersion without ignition • fire may result if ignition source is present	• fuel system design to AS 1940 • regular testing and maintenance of tanker • fire fighting equipment to be provided

CONCLUSION

By using the methodologies provided by State Environmental Planning Policy No 33 (SEPP 33) a screening process was undertaken for the proposed development of a service station at 14456 Newell Highway Edgeroi NSW. After applying a rigorous screening process taking into account the materials to be stored, boundary setbacks, transportation services, external consequences and the probabilities of a hazardous event; it is concluded that the proposed service station development is deemed *not potentially hazardous*.

As such, no further analysis (i.e. Preliminary Hazard Analysis) is necessary.

REFERENCE LIST

Australian Code for the Transportation of Dangerous Goods by Road and Rail, Edition 7.7 2020

Australian Standard AS 1940-2017 – *The Storage & Handling of Flammable & Combustible Liquids*

Australian Standard AS 4897-2008 – *The Design, Installation and Operation of Underground Petroleum Storage Systems*

Department of Planning Hazardous Industry Planning Advisory Paper No 3 '*Risk Assessment' 2011*

Department of Planning Hazardous Industry Planning Advisory Paper No 4 '*Risk Criteria for Land Use Safety Planning' 2011*

Department of Planning Hazardous Industry Planning Advisory Paper No 6. '*Guidelines for Hazard Analysis*"

Department of Planning Hazardous Industry Planning Advisory Paper No 8 '*HAZOP Guidelines*'

National Code National Code of Practice Storage and Handling of Workplace Dangerous Goods March 2001 [NOHSC:2017(2001)]

NSW Department of Planning *Hazardous and Offensive Development Application Guideline Applying SEPP 33*

NSW Department of Planning and Infrastructure *Assessment Guidelines Multi Level Risk Assessment*.

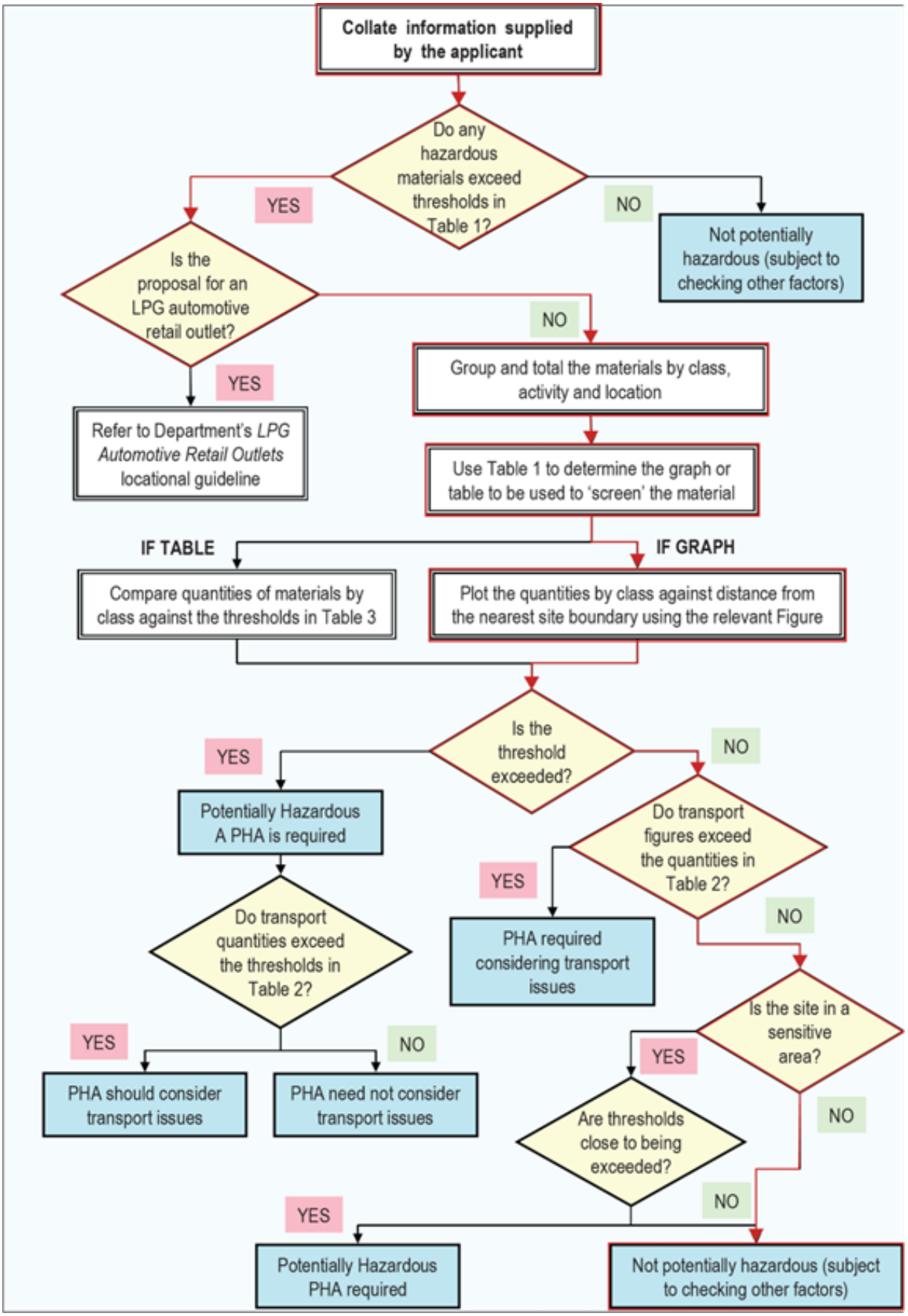
Site Specific Fuel System Specifications and Drawings.

Site Specific Architectural Drawings

Survey Plan

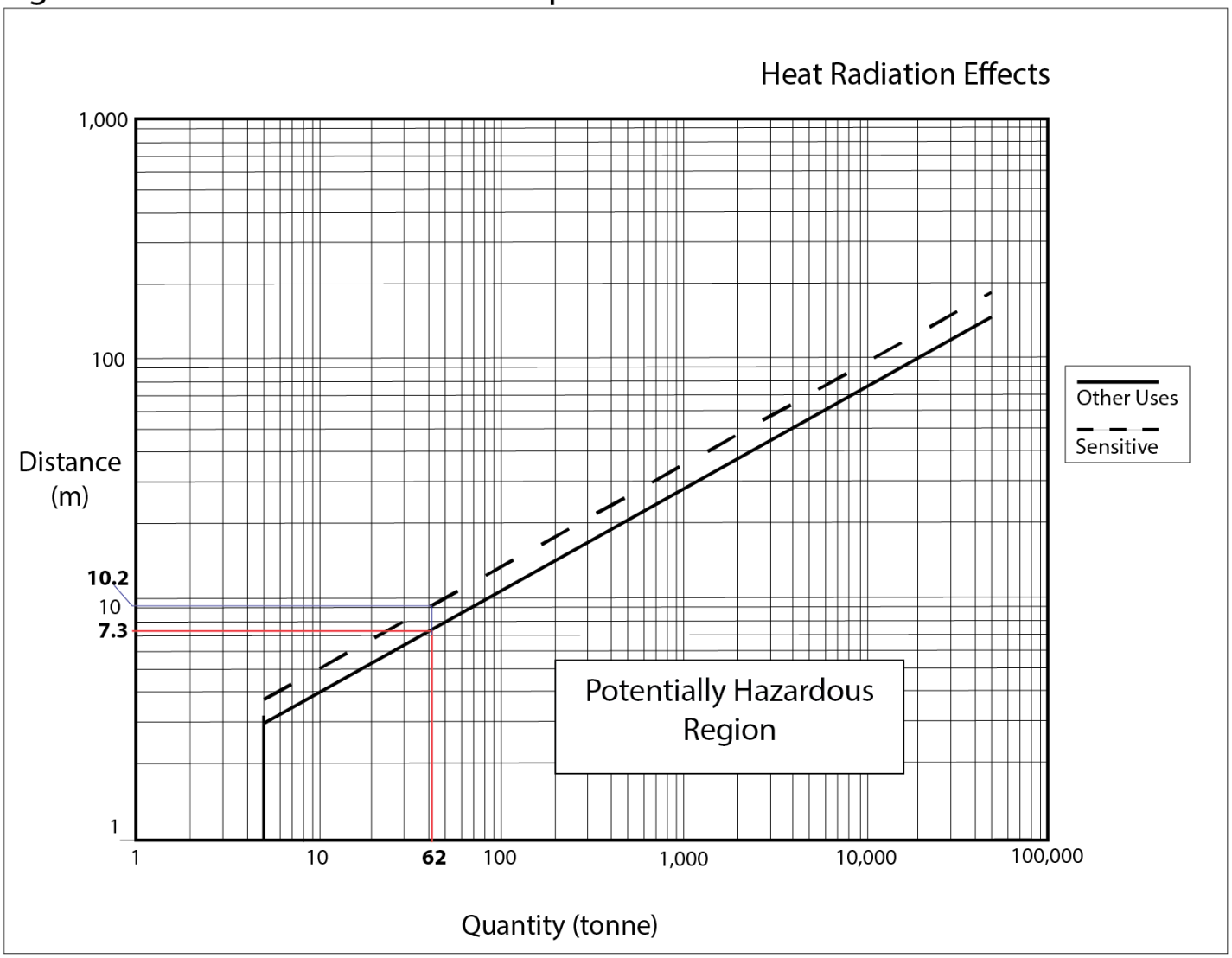
APPENDICES

Appendix 2 – Screening Process



Appendix 3 – Figure 9: Class 3PGII Flammable Liquids

Figure 9: Class 3PGII Flammable Liquids



Source: Applying SEPP 33 | January 2011

Appendix 4 – Transport Screening Thresholds

Transportation Screening Thresholds

	Vehicle Movements		Minimum quantity* per load (tonne)	
	Cumulative	Peak		
Class	Annual *or*	Weekly	Bulk	Packages
1	see note	see note	see note	
2.1	>500	>30	2	5
2.3	>100	>6	1	2
3PGI	>500	>30	1	1
3PGII	>750	>45	3	10
3PGIII	>1000	>60	10	no limit
4.1	>200	>12	1	2
4.2	>100	>3	2	5
4.3	>200	>12	5	10
5	>500	>30	2	5
6.1	all	all	1	3
6.2	see note	see note	see note	
7	see note	see note	see note	
8	>500	>30	2	5
9	>1000	>60	no limit	

Appendix 5 – Incident Inventory Classification

IAEA Table IV(a): Classification of Substances by Effect Categories

Ref. No.	Type of substance	Description of substance	Activity	Quantity (t)								
				0.2-1	1-5	5-10	10-50	50-200	200-1000	1000-5000	5000-10000	>10000
1	Flammable liquid	Vapour pressure <0.3 bar at 20°C	Storage with tank pit	-	-	-	-		AI	BI	BI	CI
2			Pipeline	-	-	-	-	-	-	-	-	-
3			Other	-	-	-	AI	BI	CI	DII	X	X
4		Vapour Pressure 0.3 bar at 20°C	Storage with tank pit	-	-	-	-	-	BI	CII	CII	DII
6			Other	-	-	-	BII	CII	DII	E II	X	X
7	Flammable gas	Liquefied by pressure	Rail, road, overground storage	-	AI	BI	C I	D I	E I	X	X	X
9			Other	-	BII	CIII	CIII	DIII	E III	X	X	X
10		Liquefied by cooling	Storage with tank pit	-	-	-	-	-	BI	CII	CII	DII
11			Other	-	-	-	BII	CII	DII	E II	X	X
13		Under pressure > 25 bar: high toxicity	Storage of cylinders (25-100kg)	-	-	CIII	CII	CI	CI	CI	X	X
14	Explosive	In bulk (causing single explosion)		AI	BI	BI	CI	CI	DI	DI	X	X
15		In packages (e.g. shells)		BIII	BIII	CIII	CI	CI	DI	DI	X	X
16	Toxic liquid	Low toxicity	Storage with tank pit	-	-	-	-	A II	A II	A II	B II	C III
17			Other	-	-	-	A III	A II	B II	C II	C II	C II
18		Medium toxicity	Storage with tank pit	-	-	-	A III	B III	D III	E III	F III	F III
21			Other	-	-	C III	D III	E III	F III	F III	X	X
22		High toxicity	Storage with tank pit	-	-	A II	B III	C III	E III	F III	G III	G III
25			Other	-	-	D III	E III	F III	F III	G III	X	X
26		Very high toxicity	Storage with tank pit	BII	CII	C III	E III	F III	G III	G III	H III	H III
29			Other	CIII	DIII	E III	F III	G III	H III	H III	X	X
30	Toxic gas	Liquefied by pressure: low toxicity	Storage with tank pit	AII	BII	B II	CIII	C II	DII	D III	D III	E III
31		medium toxicity	Other	BII	CII	C II	DIII	E III	F III	F III	G III	H III
32		high toxicity		CII	DIII	E III	E III	F III	G III	G III	X	X
33		very high toxicity		DIII	EIII	F III	G III	G III	H III	X	X	X
34		extreme toxicity		EIII	FIII	G III	H III	H III	X	X	X	X
35		Liquefied by cooling: low toxicity	In the case of activities on water use 30-34 instead of 35-39	-	-	-	A II	A II	B II	B II	C II	D III
36		medium toxicity		-	AII	B II	C II	D III	D III	E III	F III	G III
37		high toxicity		BII	CII	D III	E III	E III	F III	F III	G III	H III
38		very high toxicity		DIII	EIII	F III	F III	G III	G III	X	X	X
39		extreme toxicity		EIII	FIII	G III	H III	H III	X	X	X	X

Note: *For flammable liquids in underground tanks, the quantity should be divided by 5 and the substance treated as 'other' i.e. Refs 3 or 6.*

Symbols: *'X' means the combination of that substance and that amount does not usually exist in practice. It is suggested that a full QRA should be carried out in any such case. '-' means that the effects are small enough to be ignored.*

Appendix 6 – Effect Distance and Area Effect

IAEA Table V: Effect Categories: Maximum Distance and Area of Effect (*A*)

Effect distance (m)		Effect area category (ha)		
Category	**Max. Distance (m)**	**I**	**II**	**III**
A	0-25	0.2	0.1	0.02
B	25-50	0.8	0:4	0.1
C	50-100	3	1.5	0.3
D	100-200	12	6	1
E	200-500	80	40	8
F	500-1000	-	-	30
G	1000-3000	-	-	300
H	3000-10 000	-	-	1000

Appendix 7 – Estimate of the Effect Distance and Area

Appendix 8 – Population Density

IAEA Table VI: Population Density (σ)

Description of the area	Density (persons/ha)
Farmland, scattered houses	5
Individual dwellings	10
Village, quiet residential area	20
Residential area	40
Busy residential area	80
Urban area, shopping centres, centre of city	160

Appendix 9 – Population Correction Factor

IAEA Table VII: Population Correction Factor (f_A)

Effect area Category	Populated fraction (%) of circular area				
	100%	50%	20%	10%	5%
I	1	0.6	0.2	0.1	0.05
II	1	1	0.4	0.2	0.1
III	1	1	1	1	1

Appendix 10 – Correction Factor for Mitigation

IAEA Table VIII: Correction Factor for Mitigation (f_m)

Substances (reference numbers)	Factor
Flammables (1-12)	1
Flammables (13)	0.1
Explosives (14, 15)	1
Toxic liquid (16-29, 43-46)	0.05
Toxic gas (30-34, 37-39, 40-42)	0.1
Toxic gas (35-36)	0.05

Appendix 11 – Average Probability Number

IAEA Table IX: Average Probability Number ($N^*_{i,s}$)

Substances	Activity	
(reference numbers)	Storage	Plant
Flammable liquid (1-3)	8	7
Flammable liquid (4-6)	7	6
Flammable gas (7)	6	5
Flammable gas (9)	7	6
Flammable gas (10,11)	6	-
Flammable gas (13)	4	-
Explosive (14,15)	7	6
Toxic liquid (16-29)	5	4
Toxic gas (30-34)	6	5
Toxic gas (35-39)	6	-
Toxic gas (42)	5	4
Combustion products (43-46)	3	-

Appendix 12 – Probability Number Correction Parameter for Loading/Unloading Operations Frequency

IAEA Table X(a): Probability Number Correction Parameter (*n*) For Loading/Unloading Operations Frequency

Frequency of loading/ unloading (per year)	Parameter
1-10	+0.5
10-50	0
50-200	-1
200-500	-1.5
500-2000	-2

***Note** that this does not apply to cylinders (Ref No 13)*

Appendix 13 – Probability Number Correction Parameter for Organisational Safety

IAEA Table XII: Probability Number Correction Parameter (n_o) for Organisational Safety

Above average industry practice	+0.5
Average industry practice	0
Below average industry practice	-0.5
Poor industry practice	-1
Non-existent safety practices	-1.5

Note: *Several factors are included: safety management, age of the plant, maintenance, documentation and procedures, safety culture, training, emergency planning etc.*

In the case of organisational and management safety, it would usually be considered inappropriate to make a positive correction unless superior systems had been clearly demonstrated by, for example, an audit of the safety management systems. This would only apply to existing plants or to new plants established by an operator with a strong track record.

Appendix 14 – Probability Number Correction Parameter for Wind direction towards Populated Areas

IAEA Table XIII: Probability Number Correction Parameter (n_p) for Wind Direction Towards Populated Area(s) in the Affected Zone

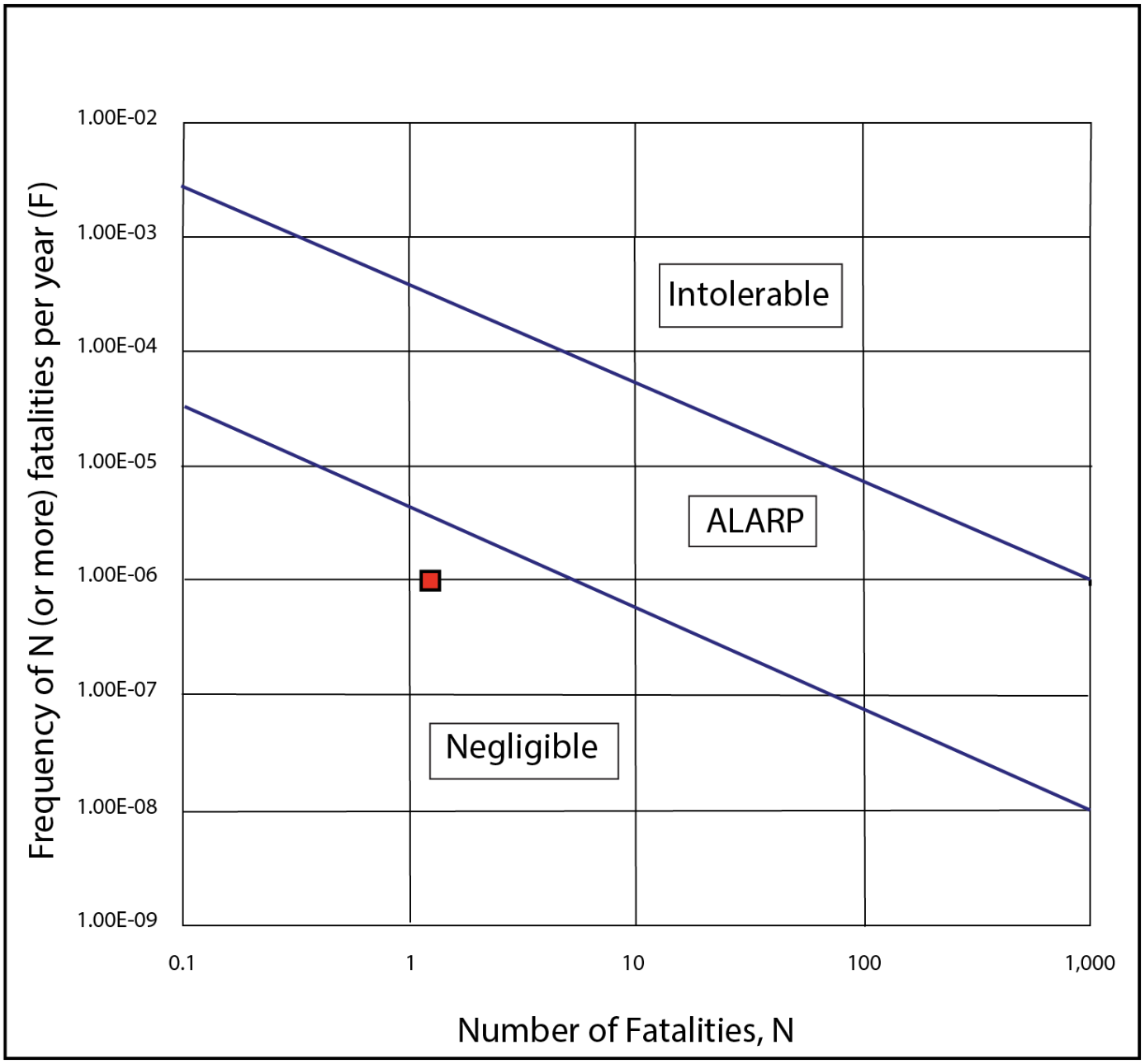
Effect area category	Part of the area (%) where people are living				
	100%	50%	20%	10%	5%
I	0	0	0	0	0
II	0	0.5	0.5	0.5	0.5
III	0	0.5	0.5	1	1.5

Appendix 15 – Societal Risk

IAEA Table XIV: Conversion of Probability Numbers (*N*) Into Frequencies (*P*, event/year)

N	*P*	*N*	*P*	*N*	*P*
0	1×10^{0}	5	1×10^{-5}	10	1×10^{-10}
0.5	1×10^{-1}	5.5	1×10^{-6}	10.5	1×10^{-11}
1	1×10^{-1}	6	1×10^{-6}	11	1×10^{-11}
1.5	1×10^{-2}	6.5	1×10^{-7}	11.5	1×10^{-12}
2	1×10^{-2}	7	1×10^{-7}	12	1×10^{-12}
2.5	1×10^{-3}	7.5	1×10^{-8}	12.5	1×10^{-13}
3	1×10^{-3}	8	1×10^{-8}	13	1×10^{-13}
3.5	1×10^{-4}	8.5	1×10^{-9}	13.5	1×10^{-14}
4	1×10^{-4}	9	1×10^{-9}	14	1×10^{-14}
4.5	1×10^{-5}	9.5	1×10^{-10}	14.5	1×10^{-15}

Note: N is the abs of the logarithm of $P(N = | \log_{10} P |)$


1.00E-02
1.00E-03
1.00E-04
1.00E-05
1.00E-06
1.00E-07
1.00E-08
1.00E-09
Frequency of N (or more) fatalities per year (F)
Intolerable
ALARP
Negligible
0.1
1
10
100
1,000
Number of Fatalities, N

Appendix 16 – Hazard Identification Word Diagram

Event	Cause	Consequence	Mitigating Factor
Underground tank leak	• mechanical damage • equipment failure	• dispersion underground without ignition	• use of double walled fibreglass tanks • primary and secondary leak detection systems • management procedures to monitor tank levels
Underground piping leak	• mechanical damage • equipment failure	• dispersion underground without ignition	• use of multi-layer piping • leak detection systems
Tanker rupture or major leak	• mechanical damage • equipment failure • traffic accident	• release of significant quantities of fuel to the environment • dispersion without ignition • fire may result if ignition source is present	• fuel system design to AS 1940 • regular testing and maintenance of tanker • fire fighting equipment to be provided
Tanker hose rupture of leak	• mechanical damage • material failure • wear and tear • misuse	• release of significant quantities of fuel to the environment • dispersion without ignition • fire may result if ignition source is present	• regular inspection and testing of hose and fittings • tanker brakes interlocked to prevent drive away while connected • unloading operations should be in bonded area • fire fighting equipment to be provided
Underground tank overfill	• incorrect level reading • incorrect connection to fill box	• release of significant quantities of fuel to the environment	• drivers are trained to ensure that there is enough ullage available

		• dispersion without ignition • fire may result if ignition source is present	in the target tank • drivers are to stay in attendance while unloading • spill kits available on site • fire fighting equipment to be provided
Customer overfill	• faulty dispenser nozzle • non attendant customer	• minor spill to forecourt • fire may result if ignition source is present	• signage directed at customer • spill kits available on site • fire fighting equipment to be provided
Customer drives away with dispenser nozzle attached	• non attendant customer	• minimal fuel spillage to forecourt	• spill kits available on site • staff training for this sort of incident
Use of mobile phone or smoking at the dispenser	• non attendant customer	• fire	• signage directed at customer • fire fighting equipment to be provided • operator control of dispenser remotely
Vandalism	• violence	• damage to equipment	• regular checks of equipment • maintenance contracts • dispenser shut down
Off site fire (adjoining property)	• various	• fire	• fuel system can be shut down • evacuation of staff and customers • fire fighting / protection to be provided

Appendix 4: Test of Significance

NSW Threatened Species Assessment – Test of Significance

1 Introduction

1.1 Legislative Context

Section 7.2 of the *Biodiversity Conservation Act 2016* (BC Act) requires that the significance of the impact of a development on threatened species and endangered ecological communities is assessed using a five-part test known as a Test of Significance. Where a significant impact is likely to occur, a Species Impact Statement (SIS) must be prepared in accordance with the Director-General's requirements, or a Biodiversity Development Assessment Report (BDAR) must be prepared by an accredited assessor in accordance with the Biodiversity Assessment Method (BAM).

The Test of Significance in this report has been prepared in accordance with requirements under Section 7.3 of the BC Act. It includes an assessment of the development against five parameters to determine whether there is likely to be a significant effect on threatened species, ecological communities, or their habitats, which are recorded at or likely to occur at the site. The assessment has been conducted in accordance with the Threatened Species Test of Significance Guidelines (OEH 2018). It investigates the effects of the development proposal on threatened species, populations, and ecological communities, as listed under the BC Act, pursuant to Section 1.7 of the *Environmental Planning & Assessment Act 1979* (EPA Act).

2 Project Details

The proposed development involves the construction of a service station at 14,456 Newell Highway in the village of Edgeroi. Before the commencement of construction, demolition works will be necessary for the replacement of the current service station as part of the development process.

The proposed development includes the following components:

- Demolition of existing service station site including removal of below-ground fuel tanks and remediation activities in the event of contamination (Subject of a separate development application);
- Removal of the main house and sheds at the rear of the site;
- Demolition and removal of the two residential buildings on the south of the old service station;
- Civil works to construct foundation and pavement areas;
- Construction of updated highway intersection/s;
- Construction of service station building and associated external covered areas;
- Installation of fuel bowsers and fuel storages;
- Installation of wastewater management system;

- Construction of onsite stormwater management system;
- Regeneration of existing bore or replacement and installation of appropriate water tanks for potable water supplies and fire-fighting water storage;
- Erection of signage for advertising and traffic flow within the site.
- Provision of onsite car and truck parking spaces for customers and staff; and
- Landscaping.

The proposed site is located in the centre of Edgeroi village, approximately 25 kilometres north of Narrabri. The site has historically provided fuel to the local community and travellers. The old facility also included a shop, food sales, a bottle shop and a post office. The development is being undertaken by Edgeroi Energy Pty Ltd.

Construction of the new service station will involve removal of surface vegetation and topsoil will then be stripped and stockpiled, the soil surface within the development footprint will be levelled and the earth will be excavated in order to install new underground fuel tanks. Most of the excavated soil will be utilised as fill materials at the site.

A Construction Environmental Management Plan (CEMP) will be prepared for construction works undertaken as part of the proposal. The CEMP will include the following management measures which are designed to protect flora and fauna from adverse impacts:

- Measures are taken to ensure that the footprint of disturbance is minimised as far as practicable;
- Measures to reduce the ecological impact of the clearance of habitat on flora and fauna;
- Weed management strategies; and
- Waste management strategies.

2.1 Site Description

The subject development site extends across Lots 1, 2, 3, and 4 DP1269526, Lots 60, 61, 63, and 66 DP753952, Lot 62 DP665543, Lots X and Y DP394753, and Lot 1 DP311343.

A site inspection was conducted by SMK Consultants on the 13th of March 2024. The area inspected consisted of the footprint of the proposed project as well as the immediate vicinity (50m- 100m).

The site includes a cleared and gravelled area that supports infrastructures and other associated facilities. The remainder of the site consists of backyards of the three houses, areas previously cleared for the house and related infrastructure and several retain isolated trees which include Bimble Box (*Eucalyptus populnea*) and Weeping Myall (*Acacia pendula*).

The area within Edgeroi is mapped as 'PCT 0 – Non-native vegetation' in the NSW Vegetation mapping system (Seed Portal). Areas adjoining the site to the north support 'PCT 55 – Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions. Areas adjoining the site to the south support 'PCT 27 - Weeping Myall open woodland of the Darling Riverine Plains Bioregion and Brigalow Belt South Bioregion.

No threatened flora or fauna species or endangered ecological communities were identified within the development footprint.

Figure 1: Locality Plan of the Proposed Development

2.2 Study Area Delineation

The following definitions are used throughout this report to refer to locations in the proposal area:

- The 'subject site' describes all areas that would be directly impacted by the works. This includes the access road and the footprint of the service station. Direct impact will primarily occur as a result of vegetation clearance and earthworks;
- The 'study area' includes the site (i.e. Lots 1, 2, 3, and 4 DP1269526, Lots 60, 61, 63, and 66 DP753952, Lot 62 DP665543, Lots X and Y DP394753, and Lot 1 DP311343), the areas adjacent to the eastern section of the site (Lots 73, 72, 71, 70, 69, and 68 in DP

753952, and Lots 1 and 2 in DP 319145), Lot 7303 in DP1143134 on the south of the site and riparian habitat along Tarlee Creek that may be indirectly impacted by the proposed works;

- The 'search area' refers to a 10-kilometre area surrounding the proposal for the purpose of database searches.

2.3 Mitigation Measures

The development involves the small-scale clearance of previous residential areas within the subject site.

The following mitigation measures are to be adopted onsite during the initial site development to minimise ecological impacts:

- The extent of the works area would be clearly defined prior to the commencement of the works (e.g. flagging tape/ fencing);
- Include flora and fauna management measures in the CEMP;
- Replacing identified hollows with nest boxes and hollow tree limbs;
- Check hollow-bearing trees for the presence of bird nestlings and arboreal mammals before felling or pushing. Animals found would be relocated to similar habitats outside the road corridor and away from the construction site;
- Retaining trunks and large branches. In accordance with Council Roadside Environmental Plan, large hollow branches will be stockpiled for placement in designated areas;
- Tree hollows would be checked for animals after felling or pushing and injured animals would be taken to a local vet, or the wildlife rescue service would be notified;
- Retain tree trunks removed by clearing activities on-site for potential habitat use by fauna; and
- Revegetate the site as soon as possible after completion of construction activities.

Indirect, off-site adverse impacts to be adopted during the construction works will include:

- Erosion and sediment control measures will be implemented and maintained to prevent sediment from moving off-site and sediment-laden water entering any watercourse;
- Measures will be introduced during construction to ensure the potential for the introduction of weed propagules to the site is minimised (e.g. machinery washdown procedure);
- Weeds occurring at the site that is listed under the *Biosecurity Act 2015* will be treated prior to completion of works;

- Minimise dust generation by minimising the extent and time that bare soil is exposed and by appropriate dust suppression;
- Ensuring vehicles and machinery remain in the identified proposal footprint.

Given that a suite of mitigation measures will be implemented to avoid and/or minimise adverse impacts related to dust, water quality, and weeds, it is considered that any potential indirect impacts of the development on environmental values outside of the proposed development footprint would be minimised. Therefore, it is considered that the extent of the impact of the proposed development is limited to the footprint of disturbance on site, i.e. the subject site.

3 Habitat Assessment for Significant Species

A site inspection was carried out in March 2024 to inform this test of significance.

The availability of habitat on site was assessed using a number of factors including:

- Structural and floral diversity;
- Occurrence and extent of habitat types in the general vicinity;
- Continuity with similar habitat adjacent to the site, or connection with similar habitat off-site by way of corridors;
- Key habitat features such as tree hollows, water bodies, crevices, and rocky areas;
- Degree of disturbance and degradation; and
- Topographic features such as aspect and slope.

This information was used to evaluate the site as a potential habitat for each of the threatened species considered and assign each species with a rating based on their likelihood to occur within the subject site. The 'likelihood of occurrence' categories is detailed in Table 1. The habitat assessment is provided in Appendix B.

Table 1: Likelihood of Occurrence Criteria

Likelihood Rating	Criteria
Known	The species was recorded within the study area during site surveys.
High	It is likely that a species would inhabit or utilise a habitat within the subject site. Criteria for this category may include: • Species recently and/or regularly recorded in contiguous or nearby habitat; • High quality habitat types or resources present within study area; • Species is known or likely to maintain a resident population surrounding the study area; and • Species is known or likely to visit during migration or seasonal availability of resources.

Likelihood Rating	Criteria
Moderate	Potential habitat for a species occurs within the subject site. Criteria for this category may include: • Species previously recorded in contiguous habitat albeit not recently (>10 years); • Poor quality, depauperate or modified habitat types and/or resources • present within study area; • Species has potential to utilise habitat during migration or seasonal availability of resources; and • Cryptic flora species with potential habitat available within the subject site that have not been seasonally targeted by surveys.
Low	It is unlikely that the species inhabits the area and would likely be considered a transient visitor if ever encountered. Criteria for this category may include: • The subject site or study area lacks specific habitat types or resources required by the species; • The subject site is beyond the current distribution of the species or is isolated from known populations; • Non-cryptic flora species that were found to be absent during targeted surveys; and • The subject site only contains common habitat which would not be considered important for the local survival of a threatened species.
Unlikely	The habitat within the subject site and study area is unsuitable for the species.

3.1 Limitations

The effectiveness of a survey detecting a given species is influenced by a range of factors. For this type of survey, such limitations are generally related to the period of time in which the fieldwork was carried out during one season. The detection of certain species may be limited by:

- Seasonal migration (particularly migratory birds);
- Seasonal flowering periods (some species are cryptic and are unlikely to be detected outside of the known flowering period);
- Seasonal availability of food such as blossoms;
- Weather conditions during the survey period (some species may go through cycles of activity related to specific weather conditions, for example, some micro chiropteran bats, reptiles, and frogs can be inactive during cold and very hot weather); and
- Species lifecycle (cycles of activity related to breeding).

These limitations have been accounted for by applying the precautionary principle in all cases where the survey methodology may have given a false negative result. All species have been

assessed based on the presence of habitat and the likely significance of that habitat to support a viable local population.

3.2 Assessment of Potential Presence of Threatened Species

A search of the National Parks and Wildlife Atlas of NSW Wildlife (BioNet) identified species with recorded sightings within a 10 km radius of the proposed development site. The complete search result for the listed species is presented in Appendix A.

The project site extends over the Brigalow Belt South Interim Biogeographic Regionalisation for Australia (IBRA) Subregion. A broader search for species, populations, and communities that may occur within the locality of the development site was therefore conducted by investigating known and predicted species' distributions within this IBRA Subregion. A copy of the search results for listed species is presented in Appendix B.

Species were considered with regard to their known distribution and habitat requirements, to assess whether the subject site is likely to serve as a suitable habitat, and subsequently whether/how the development is likely to impact the species. Only species that have the potential to be present within the available habitat are listed in Table 2 and assessed in this test of significance.

The following species, populations, and communities are considered in the Test of Significance for the proposed development.

Table 2: Results of BioNet Atlas Search

Scientific Name	Common Name	Legal Status	Records
Circus assimilis	Spotted Harrier	BC Act: V, P	10
Hieraaetus morphnoides	Little Eagle	BC Act: V, P	6
Lophoictinia isura	Square-tailed Kite	BC Act: V, P,3	1
Falco subniger	Black Falcon	BC Act: V, P	1
Neophema pulchella	Turquoise Parrot	BC Act: V, P,3	3
Ninox connivens	Barking Owl	BC Act: V, P,3	6
Tyto novaehollandiae	Masked Owl	BC Act: V, P,3	1
Phascolarctos cinereus	Koala	BC Act: V, P EPBC Act: V	217
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	BC Act: V,P	6
Chalinolobus picatus	Little Pied Bat	BC Act: V, P	4
Nyctophilus corbeni	Corben's Long-eared Bat	BC Act: V, P	7
Hoplocephalus bitorquatus	Pale-headed Snake	BC Act: V, P	6

Scientific Name	Common Name	Legal Status	Records
Desmodium campylocaulon	Creeping Tick-trefoil	BC Act: E1	138
Swainsona murrayana	Slender Darling Pea	BC Act: V	75
Dichanthium setosum	Bluegrass	BC Act: V	6
Homopholis belsonii	Belson's Panic	BC Act: E EPBC Act: V	179

The above-mentioned species will be considered within the assessment of significance.

3.3 Test of Significance - Assessment of Criteria and Discussion

The following is to be considered for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats:

a) in the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

A viable local population of a threatened terrestrial flora or fauna species in this assessment is defined as a population that occurs within the study area and the connected habitat surrounding the proposed development.

Flora Species

Belson's Panic, Slender Darling Pea, Bluegrass, Creeping Tick-trefoil

The site inspection did not reveal the presence of a local population of the above-mentioned grass and forb species. The cryptic nature of some threatened species, however, is such that the species may not have been visible during the time of the site visit, and therefore it must be assumed that viable populations of threatened flora species may be present within the region in accordance with the precautionary principle.

Potential habitat for the listed species is present within the subject site. The development involves the small-scale clearance of areas that have previously been subject to residential management of lawns and landscaped areas. Should the above-mentioned species be present within the development footprint, they may be displaced in the short term. However, given that adjoining vegetation retains the potential to support these species, it is considered that the risk of a viable population being placed at risk of extinction is minimal.

Microchiropteran Bats

Yellow-bellied Sheath-tail Bat, Little Pied Bat, Corben's Long-eared Bat

All of these bat species may use the project area for foraging.

The risk to these bat species from the development therefore consists of the direct loss of foraging and roosting habitat. There is also a risk of adverse impacts relating to injury or mortality during site construction works.

Mitigation measures listed in Section 2.3 will minimise the risk of injury or mortality to individuals of the above-listed species during the construction process. Habitat loss will occur over a relatively small area (0.5 Ha) when considered in the context of the availability of similar and higher-quality woodland habitat in the locality. It is therefore considered that adverse impacts are short-term and of low severity.

It is therefore considered that no viable local population of any threatened species would be placed at risk of extinction due to the proposed development.

Woodland Species

Turquoise Parrot

Habitat loss and/or degradation as a result of clearing, increased weed invasion, under-shrubbing, and "tidying up", are all significant threats for these species.

The proposal will result in the removal of an area that has been previously subject to extensive modification as part of a service station and residences. A suite of mitigation measures has been included in Section 2.3 to minimise the risk of adverse direct impacts on woodland fauna. Provided these are implemented, the proposal is unlikely to result in injury or mortality of woodland birds.

Indirect impacts will also be reduced through the implementation of mitigation measures relating to dust production, sediment, and erosion control measures, and weed control. Provided these are implemented, the proposal is unlikely to have indirect impacts on adjacent woodland habitats. Noise impacts would be temporary in nature and are not considered likely to have a significant impact on flora, given the historical and existing levels of activity and human presence in the locality.

The potential direct and indirect impacts of the proposal on woodland bird species are therefore not considered significant and are unlikely to place any potentially viable populations of the above-mentioned species within the region at risk of extinction.

Birds of Prey

Spotted Harrier, Little Eagle, Square-tailed Kite, Black Falcon, Barking Owl, Masked Owl

These highly mobile species have relatively large home ranges (generally >200 Ha). Provided that the mitigation measures listed in Section 2.3 are implemented during the construction phase of the project, the risk of direct impacts on the species is highly unlikely, given the size

and conspicuousness of these species and their nests. The risk of indirect impacts through loss of foraging habitat is deemed to be insignificant given the size of the home range of these species and that similar and higher-quality habitat is widely available in the locality.

It is therefore considered that small-scale removal of woodland habitat would not pose a risk to viable local populations of the above-mentioned species, in particular given the fact the widespread availability of similar and/or higher-quality habitat in the study area.

Mammals

Koala

Vegetation within the subject site includes several feed tree species suitable for Koala. Investigation of Koala on this site did not identify any individuals or signs that Koala utilise the area on a regular basis. The potential for Koala to be present within the village is unlikely.

b) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction,

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction.

The subject site does not support an endangered ecological community or critically endangered ecological community (EEC). The proposal will therefore not have an impact on the extent or occurrence of EEC's in the locality.

c) in relation to the habitat of a threatened species, population, or ecological community:

(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and,

The proposed development will include removal of residences and the service station site. The overall building site to be impacted will be in the order of 2 hectares. The majority of this land is currently supporting either cleared areas previously subject to service station and residential infrastructure and associated activity. A minor area of less than 2,000 square metres of previously undisturbed vegetation which is dominated by native species would be included in the area to be removed for the service station facilities.

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

Habitat which will be cleared as part of the proposed works has already been fragmented by Queen Street which forms part of the southern, eastern, and northern boundaries of the

proposed development site. The isolated trees provide a significantly fragmented habitat within the village area.

Habitat clearance associated with the proposed works would not result in further fragmentation of woodland habitat as the woodland within the site has already been fragmented by existing development within the Village area.

(iii) the importance of the habitat to be removed, modified, fragmented, or isolated to the long-term survival of the species, population, or ecological community in the locality.

The area to be cleared is not considered to be important for the long-term survival of any threatened species, population of ecological community in the locality. The area was already fragmented and historically cleared, and the minor extent of the clearance in combination with extensive habitat availability in the region (in particular north and south of the proposal) means that the proposal is not considered to pose a risk to the long-term survival of any threatened species or ecological community within the locality.

d) whether the proposed development is likely to have an adverse effect on critical any declared area of outstanding biodiversity value (either directly or indirectly):

The development proposal is not located in or near an area of outstanding biodiversity value other than Tarlee Creel on the northern side of Edgeroi. Tarlee Creek will not be impacted by the proposal as an extensive buffer will be retained on the northern side of the service station site. It is therefore considered that no areas of outstanding biodiversity value will be adversely affected (either directly or indirectly) by the proposed development.

e) whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Clearing of Native Vegetation

Clearing of native vegetation is a Key Threatening Process (KTP) which will be exacerbated by the proposed development. The extent of vegetation clearance will be minimised to the greatest extent possible. The area of classified native vegetation that can be cleared will be less than the 2,500 square metre area clearing threshold as identified under the BC Act. Given the minor scale of the proposed clearance and widespread availability of similar and higher-quality habitat in the locality, the impact of this KTP is not considered significant.

Invasion of Native Plant Communities by Exotic Perennial Grasses

Invasion of Native plant communities by exotic perennial grasses is listed as a key threatening process. A range of weeds tend to be spread along a highway corridor. The proposed development has identified various weed mitigation strategies to both avoid weed infestations and if one occurs, manage this infestation.

Loss of Hollow-bearing Trees

Loss of hollow bearing trees is another listed key threatening process. Hollow bearing trees are present at the northern end of the development site. As a result of the revised site layout, these trees will be preserved.

Removal of Dead Wood and Trees

Minimal dead wood is present within the proposal footprint; however, trees will be felled as part of the proposed works, while trees that align with the proposed site plan will remain on the site.

No other activities which form part of the proposed works involve any actions that constitute a key threatening process.

4 Conclusion

The proposed development involves work on land within the Village of Edgeroi. The land has been subject to extensive modification for the previous occupation of a services station site and residential premises. The site is bordered by Queen Street on the south, east, and north and Newell Highway on the west which have fragmented the site and limited the habitat value within Edgeroi Village.

Flora and habitat studies have been undertaken to identify and assess the potential impacts resulting from the proposed construction of a service station at the site.

The proposal was assessed using the Test of Significance in accordance with the BC Act for the site. The assessment determined that provided that the mitigation measures listed in Section 2.3 are implemented, given the limited extent of vegetation removal from the site and the extensive availability of similar and/or higher quality habitat in the wider locality, the project is not likely to significantly affect threatened species, ecological communities, or their habitats.

This assessment has determined that the potential adverse impacts of the proposed development on threatened species, populations, or communities are not considered significant and no further investigation in the form of a Species Impact Statement is required.

5 References

Atlas of NSW Wildlife, "NSW Government Department of Environment and Heritage Website". Accessed March 2024. http://www.bionet.nsw.gov.au/

Office of Environment and Heritage (OEH) (2020), Atlas of NSW Wildlife Database. Licenced database accessed March 2024.

Office of Environment and Heritage, "Threatened Species Profiles". Accessed March 2024. http://www.threatenedspecies.environment.nsw.gov.au/tsprofile/index.aspx

Office of Environment and Heritage, "Brigalow Belt South Bioregion". Accessed March 2024. https://www.environment.nsw.gov.au/bioregions/BrigalowBeltSouthBioregion.htm

Appendix A: Bionet Threatened Species, Populations, and Communities Search Results for a 10-kilometre radius from the Subject Site

Scientific Name	Common Name	NSW Status	Common wealth	Records
Polytelis swainsonii	Superb Parrot	V,P,3	V	1
Grantiella picta	Painted Honeyeater	V,P	V	1
Pomatostomus temporalis temporalis	Grey-crowned Babbler (eastern subspecies)	V,P		1
Digitaria porrecta	Finger Panic Grass	E1		8
Homopholis belsonii	Belson's Panic	E1	V	5

Appendix B: Bionet Threatened Species, Populations, and Communities Search Results for Brigalow Belt South Bioregion (Northern Outwash IBRA Subregion)

Species Name	Status	Habitat Description and Locally Known Populations	Local Records	Potential to Occur and Importance of Habitat Present	Assessment of Significance
Aves					
Alectura lathami Australian Brush-turkey	BC Act - E	Largely coastal distribution from Cape York south as far as the Illawarra in NSW. Occurs in forested and wooded areas of tropical and warm-temperate districts, particularly above 300 m to at least 1200 m altitude. Usually prefers dry rainforest that is found within the Semi-evergreen Vine Thicket.	P	**Unlikely** There is no suitable habitat for the species within the proposed subject site.	No
Anseranas semipalmata Magpie Goose	BC Act - V	Mainly found in shallow wetlands (less than 1 m deep) with dense growth of rushes or sedges. Equally at home in aquatic or terrestrial habitats; often seen walking and grazing on land; feeds on grasses, bulbs, and rhizomes. Activities are centred on wetlands, mainly those on floodplains of rivers and large shallow wetlands formed by run-off; breeding can occur in both summer and winter.	5	**Unlikely** The subject site does not contain habitat features preferred by the species and is therefore not considered important habitat.	No
Stictonetta naevosa Freckled Duck	BC Act - V	The species breeds in large temporary swamps created by floods in the Bulloo and Lake Eyre basins and the Murray-Darling system, particularly along the Paroo and Lachlan Rivers, and other rivers within the Riverina. The duck is forced to disperse during extensive inland droughts when wetlands in the Murray River basin provide important habitat. The species may also occur as far as coastal NSW and Victoria during such times. Prefer permanent freshwater swamps and creeks with heavy growth of	1	**Unlikely** The subject site does not contain suitable habitat for the species and is therefore not considered important habitat.	No

Species Name	Status	Habitat Description and Locally Known Populations	Local Records	Potential to Occur and Importance of Habitat Present	Assessment of Significance
		Cumbungi, Lignum or Tea-tree. During drier times they move from ephemeral breeding swamps to more permanent waters such as lakes, reservoirs, farm dams and sewage ponds.			
Hirundapus caudacutus White throated Needletail	Not Listed	White-throated Needletails are non-breeding migrants in Australia. White-throated Needletails often occur in large numbers over eastern and northern Australia. The species is almost exclusively aerial; however, it is known to roost in trees.	1	**Low** Given that the species is almost exclusively aerial and given the widespread occurrence of woodland habitat in the locality, the subject site is not considered an important habitat for the species.	No
Ephippiorhynchus asiaticus Black-necked Stork	BC Act - E	Floodplain wetlands (swamps, billabongs, watercourses, and dams) of the major coastal rivers are the key habitat in NSW for the Black-necked Stork. Secondary habitat includes minor floodplains, coastal sandplain wetlands, and estuaries.	1	**Low** The subject site is outside of the species' range (coastal habitat) and thus is therefore not considered an important habitat.	No
Circus assimilis Spotted Harrier	BC Act - V	In New South Wales, this species is widespread from coast to inland, including the western slopes of the Great Dividing Range and farther west. It is sparsely scattered in, or largely absent from, much of the Upper Western region. Primarily inhabits woodlands and dry open sclerophyll forests, usually dominated by eucalypts, including mallee associations. It has also been recorded in shrublands and heathlands and various modified habitats, including regenerating forests, very occasionally in moist forests or rainforests. Generally, the understorey is open with	10	**Moderate** This species may hunt within the subject site.	Yes

Species Name	Status	Habitat Description and Locally Known Populations	Local Records	Potential to Occur and Importance of Habitat Present	Assessment of Significance
		sparse eucalypt saplings, acacias, and other shrubs, including heath.			
Haliaeetus leucogaster White-bellied Sea-Eagle	BC Act - V	The White-bellied sea eagle is distributed around the Australian coastline, including Tasmania, and well inland along rivers and wetlands of the Murray Darling Basin. In New South Wales it is widespread along the east coast, and along all major inland rivers and waterways. Habitats are characterised by the presence of large areas of open water including larger rivers, swamps, lakes, and the sea.	10	**Low** The site is not considered important for this species due to the paucity of suitable habitat in surrounding areas.	No
Hieraaetus morphnoides Little Eagle	BC Act - V	The Little Eagle is found throughout the Australian mainland. Occupies open eucalypt forest, woodland, or open woodland. Sheoak or Acacia woodlands and riparian woodlands of interior NSW are also used. Nests in tall living trees within a remnant patch, where pairs build a large stick nest in winter.	6	**Moderate** This species may hunt throughout the subject site.	Yes
Lophoictinia isura Square-tailed Kite	BC Act - V	In NSW, the species is a regular resident in the north, north-east, and along the major west-flowing river systems. Found in a variety of timbered habitats including dry woodlands and open forests. Is a specialist hunter of passerines, especially honeyeaters, and most particularly nestlings, and insects in the tree canopy, picking most prey items from the outer foliage. Appears to occupy large hunting ranges of more than 100km.	2	**Moderate** This species may hunt throughout the subject site.	Yes

Species Name	Status	Habitat Description and Locally Known Populations	Local Records	Potential to Occur and Importance of Habitat Present	Assessment of Significance
Falco hypoleucos Grey Falcon	BC Act - E	The Grey Falcon is sparsely distributed in NSW, chiefly throughout the Murray-Darling Basin. The breeding range has contracted since the 1950s with most breeding now confined to arid parts of the range. Usually restricted to shrubland, grassland, and wooded watercourses of arid and semi-arid regions, although it is occasionally found in open woodlands near the coast. Also occurs near wetlands where surface water attracts prey.	P	**Moderate** This species may hunt throughout the subject site.	Yes
Falco subniger Black Falcon	BC Act - V	The Black Falcon is widely, but sparsely, distributed in New South Wales, mostly occurring in inland regions. In New South Wales there is assumed to be a single population that is continuous with a broader continental population, given that falcons are highly mobile, commonly travelling hundreds of kilometres.	4	**Moderate** This species may hunt throughout the subject site.	Yes
Ardeotis australis Australian Bustard	BC Act - E	The Australian Bustard mainly occurs in inland Australia and is now scarce or absent from southern and south-eastern Australia. In NSW, they are mainly found in the north-west corner and less often recorded in the lower western and central west plains regions. Breeding now only occurs in the northwest region of NSW. Mainly inhabits tussock and hummock grasslands, though prefers tussock grasses to hummock grasses; also occurs in low shrublands and low open grassy woodlands;	3	**Low** The subject site is not considered an important habitat for this species given the paucity of suitable habitat and the fact that the species is mainly found in the north-west corner of NSW.	No

Species Name	Status	Habitat Description and Locally Known Populations	Local Records	Potential to Occur and Importance of Habitat Present	Assessment of Significance
		occasionally seen in pastoral and cropping country, golf courses, and near dams.			
Burhinus grallarius Bush Stone-curlew	BC Act - E	The Bush Stone-curlew is found throughout Australia except for the central southern coast and inland, the far south-east corner, and Tasmania. Inhabits open forests and woodlands with a sparse grassy ground layer and fallen timber. Feed on insects and small vertebrates, such as frogs, lizards, and snakes. Nest on the ground in a scrape or small bare patch.	p	**Low** There is no suitable habitat for this species within the subject site and it is therefore not considered important for the species.	No
Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo	BC Act - V	Inhabits open forest and woodlands of the coast and the Great Dividing Range where stands of sheoak occur. Black Sheoak and Forest Sheoak are important foods. Inland populations feed on a wide range of sheoak. Belah is also utilised and may be a critical food source for some populations. Feeds almost exclusively on the seeds of several species of she-oak (*Casuarina* and *Allocasuarina* species), shredding the cones with the massive bill. Dependent on large hollow-bearing eucalypts for nest sites.	11	**Low** There is no suitable habitat within the subject site for the species. No Sheoak trees were recorded in the vicinity of the site, and it is therefore not considered an important habitat for the Glossy Black-Cockatoo.	No
Neophema pulchella Turquoise Parrot	BC Act - V	Lives on the edges of eucalypt woodland adjoining clearings, timbered ridges, and creeks in farmland. Prefers to feed in the shade of a tree and spends most of the day on the ground searching for the seeds or grasses and herbaceous plants or browsing on	3	**Moderate** This species may forage within the subject site, given the presence of suitable habitat in the study area.	Yes

Species Name	Status	Habitat Description and Locally Known Populations	Local Records	Potential to Occur and Importance of Habitat Present	Assessment of Significance
		vegetable matter. Nests in tree hollows, logs, or posts, from August to December.			
Polytelis swainsonii Superb Parrot	BC Act - V	Found throughout eastern inland NSW, On the southwestern slopes, their core breeding area is roughly bounded by Cowra and Yass in the east, and Grenfell, Cootamundra, and Coolac in the west. Birds breeding in this region are mainly absent during winter when they migrate north to the region of the upper Namoi and Gwydir Rivers. The other main breeding sites are in the Riverina along the corridors of the Murray, Edward, and Murrumbidgee Rivers where birds are present all year round. It is estimated that there are less than 5000 breeding pairs left in the wild. Inhabit Box-Gum, Box-Cypress-pine and Boree woodlands, and River Red Gum Forest.	2	**Low** There is no suitable habitat for this species within the subject site and it is therefore not considered important for the species.	No
Ninox connivens Barking Owl	BC Act - V	Inhabits woodland and open forest, including fragmented remnants and partly cleared farmland. It is flexible in its habitat use, and hunting can extend into closed forests and more open areas. Sometimes able to successfully breed along timbered watercourses in heavily cleared habitats (e.g. western NSW) due to the higher density of prey on these fertile riparian soils.	2	**Moderate** This species may hunt throughout the subject site.	Yes
Tyto longimembris	BC Act - V	Eastern Grass Owls are found in areas of tall grass, including grass tussocks, in swampy areas, grassy plains, swampy heath, and in cane grass or sedges on	1	**Moderate** This species may hunt throughout the subject site.	Yes

Species Name	Status	Habitat Description and Locally Known Populations	Local Records	Potential to Occur and Importance of Habitat Present	Assessment of Significance
Eastern Grass Owl		flood plains. They rest by day in a 'form' - a trampled platform in a large tussock or other heavy vegetative growth. Always breeds on the ground. Nests are found in trodden grass and often accessed by tunnels through vegetation.			
Climacteris picumnus victoriae Brown Treecreeper (eastern subspecies)	BC Act - V	The Brown Treecreeper is endemic to eastern Australia and occurs in eucalypt forests and woodlands of inland plains and slopes of the Great Dividing Range. Found in eucalypt woodlands (including Box-Gum Woodland) and dry open forest of the inland slopes and plains inland of the Great Dividing Range; mainly inhabits woodlands dominated by stringybarks or other rough-barked eucalypts, usually with open grassy understorey, sometimes with one or more shrub species. When foraging in trees and on the ground, they peck and probe for insects, mostly ants, amongst the litter, tussocks, and fallen timber, and along trunks and lateral branches. Hollows in standing dead or live trees and tree stumps are essential for nesting.	1	**Low** The subject site is not considered an important habitat for the species, which is dependent on woodland/forest for nesting and foraging. The few scattered, immature trees on the subject site are not considered important habitat for the species.	No
Aphelocephala leucopsis Southern Whiteface	BC Act - V	Southern whiteface occurs across most of mainland Australia south of the tropics, from the north-eastern edge of the Western Australian Wheatbelt, east to the Great Dividing Range. There is a broad hybrid zone between the two subspecies extending north	1	**Low** There is no suitable habitat for this species within the subject site and it is therefore not considered important for the species.	No

Species Name	Status	Habitat Description and Locally Known Populations	Local Records	Potential to Occur and Importance of Habitat Present	Assessment of Significance
		from the western edge of the Nullarbor Plain. The northern boundary extends to about Carnarvon in the west, to the southern Northern Territory in central Australia, but is slightly further south in Queensland where the species is largely confined to the south-west of the Mitchell Grass Downs and along the southern state border. They live in relatively undisturbed open woodlands and shrublands with an understorey of grasses or shrubs or habitat with low tree densities and an herbaceous understory litter cover that provides essential foraging habitat.			
Chthonicola sagittata Speckled Warbler	BC Act - V	The Speckled Warbler has a patchy distribution throughout the eastern half of NSW. There has been a decline in population density throughout its range, with the decline exceeding 40% where no vegetation remnants larger than 100ha survive. Typical habitat would include scattered native tussock grasses, a sparse shrub layer, some eucalypt regrowth, and an open canopy. The diet consists of seeds and insects, with most foraging taking place on the ground around tussocks and under bushes and trees. The rounded, domed, roughly built nest of dry grass and strips of bark is located in a slight hollow in the ground or the base of a low dense plant, often among fallen branches and other litter.	1	**Low** The subject site is not considered an important habitat for the species, which is dependent on woodland/forest for nesting and foraging. The few scattered, immature trees on the subject site are not considered important habitat for the species.	No

Species Name	Status	Habitat Description and Locally Known Populations	Local Records	Potential to Occur and Importance of Habitat Present	Assessment of Significance
Grantiella picta Painted Honeyeater	BC Act - V	The Painted Honeyeater is nomadic and occurs at low densities throughout its range. The greatest concentrations of the bird and almost all breeding occurs on the inland slopes of the Great Dividing Range in NSW, Victoria and southern Queensland. Inhabits Boree/ Weeping Myall (*Acacia pendula*), Brigalow (*A. harpophylla*) and Box-Gum Woodlands and Box-Ironbark Forests. A specialist feeder on the fruits of mistletoes growing on woodland eucalypts and acacias. Prefers mistletoes of the genus *Amyema*.	44	**Low** The subject site is not considered important habitat for the species. No mistletoe was recorded during the site visit and the scattered trees present on site are not deemed to provide suitable habitat.	No
Melithreptus gularis gularis Black-chinned Honeyeater	BC Act - V	The Black-chinned Honeyeater has two subspecies, with only the nominate (*gularis*) occurring in NSW where it is widespread, with records from the tablelands and western slopes of the Great Dividing Range to the north-west and central-west plains and the Riverina. Occupies mostly upper levels of drier open forests or woodlands dominated by box and ironbark eucalypts. Feeding territories are large making the species locally nomadic. Recent studies have found that the Black-chinned Honeyeater tends to occur in the largest woodland patches in the landscape as birds forage over large home ranges of at least 5 hectares.	3	**Moderate** The species may forage in the trees on the subject site, given that the species is locally nomadic, has a large home range, and the presence of larger patches of open woodland in the vicinity.	Yes

Species Name	Status	Habitat Description and Locally Known Populations	Local Records	Potential to Occur and Importance of Habitat Present	Assessment of Significance
Pomatostomus temporalis temporalis Grey-crowned Babbler (eastern subspecies)	BC Act - V	In NSW, the eastern sub-species occurs on the western slopes of the Great Dividing Range, and on the western plains reaching as far as Louth and Balranald. Inhabits open Box-Gum Woodlands on the slopes, and Box-Cypress-pine and open Box Woodlands on alluvial plains. Woodlands on fertile soils in coastal regions. Feed on invertebrates, either by foraging on the trunks and branches of eucalypts and other woodland trees or on the ground, digging and probing amongst litter and tussock grasses.	35	**Low** The subject site is not considered important habitat for the species, which is dependent on woodland/forest habitat. The few scattered, immature trees on site are not considered important habitat for the species.	No
Daphoenositta chrysoptera Varied Sittella	BC Act - V	Inhabits eucalypt forests and woodlands, especially rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland. Feeds on arthropods gleaned from crevices in rough or decorticating bark, dead branches, standing dead trees, and from small branches and twigs in the tree canopy.	8	**Low** The species is dependent on woodland/forest habitat. The subject site contains a few scattered, immature trees within the existing quarry footprint however these do not form woodland habitat and thus are not important habitat for the species.	No
Artamus cyanopterus cyanopterus Dusky Woodswallow	BC Act - V	Primarily inhabit dry, open eucalypt forests and woodlands, including mallee associations, with an open or sparse understorey of eucalypt saplings, acacias and other shrubs, and ground-cover of grasses or sedges and fallen woody debris. Primarily eats invertebrates, mainly insects, which are captured whilst hovering or sallying above the	1	**Low** The subject site does not woodland habitat or suitable foraging habitat required to support this species and is therefore not considered important habitat for the species.	No

Species Name	Status	Habitat Description and Locally Known Populations	Local Records	Potential to Occur and Importance of Habitat Present	Assessment of Significance
		canopy or over water. Most breeding activity occurs on the western slopes of the Great Dividing Range.			
Melanodryas cucullata cucullata Hooded Robin (south-eastern form)	BC Act - V	The south-eastern form (subspecies *cucullata*) is found from Brisbane to Adelaide and throughout much of inland NSW, with the exception of the extreme north-west, where it is replaced by subspecies *picata*. Two other subspecies occur outside NSW. Requires structurally diverse habitats featuring mature eucalypts, saplings, some small shrubs and a ground layer of moderately tall native grasses.	2	**Low** The subject site is not considered important habitat due to the limited structural diversity and the modified nature of grassland onsite.	No
Stagonopleura guttata Diamond Firetail	BC Act - V	Found in grassy eucalypt woodlands, including Box-Gum Woodlands. Also occurs in open forest, mallee, Natural Temperate Grassland, and in secondary grassland derived from other communities. Prefers clearings or areas with open understoreys. Feeds exclusively on the ground, on ripe and partly-ripe grass and herb seeds and green leaves, and on insects. Nests are globular structures built either in the shrubby understorey, or higher up, especially under hawk's or raven's nests. Birds roost in dense shrubs or in smaller nests built especially for roosting.	3	**Moderate** The species may forage within the subject site.	Yes
Mammalia					
Dasyurus maculatus	BC Act - V	Recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to	1	**Low** The species may travel through or rest within the site given its very	No

Species Name	Status	Habitat Description and Locally Known Populations	Local Records	Potential to Occur and Importance of Habitat Present	Assessment of Significance
Spotted-tailed Quoll		the coastline. Individual animals use hollow-bearing trees, fallen logs, small caves, rock outcrops, and rocky-cliff faces as den sites. Females occupy home ranges of 200-500 hectares, while males occupy very large home ranges from 500 to over 4000 hectares.		large home range, however, it is not considered an important habitat for the species. No potential den sites were observed on site.	
Sminthopsis macroura Stripe-faced Dunnart	BC Act - V	The species is rare on the NSW Central West Slopes and Northwest Slopes with the most easterly records of recent times located around Dubbo, Coonabarabran, Warialda, and Ashford. Found in native dry grasslands and low dry shrublands, often along drainage lines where food and shelter resources tend to be better. Co-occupies areas with the more common Fat-tailed Dunnart but prefers relatively ungrazed habitats with greater diversity and healthier understorey vegetation.	P	**Low** The subject site is not considered an important habitat for the species given the species preference for ungrazed, native grasslands with healthy species and structural diversity.	No
Phascolarctos cinereus Koala	BC Act - V	Inhabit eucalypt woodlands and forests. Feed on the foliage of more than 70 eucalypt species and 30 non-eucalypt species, but in any one area select preferred browse species. Home range size varies with the quality of habitat, ranging from less than two ha to several hundred hectares in size.	217	**Moderate** Bimble Box is listed as a feed tree species within the Western Slopes and Plains management area (NSW Dept. of Planning, Industry, and the Environment 2019). There are immature Coolabah trees within the existing quarry footprint, thus this species may forage within the subject site. The species is	Yes

Species Name	Status	Habitat Description and Locally Known Populations	Local Records	Potential to Occur and Importance of Habitat Present	Assessment of Significance
				therefore considered in this assessment.	
Macropus dorsalis Black-striped Wallaby	BC Act - E	From the Townsville area in Queensland to northern NSW where it occurs on both sides of the Great Divide. On the northwest slopes of NSW, it occurs in Brigalow remnants to south of Narrabri. The preferred habitat is characterised by dense woody or shrubby vegetation within three metres of the ground. This dense vegetation must occur near a more open, grassy area to provide suitable feeding habitat. On the north west slopes, associated with dense vegetation, including brigalow, ooline and semi-evergreen vine thicket.	9	**Low** The open woodland within the study area adjacent to the subject site does not form dense vegetation. Given that this species is associated with dense vegetation, the subject site is not considered important habitat.	No
Pteropus poliocephalus Grey-headed Flying-fox	BC Act - V	Occur in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops. Roosting camps are generally located within 20 km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy.	5	**Low** There is no suitable habitat, including foraging and roosting habitat, for the species on the subject site. Therefore the subject site is not considered important habitat for the species.	No
Saccolaimus flaviventris Yellow-bellied Sheathtail-bat	BC Act - V	Roosts singly or in groups of up to six, in tree hollows and buildings; in treeless areas, they are known to utilise mammal burrows. When foraging for insects, flies high and fast over the forest canopy, but lower in more open country. Forages in most habitats	6	**Moderate** This species may forage within the open areas of the subject site.	Yes

Species Name	Status	Habitat Description and Locally Known Populations	Local Records	Potential to Occur and Importance of Habitat Present	Assessment of Significance
		across its very wide range, with and without trees; appear to defend an aerial territory.			
Setirostris eleryi Bristle-faced Free-tailed Bat	BC Act - E	In NSW, the species has been recently recorded from only three disjunct locations: thirteen individuals from Gundabooka National Park, south of Bourke; one individual from Dhinnia Dthinawan Nature Reserve (formerly Bebo State Forest), north of Warialda two individuals near Bonshaw. Appears to be extremely rare throughout its range. Nationally, it has been recorded from only 15 locations. Knowledge of the ecology of the Hairy-nosed Freetail Bat is limited, however, evidence suggests that the species depends on hollows and tree fissures for roosting sites. In the Brigalow Belt South bioregion, the species mainly occurs in woodlands, forests, and arid shrublands.	P	**Low** Given the rarity of the species and the lack of suitable habitat on the subject site, it is not considered an important habitat for the species.	No
Chalinolobus picatus Little Pied Bat	BC Act - V	Occurs in dry open forest, open woodland, mulga woodlands, chenopod shrublands, cypress pine forest, and mallee and Bimbil box woodlands. Roosts in caves, rock outcrops, mine shafts, tunnels, tree hollows, and buildings. Feeds on moths and possibly other flying invertebrates.	4	**Moderate** The species may forage on site, given the presence of Bimble box open woodland in the vicinity of the subject site.	Yes
Nyctophilus corbeni Corben's Long-eared Bat	BC Act - V	Inhabits a variety of vegetation types, including mallee, bulloke and box eucalypt dominated communities, but it is distinctly more common in box/ironbark/cypress-pine vegetation. Roosts in tree	P	**Moderate** The species may forage within the subject site.	Yes

Species Name	Status	Habitat Description and Locally Known Populations	Local Records	Potential to Occur and Importance of Habitat Present	Assessment of Significance
		hollows, crevices, and under loose bark. Slow-flying agile bat, utilising the understorey to hunt non-flying prey - especially caterpillars and beetles - and will even hunt on the ground.			
Pseudomys gouldii Gould's Mouse	BC Act - E	The species is presumed extinct in NSW. The species is reported to have preferred sandhills and plains and to make burrows under bushes in loose soil.	1	**Low** The species is presumed extinct, and the subject site is therefore not considered important habitat.	No
Reptilia					
Anomalopus mackayi Five-clawed Worm-skink	BC Act – E	The species has a patchy distribution on the Northwest Slopes and Plains of north-east NSW. Occurs close to or on the lower slopes of slight rises in grassy White Box woodland on moist black soils, and River Red Gum-Coolibah-Bimble Box woodland on deep cracking loose clay soils. May also occur in grassland areas and open paddocks with scattered trees.	222	**Moderate** The species may occur throughout the subject site, given the availability of suitable habitat within and adjacent to the subject site.	No
Furina dunmalli Dunmall's Snake	BC Act – Not listed	Preferred habitat is Brigalow Forest and woodland with fallen timber and ground litter, growing on cracking clay soils and clay loam soils. Also occurs in eucalypt and *Callitris* woodland with fallen timber and ground litter.	P	**Low** The subject site is not considered important for this species given the paucity of suitable habitat.	No
Hemiaspis damelii Grey Snake	BC Act – E	The Grey Snake has a wide overall range from inland southern NSW to central Queensland, though the distribution is not continuous across this full range and consists of several isolated subpopulations. In	4	**Low** The subject site is not considered important for this species given the paucity of suitable habitat.	No

Species Name	Status	Habitat Description and Locally Known Populations	Local Records	Potential to Occur and Importance of Habitat Present	Assessment of Significance
		NSW the species occupies five geographically discrete subpopulations, predominantly associated with the lower reaches of major westerly flowing rivers, including the Gwydir, Namoi, Castlereagh, Macquarie, Lachlan, and Murrumbidgee River systems. Some NSW subpopulations occur in protected areas including Yanga National Park and Gayini Nimmie-Caira, a property under the management and ownership of the Nari Nari Tribal Council in southern NSW. Floodplains and ephemeral wetlands associated with heavy clay soils are key habitat features for the Grey Snake			
Hoplocephalus bitorquatus Pale-headed Snake	BC Act - V	A patchy distribution from north-east Queensland to the north-eastern quarter of NSW. In NSW it has historically been recorded from as far west as Mungindi and Quambone on the Darling Riverine Plains, across the northwest slopes, and from the north coast from Queensland to Sydney. Found mainly in dry eucalypt forests and woodlands, cypress forest, and occasionally in rainforest or moist eucalypt forests. In drier environments, it appears to favour habitats close to riparian areas.	6	**Moderate** The subject site is relatively close to a riparian area and the species may occur throughout the site. It is therefore considered in this assessment.	Yes
Insecta					
Jalmenus eubulus Pale Imperial Hairstreak	BC Act – E	In NSW, the species is found only in brigalow-dominated open forests and woodlands in northern areas of the state. Only known to breed in old-	57	**Low**	No

Species Name	Status	Habitat Description and Locally Known Populations	Local Records	Potential to Occur and Importance of Habitat Present	Assessment of Significance
		growth forest or woodland and does not appear to colonise regrowth habitats following clearing or other major disturbance.		The subject site is not considered important for this species due to the lack of suitable habitat.	
Flora					
Tylophora linearis	BC Act – V	Grows in dry scrubland that may have a eucalypt, *Callitris glaucophylla* and/or *Allocasuarina luehmannii* overtopping the scrub, in the Barraba, Mendooran, Temora and West Wyalong districts.	1	**Low** The subject site is outside of the species' known distribution. It is therefore not considered important habitat for the species.	No
Lepidium aschersonii Spiny Peppercress	BC Act – V	Not widespread, occurring in the marginal central-western slopes and north-western plains regions of NSW (and potentially the southwestern plains). In the north of the State recent surveys have recorded a number of new sites including Brigalow Nature Reserve, Brigalow State Conservation Area, Leard State Conservation Area and Bobbiwaa State Conservation Area. Found on ridges of gilgai clays dominated by Brigalow (*Acacia harpophylla*), Belah (*Casuarina cristata*), Buloke (*Allocasuarina luehmanii*) and Grey Box (*Eucalyptus microcarpa*).	P	**Low** The subject site and surrounding areas do not constitute suitable habitat for the species. Therefore, the subject site is not considered important habitat for the species.	No
Lepidium monoplocoides Winged Peppercress	BC Act – E	Widespread in the semi-arid western plains regions of NSW. Collected from widely scattered localities, with large numbers of historical records but few recent collections. Occurs on seasonally moist to waterlogged sites, on heavy fertile soils, with a mean annual rainfall of around 300-500 mm. Predominant	1	**Low** The subject site is not considered important for this species due to the lack of suitable habitat.	No

Species Name	Status	Habitat Description and Locally Known Populations	Local Records	Potential to Occur and Importance of Habitat Present	Assessment of Significance
		vegetation is usually an open woodland dominated by Allocasuarina luehmannii (Bulloak) and/or eucalypts, particularly Eucalyptus largiflorens (Black Box) or Eucalyptus populnea (Poplar Box). The field layer of the surrounding woodland is dominated by tussock grasses.			
Cyperus conicus	BC Act – E	Occurs rarely in the Pilliga area of NSW and is also found across the tropics in in Qld, WA and the NT, including central deserts north of Alice Springs. Grows in open woodland on sandy soil. In central Australia, the species grows near waterholes and on the banks of streams in sandy soils. Recorded from Callitris forest in the Pilliga area, growing in sandy soil with *Cyperus gracilis, C. squarrosus* and *C. fulvus*.	P	**Low** Within NSW, this species is not known to occur outside of the Piliga forest. The subject site is therefore not considered important habitat for the species.	No
Desmodium campylocaulon Creeping Tick-trefoil	BC Act – E	Occurs chiefly in the Collarenebri and Moree districts in the north-western plains of NSW. Creeping Tick-Trefoil is confined to clay soils, usually with *Astrebla* and *Iseilema* species. In NSW *Desmodium campylocaulon* grows on cracking black soils in the Narrabri, Moree, and Walgett local government areas. The species is said to be hardy but grazed where sheep have regular access. Plants are strongly stoloniferous and well-cropped by cattle.	138	**Moderate** This species was not observed during the site visit. The subject site contains suitable habitat for the species, however, and it is therefore considered in this assessment.	Yes

Species Name	Status	Habitat Description and Locally Known Populations	Local Records	Potential to Occur and Importance of Habitat Present	Assessment of Significance
Swainsona murrayana Slender Darling Pea	BC Act – V	Found throughout NSW, it has been recorded in the Jerilderie and Deniliquin areas of the southern riverine plain, the Hay plain as far north as Willandra National Park, near Broken Hill and in various localities between Dubbo and Moree. Grows in a variety of vegetation types including bladder saltbush, black box and grassland communities on level plains, floodplains and depressions and is often found with *Maireana* species. Plants have been found in remnant native grasslands or grassy woodlands that have been intermittently grazed or cultivated.	75	**Moderate** This species was not observed during the site visit. The subject site contains suitable habitat for the species however, and it has been recorded in Moree. It is therefore considered in this assessment.	Yes
Phyllanthus maderaspatensis	BC Act – E	Recorded for the Brewarrina and Collarenebri districts in the north-western plains of NSW. Grows in floodplain areas on heavy soils and may rely on appropriate and intermittent rainfall and flooding events for its survival. The species is described as being a summer-growing annual and is thus dependent on seasonal conditions. Often associated with open grasslands and eucalypt woodlands in or near creek beds, and grassy flats and levees near watercourses.	1	**Low** This species has not been recorded in Moree and it was not observed during the assessment. It is unlikely that any listed plant species would be found in the area given the history of clearing, heavy grazing and disturbance within the subject site. The site is therefore not considered important habitat for the species.	No
Dichanthium setosum Bluegrass	BC Act – V	Bluegrass occurs on the New England Tablelands, Northwest Slopes and Plains, and the Central Western Slopes of NSW, extending to northern	6	**Moderate** This species was not observed during the site assessment.	Yes

Species Name	Status	Habitat Description and Locally Known Populations	Local Records	Potential to Occur and Importance of Habitat Present	Assessment of Significance
		Queensland. Associated with heavy basaltic black soils and red-brown loams with clay subsoil. Often found in moderately disturbed areas such as cleared woodland, grassy roadside remnants, and highly disturbed pasture.		However, it is known to occur in moderately disturbed areas and the subject site has potential habitat for the species. The species is therefore included in this assessment.	
Digitaria porrecta Finger Panic Grass	BC Act – E	In NSW, the most frequently recorded associated tree species are *Eucalyptus albens* and *Acacia pendula*. Common associated grasses and forbs in NSW sites include *Austrostipa aristiglumis, Enteropogon acicularis, Cyperus bifax, Hibiscus trionum* and *Neptunia gracilis*. Common associated grasses and forbs in NSW sites include *Austrostipa aristiglumis, Enteropogon acicularis, Cyperus bifax, Hibiscus trionum* and *Neptunia gracilis*.	59	**Low** This species was not observed during the site assessment and none of the associated species listed were recorded within the subject site. It is unlikely that this listed plant species would be found in the subject site given its history of disturbance. The species is therefore not considered in this assessment.	No
Homopholis belsonii Belson's Panic	BC Act – E	Occurs on the northwest slopes and plains of NSW, mostly between Wee Waa, Goondiwindi, and Glen Innes. It also occurs in Queensland, mainly in the Brigalow Belt South bioregion. Grows in dry woodland (e.g. Belah) often on poor soils, although sometimes found in basalt-enriched sites north of Warialda and in alluvial clay soils.	179	**Low** This species was not observed during the site assessment, nor is the preferred habitat of the species found within the subject site or study area. Given the site's history of disturbance, it is not considered likely to support this species and is therefore not	No

Species Name	Status	Habitat Description and Locally Known Populations	Local Records	Potential to Occur and Importance of Habitat Present	Assessment of Significance
				considered important habitat for the species.	
Polygala linariifolia Native Milkwort	BC Act – E	North from Copeton Dam and the Warialda area to southern Queensland. The species has been recorded from the Inverell and Torrington districts growing in dark sandy loam on granite in shrubby forest of *Eucalyptus caleyi, Eucalyptus dealbata* and *Callitris*, and in yellow podsolic soil on granite in layered open forest.	1	**Low** This species is not recorded in the Moree locality, nor does the subject site contains suitable habitat for the species. It is therefore not considered important habitat for the species.	No
Cadellia pentastylis Ooline	BC Act – V	Occurs along the western edge of the North West Slopes from north of Gunnedah to west of Tenterfield. Also occurs in Queensland. Ooline is a medium-sized spreading tree usually about 10 m tall, and rarely to 25 m. It forms a closed or open canopy mixing with eucalypt and cypress pine species.	P	**Low** Ooline was not recorded within the subject site during the site assessment. The species is therefore not considered in this assessment.	No
Communities					
Brigalow (Acacia harpophylla dominant and co-dominant)	BC Act – Not Listed	he Brigalow (Acacia harpophylla dominant and co-dominant) ecological community (the Brigalow ecological community) occurs within Queensland (Qld) and New South Wales (NSW). It is commonly the dominant species in a range of open forests and woodlands; these are collectively referred to as brigalow woodlands. The Brigalow ecological community is characterised by the presence of Acacia harpophylla as one of the most abundant tree species.	K	**Low** This EEC does not occur on the site, and the site is thus not considered important habitat.	No

Species Name	Status	Habitat Description and Locally Known Populations	Local Records	Potential to Occur and Importance of Habitat Present	Assessment of Significance
Brigalow within the Brigalow Belt South, Nandewar and Darling Riverine Plains Bioregions	BC Act – EEC	The Brigalow community is a low woodland or forest community dominated by Brigalow (*Acacia harpophylla*), with pockets of Belah (*Casuarina cristata*) and Poplar Box (*Eucalyptus populnea subsp. bimbil*). Scattered remnants on the Northwest Slopes and Plains and Darling River Plains in NSW. This community has been extensively cleared for agriculture, with most surviving remnants along roadsides and paddock edges.	K	**Low** This EEC does not occur on the site, and the site is thus not considered important habitat.	No
Cadellia pentastylis (Ooline) community in the Nandewar and Brigalow Belt South Bioregions	BC Act – EEC	The Ooline community is an unusual and distinctive forest community with the canopy dominated by the tree Ooline (*Cadellia pentastylis*). The understorey is made up of a range of shrubs, such as Wattles (*Acacia* spp.), and grasses. Extensively cleared and now known from only seven main locations on the North West Slopes in NSW, between Narrabri and the Queensland border, and also in Queensland.	K	**Low** This EEC does not occur on the site, and the site is thus not considered important habitat.	No
Carbeen Open Forest Community in the Darling Riverine Plains and Brigalow Belt South Bioregions	BC Act – EEC	This was previously an open forest community of flora and fauna that may now exist as woodland or as remnant trees. Carbeen Open Forest Community is a distinctive plant community on the riverine plains of the Mehi, Gwydir, MacIntyre and Barwon Rivers and in small remnants farther south. It is found on flats and gentle rises of alluvial or aeolian sandy soils derived from ancient watercourses (it also occurs on	K	**Low** This EEC does not occur on the site, and the site is thus not considered important habitat.	No

Species Name	Status	Habitat Description and Locally Known Populations	Local Records	Potential to Occur and Importance of Habitat Present	Assessment of Significance
		some clay alluvial soils but is mostly restricted to well-drained sandy sites)			
Coolibah-Black Box Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain and Mulga Lands Bioregions	BC Act – EEC	Abiotic factors that help define this community are that it typically occurs on grey self-mulching clays of periodically waterlogged floodplains, swamp margins, ephemeral wetlands, and stream levees. The vegetative community provides characteristic habitat features of value to particular fauna, including a grassy understorey with scattered fallen logs, areas of deep-cracking clay soils, patches of thick regenerating Eucalyptus saplings, and large trees containing a diverse bark and foliage foraging resource and an abundance of small and large hollows.	P	**Low** This EEC does not occur on the site, and the site is thus not considered important habitat.	No
Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions	BC Act – EEC	Inland Grey Box Woodland occurs on fertile soils of the western slopes and plains of NSW. The community generally occurs where average rainfall is 375- 800 mm pa and the mean maximum annual temperature is 22- 26°C. Inland Grey Box Woodland includes those woodlands in which the most characteristic tree species, *Eucalyptus microcarpa* (Inland Grey Box), is often found in association with *E. populnea* subsp. *bimbil* (Bimble or Poplar Box), *Callitris glaucophylla* (White Cypress Pine), *Brachychiton populneus* (Kurrajong), *Allocasuarina luehmannii* (Bulloak) or *E. melliodora* (Yellow Box),	P	**Low** This EEC does not occur on the site, and the site is thus not considered important habitat.	No

Species Name	Status	Habitat Description and Locally Known Populations	Local Records	Potential to Occur and Importance of Habitat Present	Assessment of Significance
		and sometimes with *E. albens* (White Box). Shrubs are typically sparse or absent, although this component can be diverse and may be locally common, especially in drier western portions of the community. A variable ground layer of grass and herbaceous species is present at most sites. At severely disturbed sites the ground layer may be absent.			
Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW Southwestern Slopes bioregions	BC Act – EEC	This ecological community is scattered across the eastern parts of the alluvial plains of the Murray-Darling river system. Typically, it occurs on red-brown earths and heavy textured grey and brown alluvial soils within a climatic belt receiving between 375 and 500 mm mean annual rainfall. The structure of the community varies from low woodland and low open woodland to low sparse woodland or open shrubland, depending on site quality and disturbance history. The tree layer grows up to a height of about 10 metres and invariably includes *Acacia pendula* (Weeping Myall or Boree) as one of the dominant species or the only tree species present. The understorey includes an open layer of chenopod shrubs and other woody plant species and an open to continuous groundcover of grasses and herbs.	K	**Low** This EEC does not occur on the site, and the site is thus not considered important habitat.	No
Semi-evergreen Vine Thicket in	BC Act – EEC	A low, dense form of dry rainforest generally less than 10 m high, made up of vines and rainforest trees	P	**Low**	No

Species Name	Status	Habitat Description and Locally Known Populations	Local Records	Potential to Occur and Importance of Habitat Present	Assessment of Significance
the Brigalow Belt South and Nandewar Bioregions		as well as some shrubs. This community often occurs on rocky hills, in deep, loam, high nutrient soils derived from basalt or other volcanic rocks, in areas which are sheltered from frequent fire.		This EEC does not occur on the site, and the site is thus not considered important habitat.	
White Box Yellow Box Blakely's Red Gum Woodland	BC Act – EEC	White Box Yellow Box Blakely's Red Gum Woodland is an open woodland, in which the most obvious species are one or more of the following: White *Box Eucalyptus albens*, Yellow Box *E. melliodora* and Blakely's Red *Gum E. blakelyi*. Intact sites contain a high diversity of plant species, including the main tree species, additional tree species, some shrub species, several climbing plant species, many grasses and a very high diversity of herbs. Characterised by the presence or prior occurrence of White Box, Yellow Box and/or Blakely's Red Gum. Shrubs are generally sparse or absent, though they may be locally common. Remnants generally occur on fertile lower parts of the landscape where resources such as water and nutrients are abundant.	K	**Low** This EEC does not occur on the site, and the site is thus not considered important habitat.	No

Appendix 5: Preliminary Site Investigation Report

Preliminary Site Investigation

Service Station at:

14456 Newell Highway,

Edgeroi NSW 2390

Lot 60/-/DP753952

N5148

4th November 2021

Report distribution

Preliminary Site Investigation

Address: 14456 Newell Highway, Edgeroi NSW 2390

Application Number: N5148

Date of Report Written: 4th November 2021

Copies	**Recipient/Custodian**
1 Soft Copy (PDF) – Secured and issued by email	Mr Pankaj Berry E: pankaj_berry@hotmail.com
1 Original – Saved to NEO Consulting Archives	Secured and Saved by NEO Consulting on Register.

Version	**Prepared by**	**Reviewed by**	**Date issue**
Draft	Ehsan Zare *Environmental Consultant* 	Nick Caltabiano *Project Manager* 	2nd November 2021
FINAL	Ehsan Zare *Environmental Consultant* 	Nick Caltabiano *Project Manager* 	4th November 2021

Report Revision	**Details**	**Report No.**	**Date**	**Amended By**
1	FINAL Report	N5148	4th November 2021	Nick Caltabiano
Issued By:			 **Nick Caltabiano**	

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APPENDICES

Executive Summary

NEO Consulting Pty Ltd were appointed by Mr Pankaj Berry ('the client') to undertake a Preliminary Site Investigation (PSI) for the services station located at No. 14456 Newell Highway, Edgeroi NSW 2390 ('the site'). The site contains a non-operational fuel station and retail store.

The objective of the PSI was to provide a preliminary assessment of potentially contaminating activities which may have impacted the site.

A site investigation was conducted on the 21st October 2021 by NEO Consulting. The site contains a retail outlet and a building structure and underground fuel tanks. The fuel bowsers within the site have been removed. The site is relatively flat and contains a mix groundcover including concrete, grass and gravel.

Six (6) soil and one (1) water samples were collected from a close proximity of the underground fuel storage tanks within the site and submitted for laboratory testing at SGS Alexandria, a NATA accredited laboratory. These samples were tested for CoPC including Benzene, Toluene, Ethylbenzene and Xylenes (BTEX), Naphthalene, Total Recoverable Hydrocarbons (TRH) and Heavy Metals.

All analytical results for soil were below the relevant NEPM Assessment Criteria for Commercial and Industrial site. All analytical results for groundwater were below the relevant NEPM, ARMCANZ and ANZECC Assessment Criteria. NEO Consulting finds the site is suitable for use, providing the recommendations within **Section 15** of this report are undertaken.

1. Introduction

NEO Consulting Pty Ltd were appointed by Mr Pankaj Berry ('the client') to undertake a Preliminary Site Investigation (PSI) for the services station located at No. 14456 Newell Highway, Edgeroi NSW 2390 ('the site'). The site is legally identified as Lot 60/-/DP753952 and has a total area of approximately 4,111m^2.

This PSI was aimed to provide a preliminary assessment of potentially contaminating activities which may have impacted the site. In addition, NEO Consulting will provide recommendations if further investigation on site is required.

A site inspection was undertaken on the 21st October 2021 by NEO Consulting. Reporting and photos were conducted on the day of inspection and with reference to the relevant regulatory criteria. Further information from the inspection is outlined in Section 4 of this report.

2. Scope of Work

The PSI has been prepared in general accordance with the following regulatory framework:

- NSW EPA, *Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation,* 2019;
- NSW EPA, *Technical Note: Investigation of Service Station Sites,* 2014;
- NSW EPA, Contaminated Sites: Guideline for Assessing Service Station Sites, 2003;
- NSW EPA, *Guidelines for Consultants Reporting on Contaminated Sites,* 2020;
- NSW EPA, *Contaminated Land Management, Guidelines for the NSW Site Auditor Scheme,* 2017 (4th Edition);
- NSW EPA, *Waste Classification Guidelines Part 1: Classifying Waste,* 2014;
- NSW EPA, *Sampling Design Guidelines*, 1995;
- NSW EPA, *Guidelines on the Duty to Report Contamination under Contaminated Land Management Act*, 1997;
- NSW DECCW, UPSS Technical Note: Decommissioning, Abandonment and Removal of UPSS, 2010;
- NSW DECCW, UPSS Technical Note: Site Validation Reporting, 2010;
- NSW DECCW, *Guidelines for the Assessment and Management of Groundwater Contamination,* 2007;
- Australian Standard (AS 4482.1) – Guide to the Investigation and Sampling of Sites with Potentially Contaminated Soil, Part 2: Non-volatile and Semi-volatile compounds (2005);
- Australian Standard (AS 4482.2) – Guide to the Sampling and Investigation of Potentially Contaminated Soil, Part 2: Volatile Substances (1999);
- Australian Standard (AS 4964) *Method for the Qualitative Identification of Asbestos in Bulk Samples* (2004);
- Department of Urban Affairs and Planning, NSW Environmental Protection Authority, *Managing Land Contamination – Planning Guidelines – SEPP 55 – Remediation of Land,* 1998;

- National Environmental Protection Council (NEPC) – National Environment Protection (Assessment of Site Contamination) Amendment Measure (NEPM), (2013);
- NEPM *Schedule B1 – Guideline on Investigation Levels for Soil and Groundwater,* 2013;
- NEPM *Schedule B2 – Guideline on Site Characterisation,* 2013;
- NEPM Schedule B5c – *Guideline on Ecological Investigation Levels for Arsenic, Chromium (III), Copper, DDT, Lead, Naphthalene, Nickel and Zinc, 2013;*
- NEPM Schedule B7 – *Guideline on Derivation of Health – Based Investigation Levels, 2013;*
- NEPM *Appendix 1 – The Derivation of HILS for Metals and Inorganics, 2013;*
- Protection of the Environment Operations (Waste) Regulations, 2005;
- SafeWork NSW Code of Practice, How to Safely Remove Asbestos, 2016;
- SafeWork NSW Code of Practice, How to Manage and Control Asbestos in the Workplace, 2016;
- SafeWork NSW, *Managing Asbestos in or On Soil*, 2014
- State Environment Protection Policy 55 (SEPP 55). *Remediation of Land Under the Environmental Planning and Assessment Act,* 1998;
- Work Health and Safety Act, 2011; and
- Work Health and Safety Regulation, 2011.

The scope of works required to complete the PSI includes:

- A site inspection for evidence of sources of potential contamination on-site and neighbouring properties;
- A soil sampling program, and laboratory testing for CoPC including Total Recoverable Hydrocarbons (TRH), Benzene, Toluene, Ethylbenzene and Xylenes (BTEX) and Heavy Metals
- Historical investigations relating to the site;
- Information on the current and Historical Certificates of Title;
- Local Council records and planning certificates;
- Dial-Before-You-Dig enquiry for an evaluation into local underground services and assets;
- Acid sulphate soils (ASS) data maps;
- Establish whether data gaps may exist within the investigation;
- Development of a Conceptual Site Model (CSM) to identify the connections between potential sources of contamination, exposure pathways, and human/ecological receptors; and
- Recommendations for additional investigations (if any), based on the identified data gaps and findings of the PSI.

3. Site Details

Table 1. Site Details

Address	14456 Newell Highway, Edgeroi NSW 2390
Deposited Plan	Lot 60/-/DP753952
Locality Map	Figure 1
Site Plan	Figure 2
Area (approx.)	4,111m^2

Table 2. Surrounding Land-Use Adjacent to the Site

Direction from Site	Land-Use
North	Vacant land and Recreational area
East	Queen Street and Rural residential property
West	Newell Highway
South	Vacant land and Rural residential property

4. Site Condition

A qualified environmental consultant inspected the site on the 14th July 2021. Site photographs are provided in **Appendix A**. Observations noted during the inspection are summarised below:

- The site contains a non-operational fuel. The fuel bowsers within the site have been removed;
- The site is a rectangular-shaped lot and is surrounded by rural residential properties;
- The site contains a building structure to the back and a shed to the southwestern portion;
- The site is relatively flat and contains a mixed groundcover including concrete, grass and gravel;
- The eastern portion of the site is empty of any infrastructure and has a grass groundcover;
- The site gradient is relatively flat; and
- No visual or aromatic indications of contamination were encountered.

5. Site History

The only available historical aerial photograph of this site is an image from 2015. A description of this image is presented in **Table 3.**

Table 3. Historical Aerial photograph of the site.

Year	Description
2015	The site was a rectangular-shaped lot that contained three separated building structures within the western portion. The eastern portion of the site is empty of infrastructure and used as parking for trucks. The site was sparsely vegetated. The surrounding area of the site was composed of vacant lands and rural residential properties.

5.1 Section 10.7 (2) Planning Certificate

A Section 10.7 Planning Certificate describes how a property may be used and the restrictions on development. The Planning Certificate is issued under Section 149 of the Environmental Planning and Assessment Act 1979. At the time of reporting, NSW could not get access to the Planning Certificate.

5.2 NSW EPA Contaminated Land Register

A search within the NSW EPA contaminated land register was undertaken for the subject site. No result was found for this site.

5.3 Protection of the Environment Operations Act (POEO) Public Register

A search on the POEO public register of licensed and delicensed premises (DECC) was undertaken for the subject site. No result was found for this site.

5.4 SafeWork NSW Hazardous Goods

A search was not undertaken with NSW SafeWork for historical Dangerous Goods stored onsite. Based on site inspection, the storage of petroleum products within USTs appears to be the only dangerous goods stored on site.

5.5 Product Spill and Loss History

The site inspection carried out found no evidence to suggest chemical contamination impact on the site (i.e. chemical staining, unhealthy vegetation).

5.6 Dial Before You Dig

A Dial-Before-You-Dig request suggests the potential for underground services and assets to be impacted or act as a portal to transport contamination off-site (**Appendix D**).

6. Site Geology and Hydrology

The Geological Map of Penrite (Geological Series Sheet 9030, Scale 1:100,000, Edition 1, 1991), published by the Department of Minerals and Energy indicates the site located within a geological region characterised by Tertiary sandstone overlies by alluvial clays which consists of Vertosols.

A groundwater bore search was conducted on 4th November 2021 and five (5) groundwater bores (GW061127 GW007525, GW969838, GW034649, GW068688) were within 500m radius of the site.

It was beyond the scope of works to study the groundwater flow direction. However, based on regional topography and the nearest surface water source, Tarlee Creek (approximately 200m north of the site), groundwater is expected to flow north and the surface water across the majority of the site is expected to also flow north into Tarlee Creek.

7. Acid Sulphate Soils

To determine whether there is a potential for ASS to be present at the site, information was reviewed utilising the NSW Department of Planning, Industry and Environment eSPADE map viewer. The ASS maps identify five (5) classes of sulphuric acid on land, with Class 1 being the highest at risk of ASS. This search indicated that there is "no known occurrence" of ASS underlying the soil at this site.

8. Areas of Environmental Concern

Based on the above information, the potential Areas of Environmental Concern (AEC) and their associated Contaminants of Potential Concern (CoPC) for the site were identified and summarised below.

Table 4. AEC and associated CoPC

AEC	Potentially Contaminating / Hazardous Activity	CoPC	Likelihood of Site Impact	Comments
Entire site	Importation of fill material from unknown origin.	Heavy Metals, TRH, BTEX, PAH	Low	Based on site observations, the presence of imported fill material is unlikely.
Self service area and underground storage of petroleum products	Storage and dispensing of Petroleum Fuels underground.	Heavy Metals, TRH and BTEX	Moderate	Based on site observation, the potential for hydrocarbon spills within the service area, leaks from the underground tank and associated lines is possible.

AEC	Potentially Contaminating / Hazardous Activity	CoPC	Likelihood of Site Impact	Comments
Building structures	Hazardous materials	ACM, SMF, ODS, Lead (paint and/or dust), PCBs	Low	Based on site observations, it cannot be concluded that any of the hazardous materials mentioned here are present at this location.

Abbreviations: Asbestos Containing Materials (ACM), Benzene, Toluene, Ethylbenzene and Xylene (BTEX), Ozone Depleting Substances (ODS), Polychlorinated biphenyls (PCBs), Polycyclic Aromatic Hydrocarbon (PAH), Total Recoverable Hydrocarbons (TRH), Synthetic Mineral Fibres (SMF).

9. Conceptual Site Model

A Conceptual Site Model (CSM) has been developed and presented below, and provides a representation of the potential risks associated with the connections between the following elements:

- Potential contamination sources and their associated CoPCs;
- Potential human receptors that may be impacted by the site contamination are current and future site users including occupants to the dwelling/infrastructures onsite, site workers and the general public within the immediate vicinity of the site;
- Potential environmental receptors to the site including but not limited to: groundwater and surface water bodies, residual soils at and/or nearby the site.
- Potential exposure pathways; and
- Whether source-pathway-receptor connections are complete based on current and future suite conditions.

Table 5. Conceptual Site Model

Potential Sources	Potential Receptor	Potential Exposure Pathway	Complete connection	Risk	Justification/ Control Measures
Contaminated soil from importation of uncontrolled fill across the site.	Site occupants, workers, general public	Dermal contact, inhalation/ingestion of particulates	Limited (current)	Moderate	Exposure to potentially contaminated soils is possible.
			No (Future)	Low	If present, impacted soils are likely to be disposed of off-site.

Potential Sources	Potential Receptor	Potential Exposure Pathway	Complete connection	Risk	Justification/ Control Measures
Contaminated soil from historical onsite operations. ACM and other hazardous material within onsite structures. Historical small-scale hydrocarbon spills from refuelling events (tanks or vehicles). Storage of petroleum products beneath site within UPSS.	Tarlee Creek	Migration of impacted groundwater and surface water run-off.	No (current)	Moderate	Due to proximity and topography, possible that contaminated waters could reach this surface water receptor.
			Limited (Future)	Low	If present, contaminated soils and groundwater are likely to be remediated.
	Underlying aquifer	Leaching and migration of contaminants through groundwater infiltration.	Limited (current)	Low	Due to existing sealed surfaces across operational area, migration of CoPC is likely to be limited.
			Limited (Future)	Low	If present, contaminated soil and/or groundwater is likely to be remediated.

10. Data Gaps

The following data gaps have been identified at the site:

- Groundwater flow direction;
- The presence of hazardous materials within on site structures.

11. Sampling Analysis Plan

11.1 Field Sampling Methodology

All boreholes were completed with a drill auger. By using a drill auger for the boreholes, the qualified environmental consultant was able to conduct a visual inspection of the soil cross section. Soil was scraped from the freshly cut cross section for sample collection. Drill auger was decontaminated with deionised water between boreholes. Samples were immediately placed in laboratory prepared jars (labelled prior to arriving on site), with the lid securely attached to jar and only removed for the purpose of storing each sample. This sample storage approach allowed the preservation of any potential fill layers as well as natural underlying clay to be stored in stratigraphic layers.

Table 6. Sample details

Borehole ID	Sample ID	Depth (m)	Soil Type
BH1	S1	1.5m	Clay
BH1	S2	3.3m	Clay
BH2	S3	1.5m	Clay
BH3	S4	2.9m	Clay
BH3	S5	1.5m	Clay
BH4	S6	1.5m	Clay

Table 7. Borelogs

BH1		
0-1.5m	Medium clay	Fill
1.5-3.3m	Heavy clay	Naturals soils
BH2		
0-1.5m	Medium clay	Fill
1.5-2.9m	Heavy clay	Naturals soils

BH3		
0.0-1.5m	Medium clay	Fill
BH4		
0.0-1.5m	Medium clay	Fill/natural layer

The groundwater sample was collected from a monitoring well (MW1). The monitoring well cap was removed to enable groundwater stabilisation. HydraSleeve was lowered into the well and positioned appropriately and allowed to reach equilibrium before retrieval. Depth to water and depth of well were recorded and a PID reading was collected. Groundwater samples were placed in laboratory prepared bottles: one (1) amber glass vial for Metal analysis and two (2) glass vials for VOCs and TRH.

Table 8. Groundwater monitoring well details

Well	Depth to Water (m)	Cap Depth (m)
1	228	2284

Both the soil and groundwater samples were placed on ice in an esky for transport under Chain of Custody (COC) to a NATA accredited laboratory for the analysis of the COPC.

11.3 Field Quality Assurance & Quality Control Procedures

The following procedures were undertaken to ensure the data quality for each sample:

- Selection of appropriate sampling methods;
- Decontamination procedures;
- Appropriate containers selected for planned analyses;
- Appropriate preservation and storage measures to minimise contamination or analyte loss;
- Statement of duplicate frequency;
- Sampling devices and equipment;
- Field instrument calibrations.

12. Assessment Criteria

The following assessment criteria were adopted for the investigation.

12.1 NEPM Health Screening Level D (HSL-D) – Commercial/Industrial

HSLs have been developed for selected petroleum compounds and fractions and are used for the assessment of potential risks to human health from chronic inhalation and direct contact pathways of petroleum vapour emanating off petroleum contaminated soils (Vapour Risk). HSLs are guided by land-use scenarios, specific soil physicochemical properties and generally apply to depths below surface to >4m.

Tier 1 HSLs are divided into the following sub-criteria:

- HSL A – residential with garden/accessible soils
- HSL B – residential with minimal opportunities for soil access
- HSL C – public open space/recreational areas
- HSL D – commercial/industrial premises

12.2 NEPM Health Investigation Level D (HIL-D) – Commercial/Industrial

HILs are scientific, risk-based guidance levels to be used as in the primary stage of assessing soil contamination to evaluate the potential risks to human health from chronic exposure to contaminants. HILs are applicable to a broad range of metals and organic substances, and generally apply to depths up to 3m below the surface for residential use.

Tier 1 HILs are divided into the following sub-criteria:

- HIL A – residential with garden/accessible soils.
- HIL B – residential with minimal opportunities for soil access.
- HIL C – public open space/recreational areas.
- HIL D – commercial/industrial premises.

12.3 NEPM Ecological Investigation Level (EIL) – Commercial/Industrial

Ecological investigation levels (EILs) have been developed to assess the risk for the presence of metals and organic substance in a terrestrial ecosystem. EILs are guided by land-use scenarios, specific soil physicochemical properties and generally apply to the top 2m of soil. EILs can be applied for arsenic (As), copper (Cu), chromium III (Cr(III)), dichlorodiphenyltrichloroethane (DDT), naphthalene, nickel (Ni), lead (Pb) and zinc (Zn). The NEPM Soil Quality Guidelines (SQG) for EILs are calculated using the Added Contamination Limit (ACL) to determine the amount of contamination that had to be added to the soil to cause toxicity, including ambient background concentration (ABC).

12.4 NEPM Ecological Screening Level (ESL) – Commercial/Industrial

ESLs have been developed for selected petroleum hydrocarbons (BTEX, benzo(a)pyrene, TRH F1 and F2) in soil, based on fresh contamination. These parameters are applicable to coarse and fine-grained soil and apply from the surface of the soil to 2m below ground level, which corresponds with the root and habitat zone for many species.

12.5 NEPM Management Limits – Commercial/Industrial

Management Limits for petroleum have been developed for prevention of explosive vapour accumulation, prevention of the formation of observable Light Non-Aqueous Phase Liquids (LNAPL) and protection against effects on buried infrastructure. Commercial/Industrial limits have been adopted based on the proposed land use.

12.6 NEPM Groundwater Investigation Levels (GIL)

GILs are the concentration of a contaminant in the groundwater above which further investigation or a response is required. These levels are based on Australian water quality guidelines and drinking water guidelines and are applicable for assessing human health risk and ecological risk (fresh water or marine water) from direct contact within groundwater.

12.7 ARMCANZ & ANZECC 2000 - Freshwater 95% level of protection (% species)

The 95% protection level trigger value applies to ecosystems that could be classified as slightly-moderately disturbed. This statistical approach is based on calculations of a probability distribution of aquatic toxicity endpoints and attempts to protect a pre-determined percentage of species (in this case, 95%).

13. Investigation Results

The analytical results are summarised below. Detailed analytical results are presented in the laboratory reports in **Appendix C.**

Table 9. Health Screening Levels and Ecological Screening Levels for Benzene, Toluene, Ethylbenzene, Xylenes (BTEX). NL = Not Limiting. Values are presented as mg/kg.

NEPM Assessment Criteria	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene
NEPM 2013 Commercial/Industrial Soil **HSL-D** for Vapour Intrusion, 1-<2m depth, **Clay**, mg/kg	**6**	**NL**	**NL**	**NL**	**NL**
NEPM 2013 Commercial/Industrial Soil **HSL-D** for Vapour Intrusion, 2-<4m depth, **Clay**, mg/kg	**9**	**NL**	**NL**	**NL**	**NL**

NEPM 2013 Commercial/Industrial Soil **HSL-D** for Vapour Intrusion, 4m+ depth, **Clay**, mg/kg		**20**	**NL**	**NL**	**NL**	**NL**
NEPM 2013 Commercial/Industrial Soil **HSL-D** for direct contact, mg/kg		**430**	**99 000**	**27 000**	**81 000**	**11 000**
NEPM 2013 Soil **ESL** for Commercial/Industrial for **fine-grained soil**, mg/kg		**95**	**135**	**185**	**95**	
NEPM 2013 Soil Generic **EIL** for Commercial/Industrial, mg/kg						**370**
Sample	Depth (m)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
S1	1.5m	<0.1	<0.1	<0.1	<0.3	<0.1
S2	3.3m	<0.1	<0.1	<0.1	<0.3	<0.1
S3	1.5m	<0.1	<0.1	<0.1	<0.3	<0.1
S4	2.9m	<0.1	<0.1	<0.1	<0.3	<0.1
S5	1.5m	<0.1	<0.1	<0.1	<0.3	<0.1
S6	1.5m	<0.1	<0.1	<0.1	<0.3	<0.1

Table 10. Health Screening Levels, Ecological Screening Levels and Management Limits for TRH C_6-C_{10}, C_6-C_{10} F1*, >C_{10}-C_{16}, >C_{10}-C_{16} F2**, >C_{16}-C_{34} and >C_{34}-C_{40} * = F1 is calculated by subtracting the sum of BTEX concentrations from the C_6-C_{10} aliphatic hydrocarbon fraction. ** = F2 is calculated by subtracting Naphthalene from the >C_{10}-C_{16} aliphatic hydrocarbon fraction. NL = Not Limiting. Values are presented as mg/kg.

NEPM Assessment Criteria	TRH C6-C10	TRH C6-C10 - BTEX (F1)	TRH >C10-C16	TRH >C10-C16 - N (F2)	TRH >C16-C34 (F3)	TRH >C34-C40 (F4)
NEPM 2013 Commercial/Industrial Soil **HSL-D** for Vapour Intrusion, 1-<2m depth, **Clay**, mg/kg		**480**		**NL**		
NEPM 2013 Commercial/Industrial Soil **HSL-D** for Vapour Intrusion, 2-<4m depth, **Clay**, mg/kg		**NL**		**NL**		
NEPM 2013 Commercial/Industrial Soil **HSL-D**		**NL**		**NL**		

for Vapour Intrusion, 4m+ depth, **Clay**, mg/kg							
NEPM 2013 Commercial/Industrial Soil **HSL-D** for direct contact, mg/kg		**26 000**		**20 000**		**27 000**	**38 000**
NEPM 2013 Soil **ESL** for Commercial/Industrial for **fine-grained soil**, mg/kg		**215**		**170**		**2500**	**6600**
NEPM 2013 **Management Limits** for Commercial/Industrial for **fine-grained soil**, mg/kg		**800**		**1000**		**5000**	**10 000**
Sample	Depth (m)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
S1	1.5m	<25	<25	<25	<25	<90	<120
S2	3.3m	<25	<25	<25	<25	<90	<120
S3	1.5m	<25	<25	<25	<25	<90	<120
S4	2.9m	<25	<25	<25	<25	<90	<120
S5	1.5m	<25	<25	<25	<25	<90	<120
S6	1.5m	<25	<25	<25	<25	<90	<120

Table 11. Health Investigation Levels and Ecological Investigation Levels for metals. Values are presented as mg/kg.

NEPM Assessment Criteria		Arsenic, As	Cadmium, Cd	Chromium, Cr	Copper, Cu	Lead, Pb	Nickel, Ni	Zinc, Zn	Mercury, Hg
NEPM 2013 Commercial/Industrial Soil **HIL-D**, mg/kg		**3000**	**900**	**3600**	**240 000**	**1500**	**6000**	**400 000**	**730**
NEPM 2013 Soil Generic **EIL** for Commercial/Industrial, mg/kg		**160**							
Sample	Depth (m)	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
S1	1.5m	<1	<0.3	**12**	**6.4**	**5**	**10**	**24**	<0.05
S2	3.3m	**2**	<0.3	**9.5**	**5.6**	**5**	**12**	**19**	<0.05
S3	1.5m	**1**	<0.3	**11**	**6.1**	**4**	**12**	**12**	<0.05
S4	2.9m	**2**	<0.3	**10**	**7.4**	**5**	**17**	**42**	<0.05

S5	1.5m	<1	<0.3	**12**	**6.0**	**4**	**11**	**12**	<0.05
S6	1.5m	<1	<0.3	**10**	**6.3**	**12**	**10**	**12**	<0.05

Table 12. Groundwater Health Screening Levels for BTEX, TRH C6-C10 - BTEX (F1) and TRH >C10-C16 - N (F2). NL = Not Limiting. Values are presented as mg/kg.

NEPM Assessment Criteria	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	F1	F2
NEPM 2013 Commercial/Industrial Groundwater **HSL-D** for Vapour Intrusion, 2 - <4m depth, **Clay**, mg/L	**30**	NL	NL	NL	NL	NL	NL
NEPM 2013 Commercial/Industrial Groundwater **HSL-D** for Vapour Intrusion, 4 - <8m depth, **Clay**, mg/L	**30**	NL	NL	NL	NL	NL	NL
NEPM 2013 Commercial/Industrial Groundwater **HSL-D** for Vapour Intrusion, 8m+ depth, **Clay**, mg/L	**35**	NL	NL	NL	NL	NL	NL
MW1 (µg/L)	<0.5	<0.5	<0.5	<1.5	<0.5	<50	<60

Table 13. Groundwater Investigation Levels for BTEX, Naphthalene and Benzo(a)pyrene. NL = Not Limiting. Values are presented as mg/kg.

NEPM Assessment Criteria	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	Benzo(a)pyrene
NEPM 2013 GIL Drinking Water, mg/L	0.001	0.8	0.3	0.6	-	0.00001
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
NEPM 2013 GIL Marine Waters, µg/L	500C	-	-	-	50C	-
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
NEPM 2013 GIL Fresh Waters, µg/L	950	-	-	350 as o-x; 200 as p-x	16	-
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
ARMCANZ & ANZECC 2000 - Freshwater 95% level of protection (% species), µg/L	950	ID	ID	200 (*p*-xylene)	16	ID
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW1 (µg/L)	<0.5	<0.5	<0.5	<1.5	<0.5	Not Analysed

Table 14. Groundwater Investigation Levels for metals. Values are presented as mg/kg for Drinking Waters and µg/L for Fresh and Marine Waters.

NEPM Assessment Criteria	Arsenic, As	Cadmium, Cd	Chromium, Cr	Copper, Cu	Lead, Pb	Nickel, Ni	Zinc, Zn	Mercury, Hg
NEPM 2013 GIL Drinking Water, mg/L	0.01	0.002	0.05	2	0.01	0.02	-	0.001
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
NEPM 2013 GIL Marine Waters, µg/L	-	0.7	4.4	1.3	4.4	7	15	0.1
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
NEPM 2013 GIL Fresh Waters, µg/L	24 A(III); 13 As(V)	0.2	1	1.4	3.4	11	8	0.06
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
ARMCANZ & ANZECC 2000 - Freshwater 95% level of protection (% species), µg/L	24 A(III); 13 As(V)	0.2	1	1.4	3.4	11	8	0.6
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
MW1 (µg/L)	<1	<0.1	**1**	<1	<1	<1	<5	<0.0001

14. Conclusion

All analytical results for soil were below the relevant NEPM Assessment Criteria for Commercial and Industrial site. All analytical results for groundwater were below the relevant NEPM, ARMCANZ and ANZECC Assessment Criteria. NEO Consulting finds the site is suitable for use, providing the recommendations within **Section 15** of this report are undertaken.

15. Recommendations

Based on the information collected and available during this investigation, the following recommendations have been undertaken:

- Considering the site has been closed, the UPSS onsite should be decommissioned in accordance with NSW SafeWork, or re-commissioned for use.
- Any soils requiring excavation, on-site reuse and/or removal must be classified in accordance with "Waste Classification Guidelines Part 1: Classifying Waste" NSW EPA (2014);
- All on site structures should be assessed within a Hazardous Materials Survey prior to demolition.

References

- NSW EPA, *Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation,* 2019;
- NSW EPA, *Technical Note: Investigation of Service Station Sites,* 2014;
- NSW EPA, Contaminated Sites: Guideline for Assessing Service Station Sites, 2003;
- NSW EPA, *Guidelines for Consultants Reporting on Contaminated Sites,* 2020;
- NSW EPA, *Contaminated Land Management, Guidelines for the NSW Site Auditor Scheme,* 2017 (4th Edition);
- NSW EPA, *Waste Classification Guidelines Part 1: Classifying Waste,* 2014;
- NSW EPA, *Sampling Design Guidelines*, 1995;
- NSW EPA, *Guidelines on the Duty to Report Contamination under Contaminated Land Management Act*, 1997;
- NSW DECCW, UPSS Technical Note: Decommissioning, Abandonment and Removal of UPSS, 2010;
- NSW DECCW, UPSS Technical Note: Site Validation Reporting, 2010;
- NSW DECCW, *Guidelines for the Assessment and Management of Groundwater Contamination,* 2007;
- Australian Standard (AS 4482.1) – Guide to the Investigation and Sampling of Sites with Potentially Contaminated Soil, Part 2: Non-volatile and Semi-volatile compounds (2005);
- Australian Standard (AS 4482.2) – Guide to the Sampling and Investigation of Potentially Contaminated Soil, Part 2: Volatile Substances (1999);
- Australian Standard (AS 4964) *Method for the Qualitative Identification of Asbestos in Bulk Samples* (2004);
- Department of Urban Affairs and Planning, NSW Environmental Protection Authority, *Managing Land Contamination – Planning Guidelines – SEPP 55 – Remediation of Land,* 1998;
- National Environmental Protection Council (NEPC) – National Environment Protection (Assessment of Site Contamination) Amendment Measure (NEPM), (2013);
- NEPM *Schedule B1 – Guideline on Investigation Levels for Soil and Groundwater,* 2013;
- NEPM *Schedule B2 – Guideline on Site Characterisation,* 2013;
- NEPM Schedule B5c – *Guideline on Ecological Investigation Levels for Arsenic, Chromium (III), Copper, DDT, Lead, Naphthalene, Nickel and Zinc, 2013;*
- NEPM Schedule B7 – *Guideline on Derivation of Health – Based Investigation Levels, 2013;*
- NEPM *Appendix 1 – The Derivation of HILS for Metals and Inorganics, 2013;*
- Protection of the Environment Operations (Waste) Regulations, 2005;
- SafeWork NSW Code of Practice, How to Safely Remove Asbestos, 2016;
- SafeWork NSW Code of Practice, How to Manage and Control Asbestos in the Workplace, 2016;
- SafeWork NSW, *Managing Asbestos in or On Soil*, 2014
- State Environment Protection Policy 55 (SEPP 55). *Remediation of Land Under the Environmental Planning and Assessment Act,* 1998;

- Work Health and Safety Act, 2011; and
- Work Health and Safety Regulation, 2011.

Limitations

The findings of this report are based on the scope of work outlined in Section 2. Neo Consultants performed the services in a manner consistent with the normal level of care and expertise exercised by members of the environmental consulting profession. No warranties, express or implied are made.

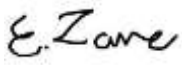
The results of this assessment are based upon the information documented and presented in this report. All conclusions and recommendations regarding the site are the professional opinions of Neo Consultants personnel involved with the project, subject to the qualifications made above. While normal assessments of data reliability have been made, Neo Consultants assumes no responsibility or liability for errors in any data obtained from regulatory agencies, statements from sources outside of Neo Consulting, or developments resulting from situations outside the scope of this project.

The results of this assessment are based on the site conditions identified at the time of the site inspection and validation sampling. Neo Consulting will not be liable to revise the report to account for any changes in site characteristics, regulatory requirements, assessment criteria or the availability of additional information, subsequent to the issue date of this report.

Neo Consulting is not engaged in environmental consulting and reporting for the purpose of advertising sales promoting, or endorsement of any client interests, including raising investment capital, recommending investment decisions, or other publicity purposes.

Neo Consulting Pty Ltd

Prepared by:



Ehsan Zare

Environmental Scientist

Reviewed by:

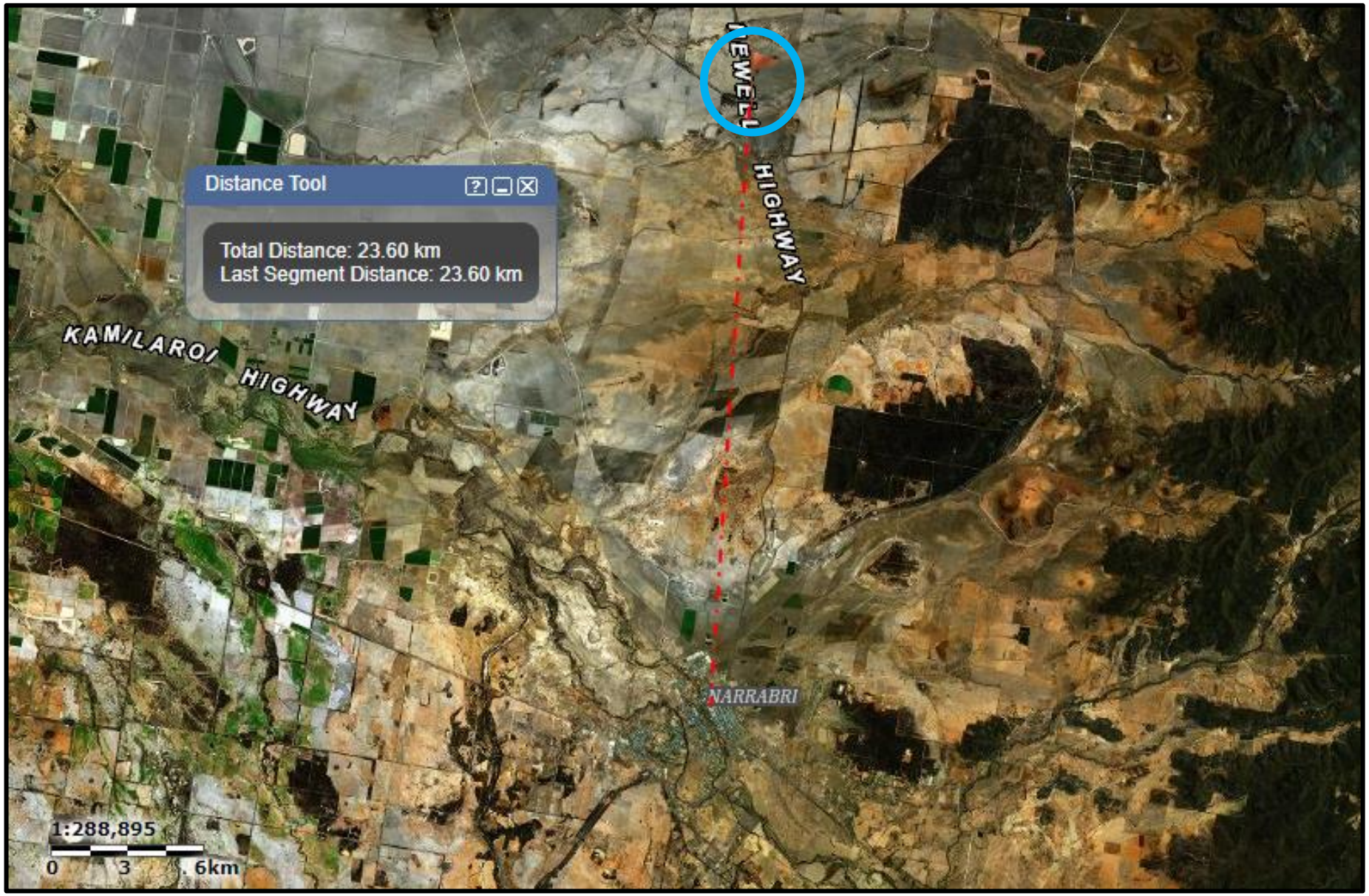
Nick Caltabiano

Project Manager

APPENDIX A

Figures and Site Photographic Log

Figure 1. Aerial map indicating that the site is approximately 23.60km north of township of Narrabri.



Source: Sixmaps 2021

Figure 1	Locality Map
Project	14456 Newell Highway, Edgeroi NSW 2390

Figure 2. The site contains a non-operational service station within the eastern portion of the lot. Area of site is approximately 4111.02m^2.

Figure 2	Site Map
Project	14456 Newell Highway, Edgeroi NSW 2390

Source: Nearmaps 2021

Figure 3. Six (6) soil and one (1) water samples were taken across the site.

Sample ID	Approximate Sample Depth (m)	Texture
S1 (BH1.1)	1.5 (fill layer)	Medium Clay
S2 (BH1.2)	3.3 (Natural layer)	Heavy Clay
S3 (BH2.1)	1.5 (fill layer)	Medium Clay
S4 (BH2.2)	2.9 (Natural layer)	Heavy Clay
S5 (BH3)	1.5 (fill layer)	Medium Clay
S6 (BH4)	1.5 (Natural layer)	Medium Clay

Borehole Location

Monitoring well Location

Source: Nearmaps 2021

Figure 3	Sample Locations
Project	14456 Newell Highway, Edgeroi NSW 2390

N

Figure 4. Aerial image of the site and surrounding area 2015. The site was a rectangular-shaped lot that contained three separated building structures within the western portion. The eastern portion of the site is empty of infrastructure and used as parking for trucks. The site was sparsely vegetated. The surrounding area of the site was composed of vacant lands and rural residential properties.

Source: Nearmaps 2021

Figure 4	Aerial Image 2015
Project	14456 Newell Highway, Edgeroi NSW 2390

Figure 5. A view of the site including the former retail store from Newell Highway. The front of the site is fenced off to public access and all the fuel bowsers have been removed.

Figure 6. The eastern portion of the retail store including the metal canopy.

Figure 7. Rear end of the site including the single storey weatherboard building structure.

Figure 8. The entrance to the backyard and the location of one of the underground fuel tanks.

Figure 9. Front of the site including the metal shed and former location of the fuel bowsers.

Figure 10. The southern portion of the site.

Figure 11. The groundwater monitoring well to the front portion of the site.

Figure 12. Front of the site including the air vent.

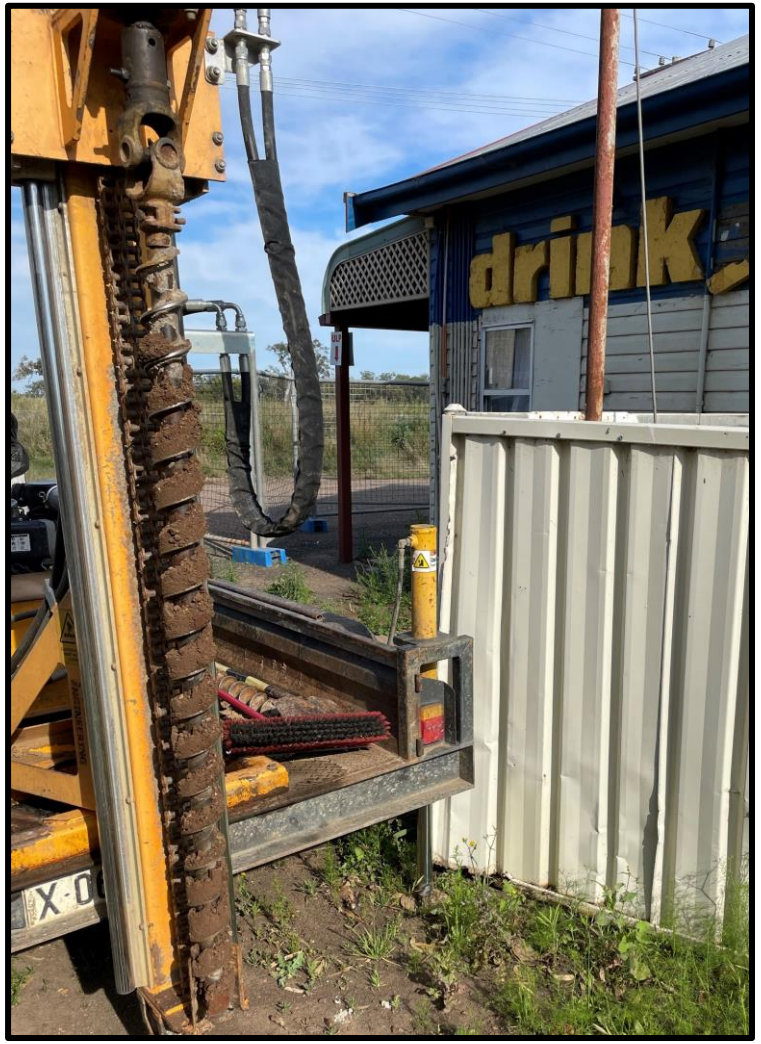


Figure 13. Drilling of S1. The fill layer consisted of a Dark Brown Medium Clay soil.

Figure 14. Drilling of S3. The soil is Dark Grey Medium Clay within fill layer.

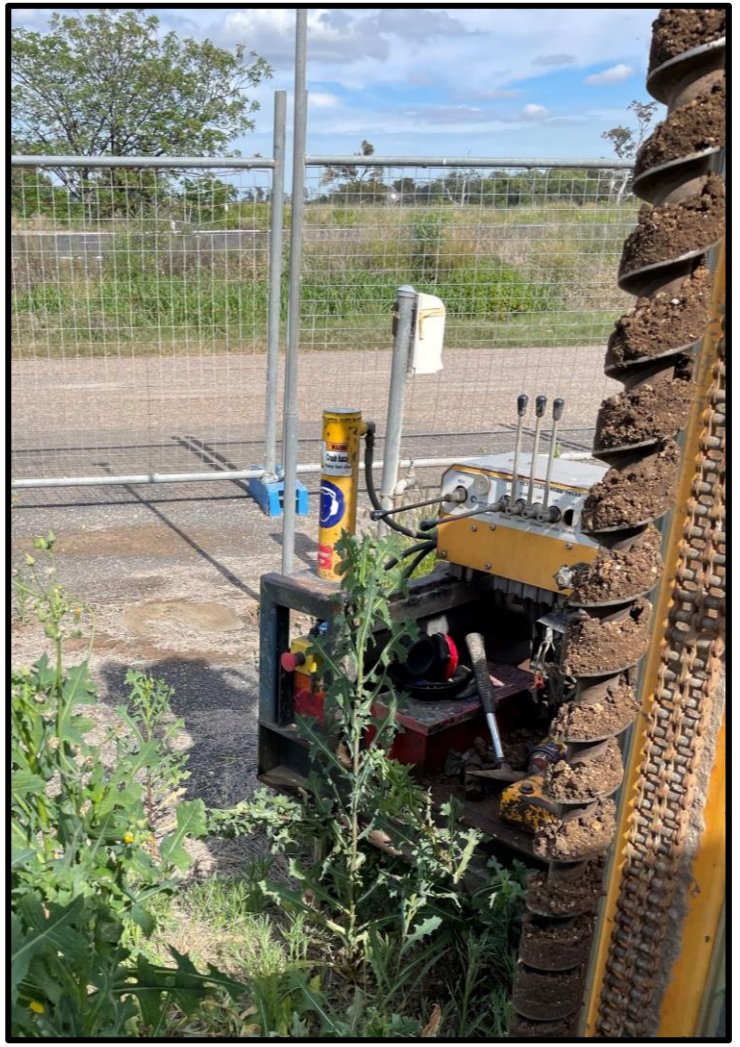


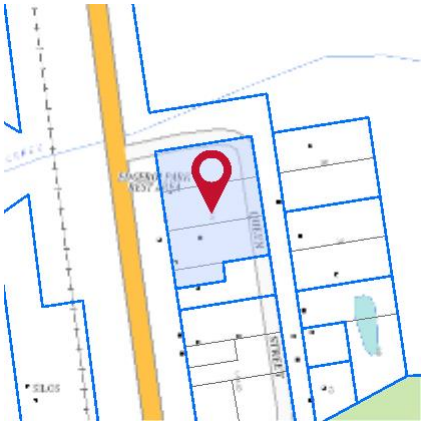
Figure 15. Drilling of S4. The soil is Dark Grey Medium Clay within fill layer.

APPENDIX B

Property Report

Property Report

14454 NEWELL HIGHWAY EDGEROI 2390



Property Details

Address:	14454 NEWELL HIGHWAY EDGEROI 2390
Lot/Section /Plan No:	1/-/DP311343 59/-/DP753952 60/-/DP753952 61/-/DP753952
Council:	NARRABRI SHIRE COUNCIL

Summary of planning controls

Planning controls held within the Planning Database are summarised below. The property may be affected by additional planning controls not outlined in this report. Please contact your council for more information.

Local Environmental Plans	Narrabri Local Environmental Plan 2012 (pub. 21-12-2012)
Land Zoning	RU5 - Village: (pub. 21-12-2012)
Height Of Building	NA
Floor Space Ratio	NA
Minimum Lot Size	2000 m²
Heritage	NA
Land Reservation Acquisition	NA
Foreshore Building Line	NA
Mineral and Resource Land	Subject Land

Detailed planning information

State Environmental Planning Policies which apply to this property

State Environmental Planning Policies can specify planning controls for certain areas and/or types of development. They can also identify the development assessment system that applies and the type of environmental assessment that is required.

- State Environmental Planning Policy (Affordable Rental Housing) 2009: Land Application (pub. 31-7-2009)
- State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004: Land Application (pub. 25-6-2004)
- State Environmental Planning Policy (Concurrences and Consents) 2018: Land Application (pub. 21-12-2018)
- State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017: Land Application (pub. 1-9-2017)
- State Environmental Planning Policy (Exempt and Complying Development Codes) 2008: Land Application (pub. 12-12-2008)
- State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004: Land Application (pub. 31-3-2004)
- State Environmental Planning Policy (Infrastructure) 2007: Land Application (pub. 21-12-2007)
- State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007: Land Application (pub. 16-2-2007)
- State Environmental Planning Policy (Primary Production and Rural Development) 2019: Land Application (pub. 28-2-2019)
- State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017: Allowable Clearing Area (pub. 17-9-2021)
- State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017: Subject Land (pub. 25-8-2017)
- State Environmental Planning Policy No 21—Caravan Parks: Land Application (pub. 24-4-1992)
- State Environmental Planning Policy No 33—Hazardous and Offensive Development: Land Application (pub. 13-3-1992)
- State Environmental Planning Policy No 36—Manufactured Home Estates: Land Application (pub. 16-7-1993)
- State Environmental Planning Policy No 50—Canal Estate Development: Land Application (pub. 10-11-1997)
- State Environmental Planning Policy No 55—Remediation of Land: Land Application (pub. 28-8-1998)
- State Environmental Planning Policy No 64—Advertising and Signage: Land Application (pub. 16-3-2001)
- State Environmental Planning Policy No 65—Design Quality of Residential Apartment Development: Land Application (pub. 26-7-2002)

Other matters affecting the property

Information held in the Planning Database about other matters affecting the property appears below. The property may also be affected by additional planning controls not outlined in this report. Please speak to your council for more information

Land near Electrical Infrastructure	This property may be located near electrical infrastructure and could be subject to requirements listed under ISEPP Clause 45. Please contact Essential Energy for more information.
Local Aboriginal Land Council	NARRABRI
Regional Plan Boundary	New England North West

APPENDIX C

Laboratory Results and Chain of Custody

SGS

CHAIN OF CUSTODY & ANALYSIS REQUEST

Page 1 of 1

SGS Environmental Services
Unit 16, 33 Maddox Street
Alexandria NSW 2015
Telephone No: (02) 85940400
Facsimile No: (02) 85940499
Email: au.samplereceipt.sydney@sgs.com

Company Name: NEO Consulting Pty Ltd
Address: 186 Riverstone Parade, Riverstone, NSW, 2765
Contact Name: Nick Caltabiano, Luke Brevu

Project Name/No: N348
Purchase Order No:
Results Required By: Next day / 3 days / Standard (Circle one)
Telephone: Nick's mobile: 0416 680 375 Luke's mobile: 0455 485 502
Facsimile:
Email Results: [Read Comment section]

Client Sample ID	Date Sampled	Lab Sample ID	WATER	SOIL	PRESERVATIVE	NO OF CONTAINERS	TPH	BTEX	Heavy Metals	Dissolved Metals
S1		1					✓	✓	✓	
S2		2					✓	✓	✓	
S3		3					✓	✓	✓	
S4		4					✓	✓	✓	
S5		5					✓	✓	✓	
S6		6					✓	✓	✓	
MW1		2								✓

SGS EHS Sydney COC
SE224999

Relinquished By:	Date/Time:	Received By:	Date/Time 25.10.21 11:00
Relinquished By:	Date/Time:	Received By:	Date/Time
Samples Intact: Yes / No	Temperature: Ambient / Chilled 10°	Sample Cooler Sealed: Yes / No	Laboratory Quotation No:
	Comments: Email Reports and Invoices to all emails => ① Nick@neoconsulting.com.au ② Luke@neoconsulting.com.au ③ admin@neoconsulting.com.au ④ Oskar@neoconsulting.com.au ⑤ sarah@neoconsulting.com.au ⑥ Ehsan@neoconsulting.com.au		

Yin, Emily (Sydney)

From: nick caltabiano <nick@neoconsulting.com.au>
Sent: Thursday, 28 October 2021 2:49 PM
To: AU.SampleReceipt.Sydney (Sydney); Crawford, Huong (Sydney)
Cc: NEO Consulting; Ehsan Zare; Luke Breva; Oskar Lamperts; Sarah Houlahan
Subject: [EXTERNAL] Re: SGS Sample Receipt Advice (Ref: N5148, Lab Ref: SE224999)

*** WARNING: this message is from an EXTERNAL SENDER. Please be cautious, particularly with links and attachments. ***

Hi Huong,

We have just realised the water samples did not include TRH and BTEX could we please add this into the requested suite?

Kind regards,

Nick

On Mon, Oct 25, 2021 at 2:37 PM <AU.Samplereceipt.Sydney@sgs.com> wrote:

> Dear Admin,
>
> Please be advised we have received samples for analysis as detailed in the attached documentation.
>
> Covid-19 update: SGS Australia is open, with our Business Service Continuity Plans being put in place to ensure your project can be delivered as normal, please see the following links further details:
> 19 March 2020 Letter.
> 30 March 2020 Update.
>
> Best regards,
> SGS Alexandria Sample Administration Team
> SGS Australia Pty Ltd
> Phone: +61 (0)2 8594 0400
> Fax: +61 (0)2 8594 0499
>
>

--

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Admin
Client	NEO CONSULTING PTY LTD
Address	PO BOX 279 RIVERSTONE NSW 2765
Telephone	0416 680 375
Facsimile	(Not specified)
Email	admin@neoconsulting.com.au
Project	**N5148**
Order Number	**N5148**
Samples	7

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE224999 R0**
Date Received	25/10/2021
Date Reported	4/11/2021

COMMENTS

Accredited for compliance with ISO/IEC 17025 - Testing. NATA accredited laboratory 2562(4354).

SIGNATORIES

Akheeqar BENIAMEEN
Chemist

Bennet LO
Senior Chemist

Dong LIANG
Metals/Inorganics Team Leader

Kamrul AHSAN
Senior Chemist

Shane MCDERMOTT
Inorganic/Metals Chemist

Teresa NGUYEN
Organic Chemist

VOC's in Soil [AN433] Tested: 25/10/2021

PARAMETER	UOM	LOR	S1 SOIL - 22/10/2021 SE224999.001	S2 SOIL - 22/10/2021 SE224999.002	S3 SOIL - 22/10/2021 SE224999.003	S4 SOIL - 22/10/2021 SE224999.004	S5 SOIL - 22/10/2021 SE224999.005
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6	<0.6
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1

PARAMETER	UOM	LOR	S6 SOIL - 22/10/2021 SE224999.006
Benzene	mg/kg	0.1	<0.1
Toluene	mg/kg	0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2
o-xylene	mg/kg	0.1	<0.1
Total Xylenes	mg/kg	0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6
Naphthalene	mg/kg	0.1	<0.1

Volatile Petroleum Hydrocarbons in Soil [AN433] Tested: 25/10/2021

PARAMETER	UOM	LOR	S1 SOIL - 22/10/2021 SE224999.001	S2 SOIL - 22/10/2021 SE224999.002	S3 SOIL - 22/10/2021 SE224999.003	S4 SOIL - 22/10/2021 SE224999.004	S5 SOIL - 22/10/2021 SE224999.005
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10	mg/kg	25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25	<25

PARAMETER	UOM	LOR	S6 SOIL - 22/10/2021 SE224999.006
TRH C6-C9	mg/kg	20	<20
Benzene (F0)	mg/kg	0.1	<0.1
TRH C6-C10	mg/kg	25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25

TRH (Total Recoverable Hydrocarbons) in Soil [AN403] Tested: 25/10/2021

PARAMETER	UOM	LOR	S1 SOIL - 22/10/2021 SE224999.001	S2 SOIL - 22/10/2021 SE224999.002	S3 SOIL - 22/10/2021 SE224999.003	S4 SOIL - 22/10/2021 SE224999.004	S5 SOIL - 22/10/2021 SE224999.005
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110	<110
TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210	<210

PARAMETER	UOM	LOR	S6 SOIL - 22/10/2021 SE224999.006
TRH C10-C14	mg/kg	20	<20
TRH C15-C28	mg/kg	45	<45
TRH C29-C36	mg/kg	45	<45
TRH C37-C40	mg/kg	100	<100
TRH >C10-C16	mg/kg	25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120
TRH C10-C36 Total	mg/kg	110	<110
TRH >C10-C40 Total (F bands)	mg/kg	210	<210

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 29/10/2021

PARAMETER	UOM	LOR	S1 SOIL - 22/10/2021 SE224999.001	S2 SOIL - 22/10/2021 SE224999.002	S3 SOIL - 22/10/2021 SE224999.003	S4 SOIL - 22/10/2021 SE224999.004	S5 SOIL - 22/10/2021 SE224999.005
Arsenic, As	mg/kg	1	<1	2	1	2	<1
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	12	9.5	11	10	12
Copper, Cu	mg/kg	0.5	6.4	5.6	6.1	7.4	6.0
Lead, Pb	mg/kg	1	5	5	4	5	4
Nickel, Ni	mg/kg	0.5	10	12	12	17	11
Zinc, Zn	mg/kg	2	24	19	12	42	12

PARAMETER	UOM	LOR	S6 SOIL - 22/10/2021 SE224999.006
Arsenic, As	mg/kg	1	<1
Cadmium, Cd	mg/kg	0.3	<0.3
Chromium, Cr	mg/kg	0.5	10
Copper, Cu	mg/kg	0.5	6.3
Lead, Pb	mg/kg	1	12
Nickel, Ni	mg/kg	0.5	10
Zinc, Zn	mg/kg	2	12

Mercury in Soil [AN312] Tested: 29/10/2021

PARAMETER	UOM	LOR	S1 SOIL - 22/10/2021 SE224999.001	S2 SOIL - 22/10/2021 SE224999.002	S3 SOIL - 22/10/2021 SE224999.003	S4 SOIL - 22/10/2021 SE224999.004	S5 SOIL - 22/10/2021 SE224999.005
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	S6 SOIL - 22/10/2021 SE224999.006
Mercury	mg/kg	0.05	<0.05

Moisture Content [AN002] Tested: 28/10/2021

PARAMETER	UOM	LOR	S1 SOIL - 22/10/2021 SE224999.001	S2 SOIL - 22/10/2021 SE224999.002	S3 SOIL - 22/10/2021 SE224999.003	S4 SOIL - 22/10/2021 SE224999.004	S5 SOIL - 22/10/2021 SE224999.005
% Moisture	%w/w	1	**16.3**	**14.2**	**16.1**	**13.7**	**15.3**

PARAMETER	UOM	LOR	S6 SOIL - 22/10/2021 SE224999.006
% Moisture	%w/w	1	**15.1**

VOCs in Water [AN433] Tested: 29/10/2021

PARAMETER	UOM	LOR	MW1 WATER - 22/10/2021 SE224999.007
Benzene	µg/L	0.5	<0.5
Toluene	µg/L	0.5	<0.5
Ethylbenzene	µg/L	0.5	<0.5
m/p-xylene	µg/L	1	<1
o-xylene	µg/L	0.5	<0.5
Total Xylenes	µg/L	1.5	<1.5
Total BTEX	µg/L	3	<3
Naphthalene	µg/L	0.5	<0.5

Volatile Petroleum Hydrocarbons in Water [AN433] Tested: 29/10/2021

PARAMETER	UOM	LOR	MW1 WATER - 22/10/2021 SE224999.007
TRH C6-C9	µg/L	40	<40
Benzene (F0)	µg/L	0.5	<0.5
TRH C6-C10	µg/L	50	<50
TRH C6-C10 minus BTEX (F1)	µg/L	50	<50

TRH (Total Recoverable Hydrocarbons) in Water [AN403] Tested: 29/10/2021

PARAMETER	UOM	LOR	MW1 WATER - 22/10/2021 SE224999.007
TRH C10-C14	µg/L	50	<50
TRH C15-C28	µg/L	200	<200
TRH C29-C36	µg/L	200	<200
TRH C37-C40	µg/L	200	<200
TRH >C10-C16	µg/L	60	<60
TRH >C10-C16 - Naphthalene (F2)	µg/L	60	<60
TRH >C16-C34 (F3)	µg/L	500	<500
TRH >C34-C40 (F4)	µg/L	500	<500
TRH C10-C40	µg/L	320	<320

Trace Metals (Dissolved) in Water by ICPMS [AN318] Tested: 25/10/2021

PARAMETER	UOM	LOR	MW1 WATER - 22/10/2021 SE224999.007
Arsenic, As	µg/L	1	<1
Cadmium, Cd	µg/L	0.1	<0.1
Copper, Cu	µg/L	1	1
Chromium, Cr	µg/L	1	<1
Nickel, Ni	µg/L	1	<1
Lead, Pb	µg/L	1	<1
Zinc, Zn	µg/L	5	<5

Mercury (dissolved) in Water [AN311(Perth)/AN312] Tested: 26/10/2021

PARAMETER	UOM	LOR	MW1 WATER - 22/10/2021 SE224999.007
Mercury	mg/L	0.0001	<0.0001

METHOD	METHODOLOGY SUMMARY
AN002	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
AN020	Unpreserved water sample is filtered through a 0.45µm membrane filter and acidified with nitric acid similar to APHA3030B.
AN040/AN320	A portion of sample is digested with nitric acid to decompose organic matter and hydrochloric acid to complete the digestion of metals. The digest is then analysed by ICP OES with metals results reported on the dried sample basis. Based on USEPA method 200.8 and 6010C.
AN040	A portion of sample is digested with Nitric acid to decompose organic matter and Hydrochloric acid to complete the digestion of metals and then filtered for analysis by ASS or ICP as per USEPA Method 200.8.
AN311(Perth)/AN312	Mercury by Cold Vapour AAS in Waters: Mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500.
AN312	Mercury by Cold Vapour AAS in Soils: After digestion with nitric acid, hydrogen peroxide and hydrochloric acid , mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser . Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500
AN318	Determination of elements at trace level in waters by ICP-MS technique,, referenced to USEPA 6020B and USEPA 200.8 (5.4).
AN403	Total Recoverable Hydrocarbons: Determination of Hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36 and in recognition of the NEPM 1999 (2013), >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). F2 is reported directly and also corrected by subtracting Naphthalene (from VOC method AN433) where available.
AN403	Additionally, the volatile C6-C9 fraction may be determined by a purge and trap technique and GC/MS because of the potential for volatiles loss. Total Recoverable Hydrocarbons - Silica (TRH-Si) follows the same method of analysis after silica gel cleanup of the solvent extract. Aliphatic/Aromatic Speciation follows the same method of analysis after fractionation of the solvent extract over silica with differential polarity of the eluent solvents .
AN403	The GC/FID method is not well suited to the analysis of refined high boiling point materials (ie lubricating oils or greases) but is particularly suited for measuring diesel, kerosene and petrol if care to control volatility is taken. This method will detect naturally occurring hydrocarbons, lipids, animal fats, phenols and PAHs if they are present at sufficient levels, dependent on the use of specific cleanup/fractionation techniques. Reference USEPA 3510B, 8015B.
AN433	VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC`s are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.

FOOTNOTES

*	NATA accreditation does not cover the performance of this service.	-	Not analysed.	UOM	Unit of Measure.
**	Indicative data, theoretical holding time exceeded.	NVL	Not validated.	LOR	Limit of Reporting.
***	Indicates that both * and ** apply.	IS	Insufficient sample for analysis.	↑↓	Raised/lowered Limit of Reporting.
		LNR	Sample listed, but not received.		

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.
Solid samples expressed on a dry weight basis.

Where "Total" analyte groups are reported (for example, Total PAHs, Total OC Pesticides) the total will be calculated as the sum of the individual analytes, with those analytes that are reported as <LOR being assumed to be zero. The summed (Total) limit of reporting is calculated by summing the individual analyte LORs and dividing by two. For example, where 16 individual analytes are being summed and each has an LOR of 0.1 mg/kg, the "Totals" LOR will be 1.6 / 2 (0.8 mg/kg). Where only 2 analytes are being summed, the " Total" LOR will be the sum of those two LORs.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

If reported, measurement uncertainty follow the ± sign after the analytical result and is expressed as the expanded uncertainty calculated using a coverage factor of 2, providing a level of confidence of approximately 95%, unless stated otherwise in the comments section of this report.

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.
Note that in terms of units of radioactivity:

a. 1 Bq is equivalent to 27 pCi
b. 37 MBq is equivalent to 1 mCi

For results reported for samples tested under test methods with codes starting with ARS-SOP, less than (<) values indicate the detection limit for each radionuclide or parameter for the measurement system used. The respective detection limits have been calculated in accordance with ISO 11929.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au/en-gb/environment-health-and-safety.

STATEMENT OF QA/QC PERFORMANCE

SE224999 R0

CLIENT DETAILS

Contact	Admin
Client	NEO CONSULTING PTY LTD
Address	PO BOX 279 RIVERSTONE NSW 2765
Telephone	0416 680 375
Facsimile	(Not specified)
Email	admin@neoconsulting.com.au
Project	**N5148**
Order Number	**N5148**
Samples	7

LABORATORY DETAILS

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Email	au.environmental.sydney@sgs.com
SGS Reference	**SE224999 R0**
Date Received	25 Oct 2021
Date Reported	04 Nov 2021

COMMENTS

All the laboratory data for each environmental matrix was compared to SGS' stated Data Quality Objectives (DQO). Comments arising from the comparison were made and are reported below.

The data relating to sampling was taken from the Chain of Custody document.
This QA/QC Statement must be read in conjunction with the referenced Analytical Report.
The Statement and the Analytical Report must not be reproduced except in full.

All Data Quality Objectives were met with the exception of the following:

Matrix Spike	Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES	1 item

SAMPLE SUMMARY

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	6 Soil, 1 Water
Date documentation received	25/10/2021	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	10.0°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

HOLDING TIME SUMMARY

SE224999 R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS "Field Sampling Guide for Containers and Holding Time" (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the

Mercury (dissolved) in Water — Method: ME-(AU)-[ENV]AN311(Perth)/AN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
MW1	SE224999.007	LB235542	22 Oct 2021	25 Oct 2021	19 Nov 2021	26 Oct 2021	19 Nov 2021	26 Oct 2021

Mercury in Soil — Method: ME-(AU)-[ENV]AN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
S1	SE224999.001	LB235842	22 Oct 2021	25 Oct 2021	19 Nov 2021	29 Oct 2021	19 Nov 2021	01 Nov 2021
S2	SE224999.002	LB235842	22 Oct 2021	25 Oct 2021	19 Nov 2021	29 Oct 2021	19 Nov 2021	01 Nov 2021
S3	SE224999.003	LB235842	22 Oct 2021	25 Oct 2021	19 Nov 2021	29 Oct 2021	19 Nov 2021	01 Nov 2021
S4	SE224999.004	LB235842	22 Oct 2021	25 Oct 2021	19 Nov 2021	29 Oct 2021	19 Nov 2021	01 Nov 2021
S5	SE224999.005	LB235842	22 Oct 2021	25 Oct 2021	19 Nov 2021	29 Oct 2021	19 Nov 2021	01 Nov 2021
S6	SE224999.006	LB235842	22 Oct 2021	25 Oct 2021	19 Nov 2021	29 Oct 2021	19 Nov 2021	01 Nov 2021

Moisture Content — Method: ME-(AU)-[ENV]AN002

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
S1	SE224999.001	LB235752	22 Oct 2021	25 Oct 2021	05 Nov 2021	28 Oct 2021	02 Nov 2021	01 Nov 2021
S2	SE224999.002	LB235752	22 Oct 2021	25 Oct 2021	05 Nov 2021	28 Oct 2021	02 Nov 2021	01 Nov 2021
S3	SE224999.003	LB235752	22 Oct 2021	25 Oct 2021	05 Nov 2021	28 Oct 2021	02 Nov 2021	01 Nov 2021
S4	SE224999.004	LB235752	22 Oct 2021	25 Oct 2021	05 Nov 2021	28 Oct 2021	02 Nov 2021	01 Nov 2021
S5	SE224999.005	LB235752	22 Oct 2021	25 Oct 2021	05 Nov 2021	28 Oct 2021	02 Nov 2021	01 Nov 2021
S6	SE224999.006	LB235752	22 Oct 2021	25 Oct 2021	05 Nov 2021	28 Oct 2021	02 Nov 2021	01 Nov 2021

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES — Method: ME-(AU)-[ENV]AN040/AN320

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
S1	SE224999.001	LB235833	22 Oct 2021	25 Oct 2021	20 Apr 2022	29 Oct 2021	20 Apr 2022	01 Nov 2021
S2	SE224999.002	LB235833	22 Oct 2021	25 Oct 2021	20 Apr 2022	29 Oct 2021	20 Apr 2022	01 Nov 2021
S3	SE224999.003	LB235833	22 Oct 2021	25 Oct 2021	20 Apr 2022	29 Oct 2021	20 Apr 2022	01 Nov 2021
S4	SE224999.004	LB235833	22 Oct 2021	25 Oct 2021	20 Apr 2022	29 Oct 2021	20 Apr 2022	01 Nov 2021
S5	SE224999.005	LB235833	22 Oct 2021	25 Oct 2021	20 Apr 2022	29 Oct 2021	20 Apr 2022	01 Nov 2021
S6	SE224999.006	LB235833	22 Oct 2021	25 Oct 2021	20 Apr 2022	29 Oct 2021	20 Apr 2022	01 Nov 2021

Trace Metals (Dissolved) in Water by ICPMS — Method: ME-(AU)-[ENV]AN318

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
MW1	SE224999.007	LB235459	22 Oct 2021	25 Oct 2021	20 Apr 2022	25 Oct 2021	20 Apr 2022	26 Oct 2021

TRH (Total Recoverable Hydrocarbons) in Soil — Method: ME-(AU)-[ENV]AN403

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
S1	SE224999.001	LB235500	22 Oct 2021	25 Oct 2021	05 Nov 2021	25 Oct 2021	04 Dec 2021	01 Nov 2021
S2	SE224999.002	LB235500	22 Oct 2021	25 Oct 2021	05 Nov 2021	25 Oct 2021	04 Dec 2021	01 Nov 2021
S3	SE224999.003	LB235500	22 Oct 2021	25 Oct 2021	05 Nov 2021	25 Oct 2021	04 Dec 2021	01 Nov 2021
S4	SE224999.004	LB235500	22 Oct 2021	25 Oct 2021	05 Nov 2021	25 Oct 2021	04 Dec 2021	01 Nov 2021
S5	SE224999.005	LB235500	22 Oct 2021	25 Oct 2021	05 Nov 2021	25 Oct 2021	04 Dec 2021	01 Nov 2021
S6	SE224999.006	LB235500	22 Oct 2021	25 Oct 2021	05 Nov 2021	25 Oct 2021	04 Dec 2021	01 Nov 2021

TRH (Total Recoverable Hydrocarbons) in Water — Method: ME-(AU)-[ENV]AN403

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
MW1	SE224999.007	LB235810	22 Oct 2021	25 Oct 2021	29 Oct 2021	29 Oct 2021	08 Dec 2021	02 Nov 2021

VOC's in Soil — Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
S1	SE224999.001	LB235509	22 Oct 2021	25 Oct 2021	05 Nov 2021	25 Oct 2021	05 Nov 2021	01 Nov 2021
S2	SE224999.002	LB235509	22 Oct 2021	25 Oct 2021	05 Nov 2021	25 Oct 2021	05 Nov 2021	01 Nov 2021
S3	SE224999.003	LB235509	22 Oct 2021	25 Oct 2021	05 Nov 2021	25 Oct 2021	05 Nov 2021	01 Nov 2021
S4	SE224999.004	LB235509	22 Oct 2021	25 Oct 2021	05 Nov 2021	25 Oct 2021	05 Nov 2021	01 Nov 2021
S5	SE224999.005	LB235509	22 Oct 2021	25 Oct 2021	05 Nov 2021	25 Oct 2021	05 Nov 2021	01 Nov 2021
S6	SE224999.006	LB235509	22 Oct 2021	25 Oct 2021	05 Nov 2021	25 Oct 2021	05 Nov 2021	01 Nov 2021

VOCs in Water — Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
MW1	SE224999.007	LB235818	22 Oct 2021	25 Oct 2021	05 Nov 2021	29 Oct 2021	05 Nov 2021	01 Nov 2021

HOLDING TIME SUMMARY

SE224999 R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS "Field Sampling Guide for Containers and Holding Time" (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the

Volatile Petroleum Hydrocarbons in Soil — Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
S1	SE224999.001	LB235509	22 Oct 2021	25 Oct 2021	05 Nov 2021	25 Oct 2021	05 Nov 2021	01 Nov 2021
S2	SE224999.002	LB235509	22 Oct 2021	25 Oct 2021	05 Nov 2021	25 Oct 2021	05 Nov 2021	01 Nov 2021
S3	SE224999.003	LB235509	22 Oct 2021	25 Oct 2021	05 Nov 2021	25 Oct 2021	05 Nov 2021	01 Nov 2021
S4	SE224999.004	LB235509	22 Oct 2021	25 Oct 2021	05 Nov 2021	25 Oct 2021	05 Nov 2021	01 Nov 2021
S5	SE224999.005	LB235509	22 Oct 2021	25 Oct 2021	05 Nov 2021	25 Oct 2021	05 Nov 2021	01 Nov 2021
S6	SE224999.006	LB235509	22 Oct 2021	25 Oct 2021	05 Nov 2021	25 Oct 2021	05 Nov 2021	01 Nov 2021

Volatile Petroleum Hydrocarbons in Water — Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
MW1	SE224999.007	LB235818	22 Oct 2021	25 Oct 2021	05 Nov 2021	29 Oct 2021	05 Nov 2021	01 Nov 2021

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA/QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	S1	SE224999.001	%	60 - 130%	80
	S2	SE224999.002	%	60 - 130%	78
	S3	SE224999.003	%	60 - 130%	82
	S4	SE224999.004	%	60 - 130%	77
	S5	SE224999.005	%	60 - 130%	66
	S6	SE224999.006	%	60 - 130%	65
d4-1,2-dichloroethane (Surrogate)	S1	SE224999.001	%	60 - 130%	83
	S2	SE224999.002	%	60 - 130%	82
	S3	SE224999.003	%	60 - 130%	87
	S4	SE224999.004	%	60 - 130%	77
	S5	SE224999.005	%	60 - 130%	74
	S6	SE224999.006	%	60 - 130%	75
d8-toluene (Surrogate)	S1	SE224999.001	%	60 - 130%	83
	S2	SE224999.002	%	60 - 130%	82
	S3	SE224999.003	%	60 - 130%	87
	S4	SE224999.004	%	60 - 130%	82
	S5	SE224999.005	%	60 - 130%	71
	S6	SE224999.006	%	60 - 130%	74

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	MW1	SE224999.007	%	40 - 130%	106
d4-1,2-dichloroethane (Surrogate)	MW1	SE224999.007	%	40 - 130%	99
d8-toluene (Surrogate)	MW1	SE224999.007	%	40 - 130%	100

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	S1	SE224999.001	%	60 - 130%	80
	S2	SE224999.002	%	60 - 130%	78
	S3	SE224999.003	%	60 - 130%	82
	S4	SE224999.004	%	60 - 130%	77
	S5	SE224999.005	%	60 - 130%	66
	S6	SE224999.006	%	60 - 130%	65
d4-1,2-dichloroethane (Surrogate)	S1	SE224999.001	%	60 - 130%	83
	S2	SE224999.002	%	60 - 130%	82
	S3	SE224999.003	%	60 - 130%	87
	S4	SE224999.004	%	60 - 130%	77
	S5	SE224999.005	%	60 - 130%	74
	S6	SE224999.006	%	60 - 130%	75
d8-toluene (Surrogate)	S1	SE224999.001	%	60 - 130%	83
	S2	SE224999.002	%	60 - 130%	82
	S3	SE224999.003	%	60 - 130%	87
	S4	SE224999.004	%	60 - 130%	82
	S5	SE224999.005	%	60 - 130%	71
	S6	SE224999.006	%	60 - 130%	74

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	MW1	SE224999.007	%	40 - 130%	106
d4-1,2-dichloroethane (Surrogate)	MW1	SE224999.007	%	60 - 130%	99
d8-toluene (Surrogate)	MW1	SE224999.007	%	40 - 130%	100

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Mercury (dissolved) in Water

Method: ME-(AU)-[ENV]AN311(Perth)/AN312

Sample Number	Parameter	Units	LOR	Result
LB235542.001	Mercury	mg/L	0.0001	<0.0001

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Number	Parameter	Units	LOR	Result
LB235842.001	Mercury	mg/kg	0.05	<0.05

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Sample Number	Parameter	Units	LOR	Result
LB235833.001	Arsenic, As	mg/kg	1	<1
	Cadmium, Cd	mg/kg	0.3	<0.3
	Chromium, Cr	mg/kg	0.5	<0.5
	Copper, Cu	mg/kg	0.5	<0.5
	Nickel, Ni	mg/kg	0.5	<0.5
	Lead, Pb	mg/kg	1	<1
	Zinc, Zn	mg/kg	2	<2.0

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Number	Parameter	Units	LOR	Result
LB235459.001	Arsenic, As	µg/L	1	<1
	Cadmium, Cd	µg/L	0.1	<0.1
	Chromium, Cr	µg/L	1	<1
	Copper, Cu	µg/L	1	<1
	Lead, Pb	µg/L	1	<1
	Nickel, Ni	µg/L	1	<1
	Zinc, Zn	µg/L	5	<5

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Number	Parameter	Units	LOR	Result
LB235500.001	TRH C10-C14	mg/kg	20	<20
	TRH C15-C28	mg/kg	45	<45
	TRH C29-C36	mg/kg	45	<45
	TRH C37-C40	mg/kg	100	<100
	TRH C10-C36 Total	mg/kg	110	<110

TRH (Total Recoverable Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN403

Sample Number	Parameter	Units	LOR	Result
LB235810.001	TRH C10-C14	µg/L	50	<50
	TRH C15-C28	µg/L	200	<200
	TRH C29-C36	µg/L	200	<200
	TRH C37-C40	µg/L	200	<200

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB235509.001	Monocyclic Aromatic Hydrocarbons	Benzene	mg/kg	0.1	<0.1
		Toluene	mg/kg	0.1	<0.1
		Ethylbenzene	mg/kg	0.1	<0.1
		m/p-xylene	mg/kg	0.2	<0.2
		o-xylene	mg/kg	0.1	<0.1
	Polycyclic VOCs	Naphthalene	mg/kg	0.1	<0.1
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	88
		d8-toluene (Surrogate)	%	-	86
		Bromofluorobenzene (Surrogate)	%	-	82
	Totals	Total BTEX	mg/kg	0.6	<0.3

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB235818.001	Monocyclic Aromatic Hydrocarbons	Benzene	µg/L	0.5	<0.5
		Toluene	µg/L	0.5	<0.5
		Ethylbenzene	µg/L	0.5	<0.5
		m/p-xylene	µg/L	1	<1

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

VOCs in Water (continued)

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB235818.001	Monocyclic Aromatic	o-xylene	µg/L	0.5	<0.5
	Polycyclic VOCs	Naphthalene	µg/L	0.5	<0.5
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	88
		d8-toluene (Surrogate)	%	-	101
		Bromofluorobenzene (Surrogate)	%	-	96

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB235509.001		TRH C6-C9	mg/kg	20	<20
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	88

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB235818.001		TRH C6-C9	µg/L	40	<40
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	88
		d8-toluene (Surrogate)	%	-	101
		Bromofluorobenzene (Surrogate)	%	-	96

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may

Mercury (dissolved) in Water

Method: ME-(AU)-[ENV]AN311(Perth)/AN312

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE224994.029	LB235542.014	Mercury	µg/L	0.0001	<0.0001	<0.0001	200	190
SE224999.007	LB235542.017	Mercury	µg/L	0.0001	<0.0001	<0.0001	200	199

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE224999.002	LB235842.014	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE225037.002	LB235842.024	Mercury	mg/kg	0.05	<0.05	<0.05	200	0

Moisture Content

Method: ME-(AU)-[ENV]AN002

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE225000.004	LB235752.011	% Moisture	%w/w	1	16.5	17.0	36	3
SE225001.006	LB235752.020	% Moisture	%w/w	1	13.6	12.7	38	7

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE224999.002	LB235833.014	Arsenic, As	mg/kg	1	2	1	85	43
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
		Chromium, Cr	mg/kg	0.5	9.5	7.7	36	20
		Copper, Cu	mg/kg	0.5	5.6	4.4	40	24
		Nickel, Ni	mg/kg	0.5	12	11	34	8
		Lead, Pb	mg/kg	1	5	4	53	13
		Zinc, Zn	mg/kg	2	19	15	42	26
SE225037.002	LB235833.024	Arsenic, As	mg/kg	1	6	5	49	8
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
		Chromium, Cr	mg/kg	0.5	8.6	9.0	36	5
		Copper, Cu	mg/kg	0.5	20	22	32	8
		Nickel, Ni	mg/kg	0.5	9.9	11	35	8
		Lead, Pb	mg/kg	1	10	12	39	15
		Zinc, Zn	mg/kg	2	67	74	33	11

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE224933.002	LB235459.014	Chromium, Cr	µg/L	1	3	3	45	3
		Copper, Cu	µg/L	1	<1	<1	173	0
		Zinc, Zn	µg/L	5	9	9	72	4
SE224978.004	LB235459.028	Arsenic, As	µg/L	1	2	2	66	0
		Cadmium, Cd	µg/L	0.1	<0.1	<0.1	200	0
		Chromium, Cr	µg/L	1	1	<1	114	3
		Copper, Cu	µg/L	1	2	2	75	2
		Lead, Pb	µg/L	1	<1	<1	200	0
		Nickel, Ni	µg/L	1	3	3	51	2
		Zinc, Zn	µg/L	5	120	120	19	1
SE224999.007	LB235459.033	Arsenic, As	µg/L	1	<1	<1	200	0
		Cadmium, Cd	µg/L	0.1	<0.1	<0.1	200	0
		Chromium, Cr	µg/L	1	<1	<1	200	0
		Copper, Cu	µg/L	1	1	1	97	2
		Lead, Pb	µg/L	1	<1	<1	200	0
		Nickel, Ni	µg/L	1	<1	<1	200	0
		Zinc, Zn	µg/L	5	<5	<5	200	0

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE225000.004	LB235500.014		TRH C10-C14	mg/kg	20	<20	<20	200	0
			TRH C15-C28	mg/kg	45	<45	<45	200	0
			TRH C29-C36	mg/kg	45	<45	<45	200	0
			TRH C37-C40	mg/kg	100	<100	<100	200	0
			TRH C10-C36 Total	mg/kg	110	<110	<110	200	0
			TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	200	0
		TRH F Bands	TRH >C10-C16	mg/kg	25	<25	<25	200	0

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may

TRH (Total Recoverable Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN403

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE225000.004	LB235500.014	TRH F Bands	TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	200	0
			TRH >C16-C34 (F3)	mg/kg	90	<90	<90	200	0
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	0
SE225000.005	LB235500.025		TRH C10-C14	mg/kg	20	<20	<20	200	0
			TRH C15-C28	mg/kg	45	<45	<45	200	0
			TRH C29-C36	mg/kg	45	<45	<45	200	0
			TRH C37-C40	mg/kg	100	<100	<100	200	0
			TRH C10-C36 Total	mg/kg	110	<110	<110	200	0
			TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	200	0
		TRH F Bands	TRH >C10-C16	mg/kg	25	<25	<25	200	0
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	200	0
			TRH >C16-C34 (F3)	mg/kg	90	<90	<90	200	0
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	0

TRH (Total Recoverable Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN403

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE225069.001	LB235810.025		TRH C10-C14	µg/L	50	<50	<50	200	0
			TRH C15-C28	µg/L	200	440	390	79	12
			TRH C29-C36	µg/L	200	<200	<200	200	0
			TRH C37-C40	µg/L	200	<200	<200	200	0
			TRH C10-C40	µg/L	320	440	390	108	12
		TRH F Bands	TRH >C10-C16	µg/L	60	<60	<60	200	0
			TRH >C10-C16 - Naphthalene (F2)	µg/L	60	<60	<60	200	0
			TRH >C16-C34 (F3)	µg/L	500	<500	<500	200	0
			TRH >C34-C40 (F4)	µg/L	500	<500	<500	200	0

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE225000.004	LB235509.014	Monocyclic Aromatic	Benzene	mg/kg	0.1	<0.1	<0.1	200	0
			Toluene	mg/kg	0.1	<0.1	<0.1	200	0
			Ethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
			m/p-xylene	mg/kg	0.2	<0.2	<0.2	200	0
			o-xylene	mg/kg	0.1	<0.1	<0.1	200	0
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	8.1	7.3	50	11
			d8-toluene (Surrogate)	mg/kg	-	8.0	7.0	50	13
			Bromofluorobenzene (Surrogate)	mg/kg	-	7.2	6.4	50	12
		Totals	Total Xylenes	mg/kg	0.3	<0.3	<0.3	200	0
			Total BTEX	mg/kg	0.6	<0.6	<0.3	200	0
SE225001.006	LB235509.023	Monocyclic Aromatic	Benzene	mg/kg	0.1	<0.1	<0.1	200	0
			Toluene	mg/kg	0.1	<0.1	<0.1	200	0
			Ethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
			m/p-xylene	mg/kg	0.2	<0.2	<0.2	176	0
			o-xylene	mg/kg	0.1	<0.1	<0.1	200	0
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	7.3	7.8	50	8
			d8-toluene (Surrogate)	mg/kg	-	7.1	7.7	50	8
			Bromofluorobenzene (Surrogate)	mg/kg	-	7.1	7.5	50	6
		Totals	Total Xylenes	mg/kg	0.3	<0.3	<0.3	194	0
			Total BTEX	mg/kg	0.6	<0.6	<0.3	200	0

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE225123.004	LB235818.021	Monocyclic Aromatic	Benzene	µg/L	0.5	<0.5	<0.5	200	0
			Toluene	µg/L	0.5	<0.5	<0.5	200	0
			Ethylbenzene	µg/L	0.5	<0.5	<0.5	200	0
			m/p-xylene	µg/L	1	<1	<1	200	0
			o-xylene	µg/L	0.5	<0.5	<0.5	200	0
		Polycyclic	Naphthalene	µg/L	0.5	<0.5	<0.5	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	9.8	9.7	30	0
			d8-toluene (Surrogate)	µg/L	-	10.0	11.1	30	11
			Bromofluorobenzene (Surrogate)	µg/L	-	10.5	10.2	30	2

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE225000.004	LB235509.014		TRH C6-C10	mg/kg	25	<25	<25	200	0
			TRH C6-C9	mg/kg	20	<20	<20	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	8.1	7.3	30	11
			d8-toluene (Surrogate)	mg/kg	-	8.0	7.0	30	13
			Bromofluorobenzene (Surrogate)	mg/kg	-	7.2	6.4	30	12
		VPH F Bands	Benzene (F0)	mg/kg	0.1	<0.1	<0.1	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	200	0
SE225001.006	LB235509.023		TRH C6-C10	mg/kg	25	<25	<25	200	0
			TRH C6-C9	mg/kg	20	<20	<20	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	7.3	7.8	30	8
			d8-toluene (Surrogate)	mg/kg	-	7.1	7.7	30	8
			Bromofluorobenzene (Surrogate)	mg/kg	-	7.1	7.5	30	6
		VPH F Bands	Benzene (F0)	mg/kg	0.1	<0.1	<0.1	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	200	0

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE225123.004	LB235818.021		TRH C6-C10	µg/L	50	<50	<50	200	0
			TRH C6-C9	µg/L	40	<40	<40	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	9.8	9.7	30	0
			d8-toluene (Surrogate)	µg/L	-	10.0	11.1	30	11
			Bromofluorobenzene (Surrogate)	µg/L	-	10.5	10.2	30	2
		VPH F Bands	Benzene (F0)	µg/L	0.5	<0.5	<0.5	200	0
			TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	<50	200	0

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB235842.002	Mercury	mg/kg	0.05	0.21	0.2	70 - 130	104

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB235833.002	Arsenic, As	mg/kg	1	340	318.22	80 - 120	105
	Cadmium, Cd	mg/kg	0.3	3.6	4.81	70 - 130	74
	Chromium, Cr	mg/kg	0.5	36	38.31	80 - 120	94
	Copper, Cu	mg/kg	0.5	310	290	80 - 120	106
	Nickel, Ni	mg/kg	0.5	180	187	80 - 120	97
	Lead, Pb	mg/kg	1	90	89.9	80 - 120	100
	Zinc, Zn	mg/kg	2	270	273	80 - 120	99

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB235459.002	Arsenic, As	µg/L	1	20	20	80 - 120	99
	Cadmium, Cd	µg/L	0.1	22	20	80 - 120	108
	Chromium, Cr	µg/L	1	21	20	80 - 120	106
	Copper, Cu	µg/L	1	21	20	80 - 120	105
	Lead, Pb	µg/L	1	20	20	80 - 120	100
	Nickel, Ni	µg/L	1	21	20	80 - 120	105
	Zinc, Zn	µg/L	5	23	20	80 - 120	114

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB235500.002		TRH C10-C14	mg/kg	20	45	40	60 - 140	113
		TRH C15-C28	mg/kg	45	<45	40	60 - 140	110
		TRH C29-C36	mg/kg	45	48	40	60 - 140	120
	TRH F Bands	TRH >C10-C16	mg/kg	25	47	40	60 - 140	118
		TRH >C16-C34 (F3)	mg/kg	90	<90	40	60 - 140	118
		TRH >C34-C40 (F4)	mg/kg	120	<120	20	60 - 140	105

TRH (Total Recoverable Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN403

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB235810.002		TRH C10-C14	µg/L	50	1200	1200	60 - 140	101
		TRH C15-C28	µg/L	200	1300	1200	60 - 140	107
		TRH C29-C36	µg/L	200	1400	1200	60 - 140	119
	TRH F Bands	TRH >C10-C16	µg/L	60	1300	1200	60 - 140	107
		TRH >C16-C34 (F3)	µg/L	500	1500	1200	60 - 140	124
		TRH >C34-C40 (F4)	µg/L	500	730	600	60 - 140	122

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB235509.002	Monocyclic	Benzene	mg/kg	0.1	3.8	5	60 - 140	76
	Aromatic	Toluene	mg/kg	0.1	3.9	5	60 - 140	78
		Ethylbenzene	mg/kg	0.1	4.1	5	60 - 140	82
		m/p-xylene	mg/kg	0.2	9.2	10	60 - 140	92
		o-xylene	mg/kg	0.1	4.5	5	60 - 140	89
	Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	9.3	10	70 - 130	93
		d8-toluene (Surrogate)	mg/kg	-	9.2	10	70 - 130	92
		Bromofluorobenzene (Surrogate)	mg/kg	-	8.4	10	70 - 130	84

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB235818.002	Monocyclic	Benzene	µg/L	0.5	52	45.45	60 - 140	115
	Aromatic	Toluene	µg/L	0.5	50	45.45	60 - 140	111
		Ethylbenzene	µg/L	0.5	48	45.45	60 - 140	105
		m/p-xylene	µg/L	1	99	90.9	60 - 140	108
		o-xylene	µg/L	0.5	49	45.45	60 - 140	108
	Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	10.1	10	60 - 140	101
		d8-toluene (Surrogate)	µg/L	-	10.2	10	70 - 130	102
		Bromofluorobenzene (Surrogate)	µg/L	-	9.5	10	70 - 130	95

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Volatile Petroleum Hydrocarbons in Soil — Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB235509.002		TRH C6-C10	mg/kg	25	72	92.5	60 - 140	78
		TRH C6-C9	mg/kg	20	64	80	60 - 140	80
	Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	9.3	10	70 - 130	93
		Bromofluorobenzene (Surrogate)	mg/kg	-	8.4	10	70 - 130	84
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	46	62.5	60 - 140	74

Volatile Petroleum Hydrocarbons in Water — Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB235818.002		TRH C6-C10	µg/L	50	1100	946.63	60 - 140	114
		TRH C6-C9	µg/L	40	920	818.71	60 - 140	112
	Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	10.1	10	60 - 140	101
		d8-toluene (Surrogate)	µg/L	-	10.2	10	70 - 130	102
		Bromofluorobenzene (Surrogate)	µg/L	-	9.5	10	70 - 130	95
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	µg/L	50	780	639.67	60 - 140	122

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Mercury (dissolved) in Water

Method: ME-(AU)-[ENV]AN311(Perth)/AN312

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE224994.001	LB235542.004	Mercury	mg/L	0.0001	0.0014	<0.0001	0.008	72

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE224981.001	LB235842.004	Mercury	mg/kg	0.05	0.23	<0.05	0.2	99

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE224981.001	LB235833.004	Arsenic, As	mg/kg	1	41	6	50	70
		Cadmium, Cd	mg/kg	0.3	36	<0.3	50	72
		Chromium, Cr	mg/kg	0.5	48	13	50	70
		Copper, Cu	mg/kg	0.5	56	20	50	72
		Nickel, Ni	mg/kg	0.5	46	10	50	72
		Lead, Pb	mg/kg	1	44	8	50	71
		Zinc, Zn	mg/kg	2	62	29	50	66 ⑨

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE224978.006	LB235459.030	Arsenic, As	µg/L	1	26	<1	20	128
		Cadmium, Cd	µg/L	0.1	24	<0.1	20	117
		Chromium, Cr	µg/L	1	24	<1	20	119
		Copper, Cu	µg/L	1	43	20	20	113
		Lead, Pb	µg/L	1	21	<1	20	105
		Nickel, Ni	µg/L	1	25	2	20	116
		Zinc, Zn	µg/L	5	140	120	20	127

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE224999.001	LB235500.004		TRH C10-C14	mg/kg	20	48	<20	40	120
			TRH C15-C28	mg/kg	45	46	<45	40	115
			TRH C29-C36	mg/kg	45	49	<45	40	123
			TRH C37-C40	mg/kg	100	<100	<100	-	-
			TRH C10-C36 Total	mg/kg	110	140	<110	-	-
			TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	-	-
		TRH F Bands	TRH >C10-C16	mg/kg	25	50	<25	40	125
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	50	<25	-	-
			TRH >C16-C34 (F3)	mg/kg	90	<90	<90	40	125
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	-	-

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE224999.001	LB235509.004	Monocyclic Aromatic	Benzene	mg/kg	0.1	3.2	<0.1	5	63
			Toluene	mg/kg	0.1	3.3	<0.1	5	65
			Ethylbenzene	mg/kg	0.1	3.5	<0.1	5	70
			m/p-xylene	mg/kg	0.2	7.9	<0.2	10	79
			o-xylene	mg/kg	0.1	3.9	<0.1	5	77
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	8.4	8.3	10	84
			d8-toluene (Surrogate)	mg/kg	-	8.3	8.3	10	83
			Bromofluorobenzene (Surrogate)	mg/kg	-	7.6	8.0	10	76
		Totals	Total Xylenes	mg/kg	0.3	12	<0.3	-	-
			Total BTEX	mg/kg	0.6	22	<0.6	-	-

VOCs in Water

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Original	Spike	Recovery%
SE224999.007	LB235818.022	Monocyclic Aromatic	Benzene	µg/L	0.5	<0.5	45.45	108
			Toluene	µg/L	0.5	<0.5	45.45	119
			Ethylbenzene	µg/L	0.5	<0.5	45.45	114
			m/p-xylene	µg/L	1	<1	90.9	113

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

VOCs in Water (continued)

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Original	Spike	Recovery%
SE224999.007	LB235818.022	Monocyclic	o-xylene	µg/L	0.5	<0.5	45.45	112
		Polycyclic	Naphthalene	µg/L	0.5	<0.5	-	-
		Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	9.9	-	62
			d8-toluene (Surrogate)	µg/L	-	10.0	-	95
			Bromofluorobenzene (Surrogate)	µg/L	-	10.6	-	96

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE224999.001	LB235509.004		TRH C6-C10	mg/kg	25	62	<25	92.5	67
			TRH C6-C9	mg/kg	20	56	<20	80	69
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	8.4	8.3	10	84
			d8-toluene (Surrogate)	mg/kg	-	8.3	8.3	10	83
			Bromofluorobenzene (Surrogate)	mg/kg	-	7.6	8.0	-	76
		VPH F	Benzene (F0)	mg/kg	0.1	3.2	<0.1	-	-
		Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	40	<25	62.5	64

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE224999.007	LB235818.022		TRH C6-C10	µg/L	50	980	<50	946.63	104
			TRH C6-C9	µg/L	40	860	<40	818.71	105
		Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	0.0	9.9	-	62
			d8-toluene (Surrogate)	µg/L	-	0.0	10.0	-	95
			Bromofluorobenzene (Surrogate)	µg/L	-	0.0	10.6	-	96
		VPH F	Benzene (F0)	µg/L	0.5		<0.5	-	-
		Bands	TRH C6-C10 minus BTEX (F1)	µg/L	50	670	<50	639.67	105

MATRIX SPIKE DUPLICATES

SE224999 R0

Matrix spike duplicates are calculated as Relative Percent Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The original result is the analyte concentration of the matrix spike. The Duplicate result is the analyte concentration of the matrix spike duplicate.

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the

No matrix spike duplicates were required for this job.

id samples expressed on a dry weight basis.

criteria are subject to internal review according to the SGS QA/QC plan and may be provided on request or alternatively can be found he
ps://www.sgs.com.au/~/media/Local/Australia/Documents/Technical Documents/MP-AU-ENV-QU-022 QA QC Plan.pdf

*	NATA accreditation does not cover the performance of this service .
**	Indicative data, theoretical holding time exceeded.
***	Indicates that both * and ** apply.
-	Sample not analysed for this analyte.
IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
LOR	Limit of reporting.
QFH	QC result is above the upper tolerance.
QFL	QC result is below the lower tolerance.
①	At least 2 of 3 surrogates are within acceptance criteria.
②	RPD failed acceptance criteria due to sample heterogeneity.
③	Results less than 5 times LOR preclude acceptance criteria for RPD.
④	Recovery failed acceptance criteria due to matrix interference.
⑤	Recovery failed acceptance criteria due to the presence of significant concentration of analyte (i.e. the concentration of analyte exceeds the spike level).
⑥	LOR was raised due to sample matrix interference.
⑦	LOR was raised due to dilution of significantly high concentration of analyte in sample.
⑧	Reanalysis of sample in duplicate confirmed sample heterogeneity and inconsistency of results.
⑨	Recovery failed acceptance criteria due to sample heterogeneity.
⑩	LOR was raised due to high conductivity of the sample (required dilution).
†	Refer to relevant report comments for further information.

Appendix 6: 2023 Traffic Impact Study

5 March 2024

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+61 2 9083 6601
Suite 17.02, Level 17,
1 Castlereagh Street,
Sydney, NSW 2000
ABN: 81 168 423 872

The Benzina Group
PO Box 365
Penrith NSW 2751

Attention: Hewa Hussain

RE: Newell Highway, Edgeroi – *Transport Assessment*

Dear Hewa,

A Development Application is to be resubmitted to Narrabri Shire Council (Council) for a proposed service station development on land at 14448 to 14454 Newell Highway, Edgeroi. The proposed development incorporates light and heavy vehicle refuelling areas, convenience store, together with food and drink premises. Car, car with caravan, coach and heavy vehicle parking is also proposed.

The site is within Narrabri Local Government Area (LGA) and has been assessed in accordance with Narrabri Development Control Plan 2011 (NDCP 2011) and Narrabri Local Environmental Plan 2022 (CBLEP 2012).

The Benzina Group engaged Ason Group in January 2024 to prepare a transport impact assessment for the proposed development.

Background Context

A DA was submitted in early 2023 for the proposed service station with this following previous submissions between July 2016 and 2018. Stantec prepared a transport impact assessment[1] as part of the submitted DA and this letter should be read in conjunction with that report to ensure consistency with background context and existing conditions.

The Newell Highway Corridor Strategy is part of the Australian Government commitment to supporting and enhancing Australia's key transport infrastructure. The Newell Highway is the most significant rural highway in NSW and serves as an important social and economic connection for local communities, freight movement and visitors travelling through the region. The 2019 Newell Highway Corridor Strategy documents a 10-year investment roadmap to ensure that the corridor continues to serve the needs of its users over the longer term. With current uncertainty surrounding the status of Australian Government infrastructure funding and following extensive Transport for NSW consultation, it was important for the development to proceed independently and without reliance on any such infrastructure upgrades. In this regard, additional land has now been acquired to ensure a comprehensive development can achieve this objective.

With a significantly larger site area, direct highway access is now achievable, and the proposed site access strategy has gained initial TfNSW support. This has ensured that the DA can be resubmitted to Council and guarantees development delivery regardless of the future status of the Newell Highway Corridor Strategy.

The site is located along the eastern side of the Newell Highway through Edgeroi and is also bounded by Queen Street on the remaining frontages, as shown in **Figure 1**.

[1] Proposed Service Station, Edgeroi, Transport Impact Assessment, 12 January 2023.

Source: Nearmap (nearmap.com/maps/)

Figure 1: Site Location

Proposed Development

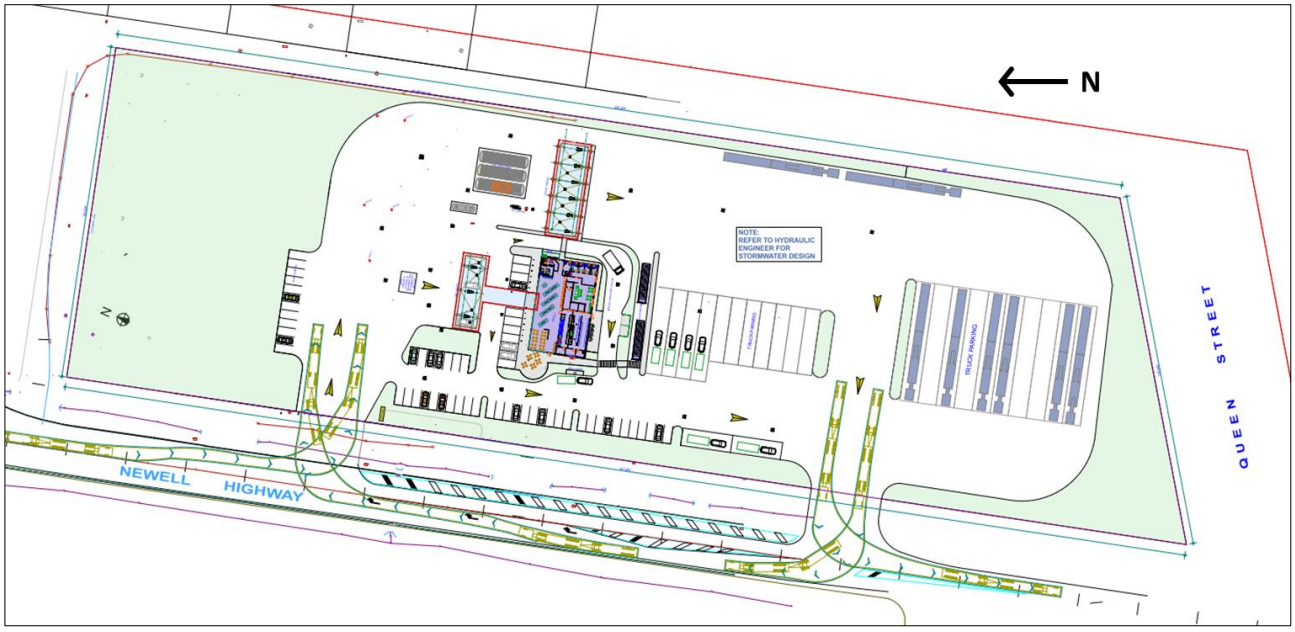
The proposed development includes separate light and heavy vehicle refuelling hardstand areas, air and water facilities, and convenience/ food and drink premises. Car and car with caravan plus dedicated coach and heavy vehicle parking is also provided. The site layout has been reconfigured to incorporate the larger site area and covers all land between the northern and southern ends of Queen Street on the eastern side of the Newell Highway.

Three double sided light vehicle fuel pumps accommodating six vehicles plus five high flow heavy vehicle fuel pumps are proposed. The light vehicle refuelling area and associated customer parking is located along the Newell Highway side of the site with heavy vehicle refuelling east of the main structure. Heavy vehicle parking is provided at the southern end of the site.

The main structure covers 492m^2 Gross Floor Area (GFA) and includes the following:

- convenience store of about 180m^2
- food and drink premise of about 195m^2 (with 49 indoor and outdoor seats)
- dedicated truckies area (with eight seats) plus lounge area covering about 72m^2
- shower facilities and other amenities covering about 45m^2.

An independent operator (as opposed to a commercial fast-food provider) is expected to operate the food and drink premise. The proposed site layout is shown in **Figure 2**.



Source: Site Plan, - A Blefari, drawing no. A002, dated 1/3/24.

Figure 2: Proposed Site Layout

Site Access and Parking

The proposed development includes two separate entry and exit driveways on the Newell Highway. Each will provide for both light and heavy vehicles with the northern driveway an entry only and the southern driveway an exit only.

Each driveway is between 16m to 18m wide and able to accommodate all vehicles up to 36.5-metre-long A-Doubles and B-Triples. All vehicles will enter and exit in a forward direction. The proposed development includes at least 95 on-site spaces, including:

- At least 65 car parking spaces, including air and water fill point spaces, two car with caravan spaces and two accessible spaces.
- six spaces for light vehicles at the fuel pumps
- five heavy vehicle spaces at the high flow fuel pumps
- two coach spaces to the rear of the main building
- about 20 heavy vehicle spaces, including 10 for 36.5m A-Doubles.

As discussed, consultation with TfNSW has been key to ensuring a robust site layout and access strategy along the Newell Highway. The concept design is shown in **Figure 3** and Attachment 1, with supporting TfNSW correspondence included in Attachment 2.

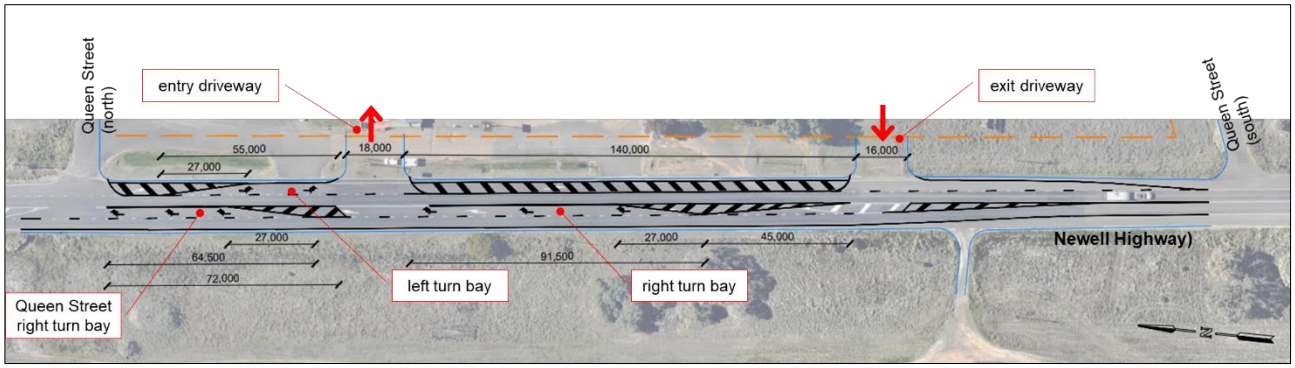


Figure 3: Proposed Site Access Arrangements

The internal site layout has also been reviewed against the requirements of DCP 2011 and the Australian Standard for Off Street Car Parking (AS/NZS2890.1:2004, AS/NZS2890.2:2018 and AS/NZS2890.6:2022). This assessment included a review of the following:

- internal circulation and separation of light and heavy vehicles
- refuelling areas and queuing capacity
- service areas and loading
- car space dimensions and circulation widths
- parking for persons with disabilities.

The assessment confirms that the proposed access driveways, refuelling areas, queuing capacity and parking layout are expected to operate well, with detailed vehicle swept paths included in Attachment 3. All light and heavy vehicle parking spaces have been designed in accordance with Australian Standards, with ample circulation and manoeuvring areas. All car spaces are 2.6 metres wide and 5.4 metres long with accessible spaces a minimum 2.4 metres wide with adjacent dedicated shared area (with bollard) to ensure appropriate use in accordance with AS2890.6.

Waste Collection and Servicing

Waste storage and a dedicated loading area are proposed at the rear of the main building. The area has been designed to ensure access by all rigid trucks including 12.5m heavy rigid vehicles and allow all loading/ unloading to occur in an area separated from the general public. All vehicles would enter and exit this area in a forward direction. Service doors connecting to the main building ensures practical use with marked crossings where necessary. A footpath connects the coach and heavy vehicle parking areas with the main building adjacent to the loading area.

The underground fuel tanks will be filled from a central remote filling point close to the heavy vehicle refuelling area. This will ensure minimal disruption to site operations, with a temporary minor reduction in the heavy vehicle refuelling capacity outside peak periods. The fuel storage tanks are typically serviced by large vehicles (at least 26m B-Doubles) in remote locations.

Parking Appraisal

DCP 2011 specifies parking rates for service station developments that are consistent with the TfNSW Guide to Traffic Generating Developments (2002). The applicable rates are as follows:

- 5 spaces per 100m^2 GFA of convenience store.
- Greater of 15 spaces per 100m^2 GFA, or 1 space per 3 seats for any restaurant space.

Application of the above to the proposed development results in the need to provide a minimum of 40 on-site parking spaces. In this regard, the proposed provision of 95 on-site parking spaces, and separation of the light and heavy vehicle parking supply is appropriate and exceeds the minimum DCP 2011 and TfNSW Guide requirements. The split between light and heavy vehicle parking and refuelling areas is also appropriate, especially considering the importance of the Newell Highway as the key inland freight route through NSW.

For developments that include 50 or more parking spaces, DCP 2011 also requires a minimum of two per cent of the parking supply be dedicated for accessible users. These spaces are provided and near the main building entrance.

Traffic Appraisal

Traffic generation estimates for service stations with a convenience store have been sourced from the TfNSW Guide. The Guide provides the following formula to calculate the evening peak two-way (in and out) vehicle trips:

- evening peak hour vehicle trips = 0.04 A(S) + 0.3 A(F) or
- evening peak hour vehicle trips = 0.66 A(F)

where A(S) = area of site (square metres) and A(F) = gross floor area of convenience store (square metres).

With the site covering a large area, and with much of it used for heavy vehicle parking and manoeuvring, application of the above calculated rate based on a combination of site area and convenience store GFA is not considered appropriate. It would result in an impractical traffic generation.

Similarly, application of the convenience store GFA rate is also considered excessive when considering existing traffic volumes on the Newell Highway. Application of this rate (assuming the convenience store over 180m^2) would result in 120 vehicle trips per hour. It is expected that the food and drink premises is ancillary to the main use.

This trip generation is excessive given the existing peak hour traffic volumes passing the site on the Newell Highway are estimated to be a maximum of 300 vehicles. The Stantec report detailed a ‘first principles’ assessment that considered the practical ‘draw-in’ ability of the site from traffic passing the site. This is considered more accurate in estimating future traffic generation of the proposed development. On this basis, the proposed development is expected to draw in 12 to 15 per cent of passing traffic and would equate to between 35 and 45 vehicles per hour. This equates to 70 to 90 vehicle trips (two-way) in any peak hour.

With the site access driveways appropriately located and setback from the Queen Street intersections on the Newell Highway, the proposed development is not expected to materially affect through traffic nor present any noticeable change to traffic conditions through Edgeroi.

Conclusion

This transport assessment considers the minor traffic related impacts of the proposed development on the Newell Highway through Edgeroi. It follows extensive stakeholder consultation and consideration of broader infrastructure works planned along the Newell Highway corridor. With an expanded site layout and access arrangements directly from the Newell Highway, the proposal can be delivered in isolation and would not affect other works, should they proceed along the highway.

The resubmitted DA exceeds the requirements of the relevant Council and TfNSW requirements with respect to site access, parking and heavy vehicle manoeuvring with no adverse impacts expected external to the site. The minor works required along the Newell Highway have been provided with initial support from TfNSW with detailed design to consider TfNSW comments and be delivered subject to further consultation.

The proposal is expected to generate similar traffic volumes to the submitted DA, with the Stantec report to be read in conjunction with this assessment to ensure consistency. The modified site layout and access arrangements represent a significant improvement.

Overall, the proposed development is not expected to present a significant impact to the operation of the Newell Highway and can be supported from a transport perspective.

We trust the above is of assistance and if you have any inquiries, please do not hesitate to contact the undersigned.

Yours sincerely,

Rhys Hazell

Principal Lead

E: rhys.hazell@asongroup.com.au

M: +61 431 426 532

Attachment 1:
Site Access Concept Design Plan

Notes:

- Road geometric design has been designed in accordance with:
  - *Austroads, Guide to Road Design Part 4A, May 2023*
- Site access has been designed in accordance with:
  - *AS2890.1:2004 Off-street car parking*
  - *AS2890.2:2018 Off-street commercial vehicle facilities*
- Access point 1 (North) shall be limited to entry only. Access point 2 (South) shall be limited to exit only.
- Largest Design Vehicle: A-Double / B-Triple

Legend:

Site

QUEEN ST

ACCESS POINT 1
(ALL VEHICLES
ENTRY ONLY)

ACCESS POINT 2
(ALL VEHICLES
EXIT ONLY)

QUEEN ST

55,000
27,000
18,000
140,000
16,000
27,000
64,500
72,000
27,000
91,500
27,000
45,000

N

GENERAL NOTES

This drawing is provided for information purposes only and should not be used for construction.
Base Plan prepared by Nearmap, taken 29 September 2023.
Newell Highway has a posted speed limit of 80km/h.
Swept path assessments completed at 10 km/h and 300mm clearance.
Design vehicle: A-Double Check Vehicle: A-Double

DESIGNED	Awornit Sherstha
PAPER SIZE	A3
APPROVED BY	Rhys Hazell
DATE	25.10.2023
SCALE	1:1000
	0 10 20

CLIENT: Edgeroi Energy Pty Ltd.

PROJECT: P2467

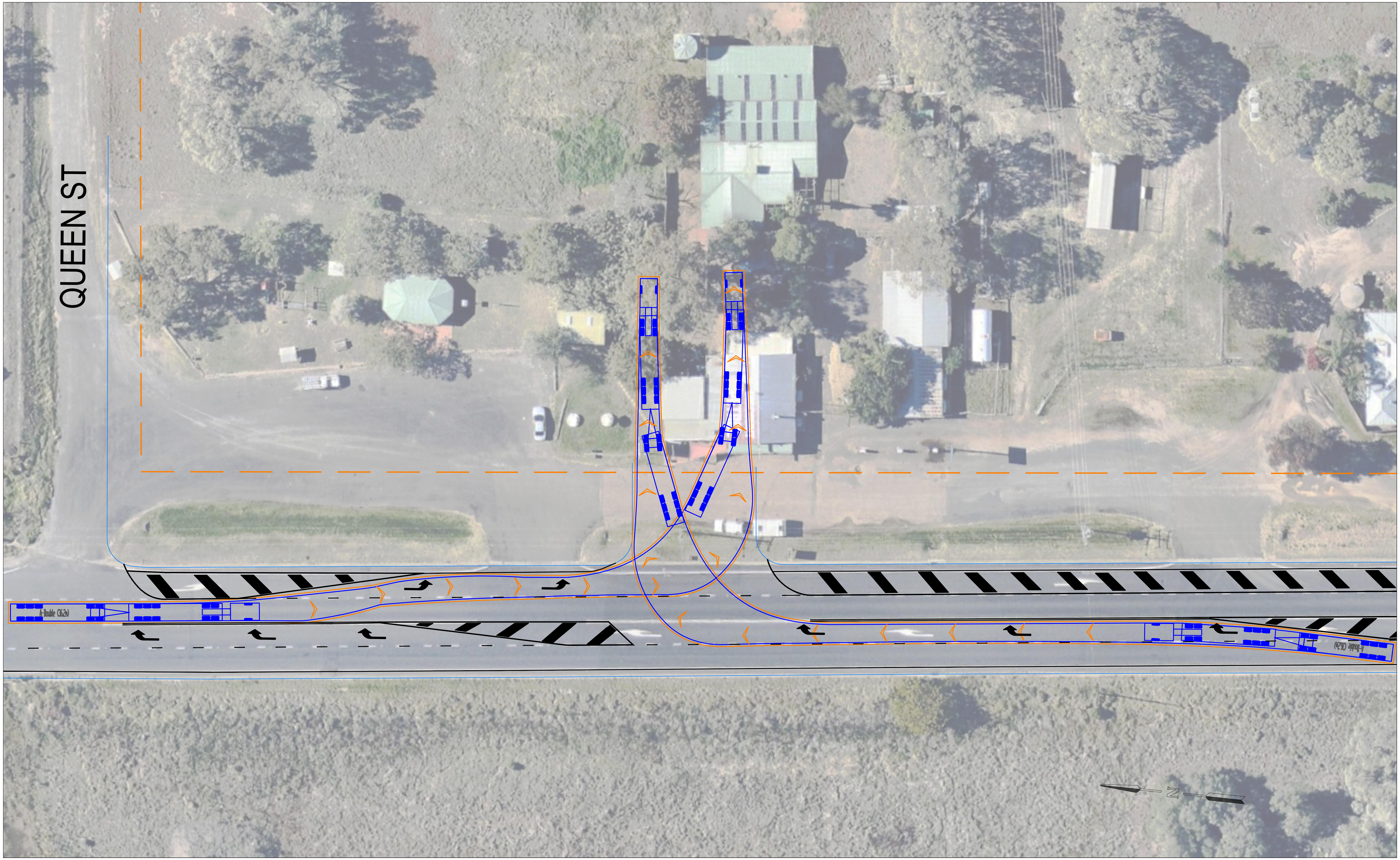
14456 Newell Highway, Edgeroi

DOCUMENT INFORMATION

NEWELL HIGHWAY - SITE ACCESS CONCEPT DESIGN PLAN

FILE NAME	SHEET
AG2467-01-v01.dwg	AG01

asongroup
Suite 17.02, Level 17, 1 Castlereagh St
Sydney NSW 2000
info@asongroup.com.au



GENERAL NOTES

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Newell Highway has a posted speed limit of 80km/h.
Swept path assessments completed at 10 km/h and 300mm clearance.
Design vehicle: A-Double Check Vehicle: A-Double

DESIGNED: Awornit Shershtha	PAPER SIZE: A3	CLIENT: Edgeroi Energy Pty Ltd.	DOCUMENT INFORMATION: SWEPT PATH ANALYSIS
APPROVED BY: Rhys Hazell	DATE: 25.10.2023	PROJECT: P2467	ENTRY - A-DOUBLE / B-TRIPLE
SCALE: 1:500	0 5 10	14456 Newell Highway, Edgeroi	FILE NAME: AG2467-01-v01.dwg / SHEET: AG02

asongroup
Suite 17.02, Level 17, 1 Castlereagh St
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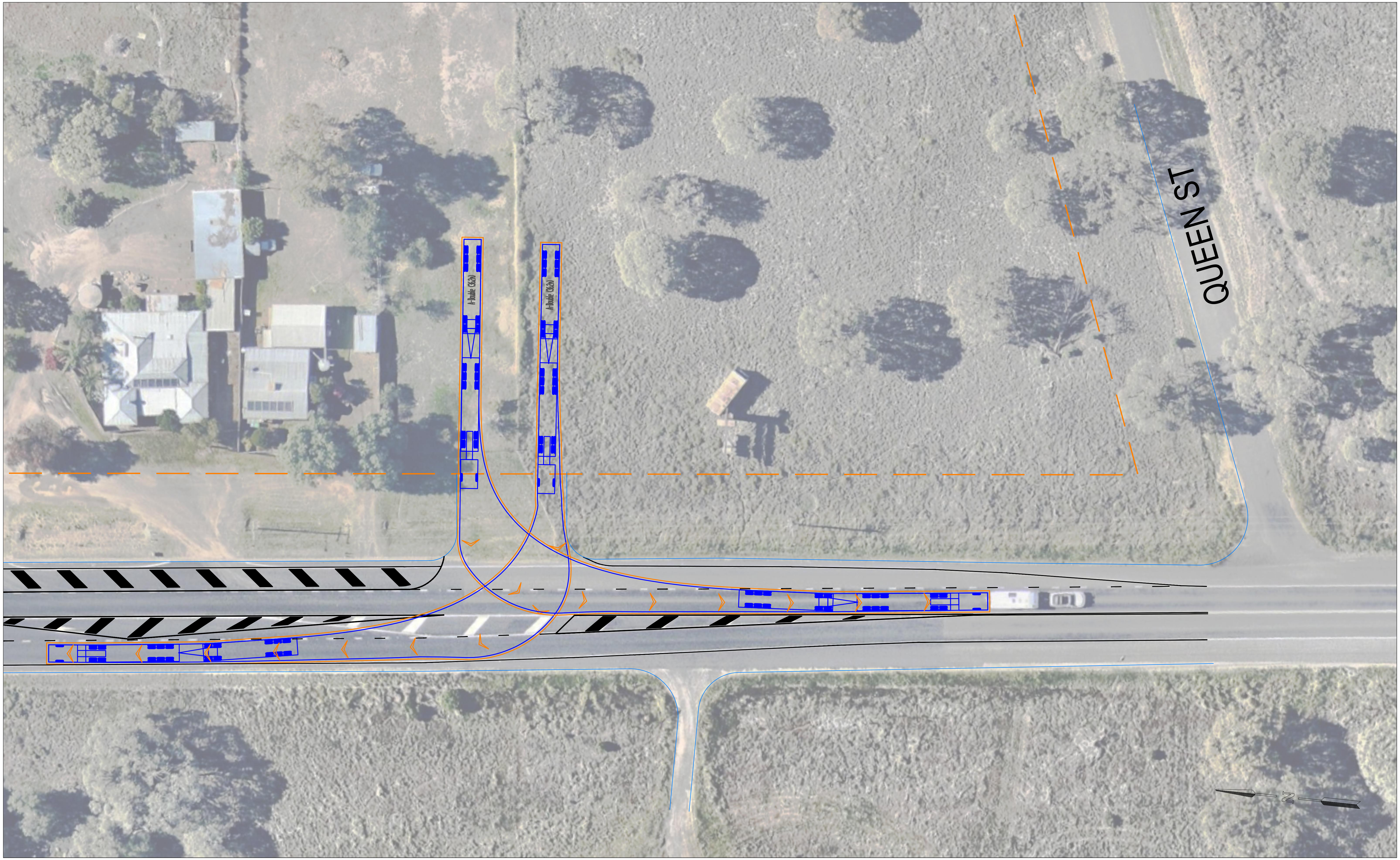

GENERAL NOTES

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Design vehicle: A-Double Check Vehicle: A-Double

DESIGNED	Awornit Shershta
PAPER SIZE	A3
APPROVED BY	Rhys Hazell
DATE	25.10.2023
SCALE	1:500

0 5 10

CLIENT

Edgeroi Energy Pty Ltd.

PROJECT

P2467

14456 Newell Highway, Edgeroi

DOCUMENT INFORMATION

SWEPT PATH ANALYSIS

EXIT - A-DOUBLE / B-TRIPLE

FILE NAME	SHEET
AG2467-01-v01.dwg	AG03

asongroup
Suite 17.02, Level 17, 1 Castlereagh St
Sydney NSW 2000
info@asongroup.com.au

Attachment 2:
TfNSW Consultation

Transport for NSW

31 January 2024

TfNSW reference: WST23/00047/04 | SF2023/076286

Mr Rhys Hazell
Suite 17.02
Level 17
1 Castlereagh Street
SYDNEY NSW 2000

Pre-DA (Mod); DA2023/0058; Revised plans for proposed Edgeroi Service Centre

Dear Rhys,

Thank you for forwarding revised plans in relation to the above-mentioned development proposal. I note the revised plans now encompass all land within the area bounded by Queen Street and the Newell Highway (HW17). By acquiring all land within this area, the revised proposal seeks to make use of existing turn lane treatments on the Newell Highway.

I write to advise that Transport for NSW (TfNSW), in principal is supportive of the revised proposal, subject to:

- The revised proposal being amended to include/address issues raised in my email dated 4 December 2023.
- TfNSW being afforded opportunity to undertake an assessment of the revised proposal, including a revised Traffic Impact Assessment (TIA) and supporting plans and documentation as part of a modification application submitted with Narrabri Shire Council.

With regard to line 9 and the note regarding the road shoulder adjoining the northbound travel lane, TfNSW notes:

- The proposed development will increase heavy vehicle turning movements into and out of the site.
- The site has not operated as a service station for more than ten years.
- Prior to closure, the site was not as attractive to, or accommodating of, heavy vehicles compared to the proposed development. Therefore the previous site use did not attract the number of vehicle movements that the proposed development will.
- Heavy vehicles operating on the Newell over the last ten years have increased in length, volumes, increasing the risk of breakdowns and conflict between turning, through and stationary vehicles.

For these reasons, it is considered the proposal will change the existing traffic environment at the intersection and provision of a widened shoulder pursuant to *Austroads Guide to Road Design* Part 3 Section 4.3 and Table 4.7 is warranted and necessary.

I trust this information is of assistance. If you require further information regarding this proposal, please contact me on 1300 019 680 or email development.west@transport.nsw.gov.au.

Yours faithfully,

Andrew McIntyre
Manager Development Services (West)
Community & Place
Regional and Outer Metropolitan

cc The General Manager
Narrabri Shire Council
PO Box 261
NARRABRI NSW

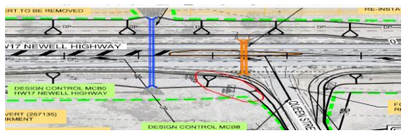
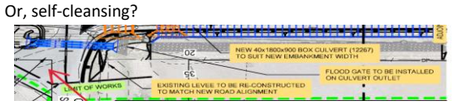
Lend Lease

TfNSW Design Review Comment Sheet

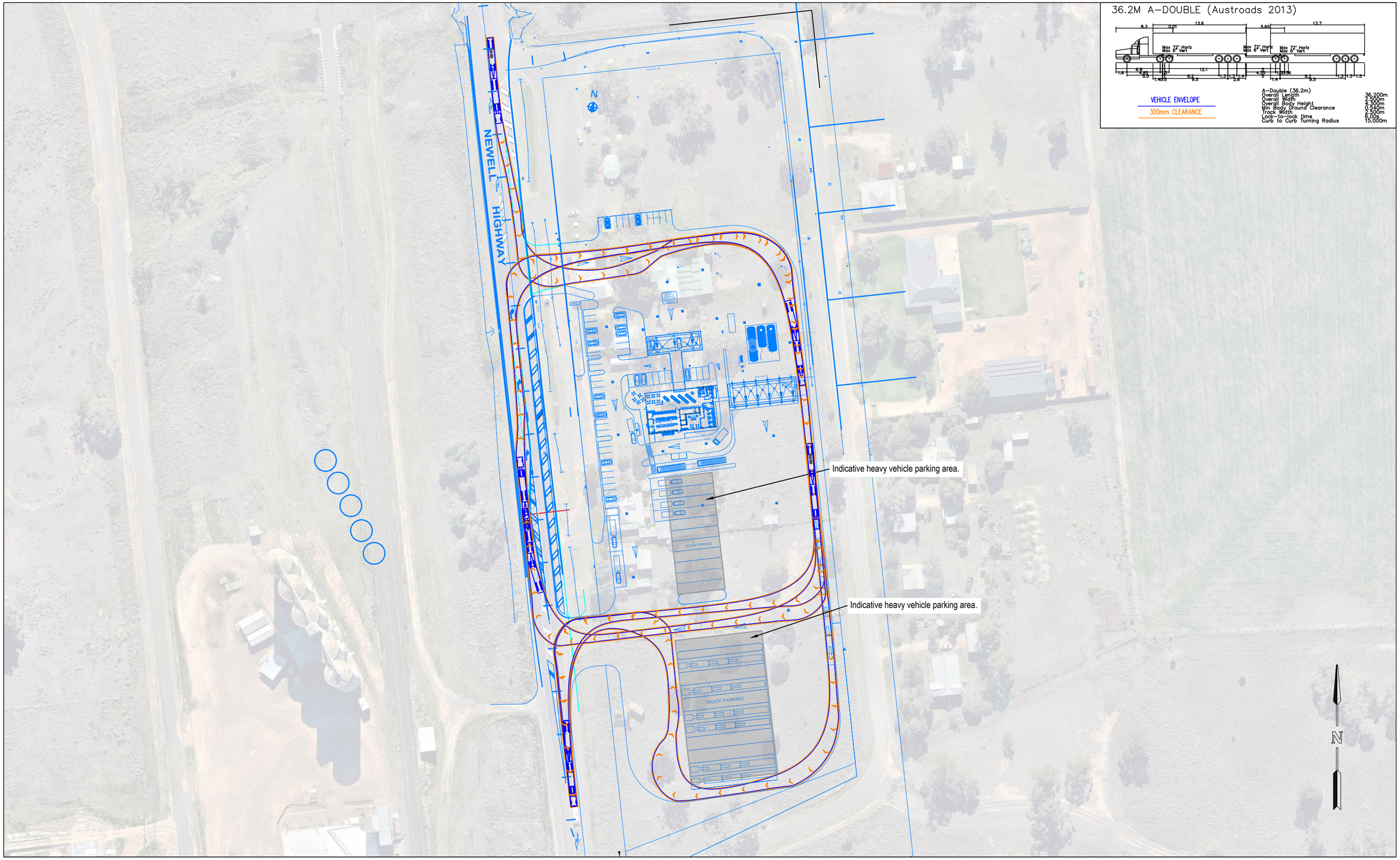
WAD Project	**WST23-00047 14456 Newell Highway Edgeroi**
Drawing No	
Design Phase	
Development Contact	**Andrew McIntyre**
Date Issued	

RMS RESPONSE AGREEMENT STATUS
O Open
C Closed

	Initials
Technical Manager	TT
Pavement and Geotech	LM
Roads Design	DW
Survey	
Bridges & Structures	SS
Flooding & Drainage	
Reviewer Name 7	
Reviewer Name 8	
Reviewer Name 9	
Reviewer Name 10	

TfNSW						WAD DESIGNER		TfNSW	
Item	Document Reference	Rev	Discipline	Reviewer Initials	Reviewer Comments	Response Comments	By	Reviewer Close-out Comments	Date Closed
1	231101 - Edgeroi Development design comments		Bridges & Structures	SS	All replaced stormwater pipes invert levels need to be maintained; all should be Class IV pipes.				
2	231101 - Edgeroi Development design comments		Bridges & Structures	SS	The proposed culvert (257136) replacement is an early stormwater receptor as the previous location was stationed at the junction of Queen St and Newell Highway. Does relocation create water ponding at junction? Please justify. Red circled section. 				
3	231101 - Edgeroi Development design comments		Bridges & Structures	SS	The proposed flood gates (understand they are flap-gates, open only to one-directional flow pressure). Does the proponent consider debris clogging? Or, self-cleansing? 				
4	231101 - Edgeroi Development design comments		Bridges & Structures	SS	Does the proponent consider 50% blockage factors for new pipes?				
5			Pavement and Geotech	LM	No additional comments to those supplied previously (ref: 48728593). Noted no geotechnical investigation, traffic loading or pavement analysis data has been provided to date.				
6			Roads Design	DW	Shoulder on north bound lane is not clear as to the width provided				
7			Roads Design	DW	CHR lanes are adequate for the 85th percentile traffic speed 80km/h allowing for a 2.5m/s2 comfortable deceleration rate to stop condition. Per table AGRD Part 4 – table 5.2, Austroads 2023 | page 37 - Austroads 2023 | page 37 - requires 100m and appears met.	Per table AGRD Part 4 – table 5.2, Austroads 2023 | page 37 - Austroads 2023 | page			
8			Roads Design	DW	This proposal would not meet the more desirable design speed - 10km/h above the post speed for a 90km/h design speed standard. Allowing for a 2.5m/s2 comfortable deceleration rate to stop condition - Per table AGRD Part 4 – table 5.2, Austroads 2023 | page 37 - 125m of CHR is required with the design being slight short on CHR length.	Per table AGRD Part 4 – table 5.2, Austroads 2023 | page 37			
9			Roads Design	DW	A minimum shoulder width of 3.0m should be provided to allow vehicle stopping clear of the through lane for north bound traffic.				
10			Roads Design	DW	Design swept paths should be provided for future design interactions submitted.				
11									
12									
13									

Attachment 3:
Vehicle Swept Paths



36.2M A-DOUBLE (Austroads 2013)

VEHICLE ENVELOPE

300mm CLEARANCE

A-Double (36.2m)	
Overall Length	36.200m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.240m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	15.000m

GENERAL NOTES

This drawing is provided for information purposes only and should not be used for construction.
Base Plan prepared by A. Blefari, received 29 February 2024.

DESIGNED: Isaac Obermaier	PAPER SIZE: A3
APPROVED BY: R. Hazell	DATE: 05.03.2024
SCALE: Custom	NTS

CLIENT
Edgeroi Energy Pty Ltd.

PROJECT
P2467

14456 Newell Highway, Edgeroi

DOCUMENT INFORMATION
Design Review

Fuel Bowser Access

FILE NAME	SHEET
AG2467-02-v01.dwg	AG01

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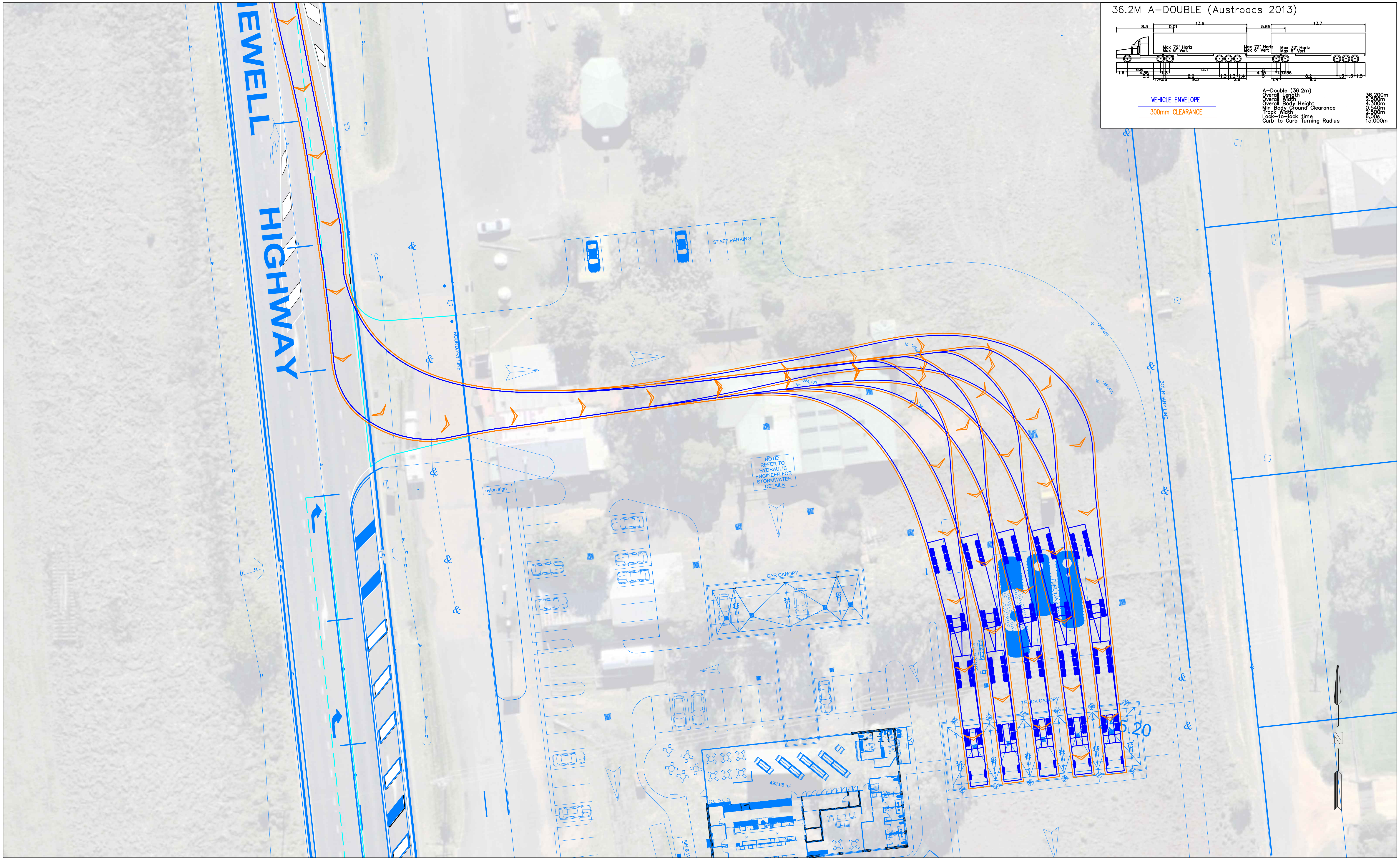

GENERAL NOTES

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Base Plan prepared by A. Blefari, received 29 February 2024.

DESIGNED Isaac Obermaier	PAPER SIZE A3	CLIENT Edgeroi Energy Pty Ltd.	DOCUMENT INFORMATION Design Review
APPROVED BY R. Hazell	DATE 05.03.2024	PROJECT P2467	Fuel Bowser Access
SCALE 1:500	0 5 10	14456 Newell Highway, Edgeroi	FILE NAME AG2467-02-v01.dwg — SHEET AG02

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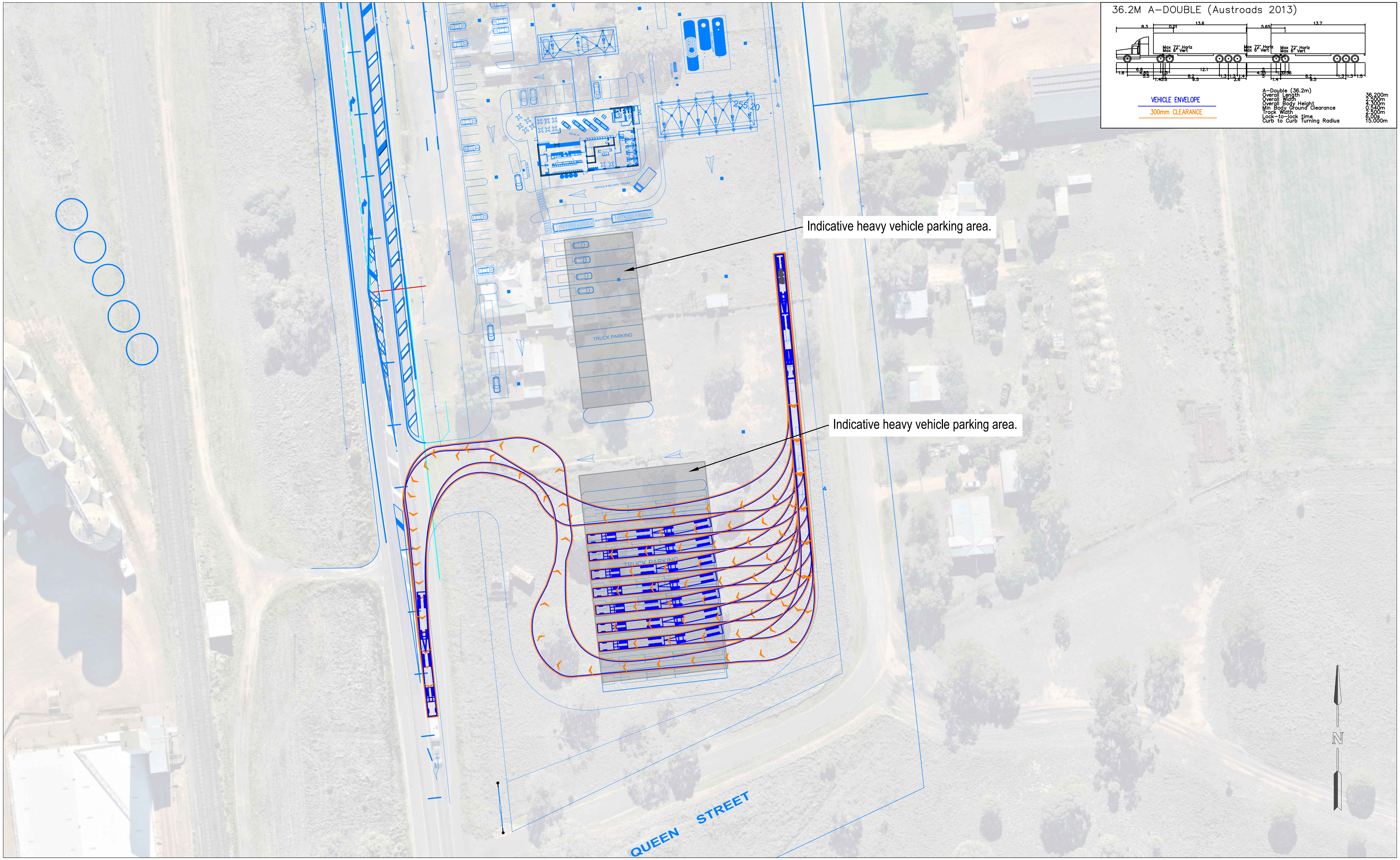

GENERAL NOTES

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Base Plan prepared by A. Blefari, received 29 February 2024.

DESIGNED Isaac Obermaier	PAPER SIZE A3	CLIENT Edgeroi Energy Pty Ltd.	DOCUMENT INFORMATION Design Review
APPROVED BY R. Hazell	DATE 05.03.2024	PROJECT P2467	A-Double Truck Parking Area
SCALE 1:1000	0 10 20	14456 Newell Highway, Edgeroi	FILE NAME AG2467-02-v01.dwg — SHEET AG03

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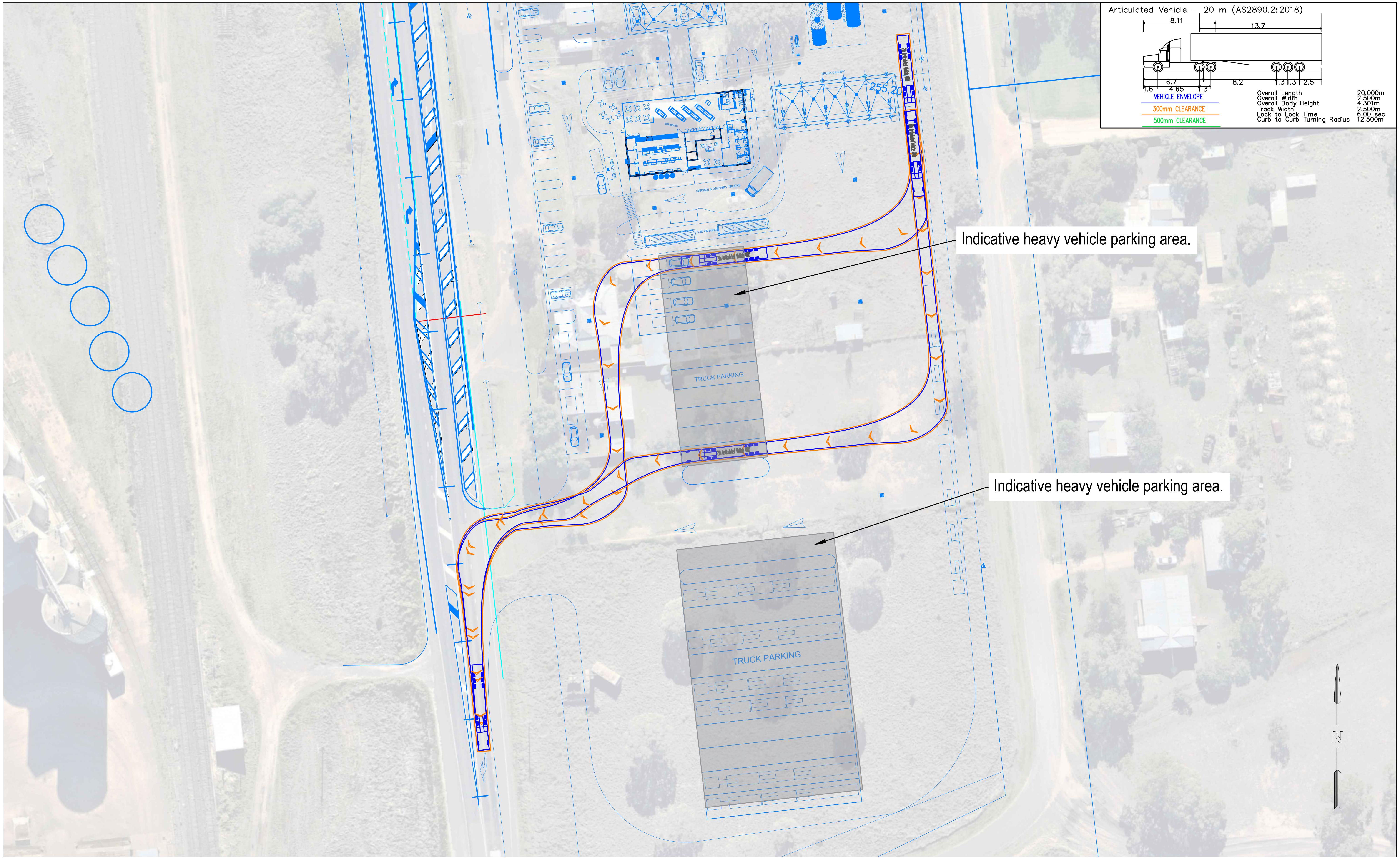
PLOT DATE: 5/03/2024 18:00:31 | CAD REFERENCE: C:\Users\Isaac Obermaier\Ason Group\Ason Group Team Site - 2467\Projects\Design\AG2467-02-v01.dwg | Isaac Obermaier |



GENERAL NOTES

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Base Plan prepared by A. Blefari, received 29 February 2024.

DESIGNED	PAPER SIZE
Isaac Obermaier	A3
APPROVED BY	DATE
R. Hazell	05.03.2024
SCALE	
Custom	NTS

CLIENT

Edgeroi Energy Pty Ltd.

PROJECT

P2467

14456 Newell Highway, Edgeroi

DOCUMENT INFORMATION

Design Review

20m AV Access

FILE NAME	SHEET
AG2467-02-v01.dwg	AG04

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PLOT DATE: 5/03/2024 18:00:41 | CAD REFERENCE: C:\Users\Isaac Obermaier\Ason Group\Ason Group Team Site - 2467\Projects\Design\AG2467-02-v01.dwg | Isaac Obermaier |

GENERAL NOTES

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Base Plan prepared by A. Blefari, received 29 February 2024.

DESIGNED Isaac Obermaier	PAPER SIZE A3	CLIENT Edgeroi Energy Pty Ltd.	DOCUMENT INFORMATION Design Review
APPROVED BY R. Hazell	DATE 05.03.2024	PROJECT P2467	Coach Access
SCALE 1:500	0 5 10	14456 Newell Highway, Edgeroi	FILE NAME AG2467-02-v01.dwg SHEET AG05

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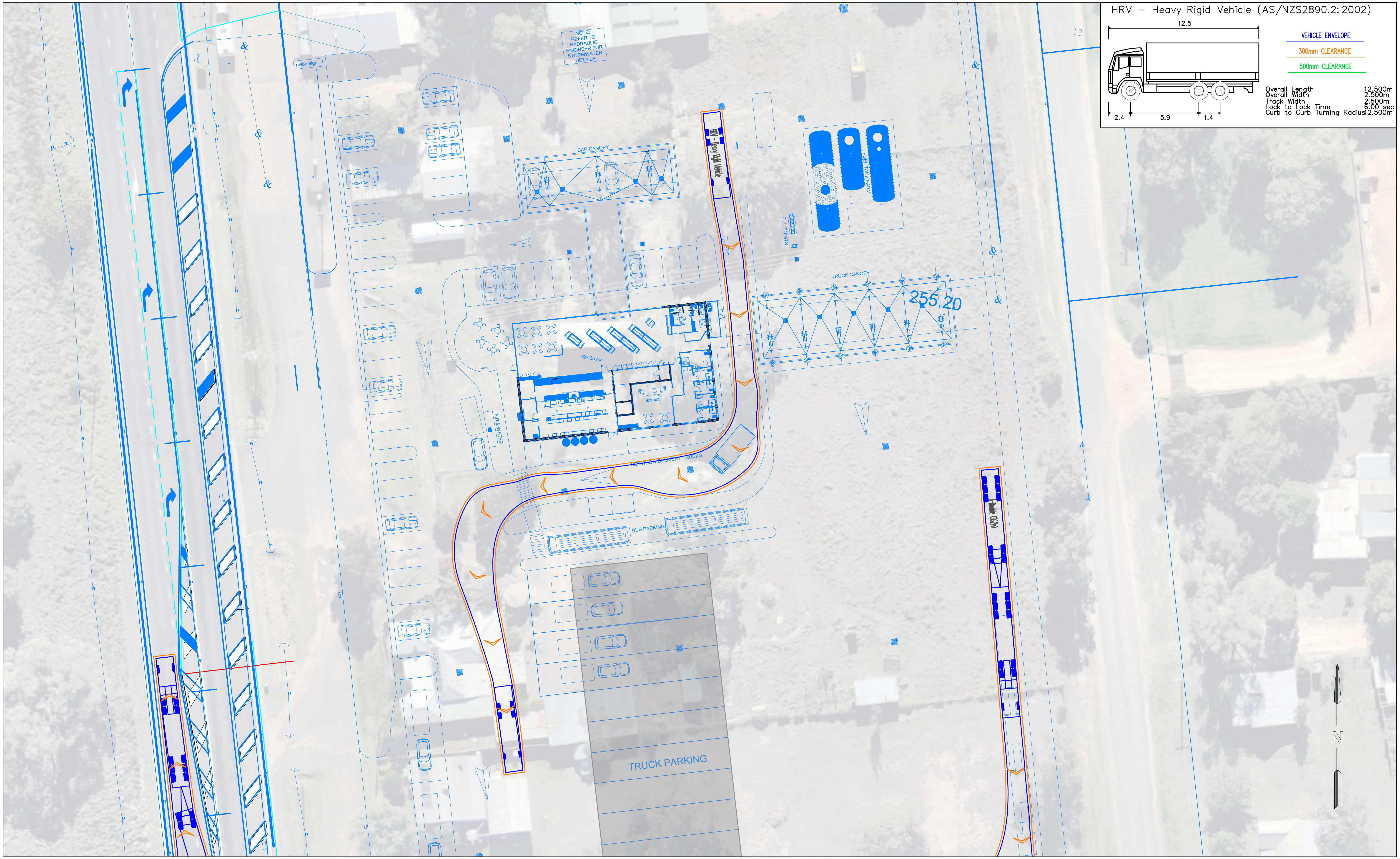

GENERAL NOTES

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Base Plan prepared by A. Blefari, received 29 February 2024.

DESIGNED	PAPER SIZE
Isaac Obermaier	A3
APPROVED BY	**DATE**
R. Hazell	05.03.2024
SCALE	
1:500	0 5 10

CLIENT

Edgeroi Energy Pty Ltd.

PROJECT

P2467

14456 Newell Highway, Edgeroi

DOCUMENT INFORMATION

Design Review

HRV Delivery Access

FILE NAME	SHEET
AG2467-02-v01.dwg	AG06

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