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Statement of Environmental Effects

Project: Torrens Title Subdivision (2 Lots into 7 Lots)

Client: Sanderson & Macdonald Pty Ltd

Site Address: 13 Fairydale Lane, Mudgee

3 April 2024

Our Reference : 37880-PR01_A

DISCLAIMER

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Project Name:	Torrens Title Subdivision (2 Lots into 7 Lots) at 13 Fairydale Lane, Mudgee
Client:	**Sanderson & Macdonald Pty Ltd**
Project Number:	37880
Report Reference:	37880-PR01_A
Date:	3 April 2024

Prepared by:	**Reviewed by:**
[redacted]	[redacted]
Jack Massey B. Urb & Reg. Planning Senior Town Planner	Jim Sarantzouklis MAIBS (Assoc.) MEHA MAICD RPIA Director

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1. INTRODUCTION

1.1. Background

Barnson Pty Ltd has been engaged by Sanderson & Macdonald Pty Ltd to prepare information in support of a Development Application (DA) for a Torrens Title Subdivision (2 Lots into 7 Lots) of Lots 9 and 10 DP 1218673 known as 13 Fairydale Lane, Mudgee.

The subject site is located on the southeastern side of Fairydale Lane and has a combined area of 5,897m². The site is vacant land.

The project will consist of subdividing the site into seven (7) residential Lots and establishing a new access road and associated infrastructure.

The site is zoned R1 General Residential pursuant to the provisions under the Mid-Western Regional *Local Environmental Plan 2012*. The proposed development is defined as a subdivision, which is permissible with consent in the R1 zone pursuant to Clause 2.6 of the LEP.

This application consists of:

- A completed development application form; and
- This Statement including supporting documents.

1.2. Proponent

The proponent for the DA is Sanderson & Macdonald Pty Ltd.

1.3. Consultant

Barnson Pty Ltd

Jack Massey

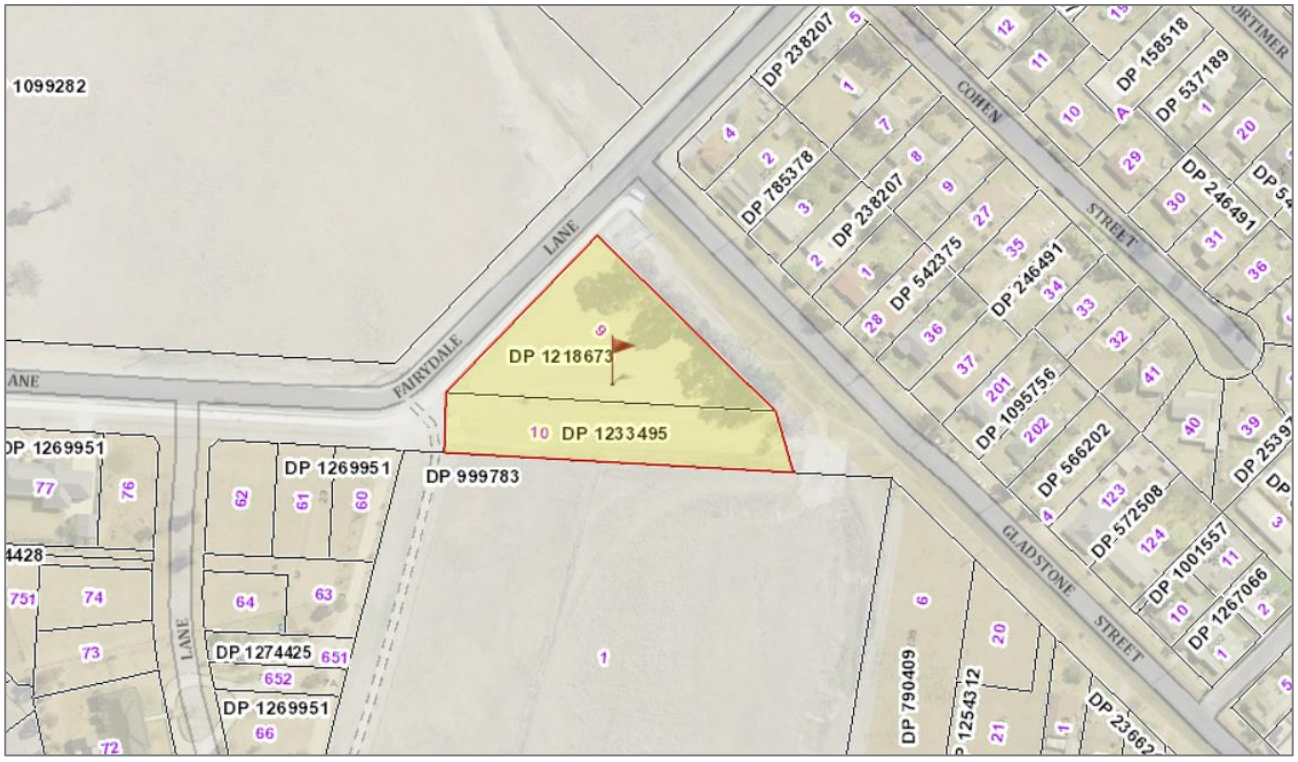
Unit 4 / 108-110 Market Street

Mudgee NSW 2850

2. EXISTING ENVIRONMENT

2.1. Location and Title

The subject site of this application is Lots 9 and 10 DP 1218673, known as 13 Fairydale Lane, Mudgee. The site is located on the southeastern side of Fairydale Lane, in the township of Mudgee, as shown in Figure 1 below.

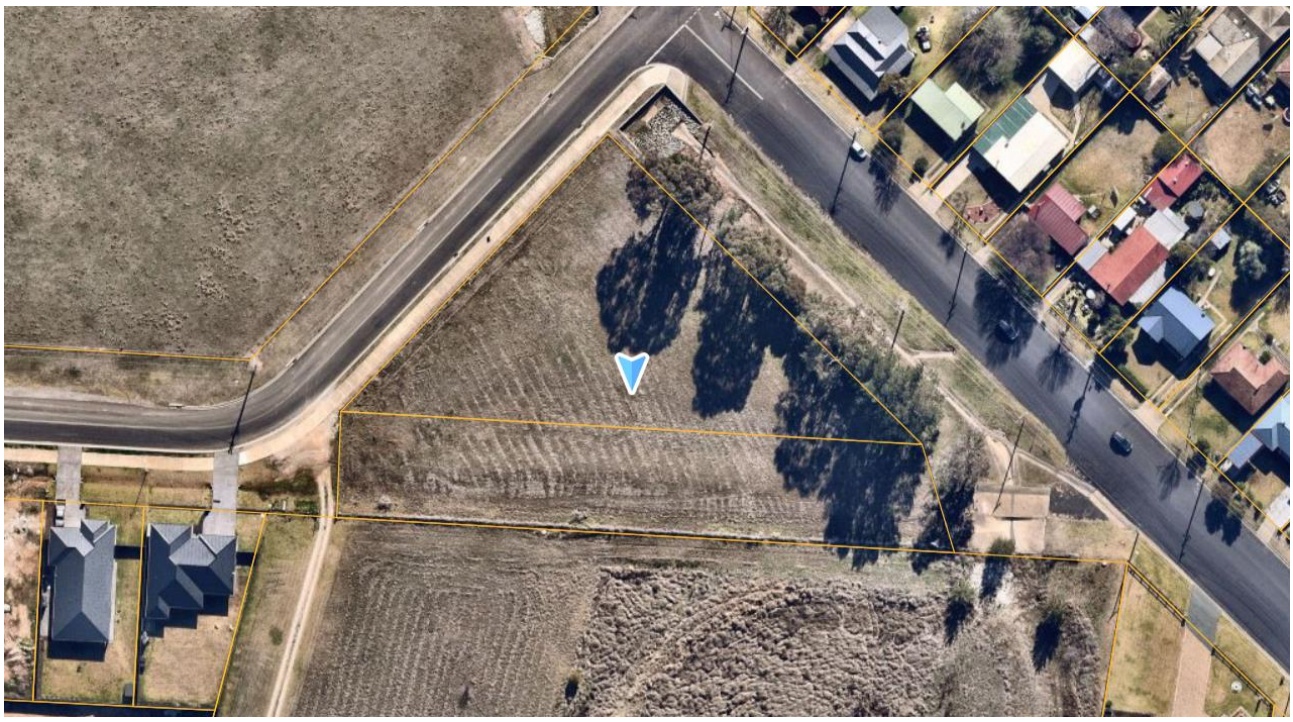


Source: (NSW Government Spatial Services, 2024)

Figure 1 – Site Location

The site has an overall area of 5,897m^2 (refer to Deposited Plan in Appendix A of this report). The site has direct frontage to Fairydale Lane.

The site is considered vacant land with a covering of weeds and grasslands. Refer to Figure 2 and Plates 1 - 3 for images of the site.



Source: (NSW Government Spatial Services, 2024)

Figure 2 – Site Aerial

Plate 1 – View of the subject site

Plate 2 – View of Fairydale Lane

Plate 3 – View of the existing pathway along Fairydale Lane

2.2. Land Use

The subject site is located in an established residential area in the township of Mudgee. There are existing residential developments surrounding the subject site with the emergence of infill housing developments within proximity. The subject site is surrounding by R1 General Residential lands and RU1 Primary Production lands to the south.

2.3. Topography

A Detail Survey has been conducted for the site and has been incorporated in the Preliminary Civil Design Drawings in Appendix B of this report. The Detail Survey found that the site generally falls from the rear towards the street.

2.4. Flora and Fauna

The site contains managed grasslands throughout the site. There is a cluster of trees along the northeastern boundary. The majority of these trees are positioned outside of the allotment boundary and shall not be impacted, with the exception of three (3) small Eucalypts that are to be removed to facilitate subdivision works, as shown in Plate 4 and 5 below.

Plate 4 – View of the existing vegetation and small Eucalypts on the site

Plate 5 – View of the existing vegetation along the boundary

2.5. Natural Hazards

2.5.1. Flooding

The subject site is not mapped within the Flood Planning Area pursuant to the NSW ePlanning Spatial Viewer of *Mid-Western Regional Local Environmental Plan 2012*.

In 2012, WMA Water were engaged by Mid-Western Regional Council to undertake a flood study for Mudgee. The Mudgee Flood Study was released in February 2021. Barnson contacted WMA Water to determine if the site sits within the 1% Annual Exceedance Probability (AEP) area (Figure 29 of the flood study). An extract of the mapped area in relation to the subject site is provided in Figure 3 below.

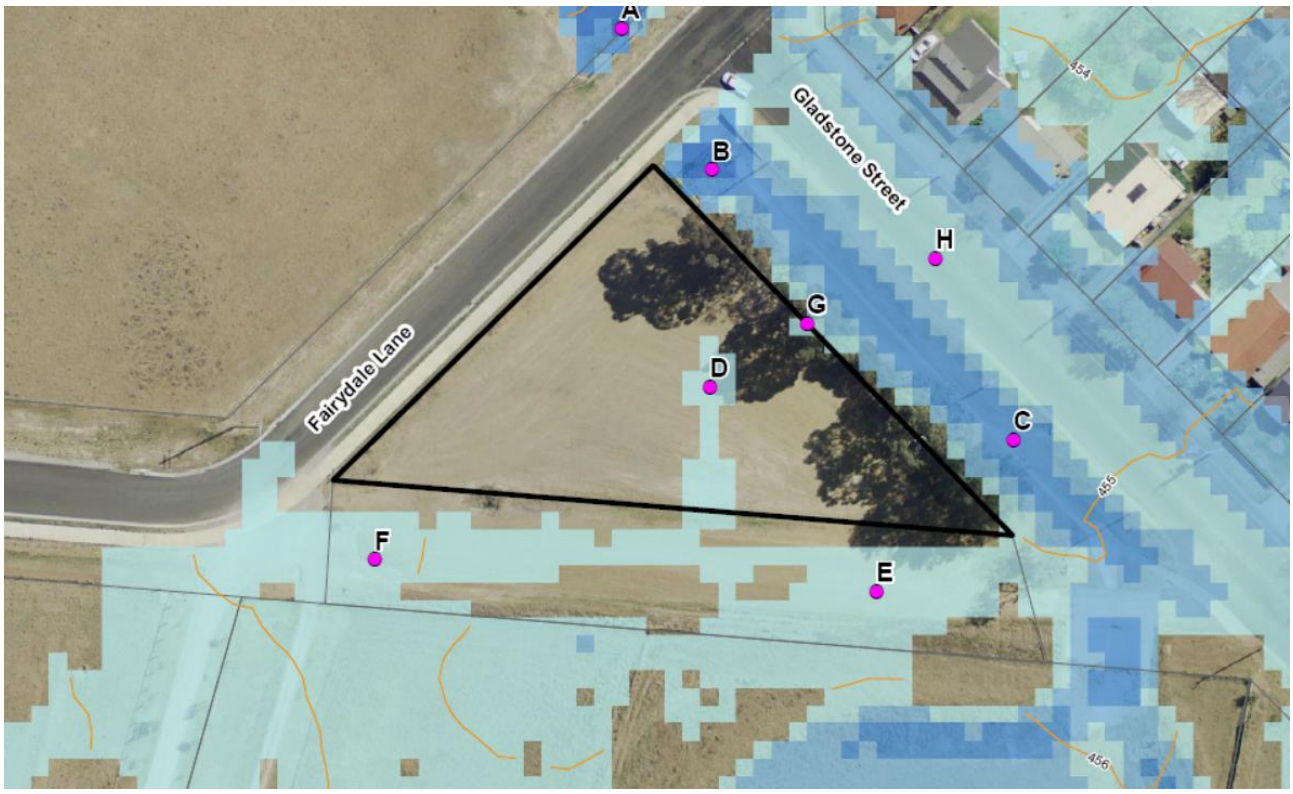


Figure 3 – 1% AEP Mapped Area

Note. The 1% AEP is also known as the 1:100 year flood event.

The 1% AEP mapped area has been incorporated in the design of the subdivision and shown on the Civil Design Drawings in Appendix B of this report.

2.5.2. Bush Fire

The subject site is not mapped within a bushfire prone area pursuant to the ePlanning Spatial Viewer or RFS' Online Bushfire Mapping Tool.

2.6. Services

Existing services such as reticulated water and sewer, telecommunications, electricity, stormwater management and road access are available within proximity to the site.

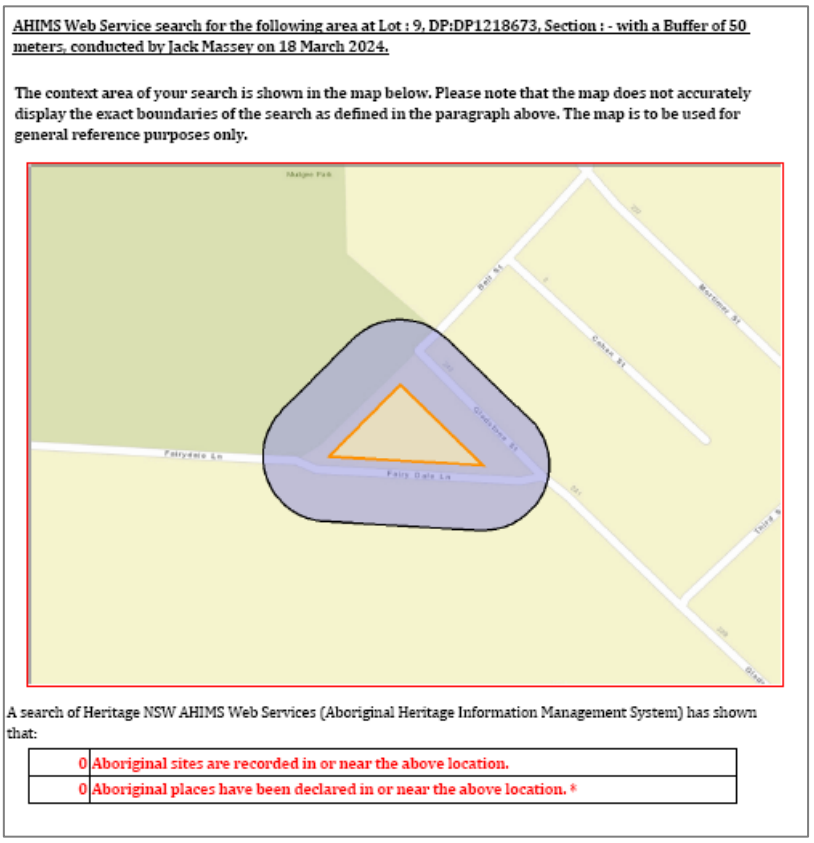
2.7. Access and Traffic

The site has direct frontage and access to Fairydale Lane (two way, two laned sealed road). The is currently no formal access crossover or layback from the street to the site.

2.8. Heritage

The site is not identified as containing a heritage listed item pursuant to Schedule 5 of the *Mid-Western Regional Local Environmental Plan 2012* or State Heritage Register.

An Aboriginal Heritage Information System (AHIMS) search was undertaken for the site and immediate surrounds. The AHIMS search revealed that there are no Aboriginal sites recorded within the boundary of the subject site. Refer to AHIMS extract in Figure 4 below.



AHIMS Web Service search for the following area at Lot : 9, DP:DP1218673, Section : - with a Buffer of 50 meters, conducted by Jack Massey on 18 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. *

Figure 4 – AHIMS Extract

2.9. Site History & Contamination

A review of historical aerial photographs dating back to 1965 was undertaken. A summary of the Site features is provided as follows:

- 1965 – The site remains largely vacant with a dam to the south, and developed lots to the east.
- 1980 to 1995 – by 1980, the site has begun to be used for scrapyard purposes, with vehicles and other metal scrap stored onsite. The same use was evident on site for an extended period of time. Surrounding land uses began to be developed overtime.

- 2012 – the site has now been cleared with trees and stormwater works on the north-eastern boundary visible.
- 2015 – Preparations for road construction start along the north western boundary. Between 2015 and 2017 Fairydale Lane is closed and removed from its alignment to the south of the site and realigned along the north-western boundary of the site. Realignment sees stockpiles of fill located along the southern boundary of the Subject Site.
- 2017 to 2023 – the site remains unoccupied but off-site a new residential subdivision is evident to the west.

3. PROPOSED DEVELOPMENT

The proposed development is for the Torrens Title Subdivision (2 Lots into 7 Lots) of Lots 9 and 10 DP 1218673 known as 13 Fairydale Lane, Mudgee. All proposed Lots will be vacant for future residential development. A Subdivision Sketch has been provided in Appendix B of this report.

Proposed Lot sizes for the subdivision are demonstrates in Table 1 below.

Table 1 - Proposed Lot Sizes	
Lot Number	Area (m^2)
1	799m^2
2	604m^2
3	604m^2
4	1083m^2
5	672m^2
6	605m^2
7	600m^2

All proposed Lots are capable of servicing dual occupancy developments, and as such, services have been designed to accommodate single dwellings or dual occupancies on each proposed Lot.

The following essential services are to be provided;

- Reticulated water for each proposed Lot;
- Stormwater management infrastructure;
- Reticulated sewerage management infrastructure afforded to each Lot;
- Electricity to each proposed Lot;
- Telecommunications to each proposed Lot; and
- Hydrants for fire protection.

The proposed development includes the construction of a new sealed two-way two laned cul-de-sac to provide direct frontage and access to the resultant lots as well as connect the resultant lots to the local road network. Traffic generated by the development would only contribute to an increase of approximately 3.15% for the locality. As such, no upgrade works to the road network are triggered. Refer to Traffic Impact Assessment in Appendix C of this report.

A retaining wall and allotment filling is proposed along the northeastern boundary of the site. This is to ensure sewer services can adequately service proposed Lots 5 - 7. The maximum height of the proposed retaining wall shall be 1.355m at the boundary between Lots 6 and 7. The retaining wall structure shall be constructed using 'I' beam posts and treated horizonal pine sleepers, or a similar product. The posts shall be positioned within a 300mm diameter mass concrete pier. It is anticipated that fencing shall be established on top of the proposed retaining wall, as required.

There will be the removal of some trees located on the site, as shown in Plate 4 of this report. All well-established trees located outside of the building shall be retained and protected. New boundary fencing for the proposed Lots shall be established as part of future applications for residential accommodation. Pegging of boundaries shall be done at the subdivision stage.

Landscaping is proposed along the new street frontage and boundary facing Fairydale Lane. The following is proposed:

- Seven (7) street trees consisting of Luscious Water Gums (Tristaniopsis Laurina);
- Establishment of a hedge along the boundaries consisting of Fluro Burst Bottle Brush (Callistemon);
- 1.8m high aluminium slatted fencing;
- Feature timber post screening at the corner of each lot where the entrance to the subdivision is positioned, reducing the height of the fencing from 1.8m to 1.2m;
- Mat Rush (Lomandra Fluviatilis) vegetation positioned in front of the curved timber screening entrance.

The intent of the change in the timber screening and low vegetation as the front of the subdivision is to assist with sight distances for vehicles entering and entering the new subdivision.

Refer to Landscape Design in Appendix D of this report.

The Subdivision Sketch and Civil Design drawings provided in Appendix B of this report outlines the proposed subdivision and access road.

4. LAND USE ZONING

The subject site is zoned R1 General Residential pursuant to the provisions under the *Mid-Western Regional Local Environmental Plan 2012* (LEP). The proposed development is for a subdivision, which is permissible with consent in the R1 Zone.

The subdivision is permissible pursuant to C*lause 2.6* of the MWRLEP 2012 which states:

> *(1) Land to which this Plan applies may be subdivided, but only with development consent.*

The permissibility of the proposed development is assessed in terms of the heads of consideration in Section 4.15 of the *Environmental Planning & Assessment Act 1979*, which incorporates consideration of the LEP and the objectives and permissible uses outlined in the R1 General Residential zone, as outlined in Section 5 of this report.

5. PLANNING CONSIDERATIONS

5.1. Biodiversity Conservation Act 2016

5.1.1. Is the development likely to significantly affect threatened species?

Clause 7.2 of the *Biodiversity Conservation Act 2016* (BC Act) identifies the following circumstances where a development is likely to significantly affect threatened species:

(a) it is likely to significantly affect threatened species or ecological communities, or their habitats, according to the test in section 7.3, or

(b) the development exceeds the biodiversity offsets scheme threshold if the biodiversity offsets scheme applies to the impacts of the development on biodiversity values, or

(c) it is carried out in a declared area of outstanding biodiversity value.

Each of these is addressed below.

Section 7.3 Test

To determine whether a development is likely to significantly affect threatened species or ecological communities, or their habitats, the following is to be taken into account in accordance with Section 7.3 of the BC Act:

(a) in the case of a threatened species, whether the proposed development or activity 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,

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

(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, or

(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,

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

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

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

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

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

(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.

Comment: The proposal requires clearing of the following to allow the development to proceed;

- Two (2) juvenile Eucalypts along the northeastern boundary;
- Managed grassland vegetation and weeds.

There are no known endangered ecological communities or native vegetation located on the site and the site is not mapped on the Biodiversity Value Map as containing land with high biodiversity value. The vegetation to be removed is consistent with residential allied vegetation.

Therefore, the proposed development is not likely to significantly affect threatened species or ecological communities, or their habitats.

Section 7.4 Test

Section 7.4 of the BC Act states:

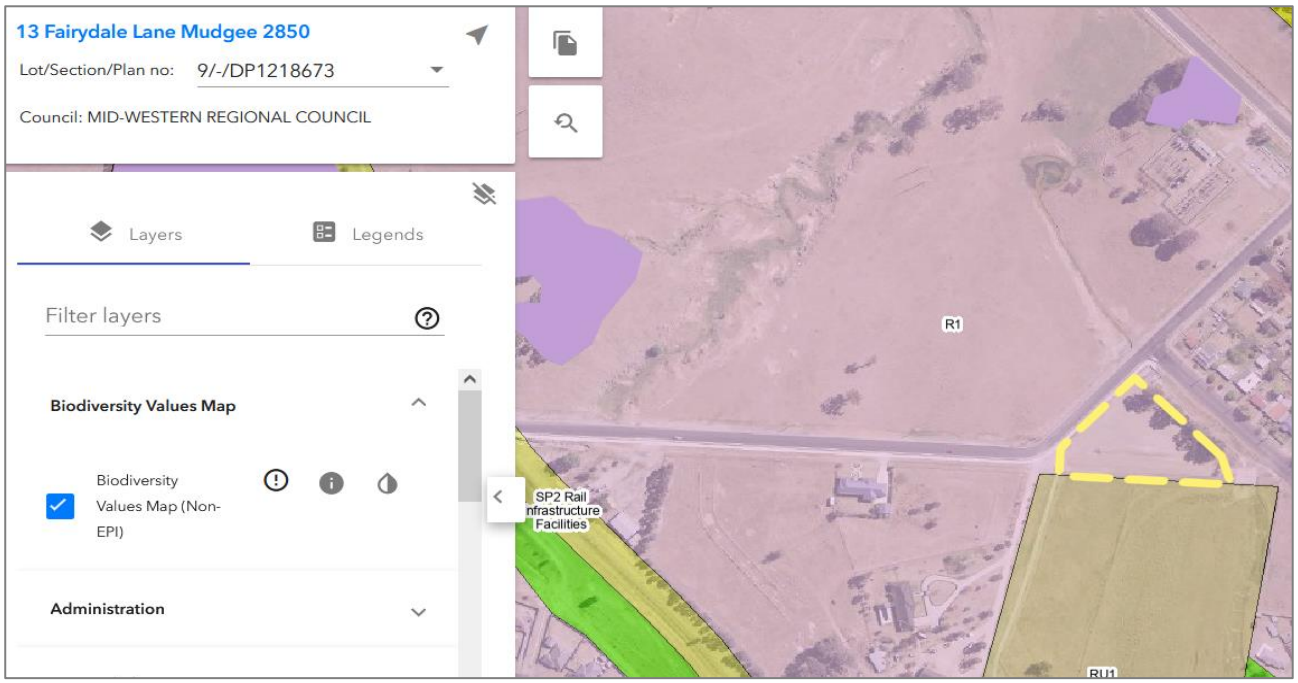
(1) Proposed development exceeds the biodiversity offsets scheme threshold for the purposes of this Part if it is development of an extent or kind that the regulations declare to be development that exceeds the threshold.

(2) In determining whether proposed development exceeds the biodiversity offsets threshold for the purposes of this Part, any part of the proposed development that involves the clearing of native vegetation on category 1-exempt land (within the meaning of Part 5A of the Local Land Services Act 2013) is to be disregarded.

Comment: The site is not mapped as containing any Biodiversity Value. The proposed development does not exceed the biodiversity offsets threshold for the purposes of this part.

Declared Area of Outstanding Biodiversity Value

The site is not mapped on the Biodiversity Value Map as being land with a high biodiversity value as defined by the BC Act.



Source: (NSW Government, 2024)

Figure 5 – Biodiversity Value Map

5.1.2. Biodiversity Development Assessment Report

As outlined in Section 5.1.1, the proposed development is not likely to significantly affect threatened species as defined by Section 7.2 of the BC Act. Therefore, a Biodiversity Development Assessment Report is not required to accompany the application for development consent.

5.2. Fisheries Management Act 1994

5.2.1. Applicability

The Fisheries Management Act 1994 (FM Act) applies to:

(a) in relation to all waters that are within the limits of the State, and

(b) except for purposes relating to a fishery, or a part of a fishery, that is to be managed in accordance with the law of the Commonwealth pursuant to an arrangement under Division 3 of Part 5 and except for purposes prescribed by paragraph (d)—in relation to any waters of the sea not within the limits of the State that are on the landward side of waters adjacent to the State that are within the Australian fishing zone, and

(c) for purposes relating to a fishery, or a part of a fishery, that is managed in accordance with the law of the State pursuant to an arrangement under Division 3 of Part 5—in relation to any waters to which the legislative powers of the State extend with respect to that fishery, whether pursuant to section 5 of the Coastal Waters (State Powers) Act 1980 of the Commonwealth or otherwise, and

(d) for purposes relating to recreational fishing activities engaged in otherwise than by use of a foreign boat (other than recreational activities prohibited or regulated under a plan of management determined under section 17 of the Commonwealth Act)—in relation to any waters to which the legislative powers of the State extend with respect to such activities.

Comment: Not applicable.

5.3. Environmental Planning & Assessment Act 1979

5.3.1. Application of Biodiversity Conservation Act 2016 & Fisheries Management Act 1994

Section 1.7 of the *Environmental Planning & Assessment Act 1979* (EP&A Act) identifies that Part 7 of the BC Act and Part 7A of the FM Act relate to the operation of the EP&A Act in relation to the terrestrial and aquatic environment. These Acts are addressed in Sections 5.1 and 5.2 of this report respectively.

5.3.2. Evaluation

Section 4.15 of the EP&A Act (as amended) requires the Council to consider various matters in regard to the determination of the Development Application.

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

(a) The provisions of:

(i) any environmental planning instrument, and

(ii) any proposed instrument that is or has been the subject of public consultation under this Act and that has been notified to the consent authority (unless the Secretary has notified the consent authority that the making of the proposed instrument has been deferred indefinitely or has not been approved), and

(iii) any development control plan, and

(iv) any planning agreement that has been entered into under section 7.4, or any draft planning agreement that a developer has offered to enter into under section 7.4, and

(v) the regulations (to the extent that they prescribe matters for the purposes of this paragraph), and

(vi) any coastal zone management plan (within the meaning of the Coastal Protection Act 1979), that apply to the land to which the development application relates,

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

(c) The suitability of the site for the development,

(d) Any submissions made in accordance with this act or the regulations,

(e) The public interest.

The proposed development has been designed with consideration to the following matters, as outlined below.

5.4. Environmental Planning Instruments

5.4.1. State Environmental Planning Policy (Biodiversity and Conservation) 2021

Whilst the subject site is located within the Mudgee LGA, it is not considered to comprise potential koala habitat as defined by *State Environmental Planning Policy (Biodiversity and Conservation) 2021*.

An AHIMS search was conducted and found no aboriginal significant sites or items on the subject site and the site is not listed as containing a heritage listed item per Schedule 5 of the LEP or the State Heritage Register.

Therefore SEPP (Biodiversity and Conservation) 2021 does not require any further consideration.

5.4.2. State Environmental Planning Policy (Resilience and Hazards) 2021

Clause 4.6 of *State Environmental Planning Policy (resilience and Hazards) 2021* requires Council to consider the following before granting consent to a DA:

(a) it has considered whether the land is contaminated, and
(b) if the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the purpose for which the development is proposed to be carried out, and
(c) if the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, it is satisfied that the land will be remediated before the land is used for that purpose.

Comment: A Preliminary Site Investigation has been carried out and is provided in Appendix E of this report. The investigation confirmed the following background use of the site:

- 1965 – The site remains largely vacant with a dam to the south, and developed lots to the east.
- 1980 to 1995 – by 1980, the site has begun to be used for scrapyard purposes, with vehicles and other metal scrap stored onsite. The same use was evident on site for an extended period of time. Surrounding land uses began to be developed overtime.
- 2012 – the site has now been cleared with trees and stormwater works on the north-eastern boundary visible.
- 2015 – Preparations for road construction start along the north western boundary. Between 2015 and 2017 Fairydale Lane is closed and removed from its alignment to the south of the site and realigned along the north-western boundary of the site. Realignment sees stockpiles of fill located along the southern boundary of the Subject Site.
- 2017 to 2023 – the site remains unoccupied but off-site a new residential subdivision is evident to the west.

The report provided the following recommendations:

- Based on the findings of the desktop review and site investigation it can be stated with a reasonable level of confidence that the Subject Site is suitable for the intended development of the land for residential use.
- A Construction Environmental Management Plan (CEMP) must be prepared, prior to construction works being started. The purpose of the CEMP is for the management of excavated soils and should include procedures for the management of sediment and erosion.
- It is recommended that any material excavated at the Subject Site as part of the redevelopment, be classified in accordance with the general solid waste (NSW EPA, 2014) and excavated natural material (NSW EPA, 2014a) guidelines (ENM Order), and appropriately disposed.

5.4.3. Mid-Western Regional Local Environmental Plan 2012

Land Use Table

The subject site is zoned R1 General Residential pursuant to the *Mid-Western Regional Local Environmental Plan 2012* (LEP). The objectives of the R1 zone are:

- *To provide for the housing needs of the community*
- *To provide for a variety of housing types and densities*
- *To enable other land uses that provide facilities or services to meet the day to day needs of residents.*

Comment: The proposed development is defined as a 'subdivision', which is considered to be consistent with the zone objectives as it provides for additional opportunities for a variety of housing types and densities that meet the needs of the community. It is permissible with consent in the R1 zone.

Subdivision

Clause 2.6 of the Mid-Western Regional Local Environmental Plan 2012 (LEP) enables subdivision to be carried out with development consent.

Minimum Lot Size

Clause 4.1 (3) states:

> *(3) The size of any lot resulting from a subdivision of land to which this clause applies is not to be less than the minimum size shown on the Lot Size Map in relation to that land.*

Comment: All proposed Lots meet the specified Minimum Lot Size (MLS) of 600m^2 applicable to the land. The Plans in Appendix B confirm that each lot is in excess of 600m^2 on the size.

Flood Planning

The subject site is mapped as being within the Flood Planning Area. Clause 5.21 of the LEP states that consent cannot be granted for development in a flood planning area unless the consent authority is satisfied that:

(a) *is compatible with the flood hazard of the land, and*
(b) *will not significantly adversely affect flood behaviour resulting in detrimental increases in the potential flood affectation of other development or properties, and*
(c) *incorporates appropriate measures to manage risk to life from flood, and*
(d) *will not significantly adversely affect the environment or cause avoidable erosion, siltation, destruction of riparian vegetation or a reduction in the stability of river banks or watercourses, and*
(e) *is not likely to result in unsustainable social and economic costs to the community as a consequence of flooding.*

Comment: Figure 3 of this report and Sheet C07 of the Subdivision Plans in Appendix B show the extent of the flood prone land. The Mudgee Flood Study provided clear indication of the 1% Annual Exceedance Probability (AEP) flood event for Mudgee and surrounds. The WMA Flood Information provided in Appendix F shows that the site has a 1% AEP Peak Flood Level of 454.88m AHD.

Council's LEP defines the Flood Planning Area as follows:

flood planning area has the same meaning as it has in the Flood Risk Management Manual.

The Flood Risk Management Manual (FRM) 2023 defines a Flood Planning Area as follows:

The area of land below the FPL (Flood Planning Level)

In order to determine if the land sits within the Flood Planning Area, the Flood Planning Level must be determined, as follows.

The FRM provided the following reference for a Flood Planning Level; *''Determining the FPL for typical residential development should generally start with a DFE of the 1% AEP flood plus an appropriate freeboard (typically 0.5m)''.*

As shown in Appendix F of this report, the 1% AEP for the site is 454.88m AHD. Therefore, by applying the freeboard, the Flood Planning Level for the site is 455.38m AHD.

Existing ground levels for Lots 1-4 are above the FPL and the allotment filling associated with Lots 5-7 shall increase the level of those lots to approximately 455.7 AHD. Therefore, all proposed Lots shall be above the Flood Planning Level applicable to the site.

Therefore, given that the land is above the Flood Planning Level and therefore not considered within the Flood Planning Area, for the purposes of the Flood Risk Management Manual (FRM) 2023, the provisions under this clause do not apply.

Groundwater Vulnerability

Clause 6.4 'Groundwater Vulnerability' applies to the subject application as the subject site is mapped as groundwater vulnerable pursuant to the ePlanning Spatial Viewer and LEP mapping.

Clause 6.4 states:

(3) Before determining a development application for development on land to which this clause applies, the consent authority must consider the following—

(a) the likelihood of groundwater contamination from the development (including from any on-site storage or disposal of solid or liquid waste and chemicals),

(b) any adverse impacts the development may have on groundwater dependent ecosystems,

(c) the cumulative impact the development may have on groundwater (including impacts on nearby groundwater extraction for a potable water supply or stock water supply),

(d) any appropriate measures proposed to avoid, minimise or mitigate the impacts of the development.

Comment: The proposed development includes a subdivision with no new proposed dwellings, and as such, does not include significant adverse impacts on groundwater.

There are no proposed groundwater contamination activities, or any development that would have adverse impacts on groundwater dependant ecosystems. It is not proposed to extract any groundwater as part of the subdivision. There are no identified cumulative impacts on groundwater or nearby groundwater extraction of the proposed development and as such, is considered to be compliant for the purposes of this part.

Essential Services

Clause 6.9 'Essential Services' applies to the subject site, as each lot is required to have essential services available or adequate arrangements in place to make them available when required.

Clause 6.9 states;

Development consent must not be granted to development unless the consent authority is satisfied that any of the following services that are essential for the proposed development are available or that adequate arrangements have been made to make them available when required—

(a) the supply of water,

(b) the supply of electricity,

(c) the disposal and management of sewage,

(d) stormwater drainage or on-site conservation,

(e) suitable road access.

Comment: The proposed development includes the provision of reticulated water, electricity, sewer, stormwater and telecommunication infrastructure as well as suitable road access to the new proposed access road. Subdivision Plans are provided in Appendix B of this report.

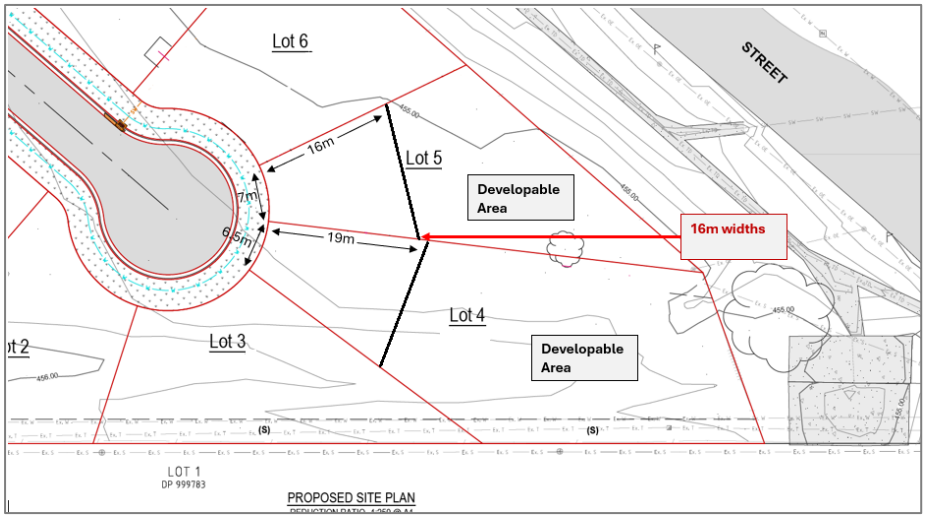
5.5. Draft Environmental Planning Instruments

No draft Environmental Planning Instruments are applicable to the subject site or development.

5.6. Development Control Plans

Section 7 of the *Mid-Western Regional Council Development Control Plan 2013* (DCP) applies to the proposed subdivision. Table 2 below considers the provisions of Part 7.1 (Urban Subdivision) as they apply to the proposed development.

Table 2 – DCP Compliance Table

Provision	Comment
Part 7.1 Urban Subdivision: Land zoned R1, R2 and R3	
Lot Size	All proposed lot sizes meet the minimum lot size requirement of 600m^2. The slope of the land does not exceed 20 degrees. Item (c) under this part states: *All lots must have a minimum width of 16m at the building line (4.5 metres from the front property boundary) in the case of lots within residential and village zones.* Comment: Lots 1, 2, 3, 6 and 7 comply with this requirement at the front boundary of each Lot. However, Lots 4 and 5 do not comply. The below image show where the 16m width starts on each Lot.  As shown above, there is a plethora of space on proposed Lots 4 and 5 for the development of residential dwellings. At the very least, proposed Lot 5 may only be limited to one (1) dwelling (i.e. no dual occupancy) given the area available. However, this would be subject to a detailed design and submission of a Development Application to Council in future.
Lot Design	The subdivision results in seven (7) proposed Lots. The subdivision has been designed to optimise solar access, consideration solar patterns and solar orientation for future dwellings on the Lots.

	The proposed Lots are generally rectangular in shape with some slight variances and allow an orientation to include 3-hours of sunlight access between 9:00am and 3:00pm on 21 June (Winter Solstice).
Street Design and Layout	A new road is proposed to service the proposed Lots. The subject site is located in an existing residential area. The increase in traffic is anticipated to be minimal. The proposed subdivision complies with the design criteria under this part. Refer to Subdivision Plans provided in Appendix B of this report. A Traffic Impact Assessment has been prepared and is provided in Appendix C of this report. The TIA concluded that: • Traffic generated by the proposed development contributes to approximately 3.15% increase from existing Fairydale Lane traffic; • Fairydale Lane currently operates at an acceptable level of service and will continue to do so with the traffic generated by the proposed development. No upgrade works are required; and • The intersection of the new cul-de-sac and Fairydale Lane warrants basic left / basic right turn treatments, which are satisfied by the existing arrangement.
Cycleways and Footpaths	Not applicable to proposed development as there are no proposed footpaths or cycle ways proposed.
Open Space	Not applicable.
Landscaping	A Landscaping Design has been prepared and is provided in Appendix D of this report. This part of the DCP requires two (2) street trees to be established per Lot. As shown on the landscape design, a total of seven (7) trees have been nominated along the new road, consisting of Luscious Water Gums (Tristaniopsis Laurina). These trees reach a height of 8m and width of 7m, and are therefore considered larger trees. This tree arrangement is considered suitable for the proposed subdivision and will adequately soften the visual impact of the road reserve, whilst creating an inviting space for future residential accommodation. It is noted that proposed Lots 1 and 7 adjoin Fairydale Lane to the northwest. The proposed Lots are not orientated towards that street network and access is not to be provided via Fairydale Lane. As such, treatment of the boundaries facing Fairydale Land has been incorporated in the design, as follows: • Establishment of a hedge along the boundaries consisting of Fluro Burst Bottle Brush (Callistemon); • 1.8m high aluminium slatted fencing;

	• Feature timber post screening at the corner of each lot where the entrance to the subdivision is positioned, reducing the height of the fencing from 1.8m to 1.2m; • Mat Rush (Lomandra Fluviatilis) vegetation positioned in front of the curved timber screening entrance. The intent of the change in the timber screening and low vegetation as the front of the subdivision is to assist with sight distances for vehicles entering and entering the new subdivision. Examples of the vegetation nominated on the Landscape Design in Appendix D are provided below. Luscious Water Gum  Fluro Burst Bottle Brush

	 Mat Rush 
Utility Services	The proposed subdivision will result in seven (7) new allotments. All new proposed lots shall be afforded with connections, or arrangements made to make available when required, for all essential services. Preliminary Civil Design drawings have been provided in Appendix B of this report.
Drainage	Addressed in in the following section of this table.
Part 5.3 Stormwater & Drainage Controls	
Stormwater Management	The proposed development is a subdivision only with an associated access road and does not include the construction of any new dwellings or structures. A servicing plan has been provided for the proposed development which includes the stormwater management infrastructure in Appendix B of this report.

Part 5.4 Environmental Controls	
Protection of Aboriginal Archaeological Items	An AHIMS Search was undertaken (See Section 2.8 of this report) and shows that there are no known Aboriginal items or relics known to be on the subject site. If any items of significance are identified the proponent will notify relevant authorities.
Bushfire Management	The subject site is not mapped as bushfire prone land.
Riparian and Drainage Line Environments	There are no identified watercourses located on the site or within close proximity.
Pollution and Water Management	There is no proposed pollution or waste producing activity as part of this proposed development.
Threatened Species and Vegetation Management	The proposed development is for the subdivision of the site into seven (7) new lots. There will be some clearing as part of subdivision works and vegetation within the proposed Lots shall be retained where possible. The proposed development includes an associated access road to the proposed lots. This will include some minor clearing along the southern boundary of the site for the access road. The proposed clearing is under the threshold according to the biodiversity values map and threshold tool and is not considered to have a significant adverse impact on flora or fauna on the site.
Building in Saline Environments	It is understood that salinity may occur on the subject site, resulting in any future proposed residential buildings being susceptible to salt damage.
House Slabs and Footings	Not applicable as there are no proposed slabs or footings.
Brickwork	Not applicable as there is no proposed brickwork.
All Buildings	Not applicable as there are no proposed buildings.
Alterations and Additions	Not applicable as there are no proposed alterations or additions.

5.7. Any Planning Agreement entered into

No Planning Agreements entered into are known to exist in relation to the development or site.

5.8. Any Matters Prescribed by the Regulations

For the purposes of Section 4.15(1)(a)(iv) of the EP&A Act, Clause 92 of the *Environmental Planning and Assessment Regulations 2000* (EP&A Regulations) specifies the additional matters a consent authority must take into consideration when determining a DA. None of which apply to the proposed development.

5.9. Any Likely Impacts of the Development

5.9.1. Context & Setting

The subject site is located within an existing established residential area in Mudgee. Surrounding the site are residential activities consisting of dwellings, units and multi-dwelling housing developments. There are infill residential development emerging within proximity to the site. The development, being a seven Lot residential subdivision, is therefore considered suitable for its context and setting.

5.9.2. Access, Transport & Traffic

The site has direct frontage and access off Fairydale Lane (a two way, two laned sealed road). Access to the proposed new lots will be gained via the new access road to be constructed as part of this proposal. All proposed lots will have direct frontage and access to the local road network. The proposed development is considered consistent with the surrounding character and desired character of the adjoining lands (R1 general residential zoned land) and associated expected traffic generation. It is not anticipated that the proposed subdivision would impact on traffic generation in the locality.

5.9.3. Utilities

Essential services including reticulated water, sewer, stormwater, electricity and telecommunications infrastructure shall be afforded to each of the resultant lots and be available, or adequate arrangements in place to make them available, when required (including direct frontage/access to the local road network). Separate applications for services shall be lodged to Council following the release of the consent.

5.9.4. Social & Economic Impacts in the Locality

The proposed development creates the potential for seven (7) new housing developments, contributing to providing for the housing needs of the community, contributing to housing diversity, opportunity and affordability as well as contributing to economic activity in the building and construction industries to establish the subdivision and construct the future residential developments. The proposed development has no significant adverse economic or social impacts as a result of the subdivision.

5.9.5. Site Design & Internal Design

There are no prohibitive constraints posed by adjacent developments. There does not appear to be any zoning, planning or environmental matters that should hinder the proposed development of the site. In this regard, it can be concluded that the proposed subdivision is suitable for the locality.

5.9.6. Other

There are no other impacts such as natural or technological hazards that would result from the proposed subdivision.

5.10. Suitability of the Site for the Proposed Development

The suitability of the site for the proposed development has been addressed in the above sections of this report. There are no prohibitive constraints posed by adjacent developments. There does not appear to be any zoning, planning or environmental matters that should hinder the proposed development of the site. In this regard, it can be concluded that the proposal fits into the locality and the site attributes are conducive for the development.

5.11. The Public Interest

The proposed development is considered to be in the public interest as it provides for a subdivision, to produce seven new vacant lots for further development to meet the housing needs of the community. As outlined throughout this report the development is consistent with the minimum lot size for the area and is not expected to have any adverse off-site impacts.

6. CONCLUSION

It is recommended that the proposed subdivision of Lots 9 and 10 DP 1218673, known as 13 Fairydale Lane, Mudgee be supported on the following grounds:

- The proposal is considered acceptable in terms of the provisions of Section 4.15 of the *Environmental Planning and Assessment Act 1979*;
- The proposal is permissible with consent and consistent with the relevant development standards and provisions of the *Mid-Western Regional Local Environmental Plan 2012*;
- The proposal complies with the relevant provisions of the *Mid-Western Regional Council Development Control Plan 2012*;
- The proposed development is not anticipated to generate any adverse impacts in the locality; and
- The proposed development is considered suitable for the site and its surrounds.

7. REFERENCES

NSW Government. (2024, March 1). *Biodiversity Value Map*. Retrieved from https://www.lmbc.nsw.gov.au/Maps/index.html?viewer=BVMap

NSW Government Spatial Services. (2024, March 1). *Six Maps*. Retrieved from http://maps.six.nsw.gov.au/

NSW Rural Fire Service. (2019). *Planning for Bush Fire Protection: A Guide for Council's, Planners, Fire Authorities and Developers.* Sydney: NSW RFS.

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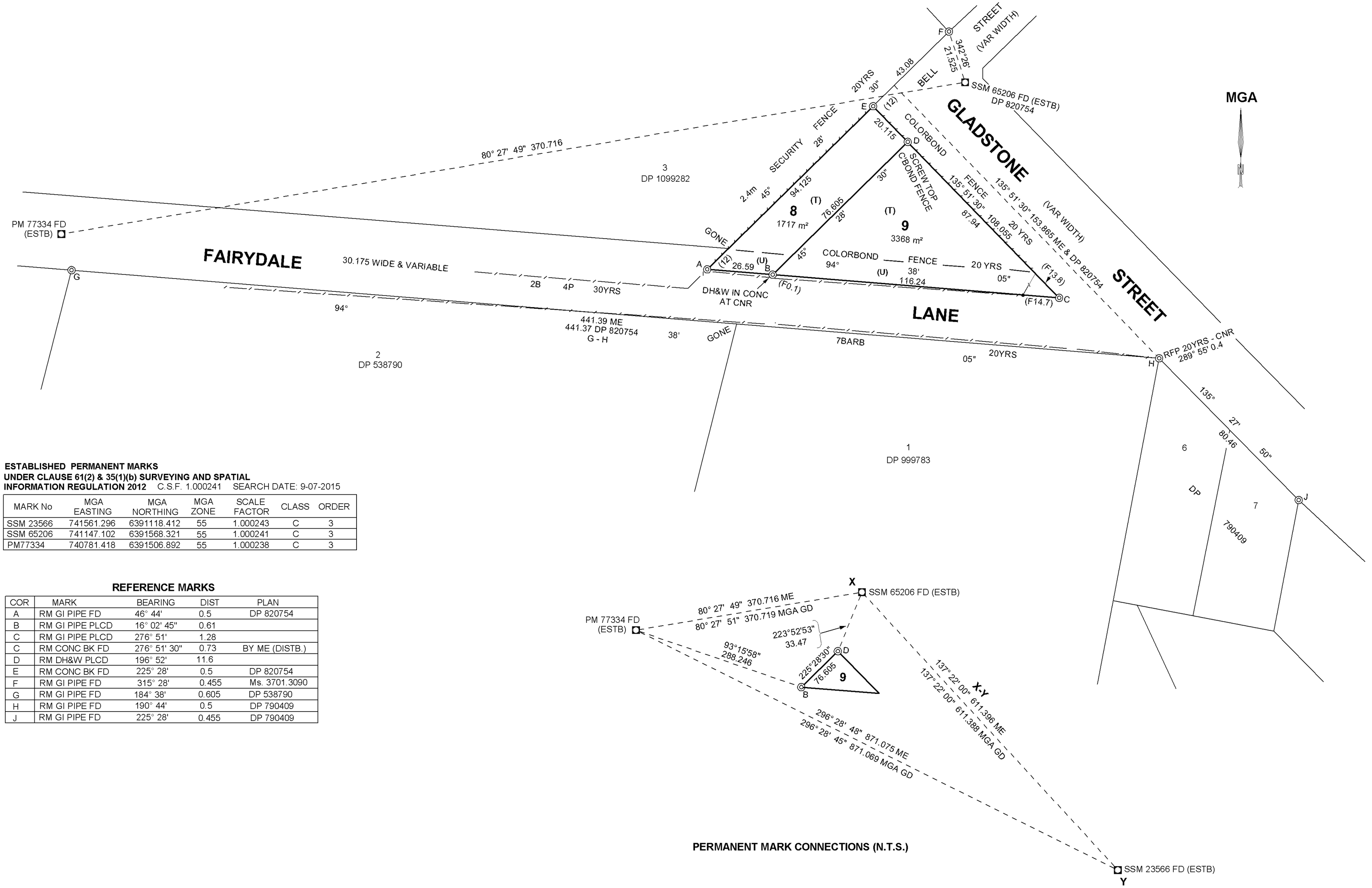
APPENDIX A

Title and Deposited Plan



PERMANENT MARK CONNECTIONS (N.T.S.)

ESTABLISHED PERMANENT MARKS
UNDER CLAUSE 61(2) & 35(1)(b) SURVEYING AND SPATIAL INFORMATION REGULATION 2012 C.S.F. 1.000241 SEARCH DATE: 9-07-2015

MARK No	MGA EASTING	MGA NORTHING	MGA ZONE	SCALE FACTOR	CLASS	ORDER
SSM 23566	741561.296	6391118.412	55	1.000243	C	3
SSM 65206	741147.102	6391568.321	55	1.000241	C	3
PM77334	740781.418	6391506.892	55	1.000238	C	3

REFERENCE MARKS

COR	MARK	BEARING	DIST	PLAN
A	RM GI PIPE FD	46° 44'	0.5	DP 820754
B	RM GI PIPE PLCD	16° 02' 45"	0.61	
C	RM GI PIPE PLCD	276° 51'	1.28	
C	RM CONC BK FD	276° 51' 30"	0.73	BY ME (DISTB.)
D	RM DH&W PLCD	196° 52'	11.6	
E	RM CONC BK FD	225° 28'	0.5	DP 820754
F	RM GI PIPE FD	315° 28'	0.455	Ms. 3701.3090
G	RM GI PIPE FD	184° 38'	0.605	DP 538790
H	RM GI PIPE FD	190° 44'	0.5	DP 790409
J	RM GI PIPE FD	225° 28'	0.455	DP 790409

(T) RESERVATIONS & CONDITIONS IN THE CROWN GRANT
(U) LAND EXCLUDES MINERALS

10 20 30 40 50 Table of mm 90 100 110 120 130 140

Surveyor: COLIN WILLIAM (BILL) CURRIE Date of Survey: 27.8.2015 Surveyor's Ref: 20965 MWRC	PLAN OF **SUBDIVISION OF LOTS 2 & 3 IN DP 820754**	LGA: MID WESTERN REGIONAL Locality: MUDGEE Subdivision No: Lengths are in metres. Reduction Ratio 1: 1000	Registered 16.5.2016	DP1218673

PLAN FORM 6 (2012) **WARNING: Creasing or folding will lead to rejection**

DEPOSITED PLAN ADMINISTRATION SHEET

Registered: 16.5.2016 Office Use Only

Title System: TORRENS

Purpose: SUBDIVISION

Office Use Only

DP1218673 S

PLAN OF

PLAN OF SUBDIVISION OF LOTS 2 & 3

IN DP 820754

LGA: MID WESTERN REGIONAL

Locality: MUDGEE

Parish: MUDGEE

County: WELLINGTON

Crown Lands NSW/Western Lands Office Approval

I, ... (Authorised Officer) in approving this plan certify that all necessary approvals in regard to the allocation of the land shown herein have been given.

Signature: .....

Date: .....

Application Number:

File Number:

Office:

Subdivision Certificate

I, Lindsay Dunstan

*Authorised Person/*General Manager/*Accredited Certifier, certify that the provisions of s.109J of the *Environmental Planning and Assessment Act 1979* have been satisfi[redacted] subdivision, new road or reserve set ou[redacted]

Signature: .....

Accreditation number: .....

Consent Authority: MIDWESTERN REGIONAL COUNCIL

Date of endorsement: 20 Jan 2016

Subdivision Certificate number: SC021/2016

File number: DA0147/2016

Survey Certificate

I, COLIN WILLIAM (BILL) CURRIE

Of BARNSON PTY LTD

4/108-110 MARKET STREET, MUDGEE

a surveyor registered under the *Surveying and Spatial Information Act 2002*, certify that:

*(a) The land shown in the plan was surveyed in accordance with the *Surveying and Spatial Information Regulation 2012*, is accurate and the survey was completed on 27.8.2015 .....

*(b) ~~The part of the land shown in the plan (*being/*excluding ^ ..... was surveyed in accordance with the *Surveying and Spatial Information Regulation 2012*, is accurate and the survey was completed on, ... the part not surveyed was compiled in accordance with that Regulation.~~

*(c) ~~The land shown in this plan was compiled in accordance with the Surve[redacted]tion 2012.~~

Signature[redacted] ....Dated: 15/9/15

Surveyor ID: 7447

Datum Line: 'X'-'Y'.....

Type: Urban/ ~~Rural~~

The terrain is ~~-LEVEL-/ Steep Mountainous.~~

^Specify the land actually surveyed or specify any land shown in the plan that is not the subject of the survey.

Statements of intention to dedicate public roads, public reserves and drainage reserves.

IT IS INTENDED TO DEDICATE LOT 8 TO THE PUBLIC AS ROAD

Plans used in the preparation of survey/~~compilation~~.

DP 820754, DP 538790, DP 790409

If space is insufficient continue on PLAN FORM 6A

Signatures, Seals and Section 88B Statements should appear on PLAN FORM 6A

Surveyor's Reference: **20965 MWRC**

PLAN FORM 6A (2012) **WARNING: Creasing or folding will lead to rejection**

DEPOSITED PLAN ADMINISTRATION SHEET

Registered: 16.5.2016 Office Use Only

:e Use Only

DP1218673

PLAN OF SUBDIVISION OF LOTS 2 & 3 IN DP 820754

Subdivision Certificate number: SC021/2016

Date of Endorsement: 20/01/2016

This sheet is for the provision of the following information as required:

- A schedule of lots and addresses - See 60(c) *SSI Regulation 2012*
- Statements of intention to create and release affecting interests in accordance with section 88B *Conveyancing Act 1919*
- Signatures and seals- see 195D *Conveyancing Act 1919*
- Any information which cannot fit in the appropriate panel of sheet 1 of the administration sheets.

LOT	NUMBER	STREET NAME	STREET TYPE	LOCATLITY
9	13	FAIRYDALE	LANE	MUDGEE

Lindsay Dunstan
Manager Statutory
Planning, MWRC

Robert John SANDERSON [redacted]

Surveyor's Reference: **20965 MWRC**

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 9/1218673

SEARCH DATE	TIME	EDITION NO	DATE
16/11/2023	7:42 AM	1	16/5/2016

LAND

LOT 9 IN DEPOSITED PLAN 1218673
AT MUDGEE
LOCAL GOVERNMENT AREA MID-WESTERN REGIONAL
PARISH OF MUDGEE COUNTY OF WELLINGTON
TITLE DIAGRAM DP1218673

FIRST SCHEDULE

ROBERT JOHN SANDERSON

SECOND SCHEDULE (2 NOTIFICATIONS)

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S) WITHIN THE PART(S) SHOWN SO INDICATED IN THE TITLE DIAGRAM
2 LAND EXCLUDES MINERALS WITHIN THE PART SHOWN SO INDICATED IN THE TITLE DIAGRAM

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

Barnson Pty Ltd (Mudgee) PRINTED ON 16/11/2023

* Any entries preceded by an asterisk do not appear on the current edition of the Certificate of Title.
Warning: the information appearing under notations has not been formally recorded in the Register.

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 10/1233495

SEARCH DATE	TIME	EDITION NO	DATE
16/11/2023	7:42 AM	1	2/7/2018

LAND

LOT 10 IN DEPOSITED PLAN 1233495
AT MUDGEE
LOCAL GOVERNMENT AREA MID-WESTERN REGIONAL
PARISH OF MUDGEE COUNTY OF WELLINGTON
TITLE DIAGRAM DP1233495

FIRST SCHEDULE

ROBERT JOHN SANDERSON (T AN323412)

SECOND SCHEDULE (2 NOTIFICATIONS)

1 LAND EXCLUDES MINERALS (S.171 CROWN LANDS ACT 1989)
2 DP1233495 EASEMENT FOR SERVICES 3 METRE(S) WIDE AFFECTING THE PART(S) SHOWN SO BURDENED IN THE TITLE DIAGRAM

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

Barnson Pty Ltd (Mudgee) PRINTED ON 16/11/2023

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APPENDIX B

Subdivision Plans

Civil Design Documentation

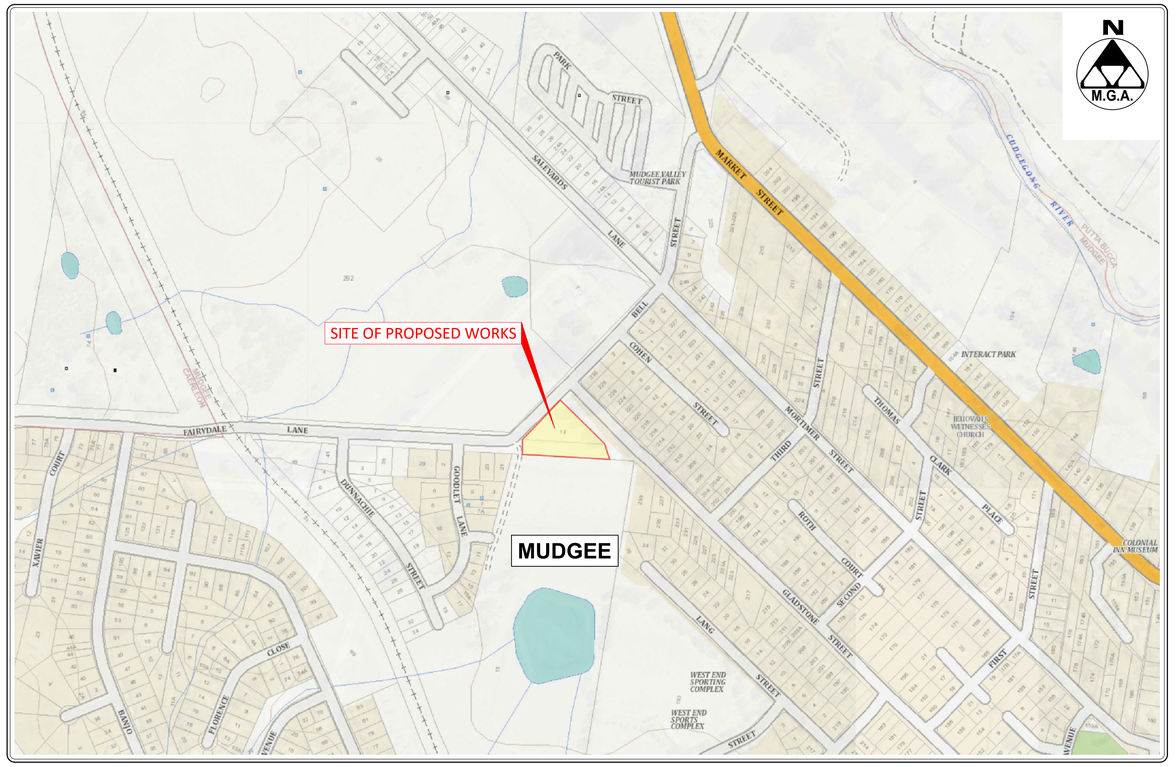
Proposed Subdivision

Lots 9 & 10 in DP 1233495

13 Fairydale Lane, Mudgee NSW 2850

SCHEDULE OF DRAWINGS

SHEET No.	DESCRIPTION
37880-C00	COVER SHEET AND DRAWING SCHEDULE
37880-C01	EXISTING SITE PLAN
37880-C02	PROPOSED SITE PLAN
37880-C03	PROPOSED LOT PLAN
37880-C04	PROPOSED BULK EARTHWORKS PLAN
37880-C05	PROPOSED BULK EARTHWORKS SPECIFICATIONS
37880-C06	PROPOSED STORMWATER PLAN
37880-C07	PROPOSED FLOOD IMPACT PLAN
37880-C08	PROPOSED SEWER PLAN
37880-C09	PROPOSED SEWER LONGSECTIONS AND DETAILS
37880-C10	PROPOSED WATER PLAN



LOCALITY PLAN

REDUCTION RATIO 1:12500 @ A1

SUBMISSION FOR DA

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DESIGN . PLAN . MANAGE

BARNSON PTY LTD

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web barnson.com.au

Rev	Date	Description
A	6-02-2024	PRELIMINARY DRAWING
B	18-03-2024	ISSUED FOR DA

Project
CIVIL DESIGN DOCUMENTATION
PROPOSED SUBDIVISION
Site Address
13 FAIRYDALE LANE
MUDGEE NSW 2850
Client
SANDERSON & MACDONALD PTY LTD

Drawing Title
COVER SHEET & DRAWING SCHEDULE

Design	LM	Original Sheet Size	A1
Drawn	JS		
Check	LM	Revision	B

Certification

Project No 37880
Drawing No C00

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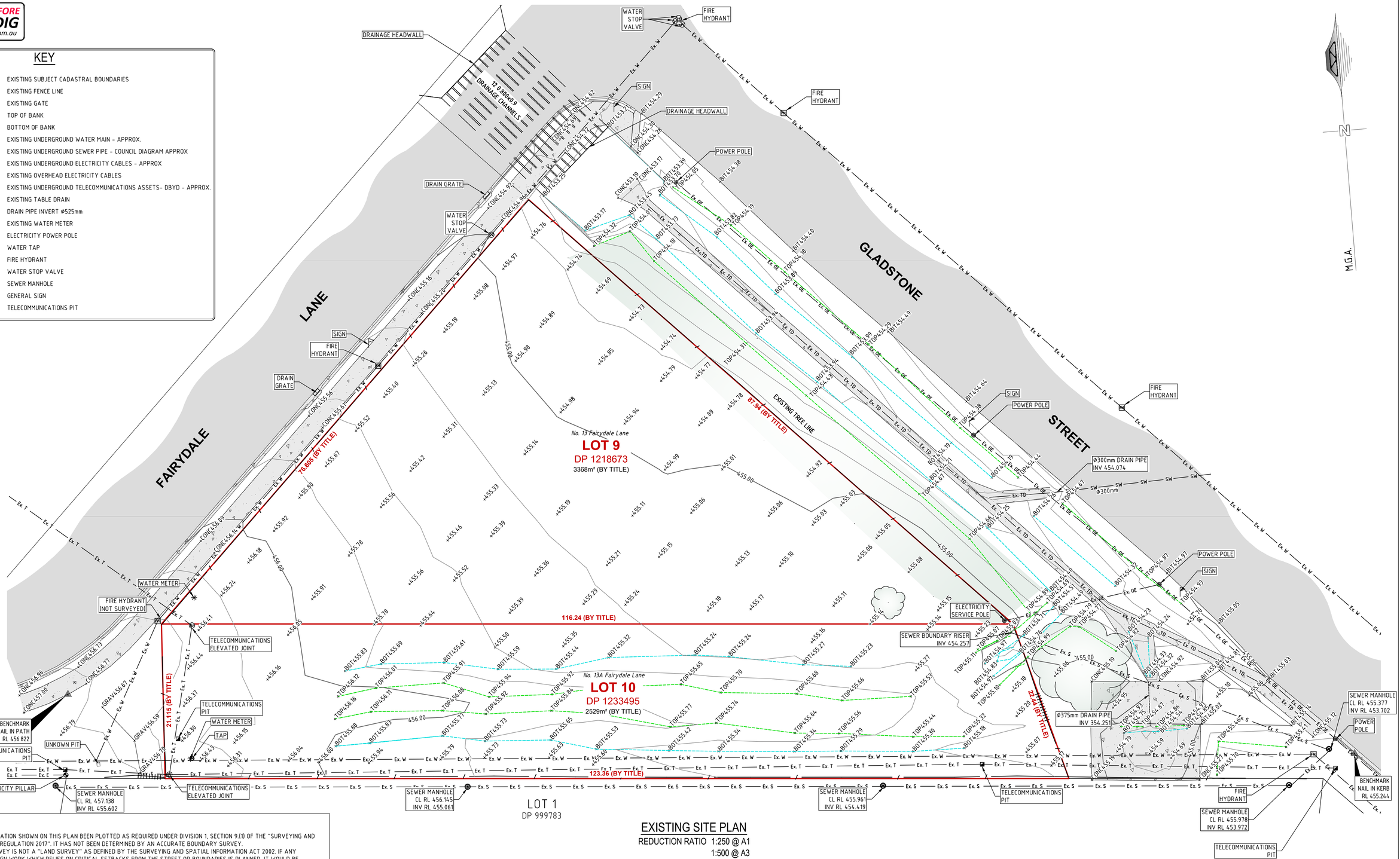
KEY

- EXISTING SUBJECT CADASTRAL BOUNDARIES
- EXISTING FENCE LINE
- EXISTING GATE
- TOP OF BANK
- BOTTOM OF BANK
- Ex. W — Ex. W — EXISTING UNDERGROUND WATER MAIN - APPROX.
- Ex. S — Ex. S — EXISTING UNDERGROUND SEWER PIPE - COUNCIL DIAGRAM APPROX
- Ex. E — Ex. E — EXISTING UNDERGROUND ELECTRICITY CABLES - APPROX
- Ex. OE — Ex. OE — EXISTING OVERHEAD ELECTRICITY CABLES
- Ex. T — Ex. T — EXISTING UNDERGROUND TELECOMMUNICATIONS ASSETS- DBYD - APPROX.
- Ex. TD — Ex. TD — EXISTING TABLE DRAIN
- Ex. SW — Ex. SW — DRAIN PIPE INVERT Ø525mm
- EXISTING WATER METER
- ELECTRICITY POWER POLE
- WATER TAP
- FIRE HYDRANT
- WATER STOP VALVE
- SEWER MANHOLE
- GENERAL SIGN
- TELECOMMUNICATIONS PIT



NOTES:

- THE BOUNDARY INFORMATION SHOWN ON THIS PLAN BEEN PLOTTED AS REQUIRED UNDER DIVISION 1, SECTION 9.(1) OF THE "SURVEYING AND SPATIAL INFORMATION REGULATION 2017". IT HAS NOT BEEN DETERMINED BY AN ACCURATE BOUNDARY SURVEY.
- A DETAIL & LEVEL SURVEY IS NOT A "LAND SURVEY" AS DEFINED BY THE SURVEYING AND SPATIAL INFORMATION ACT 2002. IF ANY CONSTRUCTION OR DESIGN WORK WHICH RELIES ON CRITICAL SETBACKS FROM THE STREET OR BOUNDARIES IS PLANNED, IT WOULD BE IMPERATIVE TO CARRY OUT FURTHER SURVEY WORK TO DETERMINE THE BOUNDARY DIMENSIONS.
- THE LOCATIONS AND DEPTHS OF UNDERGROUND SERVICE LINES SHOWN ON THIS PLAN HAVE BEEN SCALED FROM RELEVANT AUTHORITY PLANS. IT IS RECOMMENDED THAT THE LOCATION OF THESE SERVICES SHOULD BE PRECISELY DETERMINED BY POTHOLING PRIOR TO DESIGN AND CONSTRUCTION OR ANY EXCAVATION, DEMOLITION OR CONSTRUCTION COMMENCES. ALL MEASURES SHOULD BE TAKEN TO PROTECT THESE SERVICES FROM DAMAGE. THERE MAY BE UNDERGROUND SERVICES THAT HAVE NOT BEEN SHOWN HEREON. BARNSON TAKES NO RESPONSIBILITY FOR LOSSES, DAMAGES OR INJURIES TO ANY PERSON OR ORGANISATION THAT MAY OCCUR DUE TO THE RELIANCE ON THIS PLAN FOR THE LOCATION OF UNDERGROUND SERVICES.
- SERVICES LOCATED ONLY WHERE VISIBLE
- THE BENCHMARK PROVIDED IS FOR DETAILED PLANNING AND DESIGN IT IS TO BE CONFIRMED PRIOR TO USE FOR CONSTRUCTION ACTIVITY.

DATE OF SURVEY : 17th JANUARY 2024
SURVEY BY : R. Boylan

DATUM : AUSTRALIAN HEIGHT DATUM (A.H.D.)
ORIGIN : SSM 77192 RL 447.505m (S.C.I.M.S.)
MAJOR CONTOUR INTERVAL : 1 METRE
MINOR CONTOUR INTERVAL : 0.25 METRES

EXISTING SITE PLAN

REDUCTION RATIO 1:250 @ A1
1:500 @ A3

SCALE 1:250(A1)
0 5 10 15 20 25
SCALE 1:500(A3)
0 5 10 15 20 25

SUBMISSION FOR DA

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Rev	Date	Description
A	6-02-2024	PRELIMINARY DRAWING
B	18-03-2024	ISSUED FOR DA

Project
CIVIL DESIGN DOCUMENTATION
PROPOSED SUBDIVISION
Site Address
13 FAIRYDALE LANE
MUDGEE NSW 2850
Client
SANDERSON & MACDONALD PTY LTD

Drawing Title
EXISTING SITE PLAN

Design	LM	Original Sheet Size	A1
Drawn	JS		
Check	LM	Revision	B

Certification

Project No 37880
Drawing No C01

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LEGEND (existing)

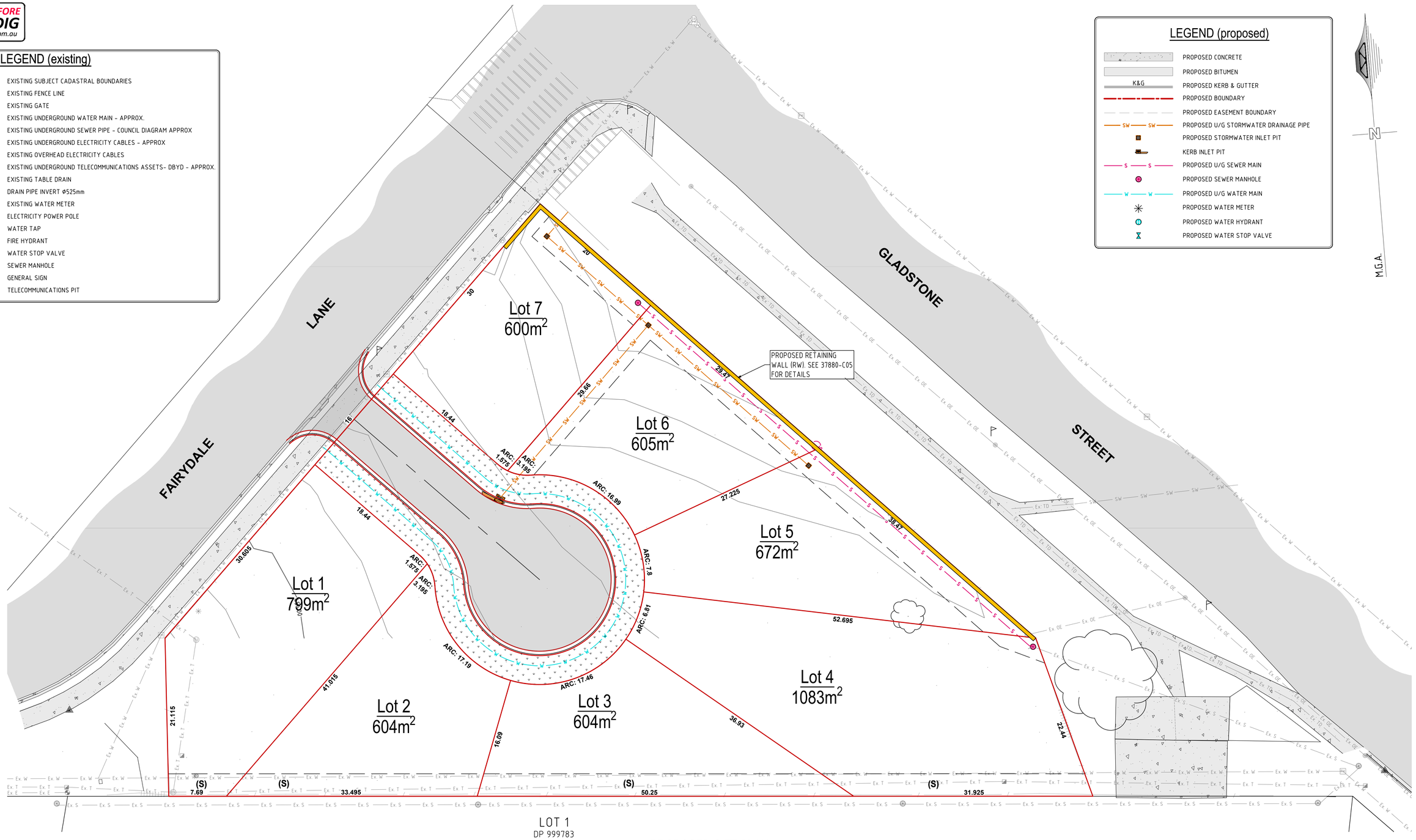
- EXISTING SUBJECT CADASTRAL BOUNDARIES
- EXISTING FENCE LINE
- EXISTING GATE
- Ex. W — EXISTING UNDERGROUND WATER MAIN - APPROX.
- Ex. S — EXISTING UNDERGROUND SEWER PIPE - COUNCIL DIAGRAM APPROX
- Ex. E — EXISTING UNDERGROUND ELECTRICITY CABLES - APPROX
- Ex. OE — EXISTING OVERHEAD ELECTRICITY CABLES
- Ex. T — EXISTING UNDERGROUND TELECOMMUNICATIONS ASSETS- DBYD - APPROX.
- Ex. TD — EXISTING TABLE DRAIN
- Ex. SW — DRAIN PIPE INVERT Ø525mm
- EXISTING WATER METER
- ELECTRICITY POWER POLE
- WATER TAP
- FIRE HYDRANT
- WATER STOP VALVE
- SEWER MANHOLE
- GENERAL SIGN
- TELECOMMUNICATIONS PIT

LEGEND (proposed)

- PROPOSED CONCRETE
- PROPOSED BITUMEN
- K&G — PROPOSED KERB & GUTTER
- PROPOSED BOUNDARY
- PROPOSED EASEMENT BOUNDARY
- SW — SW — PROPOSED U/G STORMWATER DRAINAGE PIPE
- PROPOSED STORMWATER INLET PIT
- KERB INLET PIT
- S — S — PROPOSED U/G SEWER MAIN
- PROPOSED SEWER MANHOLE
- W — W — PROPOSED U/G WATER MAIN
- PROPOSED WATER METER
- PROPOSED WATER HYDRANT
- PROPOSED WATER STOP VALVE

N

M.G.A.



PROPOSED SITE PLAN

REDUCTION RATIO 1:250 @ A1
1:500 @ A3

SCALE 1:250(A1)
0 5 10 15 20 25
SCALE 1:500(A3)
0 5 10 15 20 25

(S) EASEMENT FOR SERVICES 3 WIDE

SUBMISSION FOR DA

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Project
CIVIL DESIGN DOCUMENTATION
PROPOSED SUBDIVISION
Site Address
13 FAIRYDALE LANE
MUDGEE NSW 2850
Client
SANDERSON & MACDONALD PTY LTD

Drawing Title
PROPOSED SITE PLAN

Design LM
Drawn JS
Check LM

Original Sheet Size A1
Revision B

Certification

Project No 37880
Drawing No C02

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LEGEND (existing)

- EXISTING SUBJECT CADASTRAL BOUNDARIES
- EXISTING FENCE LINE
- EXISTING GATE
- Ex. W — EXISTING UNDERGROUND WATER MAIN - APPROX.
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- WATER STOP VALVE
- SEWER MANHOLE
- GENERAL SIGN
- TELECOMMUNICATIONS PIT

LEGEND (proposed)

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- PROPOSED BITUMEN
- K&G — PROPOSED KERB & GUTTER
- PROPOSED BOUNDARY
- PROPOSED EASEMENT BOUNDARY
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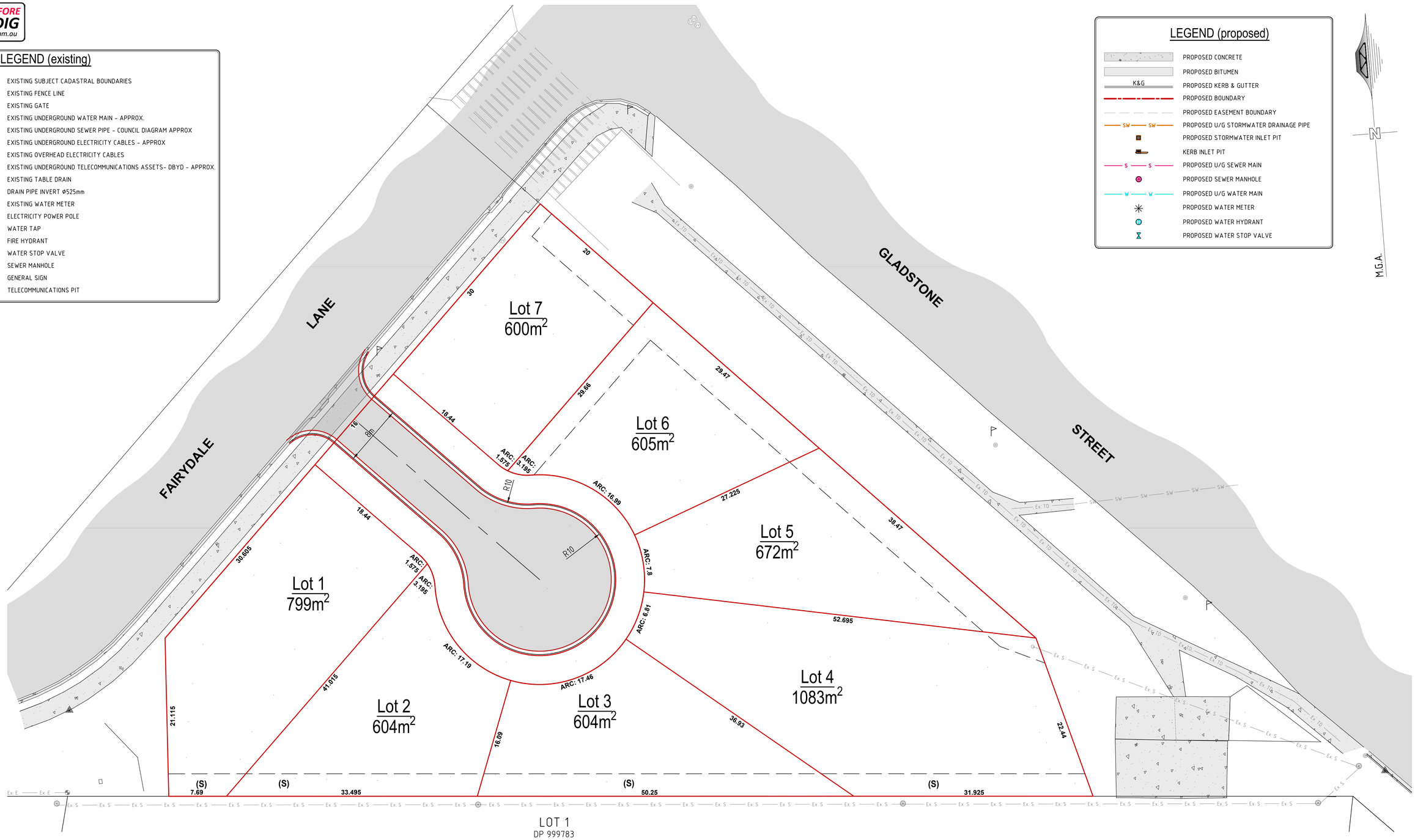
- PROPOSED STORMWATER INLET PIT
- KERB INLET PIT
- S — S — PROPOSED U/G SEWER MAIN
- PROPOSED SEWER MANHOLE
- W — W — PROPOSED U/G WATER MAIN
- PROPOSED WATER METER
- PROPOSED WATER HYDRANT
- PROPOSED WATER STOP VALVE

N

M.G.A.



PROPOSED LOT PLAN
REDUCTION RATIO 1:250 @ A1
1:500 @ A3

SCALE 1:250(A1)
0 5 10 15 20 25
0 5 10 15 20 25
SCALE 1:500(A3)

(S) EASEMENT FOR SERVICES 3 WIDE

SUBMISSION FOR DA

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DESIGN . PLAN . MANAGE

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Site Address
13 FAIRYDALE LANE
MUDGEE NSW 2850
Client
SANDERSON & MACDONALD PTY LTD

Drawing Title
PROPOSED LOT PLAN

Design LM
Drawn JS
Check LM

Original Sheet Size A1
Revision B

Certification

Project No 37880
Drawing No C03

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LEGEND (existing)

- EXISTING SUBJECT CADASTRAL BOUNDARIES
- EXISTING FENCE LINE
- EXISTING GATE
- Ex. W — Ex. W — EXISTING UNDERGROUND WATER MAIN - APPROX.
- Ex. S — Ex. S — EXISTING UNDERGROUND SEWER PIPE - COUNCIL DIAGRAM APPROX
- Ex. E — Ex. E — EXISTING UNDERGROUND ELECTRICITY CABLES - APPROX
- Ex. OE — Ex. OE — EXISTING OVERHEAD ELECTRICITY CABLES
- Ex. T — Ex. T — EXISTING UNDERGROUND TELECOMMUNICATIONS ASSETS- DBYD - APPROX.
- Ex. TD — Ex. TD — EXISTING TABLE DRAIN
- Ex. SW — Ex. SW — DRAIN PIPE INVERT Ø525mm
- EXISTING WATER METER
- ELECTRICITY POWER POLE
- WATER TAP
- FIRE HYDRANT
- WATER STOP VALVE
- SEWER MANHOLE
- GENERAL SIGN
- TELECOMMUNICATIONS PIT

FILL 1.457m
0.000m
CUT 1.457m

LEGEND (proposed)

- PROPOSED CONCRETE
- PROPOSED BITUMEN
- K&G — PROPOSED KERB & GUTTER
- PROPOSED BOUNDARY
- PROPOSED EASEMENT BOUNDARY
- SW — SW — PROPOSED U/G STORMWATER DRAINAGE PIPE
- PROPOSED STORMWATER INLET PIT
- KERB INLET PIT
- S — S — PROPOSED U/G SEWER MAIN
- PROPOSED SEWER MANHOLE
- W — W — PROPOSED U/G WATER MAIN
- PROPOSED WATER METER
- PROPOSED WATER HYDRANT
- PROPOSED WATER STOP VALVE

N
M.G.A.

FAIRYDALE LANE

GLADSTONE STREET

EXISTING RL: 454.925m
PROPOSED RL: 454.925m
RW HEIGHT: 0.000m

EXISTING RL: 454.750m
PROPOSED RL: 455.750m
RW HEIGHT: 1.000m

EXISTING RL: 454.645m
PROPOSED RL: 456.000m
RW HEIGHT: 1.355m

PROPOSED RETAINING WALL (RW). SEE 37880-C05 FOR DETAILS

EXISTING RL: 454.806m
PROPOSED RL: 455.700m
RW HEIGHT: 0.894m

EXISTING RL: 455.076m
PROPOSED RL: 455.076m
RW HEIGHT: 0.000m

Lot 1
799m²

Lot 2
604m²

Lot 3
604m²

Lot 4
1083m²

Lot 5
672m²

Lot 6
605m²

Lot 7
600m²

(S) (S) (S) (S)

LOT 1
DP 999783

PROPOSED BULK EARTHWORKS PLAN

REDUCTION RATIO 1:250 @ A1
1:500 @ A3

SCALE 1:250(A1)
0 5 10 15 20 25
SCALE 1:500(A3)

(S) EASEMENT FOR SERVICES 3 WIDE

SUBMISSION FOR DA

barnson.
DESIGN . PLAN . MANAGE

BARNSON PTY LTD

phone 1300 BARNSON (1300 227 676)
email generalenquiry@barnson.com.au
web barnson.com.au

Rev	Date	Description
A	6-02-2024	PRELIMINARY DRAWING
B	18-03-2024	ISSUED FOR DA

Project
CIVIL DESIGN DOCUMENTATION
PROPOSED SUBDIVISION
Site Address
13 FAIRYDALE LANE
MUDGEE NSW 2850
Client
SANDERSON & MACDONALD PTY LTD

Drawing Title
PROPOSED BULK EARTHWORKS PLAN

Design LM
Drawn JS
Check LM

Original Sheet Size A1
Revision B

Certification

Project No 37880
Drawing No C04

SITEWORKS NOTES

1. ORIGIN OF LEVELS :- AHD.
2. SUB-CONTRACTOR MUST VERIFY ALL DIMENSIONS AND EXISTING LEVELS ON SITE PRIOR TO COMMENCEMENT OF WORK.
3. ALL WORK IS TO BE UNDERTAKEN IN ACCORDANCE WITH THE DETAILS SHOWN ON THE DRAWINGS, THE SPECIFICATIONS AND THE DIRECTIONS OF THE SUPERINTENDENT.
4. EXISTING SERVICES HAVE BEEN OBTAINED FROM SURFACE INSPECTION ONLY. IT IS THE RESPONSIBILITY OF THE SUB-CONTRACTOR TO ESTABLISH THE LOCATION AND LEVEL OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE SUPER-INTENDENT. CLEARANCES SHALL BE OBTAINED FROM THE RELEVANT SERVICE AUTHORITY.
5. WHERE NEW WORKS ABUT EXISTING THE SUB-CONTRACTOR SHALL ENSURE THAT A SMOOTH EVEN PROFILE, FREE FROM ABRUPT CHANGES IS OBTAINED.
6. THE SUB-SUB-CONTRACTOR SHALL ARRANGE ALL SURVEY SETOUT TO BE CARRIED OUT BY A REGISTERED SURVEYOR.
7. CARE IS TO BE TAKEN WHEN EXCAVATING NEAR EXISTING SERVICES. NO MECHANICAL EXCAVATIONS ARE TO BE UNDERTAKEN OVER TELECOM OR ELECTRICAL SERVICES. HAND EXCAVATE IN THESE AREAS.
8. ON COMPLETION OF CONSTRUCTION, ALL DISTURBED AREAS MUST BE RESTORED TO ORIGINAL, INCLUDING KERBS, FOOTPATHS, CONCRETE AREAS, GRAVEL AND GRASSED AREAS AND ROAD PAVEMENTS.
9. MAKE SMOOTH TRANSITION TO EXISTING SURFACES.
10. THE SUB-CONTRACTOR SHALL PROVIDE ALL TEMPORARY DIVERSION DRAINS AND MOUNDS TO ENSURE THAT AT ALL TIMES EXPOSED SURFACES ARE FREE DRAINING AND WHERE NECESSARY EXCAVATE SUMPS AND PROVIDE PUMPING EQUIPMENT TO DRAIN EXPOSED AREAS. ALL WORK TO BE UNDERTAKEN WITH ADHERENCE TO THE REQUIREMENTS OF THE SOIL AND WATER MANAGEMENT PLAN.
11. THESE PLANS SHALL BE READ IN CONJUNCTION WITH APPROVED ARCHITECTURAL, STRUCTURAL, HYDRAULIC AND MECHANICAL DRAWINGS AND SPECIFICATIONS.

BULK EARTHWORKS APPROVALS

1. APPROVAL IS REQUIRED BY ALL RELEVANT AUTHORITIES PRIOR TO COMMENCEMENT OF WORKS ON SITE.

2. THE BULK EARTHWORKS PLANS AND ALL SUPPORTING INFORMATION INCLUDING ALL EROSION AND SEDIMENT CONTROL PLANS SHALL REMAIN ON SITE AT ALL TIMES.

EXISTING SERVICES

1. EXACT LOCATION OF ALL SERVICES SHALL BE LOCATED PRIOR TO THE COMMENCEMENT OF WORK. IT IS THE BUILDERS RESPONSIBILITY TO CONFIRM THE DEPTH AND LOCATION OF SERVICES AND BARNSON PTY LTD ACCEPTS NO RESPONSIBILITY FOR THE COMPLETENESS OR ACCURACY OF THE SERVICES SHOWN.

ADJOINING PROPERTY

1. IT IS THE SUB-CONTRACTOR'S RESPONSIBILITY TO ENSURE THE EFFECTS OF THE EARTHWORKS DO NOT HAVE AN IMPACT TO THE NEIGHBOURING PROPERTIES. SHOULD AN ISSUE ARISE ON SITE, THE SUB-CONTRACTOR SHALL INFORM THE SUPERINTENDENT IMMEDIATELY.

2. THE SUB-CONTRACTOR IS TO RECEIVE WRITTEN PERMISSION PRIOR TO ENTERING OR COMMENCING WORK OUTSIDE THE DEVELOPMENT SITE AND SHALL RECEIVE PERMISSION FROM EASEMENT HOLDERS AND LOCAL AUTHORITY PRIOR TO WORK COMMENCING.

AUTHORITY REGULATIONS

1. HAUL ROUTES FROM SITE IS TO BE AS FOLLOWS: SITE > TO BE CONFIRMED, STAY ON MAIN ROADS.

2. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO WORK COMMENCING AS REQUIRED BY THE COUNCIL APPROVED SEDIMENT & EROSION CONTROL PLAN.

3. ALL VEGETATION PROTECTION AND PRESERVATION MEASURES SHALL BE INSTALLED PRIOR TO COMMENCEMENT OF WORK.

SOIL CONTAMINATION

1. ANY SUSPECTED GROUND OR GROUND WATER CONTAMINATION SHALL BE INVESTIGATED BY A SUITABLY QUALIFIED GEOTECHNICAL ENGINEER.

CONSTRUCTION RECORDS

1 ADEQUATE RECORDS SHALL BE KEPT THROUGHOUT CONSTRUCTION INCLUDING, BUT NOT LIMITED TO;

- LOCATION AND QUANTITY OF EXCESS CUT (DUMP SITE);
- THE AREAS ON SITE OF ALL FILL;
- LEVELS OF STRIPPED SURFACE;
- LOCATION OF ANY VEGETATION REMOVED;
- LOCATION OF SITE CONTAMINATION/UNSUITABLE MATERIAL;
- LEVELS AT COMPLETION OF BULK EARTHWORKS WORK;
- DETAILS OF SUB-GRADE TEST ROLLING (PROOF ROLLING);
- TYPES/SOURCE OF FILL MATERIAL;
- LOCATION LEVEL AND RESULT OF EACH COMPACTION TEST;
- RECORD OF ALL ACTIONS TAKEN ON SITE.

UNSUITABLE MATERIALS

1. REFER TO GEOTECHNICAL ENGINEER, AS REQUIRED, FOR DETERMINATION OF SUITABILITY OF MATERIAL WON ON SITE, OR BORROW PIT TO BE USED AS FILL MATERIAL.

2. ALL UNSUITABLE FILL SHALL BE EITHER REMOVED OR USED ORGANIC MATTER FROM BUILDING AND PAVEMENT AREAS TO AN 3. PRIOR TO ANY EARTHWORKS STRIP TOPSOIL, CONTAINING AS PER THE RECOMMENDATIONS IN THE GEOTECHNICAL REPORT. APPROXIMATE DEPTH OF 0.10M, SPOIL MATERIAL AS DIRECTED BY THE MANAGER. REMOVE RUBBLE, OVER SATURATED MATERIALS AND ALL ORGANIC MATTER.

TESTING/INSPECTIONS

1. ALL TESTING OF EARTHWORKS SHALL BE DONE AT THE SUB-CONTRACTOR'S EXPENSE, UNLESS NOTED OTHERWISE. SHALL A SUB-GRADE OR PROOF ROLL INSPECTION FAIL, OR 2. ADDITIONAL INSPECTIONS BE REQUIRED FOR ANY REASON OUTSIDE, THE SUB-CONTRACTOR WILL WEAR THE COSTS OF ANY SUBSEQUENT RE-INSPECTIONS UNLESS NOTED OTHERWISE.

EARTHWORKS SEQUENCE

1. INSTALL ALL VEGETATION PROTECTION, EROSION AND SEDIMENT CONTROL, AND SITE-SPECIFIC MEASURES PRIOR TO THE COMMENCEMENT OF ANY WORK.

2. STRIP ALL TOPSOIL/ORGANIC MATERIAL FROM CONSTRUCTION AREA AND REMOVE FROM SITE OR STOCKPILE AS DIRECTED BY THE SUPERINTENDENT.

3. EXCAVATE MATERIAL AS INDICATED ON THE BULK EARTHWORKS PLAN.

4. PRIOR TO PLACING FILL, PROOF ROLL EXPOSED SUB-GRADE WITH AN 8 TONNE (MINIMUM) ROLLER OR WATER TRUCK TO DETECT THEN REMOVE SOFT SPOTS, REPLACE UNSUITABLE MATERIAL WITH SUITABLE GRANULAR MATERIAL AND COMPACT TO THE MINIMUM COMPACTION REQUIREMENTS LISTED. (TO BE UNDERTAKEN IN THE PRESENCE OF A CIVIL/GEOTECHNICAL ENGINEER

5. GEOTECHNICAL ENGINEER TO UNDERTAKE SUB-GRADE COMPACTION TESTING TO LEVEL 1, AS PER AS 3798 (2007) AND PROVIDE CBR VALUES FOR ADJUSTMENT TO PAVEMENT DESIGN.

6. FILLING IS TO BE PLACED AND COMPACTED IN MAXIMUM 150MM LAYERS AND TO THE MINIMUM COMPACTION REQUIREMENTS LISTED.

7. AFTER ALL BULK EARTHWORKS HAVE OCCURRED, PROOF ROLL THE FINISHED PAD LEVEL WITH AN 8 TONNE (MINIMUM) ROLLER OR WATER TRUCK TO DETECT, THEN REMOVE SOFT SPOTS, REPLACE UNSUITABLE MATERIAL WITH SUITABLE GRANULAR MATERIAL AND COMPACT TO THE MINIMUM COMPACTION REQUIREMENTS LISTED.

SCOUR PROTECTION NOTES

1. SCOUR PROTECTION IS TO BE PROVIDED AS A 3000mm WIDE DISTRIBUTION x 300mm DEEP D_{50}100mm RIP RAP PLACED ON A SINGLE LAYER OF GEOTEXTILE (BIDIM A34 OR EQUIVALENT)
2. GRADING TO BE AS PER TABLE BELOW

EQUIVALENT SPHERICAL DIAMETER ##	PERCENT (BY WEIGHT) OF RIP RAP OF SMALLER SIZE
1.5 - 2.0 TIMES D_{50}++	100%
D_{50}	50%
0.3 D_{50}	10 - 20%

THE DIAMETER OF A SPHERE WITH AN EQUIVALENT VOLUME TO THE INDIVIDUAL ROCK.

++ D_{50} IS THE MEDIAN RIP RAP DIAMETER OF THE ROCK MIX. (i.e. 50% (BY WEIGHT) IS SMALLER AND 50% (BY WEIGHT) IS LARGER).

TYPICAL EARTHWORKS EMBANKMENT NOTES

1. IT IS THE BUILDER'S RESPONSIBILITY TO ENSURE THAT THE SITE WORKS DO NOT COMPROMISE/UNDERMINE OR PLACE ADDITIONAL SURCHARGE ON ANY EXISTING STRUCTURES.

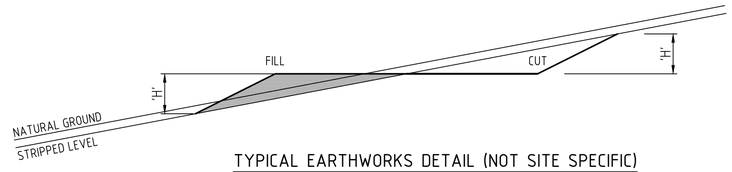
2. BATTER ANGLES MUST COMPLY WITH LOCAL AUTHORITY REQUIREMENTS AND ARE TO CONFORM TO THE ABOVE DIAGRAM.

3. ALL BATTERS SHALL BE PROTECTED FROM EROSION, AND ADEQUATE EROSION AND SEDIMENT CONTROL MEASURES IN PLACE PRIOR TO THE COMMENCEMENT OF WORK.

4. SHOULD THE ABOVE CONDITIONS NOT BE ACHIEVED, BARNSON MUST BE CONTACTED PRIOR TO ANY SITE WORKS BEING UNDERTAKEN.

PAD AND FINISHED LEVEL NOTES

1. ACTUAL FINISHED LEVELS SHOWN ON THIS PLAN ARE FOR THE SUB-CONTRACTOR'S GUIDANCE ONLY. ACTUAL FINISHED LEVELS SHALL BE SET-OUT IN ACCORDANCE WITH ARCHITECTURAL PLANS (REPORT ANY DISCREPANCIES TO BARNSON IMMEDIATELY).



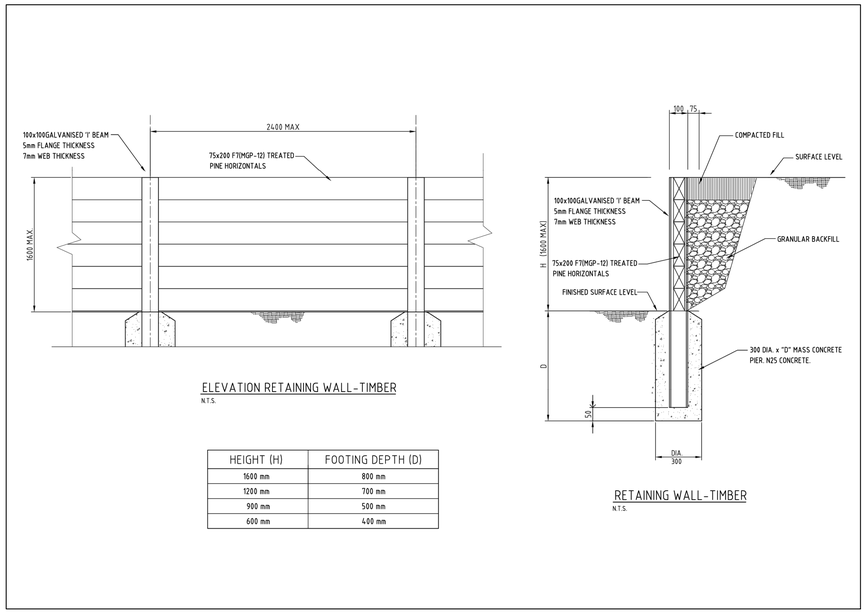
TYPICAL EARTHWORKS DETAIL (NOT SITE SPECIFIC)
NOT TO SCALE

BATTER ANGLES - SHORT TERM

SLOPE = H:L H<2m	MATERIAL TYPE (REFER GEOTECHNICAL REPORT)					
	STABLE ROCK	SAND	SILT	FIRM CLAY	SOFT CLAY	SOFT SOILS
COMPACTED FILL	1:1	1:3	1:4	1:2	N/A	N/A
CUTTING	N/A	1:3	1:4	1:2	1:3	N/A

N/A = REFER TO GEOTECHNICAL REPORT FOR TREATMENT OF UNSUITABLE MATERIAL

ALL BATTER ANGLES ARE APPROXIMATE ONLY AND SHOULD BE CONFIRMED BY A GEOTECHNICAL ENGINEER.



PROPOSED RETAINING WALL - SECTION

barnson.
DESIGN . PLAN . MANAGE

BARNSON PTY LTD

phone 1300 BARNSON (1300 227 676)
email generalenquiry@barnson.com.au
web barnson.com.au

Rev	Date	Description
A	6-02-2024	PRELIMINARY DRAWING
B	18-03-2024	ISSUED FOR DA

Project
CIVIL DESIGN DOCUMENTATION
PROPOSED SUBDIVISION
Site Address
13 FAIRYDALE LANE
MUDGEE NSW 2850
Client
SANDERSON & MACDONALD PTY LTD

Drawing Title
PROPOSED BULK EARTHWORKS SPECIFICATIONS

Design LM
Drawn JS
Check LM
Original Sheet Size A1
Revision B

Certification

Project No 37880
Drawing No C05

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LEGEND (existing)

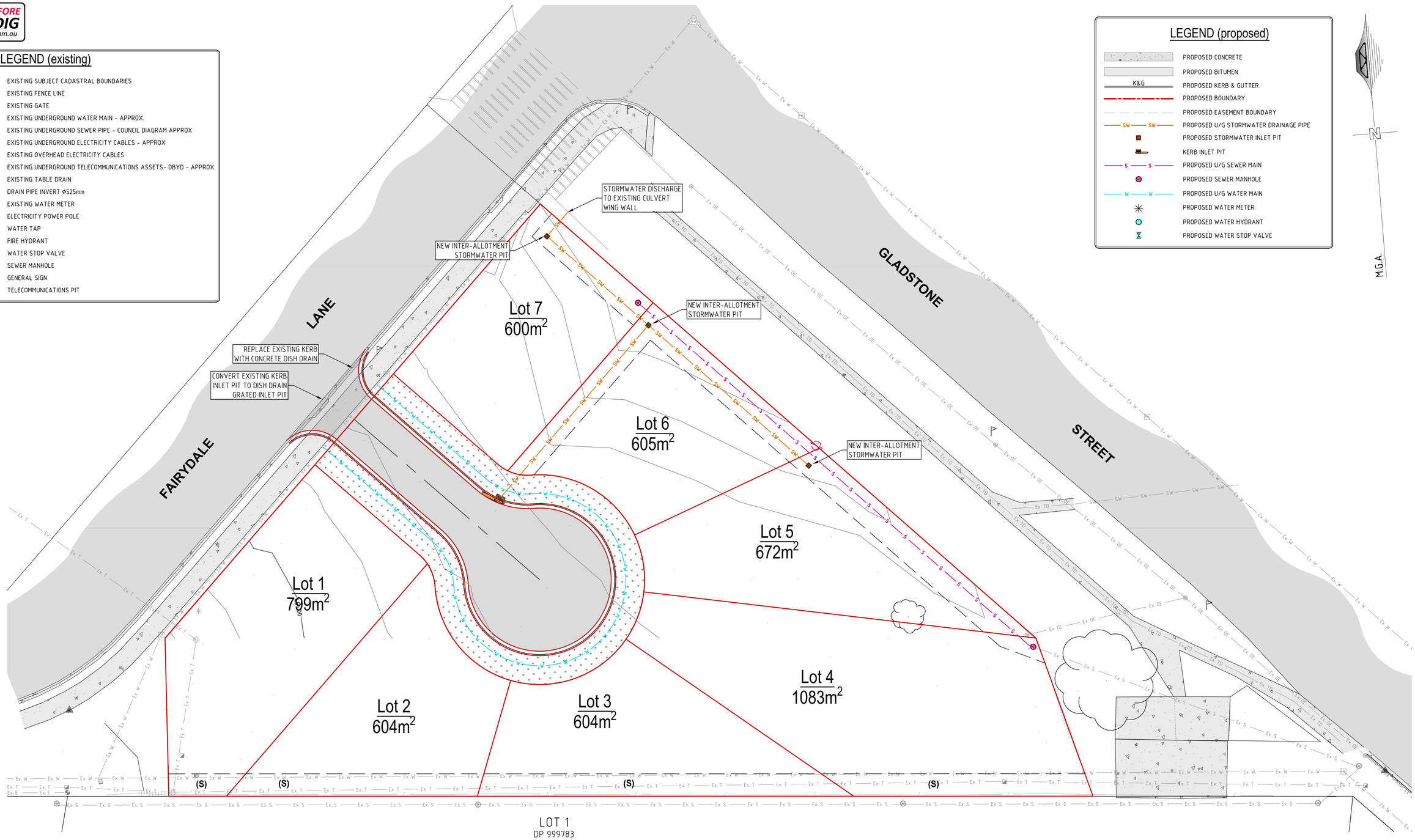
- EXISTING SUBJECT CADASTRAL BOUNDARIES
- EXISTING FENCE LINE
- EXISTING GATE
- Ex. W — EXISTING UNDERGROUND WATER MAIN - APPROX.
- Ex. S — EXISTING UNDERGROUND SEWER PIPE - COUNCIL DIAGRAM APPROX
- Ex. E — EXISTING UNDERGROUND ELECTRICITY CABLES - APPROX
- Ex. OE — EXISTING OVERHEAD ELECTRICITY CABLES
- Ex. T — EXISTING UNDERGROUND TELECOMMUNICATIONS ASSETS- DBYD - APPROX.
- Ex. TD — EXISTING TABLE DRAIN
- Ex. SW — DRAIN PIPE INVERT Ø525mm
- EXISTING WATER METER
- ELECTRICITY POWER POLE
- WATER TAP
- FIRE HYDRANT
- WATER STOP VALVE
- SEWER MANHOLE
- GENERAL SIGN
- TELECOMMUNICATIONS PIT

LEGEND (proposed)

- PROPOSED CONCRETE
- PROPOSED BITUMEN
- K&G — PROPOSED KERB & GUTTER
- PROPOSED BOUNDARY
- PROPOSED EASEMENT BOUNDARY
- SW — SW — PROPOSED U/G STORMWATER DRAINAGE PIPE
- PROPOSED STORMWATER INLET PIT
- KERB INLET PIT
- S — S — PROPOSED U/G SEWER MAIN
- PROPOSED SEWER MANHOLE
- W — W — PROPOSED U/G WATER MAIN
- PROPOSED WATER METER
- PROPOSED WATER HYDRANT
- PROPOSED WATER STOP VALVE

N

M.G.A.



PROPOSED STORMWATER PLAN

REDUCTION RATIO 1:250 @ A1
1:500 @ A3

SCALE 1:250(A1)
0 5 10 15 20 25
SCALE 1:500(A3)

(S) EASEMENT FOR SERVICES 3 WIDE

SUBMISSION FOR DA

barnson
DESIGN . PLAN . MANAGE

BARNSON PTY LTD

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email generalenquiry@barnson.com.au
web barnson.com.au

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Project
CIVIL DESIGN DOCUMENTATION
PROPOSED SUBDIVISION
Site Address
13 FAIRYDALE LANE
MUDGEE NSW 2850
Client
SANDERSON & MACDONALD PTY LTD

Drawing Title
PROPOSED STORMWATER PLAN

Design LM
Drawn JS
Check LM

Original Sheet Size A1
Revision B

Certification

Project No 37880
Drawing No C06

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LEGEND (existing)

- EXISTING SUBJECT CADASTRAL BOUNDARIES
- EXISTING FENCE LINE
- EXISTING GATE
- Ex. W — EXISTING UNDERGROUND WATER MAIN - APPROX.
- Ex. S — EXISTING UNDERGROUND SEWER PIPE - COUNCIL DIAGRAM APPROX
- Ex. E — EXISTING UNDERGROUND ELECTRICITY CABLES - APPROX
- Ex. OE — EXISTING OVERHEAD ELECTRICITY CABLES
- Ex. T — EXISTING UNDERGROUND TELECOMMUNICATIONS ASSETS- DBYD - APPROX.
- Ex. TD — EXISTING TABLE DRAIN
- Ex. SW — DRAIN PIPE INVERT Ø525mm
- EXISTING WATER METER
- ELECTRICITY POWER POLE
- WATER TAP
- FIRE HYDRANT
- WATER STOP VALVE
- SEWER MANHOLE
- GENERAL SIGN
- TELECOMMUNICATIONS PIT

LEGEND (proposed)

- PROPOSED CONCRETE
- PROPOSED BITUMEN
- K&G — PROPOSED KERB & GUTTER
- PROPOSED BOUNDARY
- PROPOSED EASEMENT BOUNDARY
- SW — SW — PROPOSED U/G STORMWATER DRAINAGE PIPE
- PROPOSED STORMWATER INLET PIT
- KERB INLET PIT
- S — S — PROPOSED U/G SEWER MAIN
- PROPOSED SEWER MANHOLE
- W — W — PROPOSED U/G WATER MAIN
- PROPOSED WATER METER
- PROPOSED WATER HYDRANT
- PROPOSED WATER STOP VALVE

A B C D E F G H

Gladstone Street

GLADSTONE STREET

FAIRYDALE LANE

Fairydale Lane

Lot 1 799m²

Lot 2 604m²

Lot 3 604m²

Lot 4 1083m²

Lot 5 672m²

Lot 6 605m²

Lot 7 600m²

(S) (S) (S) (S)

LOT 1 DP 999783

M.G.A.

PROPOSED FLOOD IMPACT PLAN

REDUCTION RATIO 1:250 @ A1
1:500 @ A3

SCALE 1:250(A1)
0 5 10 15 20 25
SCALE 1:500(A3)
0 5 10 15 20 25

(S) EASEMENT FOR SERVICES 3 WIDE

SUBMISSION FOR DA

barnson
DESIGN . PLAN . MANAGE

BARNSON PTY LTD

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Project
CIVIL DESIGN DOCUMENTATION
PROPOSED SUBDIVISION
Site Address
13 FAIRYDALE LANE
MUDGEE NSW 2850
Client
SANDERSON & MACDONALD PTY LTD

Drawing Title
PROPOSED FLOOD IMPACT PLAN

Design LM
Drawn JS
Check LM

Original Sheet Size A1
Revision B

Certification

Project No 37880
Drawing No C07

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LEGEND (existing)

- EXISTING SUBJECT CADASTRAL BOUNDARIES
- EXISTING FENCE LINE
- EXISTING GATE
- Ex. W — EXISTING UNDERGROUND WATER MAIN - APPROX.
- Ex. S — EXISTING UNDERGROUND SEWER PIPE - COUNCIL DIAGRAM APPROX
- Ex. E — EXISTING UNDERGROUND ELECTRICITY CABLES - APPROX
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- Ex. T — EXISTING UNDERGROUND TELECOMMUNICATIONS ASSETS- DBYD - APPROX.
- Ex. TD — EXISTING TABLE DRAIN
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- WATER TAP
- FIRE HYDRANT
- WATER STOP VALVE
- SEWER MANHOLE
- GENERAL SIGN
- TELECOMMUNICATIONS PIT

LEGEND (proposed)

- PROPOSED CONCRETE
- PROPOSED BITUMEN
- K&G — PROPOSED KERB & GUTTER
- PROPOSED BOUNDARY
- PROPOSED EASEMENT BOUNDARY
- SW — SW — PROPOSED U/G STORMWATER DRAINAGE PIPE
- PROPOSED STORMWATER INLET PIT
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- PROPOSED WATER HYDRANT
- PROPOSED WATER STOP VALVE

M.G.A.

FAIRYDALE LANE

GLADSTONE STREET

Lot 1
799m²

Lot 2
604m²

Lot 3
604m²

Lot 4
1083m²

Lot 5
672m²

Lot 6
605m²

Lot 7
600m²

LOT 1
DP 999783

NEW SMH A/1
LID RL: 456.000m
INV RL: 454.987m

PROPOSED RETAINING WALL (RW). SEE 37880-C05 FOR DETAILS

NEW 150mmØ uPVC SEWER LINE AT 1% FALL

NEW SMH A/0
TO EXISTING I0
LID RL: 455.617m
INV RL: 454.257m

NEW JUNCTIONS TO EXISTING SEWER

EXISTING SMH
LID RL: 457.138m
INV RL: 455.602m

EXISTING SMH
LID RL: 456.145m
INV RL: 455.061m

EXISTING SMH
LID RL: 455.961m
INV RL: 454.419m

EXISTING SMH
LID RL: 455.978m
INV RL: 453.972m

(S) EASEMENT FOR SERVICES 3 WIDE

PROPOSED SEWER PLAN

REDUCTION RATIO 1:250 @ A1
1:500 @ A3

SCALE 1:250(A1)
0 5 10 15 20 25
SCALE 1:500(A3)

SUBMISSION FOR DA

barnson
DESIGN . PLAN . MANAGE

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CIVIL DESIGN DOCUMENTATION
PROPOSED SUBDIVISION
Site Address
13 FAIRYDALE LANE
MUDGEE NSW 2850
Client
SANDERSON & MACDONALD PTY LTD

Drawing Title
PROPOSED SEWER PLAN

Design LM
Drawn JS
Check LM

Original Sheet Size A1
Revision B

Certification

Project No 37880
Drawing No C08

BEDDING NOTES

1. THE MINIMUM DEPTH TO TOP OF PIPE SHALL BE 1000mm, EXCEPT UNDER ROAD PAVEMENT WHERE MINIMUM COVER TO TOP OF PIPE SHALL BE 1200mm MINIMUM UNLESS SHOWN OTHERWISE. PIPES WITH LESS COVER THAN THESE LIMITS TO BE CONCRETE ENCASED, AND DICL UNDER ROADS.

2. GRADES OF GRAVITY SEWER NOT TO BE FLATTER THAN 1:179 (0.55%) FOR 150mm DIAMETER PIPES AS PER WSA-2014.

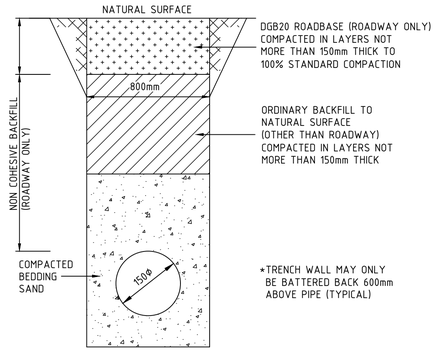
3. MANHOLES SHALL BE PLACED AT EACH CHANGE IN DIRECTION OR GRADE OF THE PIPE LINE AT INTERVALS ALONG THE LINE NOT EXCEEDING 80m.

FIELD NOTES

1. BEARINGS AND DISTANCES ARE BY TITLE AND/OR DEED ONLY. NO BOUNDARY INVESTIGATION HAS BEEN CARRIED OUT.

2. SERVICES SHOWN HEREON HAVE BEEN DETERMINED FROM VISUAL EVIDENCE ONLY. PRIOR TO ANY DEMOLITION, EXCAVATION OR CONSTRUCTION ON THE SITE THE RELEVANT AUTHORITY SHOULD BE CONTACTED TO ESTABLISH DETAILED LOCATION AND DEPTH.

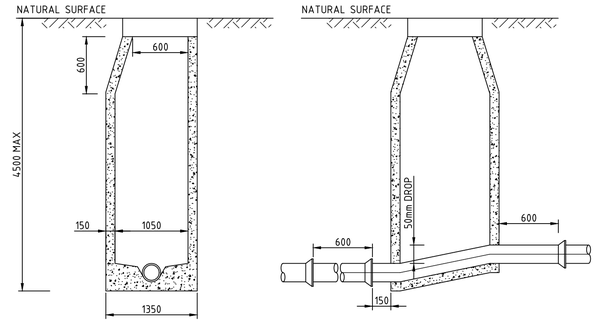
3. ALL HEIGHTS TO AHD (AUSTRALIAN HEIGHT DATUM).



TYPICAL TRENCH SECTION

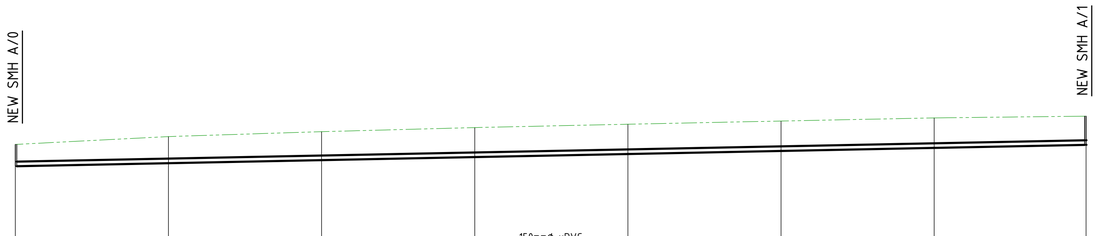
N.T.S.

* INSTALLATION OF UPVC PIPES SHALL TO CONFORM TO AS2032-1977 "INSTALLATION OF UPVC PIPE SYSTEMS", AS2566-1998 "BURIED FLEXIBLE PIPELINES", WSA-02 2002 AND MANUFACTURERS INSTRUCTIONS.



TYPICAL MANHOLE SECTION (150mmØ)

N.T.S.



PIPE TYPE				150mmØ uPVC				
PIPE GRADE				1.0%				
DEPTH TO INVERT	-0.713m	-0.869m	-0.929m	-0.963m	-0.972m	-0.976m	-0.979m	-0.936m
DESIGN	454.29	454.39	454.49	454.59	454.69	454.79	454.89	454.99
NATURAL	455.00	455.26	455.42	455.55	455.66	455.76	455.87	455.92
Station	0.0	10.0	20.0	30.0	40.0	50.0	60.0	69.9

Scale Horizontal 1:200 Vertical 1:100

SEWER LONGSECTION

SUBMISSION FOR DA

barnson
DESIGN . PLAN . MANAGE

BARNSON PTY LTD

phone 1300 BARNSON (1300 227 676)
email generalenquiry@barnson.com.au
web barnson.com.au

Rev	Date	Description
A	6-02-2024	PRELIMINARY DRAWING
B	18-03-2024	ISSUED FOR DA

Project
CIVIL DESIGN DOCUMENTATION
PROPOSED SUBDIVISION
Site Address
13 FAIRYDALE LANE
MUDGEE NSW 2850
Client
SANDERSON & MACDONALD PTY LTD

Drawing Title
PROPOSED SEWER LONGSECTION AND DETAILS

Design LM
Drawn JS
Check LM
Original Sheet Size A1
Revision B

Certification

Project No 37880
Drawing No C09

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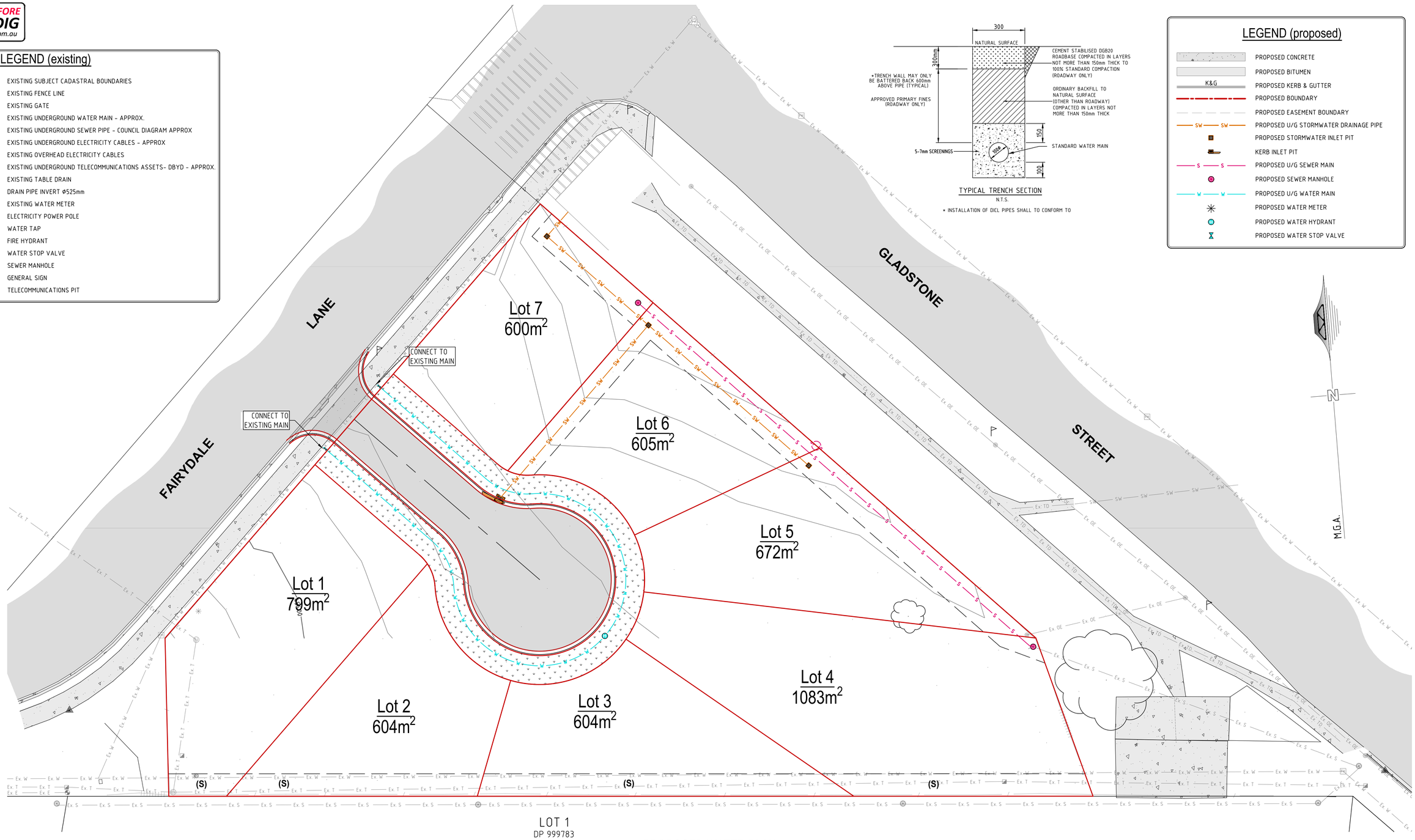
LEGEND (existing)

- EXISTING SUBJECT CADASTRAL BOUNDARIES
- EXISTING FENCE LINE
- EXISTING GATE
- Ex. W — Ex. W — EXISTING UNDERGROUND WATER MAIN - APPROX.
- Ex. S — Ex. S — EXISTING UNDERGROUND SEWER PIPE - COUNCIL DIAGRAM APPROX
- Ex. E — Ex. E — EXISTING UNDERGROUND ELECTRICITY CABLES - APPROX
- Ex. OE — Ex. OE — EXISTING OVERHEAD ELECTRICITY CABLES
- Ex. T — Ex. T — EXISTING UNDERGROUND TELECOMMUNICATIONS ASSETS- DBYD - APPROX.
- Ex. TD — Ex. TD — EXISTING TABLE DRAIN
- Ex. SW — Ex. SW — DRAIN PIPE INVERT Ø525mm
- EXISTING WATER METER
- ELECTRICITY POWER POLE
- WATER TAP
- FIRE HYDRANT
- WATER STOP VALVE
- SEWER MANHOLE
- GENERAL SIGN
- TELECOMMUNICATIONS PIT



TYPICAL TRENCH SECTION
N.T.S.
* INSTALLATION OF DICL PIPES SHALL TO CONFORM TO

LEGEND (proposed)

- PROPOSED CONCRETE
- PROPOSED BITUMEN
- K&G — PROPOSED KERB & GUTTER
- PROPOSED BOUNDARY
- PROPOSED EASEMENT BOUNDARY
- SW — SW — PROPOSED U/G STORMWATER DRAINAGE PIPE
- PROPOSED STORMWATER INLET PIT
- KERB INLET PIT
- S — S — PROPOSED U/G SEWER MAIN
- PROPOSED SEWER MANHOLE
- W — W — PROPOSED U/G WATER MAIN
- PROPOSED WATER METER
- PROPOSED WATER HYDRANT
- PROPOSED WATER STOP VALVE

PROPOSED WATER PLAN

REDUCTION RATIO 1:250 @ A1
1:500 @ A3

SCALE 1:250(A1)
0 5 10 15 20 25
SCALE 1:500(A3)

(S) EASEMENT FOR SERVICES 3 WIDE

SUBMISSION FOR DA

barnson.
DESIGN . PLAN . MANAGE

BARNSON PTY LTD

phone 1300 BARNSON (1300 227 676)
email generalenquiry@barnson.com.au
web barnson.com.au

Rev	Date	Description
A	6-02-2024	PRELIMINARY DRAWING
B	18-03-2024	ISSUED FOR DA

Project
CIVIL DESIGN DOCUMENTATION
PROPOSED SUBDIVISION
Site Address
13 FAIRYDALE LANE
MUDGEE NSW 2850
Client
SANDERSON & MACDONALD PTY LTD

Drawing Title
PROPOSED WATER PLAN

Design LM
Drawn JS
Check LM

Original Sheet Size A1
Revision B

Certification

Project No 37880
Drawing No C10

barnson.

APPENDIX C

Traffic Impact Assessment

barnson.
DESIGN . PLAN . MANAGE

Traffic Impact Assessment

Client: Buzz Sanderson

Site Address: 13 Fairydale Lane, Mudgee, NSW 2850

18 March 2023

Our Reference : 37780-TIA_0

barnson.
DESIGN . PLAN . MANAGE

1300 BARNSON (1300 227 676)
generalenquiry@barnson.com.au
abn. 43 088 342 625

to.
Buzz Sanderson
13 Fairydale Lane
Mudgee NSW 2850

date.
18.03.2023

reference.
37780-TIA_0

Dear **Buzz Sanderson**,

13 Fairydale Lane, Mudgee, NSW 2850

Traffic Impact Assessment

With reference to the above, please find the following Traffic Impact Assessment report regarding the proposed residential subdivision.

If you have any further enquiries regarding this matter, please contact the undersigned.

Yours faithfully

BARNSON PTY LTD

[redacted]

Luke Morris
B.E. MIEAust CPEng (NPER)
Director

DISCLAIMER

This report has been prepared solely for **Buzz Sanderson** in accordance with the scope provided by the client and for the purpose(s) as outlined throughout this report.

Barnson Pty Ltd accepts no liability or responsibility for or in respect of any use or reliance upon this report and its supporting material by anyone other than the client.

Project Name:	Traffic Impact Assessment for 13 Fairydale Lane, Mudgee, NSW 2850
Client:	**Buzz Sanderson**
Project Number:	37780
Report Reference:	37780-TIA_0
Date:	18 March 2023

Reviewed by:	**Prepared by:**
	
Luke Morris B.E. MIEAust CPEng (NPER) Director	Eden Gliksman B.Eng (Hons) Civil Engineer

Contents

List of Figures

List of Tables

EXECUTIVE SUMMARY

Barnson Pty Ltd has been engaged by Sanderson & Macdonald Pty Ltd to prepare a Traffic Impact Assessment (TIA) in support of a Development Application (DA) for a Torrens Title Subdivision (2 Lots into 7 Lots) of Lots 9 and 10 DP 1218673 known as 13 Fairydale Lane, Mudgee.

The subject site is located on the south-eastern side of Fairydale Lane and has a combined area of 5,897m². The site is vacant land and contains weeds and grasslands throughout.

The project will consist of subdividing the site into seven (7) residential lots and establishing a new access road and associated infrastructure.

The following conclusions have been drawn as a result of this assessment:

- Traffic generated by the proposed development contributes to approximately 3.15% increase from existing Fairydale Lane traffic.
- Fairydale Lane currently operates at an acceptable level of service and will continue to do so with the traffic generated by the proposed development. No upgrade works are required.
- The intersection of the new cul-de-sac and Fairydale Lane warrants basic left / basic right turn treatments, which are satisfied by the existing arrangement.

1. INTRODUCTION

1.1. Project Outline

The proposed development is a seven-lot subdivision including installation of associated services, as well as a new access road.

1.2. Purpose and Scope

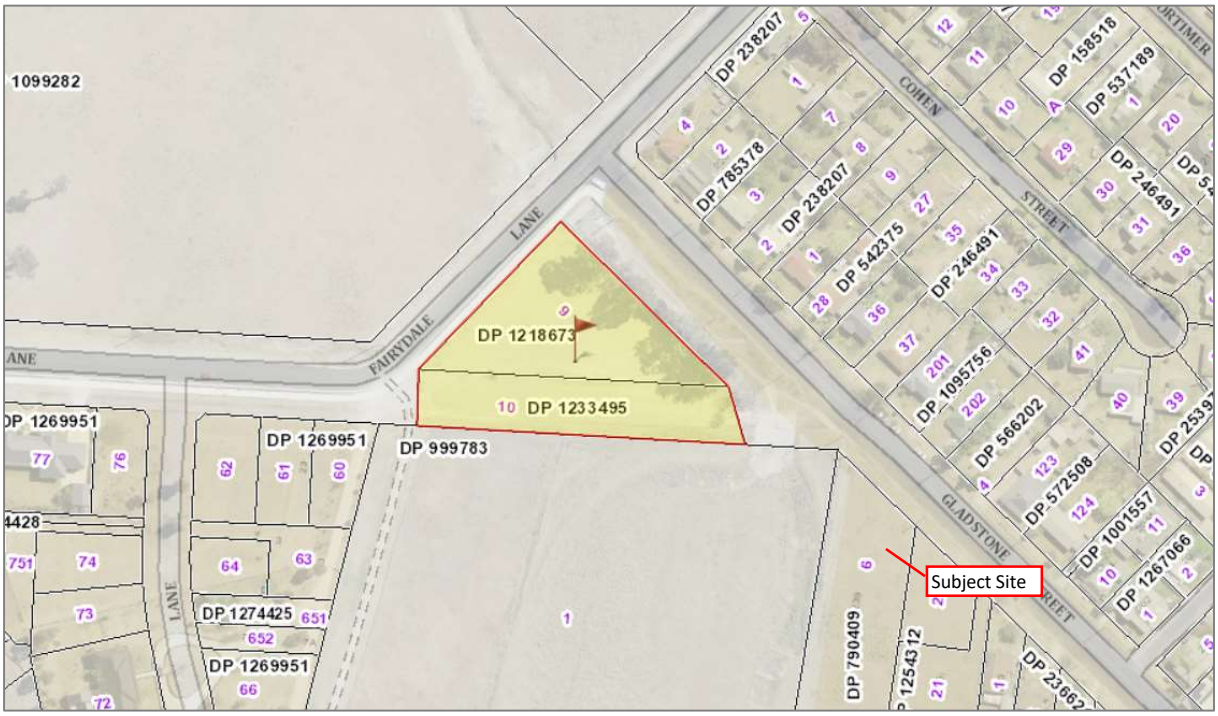
This Traffic Impact Assessment (TIA) has been commissioned by the applicant as part of the DA for the subject site and provides an assessment of the traffic implications of the proposed expansion on surrounding traffic, transport and local road infrastructure.

This TIA has been prepared in accordance with the relevant Australian Standards, the RTA Guide to Traffic Generating Developments (2002) and Mid-Western Regional Council's policies and plans.

2. EXISTING CONDITIONS

2.1. Location and Site

The subject site of this application is Lots 9 and 10 DP 1218673, known as 13 Fairydale Lane, Mudgee. The site is located on the southeastern side of Fairydale Lane, in the township of Mudgee, as shown in **Figure 1** below.



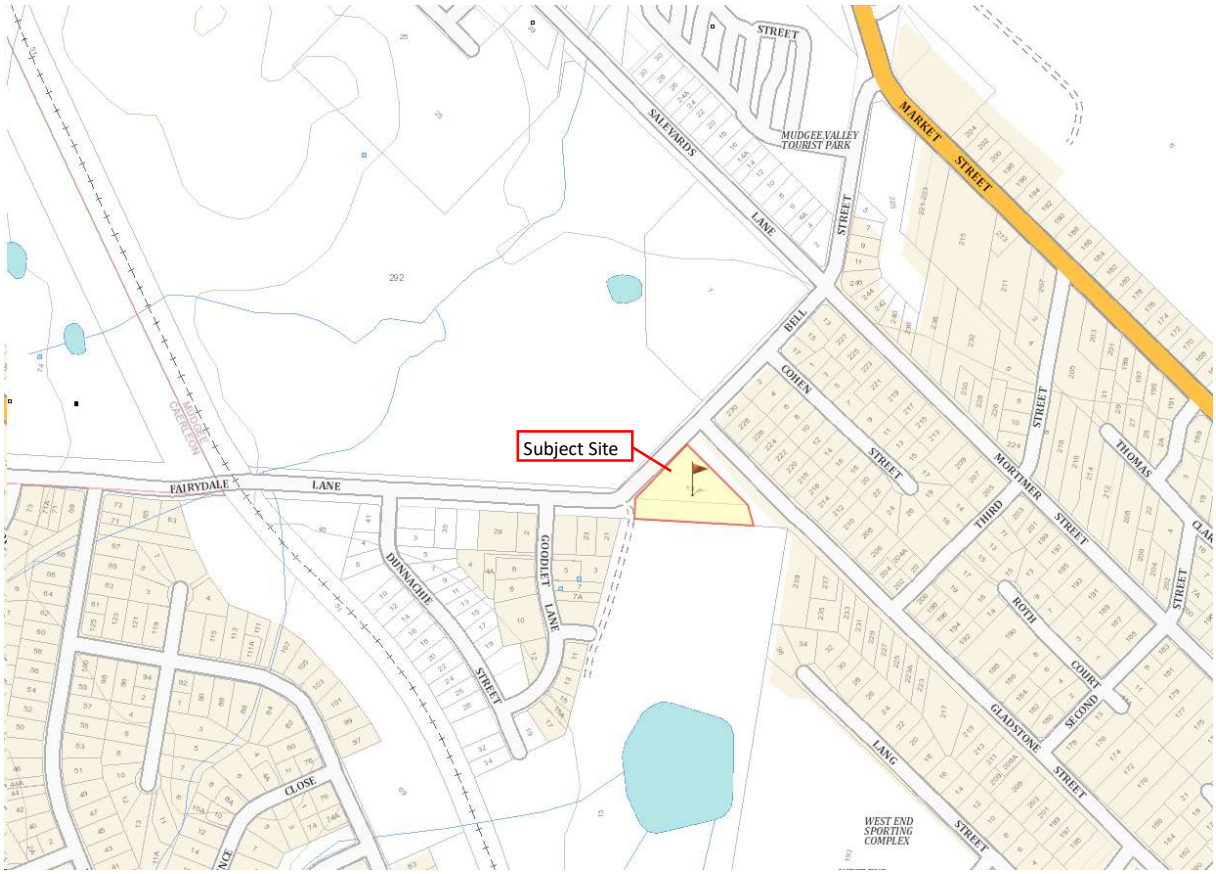
Source: SIX Maps e-Topo, NSW Spatial Information Exchange, 2021

Figure 1 – Site aerial photograph

2.2. Existing Traffic Hierarchy

The subject site has direct access to Fairydale Lane, which is classified as a collector road. The road hierarchy is shown in **Figure 2** below.

Fairydale Lane helps link southwestern Mudgee with the township centre. The speed limit on Fairydale Lane is 50km/h, and the road reserve width is 20m with 11m wide carriageway and roll-type kerb on both sides as shown in **Figures 3 and 4** below.



Source: SIX Maps e-Topo, NSW Spatial Information Exchange, 2021

Figure 2 – Existing road hierarchy

Figure 3 – South West view of the front of the site along Fairydale Lane

Figure 4 – North east view of the front of the site along Fairydale Lane

2.3. Traffic Volumes

Traffic counts for Fairydale Lane were obtained by a manual survey. Counts were taken at the site frontage on Friday 8th March and Monday 11th March in both directions at 8.00am – 9.00am and 5.00pm – 6.00pm. The raw data is attached in **Appendix A** and summarised below in **Table 1**.

Table 1 – Existing traffic volumes on Fairydale Lane

Date		North			South			Total
		Bike	Car	Trucks	Bike	Car	Trucks	
Friday 8th May 2023	Morning	2	101	5	1	63	4	176
	Evening	0	87	1	1	102	0	191
	Total	2	188	6	2	165	4	367
Mon 11th March 2024	Morning	0	85	0	0	49	4	138
	Evening	0	89	0	1	104	1	195
	Total	0	174	0	1	153	5	333

For the purposes of analysis, a peak hourly volume of 200 vph has been adopted.

2.4. Public Transport

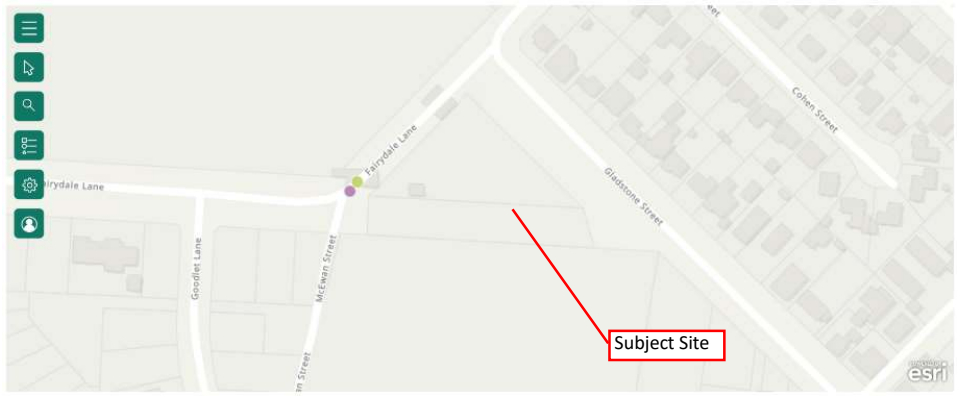
There is no public transport or school bus schedule that pass the Fairydale Lane frontage as shown in **Figure 5** below, however the Ogden's Public Bus Route F and G access Gladstone Street and Bell Street adjacent the site.

Source: Mudgee Interlink, Ogdens Coaches, 2021

Figure 5 – Mudgee bus routes

2.5. Traffic Safety

Traffic accident history of the area has been obtained from the TfNSW Centre for Road Safety. In the five years between 2018 and 2023, there were two (2) recorded in the vicinity of the subject site, both occurring at the bend in the alignment of Fairydale Lane, as shown in **Figure 6** below. The minor hazard associated with the existing bend in the road alignment will not be exacerbated or significantly impacted by the introduction of the proposed access road.



Reporting year	Crash Id	Degree of crash	RUM - code	RUM - description	Type of location	Natural lighting	Longitude	Latitude	Number killed	Number injured
2021	1275655	Minor/Other Injury	86	Off left/left bend	2-way undivided	Darkness	149.568256	-32.587836		1
2022	1299841	Serious Injury	84	Off right/left bend	2-way undivided	Daylight	149.568302	-32.587791		1

Source: Crash and Casualty Statistics, Centre for Road Safety, Transport for NSW, 2024

Figure 6 – Map of traffic accident history

3. PROPOSED DEVELOPMENT

The proposed development is a seven-lot residential subdivision, including provision of associated services and a new access road.

3.1. Traffic Generation

Traffic generation rates for the proposed seven residential lots have been obtained from the Roads and Traffic Authority Guide to Traffic Generating Developments (2002).

Table 2 - Traffic generation from proposed subdivision

Daily vehicle trips per dwelling[1] (vpd)	9.0
Peak hour vehicle trips per dwelling[1] (vph)	0.85
Number of new dwellings	7
Total daily vehicle trips (vpd)	63
Total peak hour vehicle trips (vph)	6
Existing Fairydale Lane daily traffic (vpd)	2,000
Existing Fairydale Lane peak hour traffic (vph)	200
Increase in daily traffic	3.15%
Increase in peak hour traffic	3.00%

1. Guide to Traffic Generating Developments, Roads & Traffic Authority, 2002

In the event that the sub-division featured dual-occupancies throughout, the increase in daily traffic on Fairydale Lane would be approximately 6.3%.

3.2. Mid-Block Level of Service

The peak hourly flows for a mid-block road at various Levels of Service (LoS) are set out in **Table 3** below.

Table 3 - Urban road peak hour flows per direction

Level of Service	One Lane (vph)
A	200
B	380
C	600
D	900
E	1400

Source: Guide to Traffic Generating Developments, Roads & Traffic Authority, 2002

From the above, Fairydale Lane experiences moderate traffic flows and currently operates comfortably at a LoS A and will continue to do so following development. Therefore, no upgrades are required to Fairydale Lane to accommodate traffic generated by the development.

In the event that the sub-division featured dual-occupancies throughout, Fairydale Lane would still experience moderate traffic flows and currently operates comfortably at a LoS A and will continue to do so.

3.3. Intersection Analysis

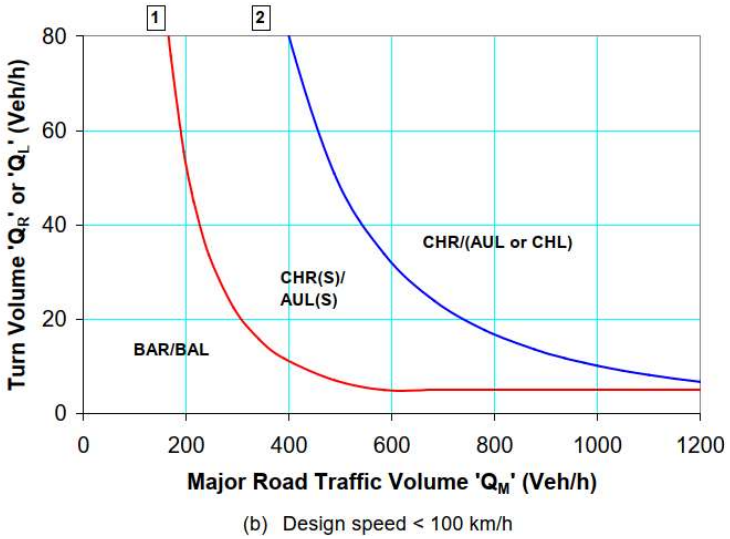
Turn warrants have been determined from the peak traffic flows summarised below, with a conservative assumption that 100% of proposed traffic is turning in the same direction:

Table 4 - Proposed peak hour turning volumes

Intersection	Existing traffic northbound[2]	Existing traffic southbound[2]	Proposed left turning traffic[3]	Traffic volume parameter Q_{ML}[4]	Proposed right turning traffic[3]	Traffic volume parameter Q_{MR}[4]
Fairydale Lane	100	100	6	100	6	200

1. All figures given in vehicles per hour (vph)
2. The case shown assumes existing traffic is split evenly in both directions, however the same recommendation applies to different traffic splits
3. Conservative assumption that 100% of traffic generated by the development turns in the same direction
4. Traffic volume parameters Q_{ML} and Q_{MR} have been calculated as prescribed by the Guide to Road Design Part 4: Intersections and Crossings, Austroads, 2017, Figure A 11

From these volumes and the warrants illustrated in **Figure 7** below, the appropriate turn treatment for the intersection is a Basic Right (BAR) / Basic Left (BAL) arrangement, which is satisfied by the existing intersection configuration.



(b) Design speed < 100 km/h

Source: Figure A 10, Guide to Road Design Part 4, Austroads, 2017

Figure 7 – Warrants for turn treatments at unsignalised intersections

With an estimated maximum of 6 vehicle movements per hour from the site, this equates to approximately one movement every 10 minutes. These turns will be easily accommodated within the gaps in traffic flow on Fairydale Lane.

In the event that the sub-division featured dual-occupancies throughout, there would be approximately 12 vehicle movements per hour from the site. This equates to approximately one movement every 5 minutes. One again, these turns will be easily accommodated within the gaps in traffic flow on Fairydale Lane.

3.4. Cumulative Impacts

At the time of preparing this report, there were no other traffic generating developments in the vicinity of the subject site that would influence the traffic counts.

4. CONCLUSION

Barnson Pty Ltd has been engaged by Sanderson & Macdonald Pty Ltd to prepare a Traffic Impact Assessment (TIA) in support of a Development Application (DA) for a Torrens Title Subdivision (2 Lots into 7 Lots) of Lots 9 and 10 DP 1218673 known as 13 Fairydale Lane, Mudgee.

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Should you require any further information or clarification regarding this matter, please do not hesitate to contact the undersigned.

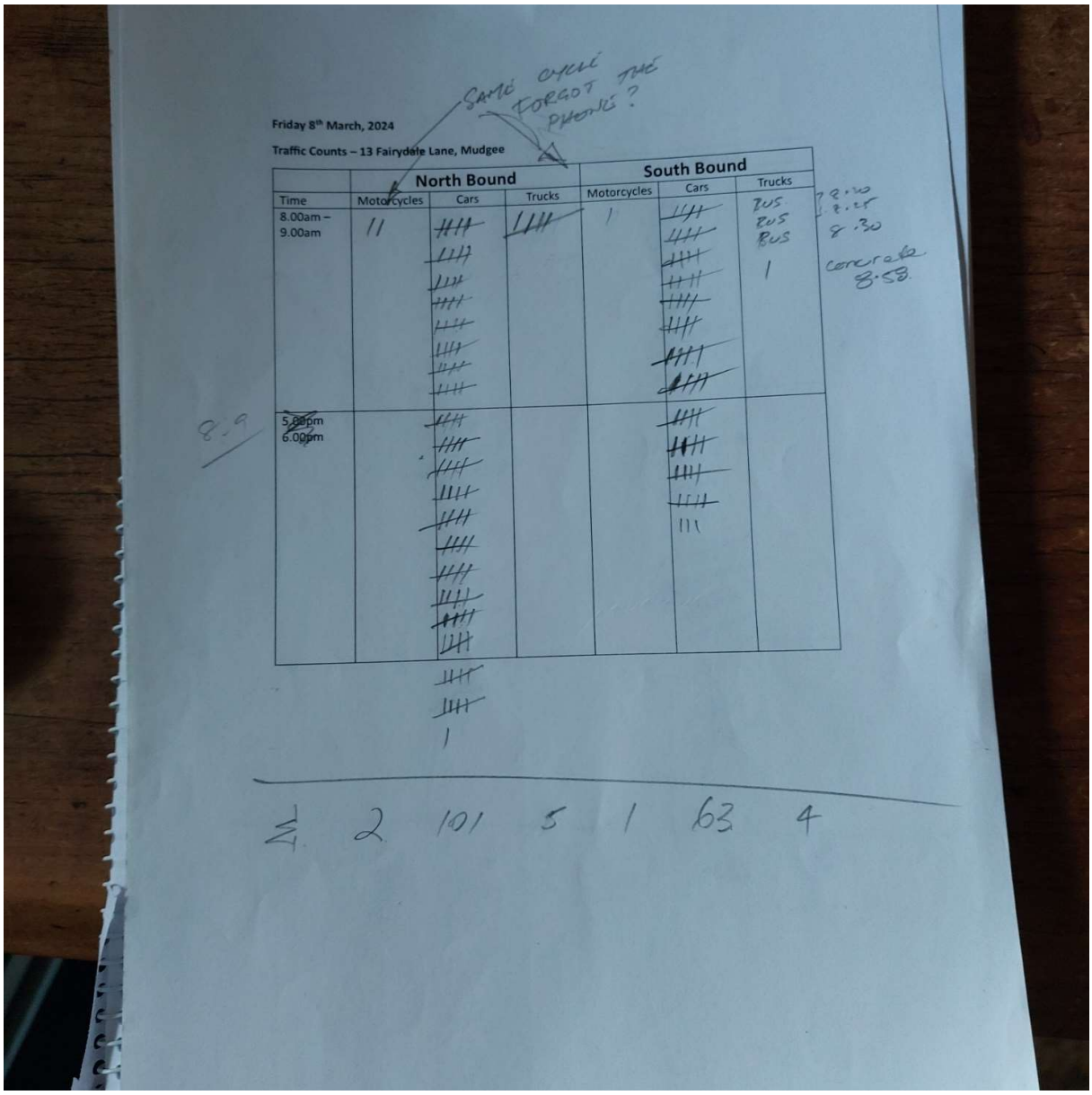
Yours faithfully

BARNSON PTY LTD

[redacted]

Luke Morris
B.E. MIEAust CPEng (NPER)
Director

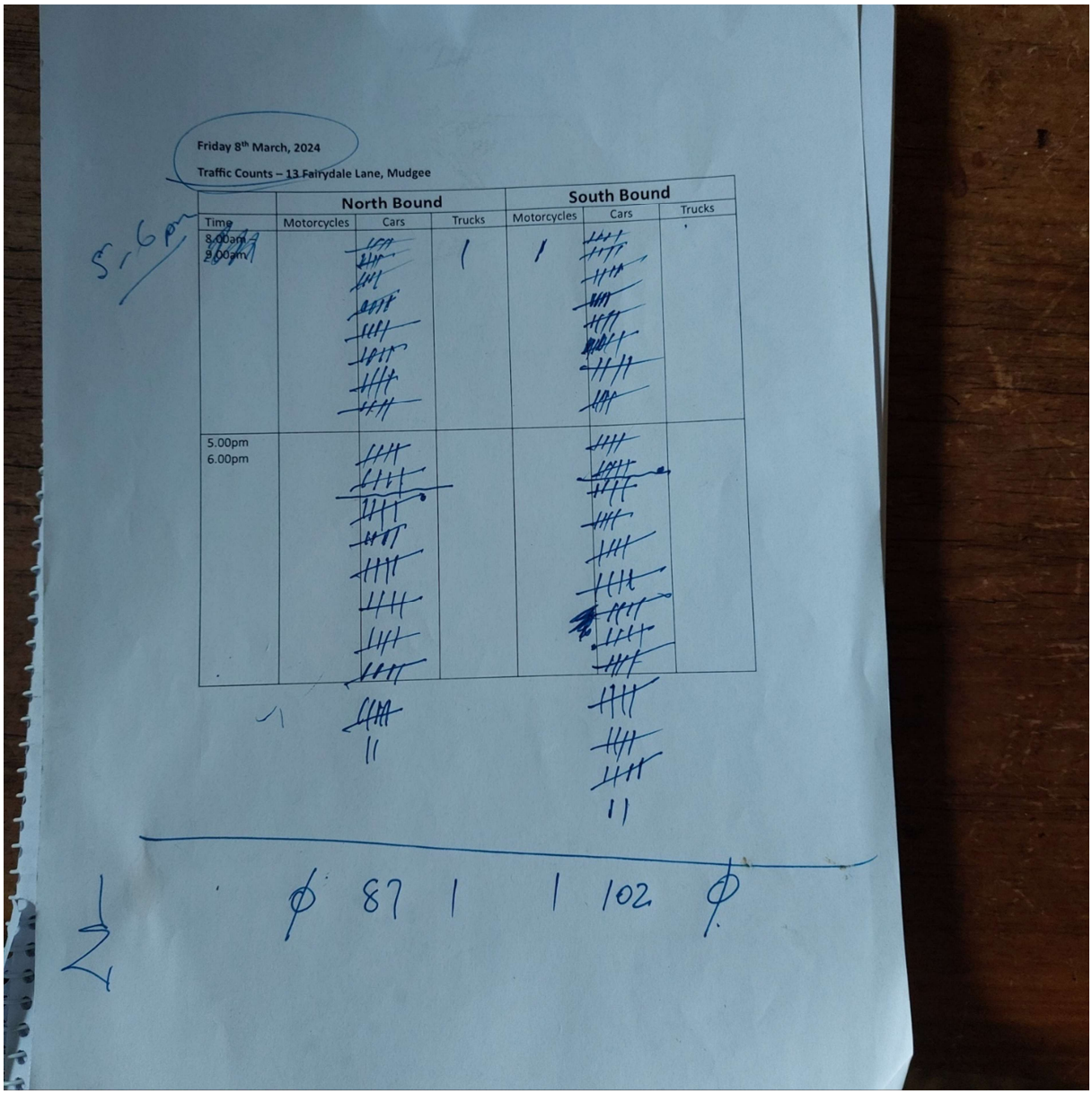
APPENDIX A – RAW TRAFFIC DATA



Friday 8th March, 2024

Traffic Counts – 13 Fairydale Lane, Mudgee

	North Bound			South Bound		
Time	Motorcycles	Cars	Trucks	Motorcycles	Cars	Trucks
8.00am – 9.00am	11	101	5	1	63	4
5.00pm 6.00pm	2					



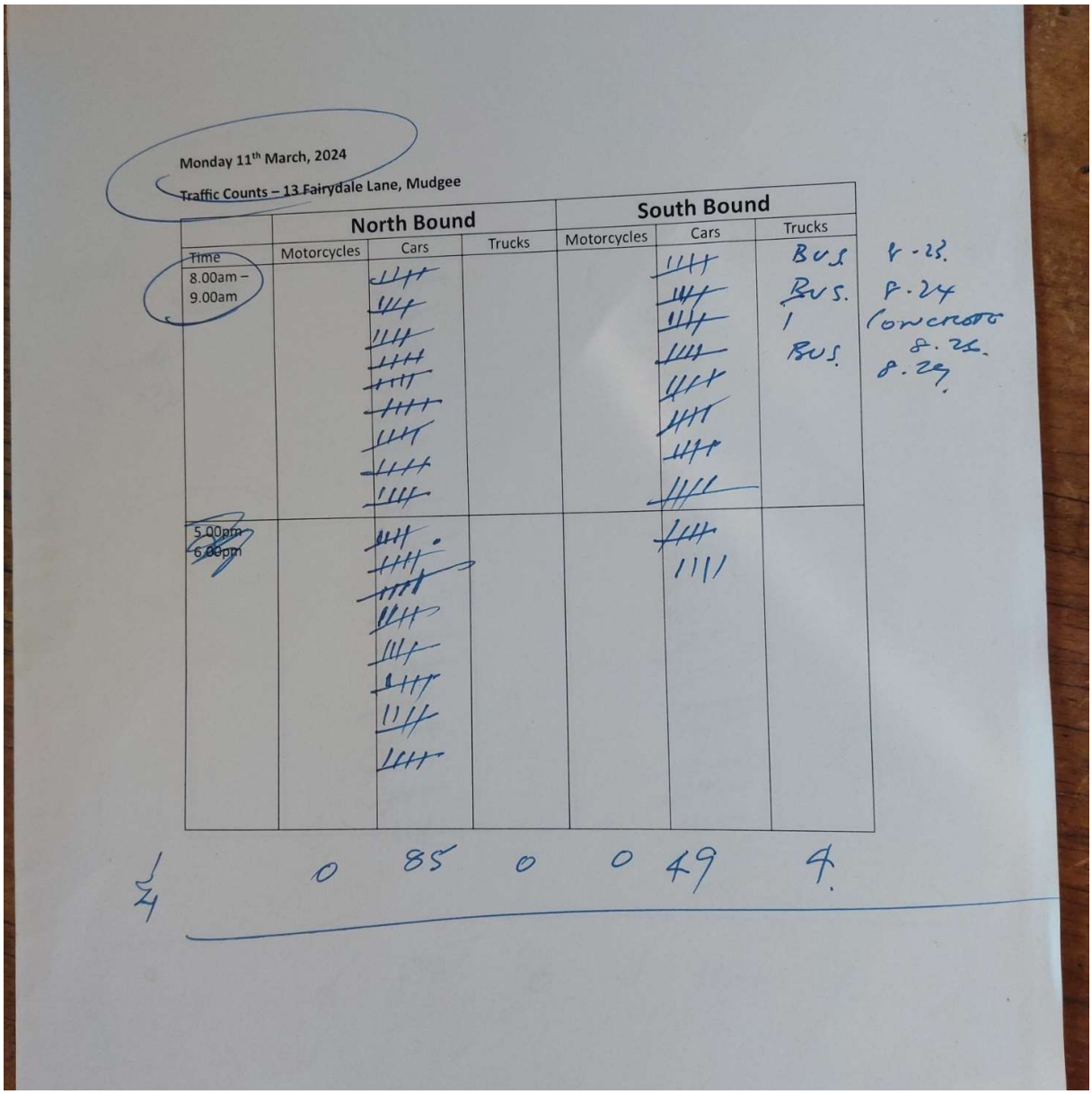
Friday 8th March, 2024

Traffic Counts – 13 Fairydale Lane, Mudgee

5, 6pm

Time	North Bound			South Bound		
	Motorcycles	Cars	Trucks	Motorcycles	Cars	Trucks
8.00am 9.00am			1	1		
5.00pm 6.00pm						

87 | 102



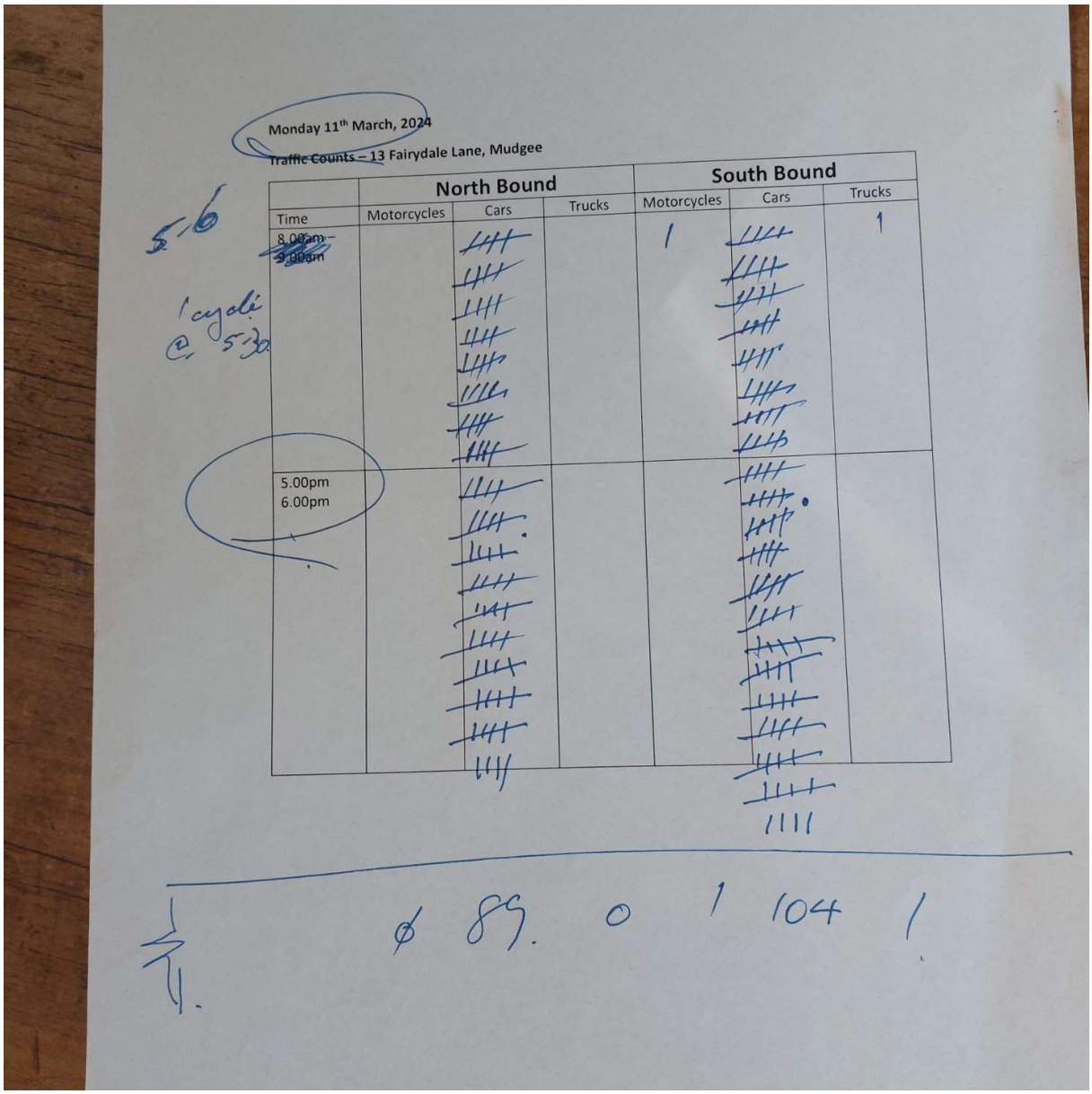
Monday 11th March, 2024

Traffic Counts – 13 Fairydale Lane, Mudgee

	North Bound			South Bound		
Time	Motorcycles	Cars	Trucks	Motorcycles	Cars	Trucks
8.00am – 9.00am						
5.00pm 6.00pm						

Bus. 8.23. Bus. 8.24 Concrete 8.25. Bus. 8.29.

1/4 0 85 0 0 49 4.



Monday 11th March, 2024

Traffic Counts – 13 Fairydale Lane, Mudgee

Time	North Bound			South Bound		
	Motorcycles	Cars	Trucks	Motorcycles	Cars	Trucks
8.00am – 9.00am				1		1
5.00pm 6.00pm						

5-6

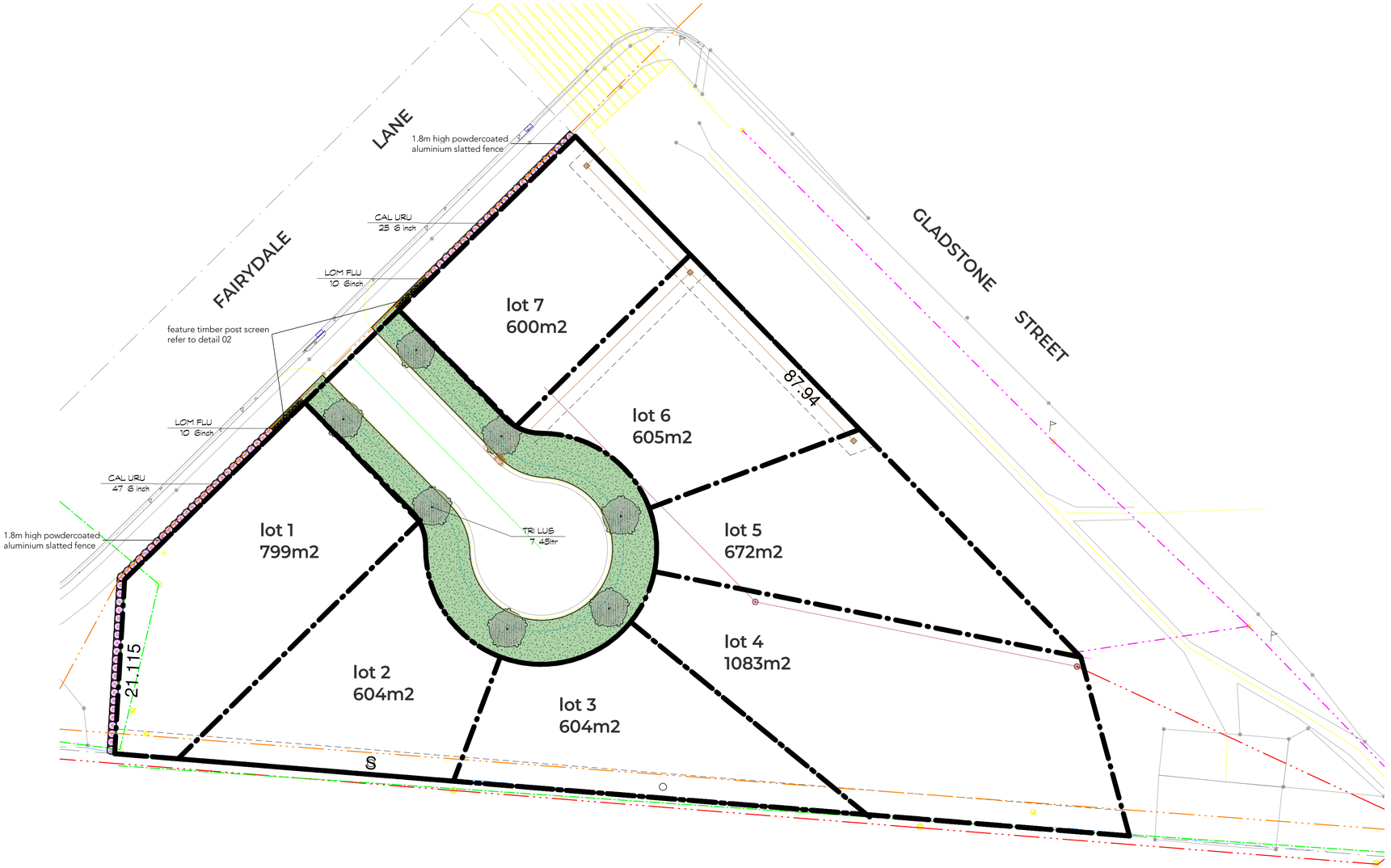
1 cyclist @ 5:30

89 0 1 104 1

barnson.

APPENDIX D

Landscape Design



01 SITE LAYOUT

Scale 1 : 300 @ A1

0 3000 6000 12000 30000

N

PROPOSED SITE LEGEND

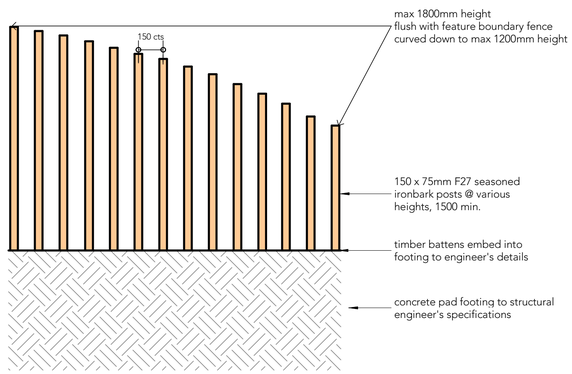
- new asphaltic concrete carpark area for more information refer to civil engineer's design
- new concrete kerb & gutter for more information refer to civil engineer's design
- proposed grassed area (natural or synthetic tbc)
- proposed garden area
- 1800mm high aluminium slatted fence - horizontal - timber look

Plant Schedule

Symbol	Plant Code	Botanical Name	Common Name	Size	Container	Remarks	Count
Trees							
	TRI LUS	Tristaniopsis laurina `DOW10` TM	Luscious Water Gum	45ltr	Pot	H:8m W:7m	7
							7
Shrubs							
	CAL URU	Callistemon x `CNU19`	Fluro Burst™ Bottlebrush	6 inch	Pot	H:1.5m W:1m	72
	LOM FLU	Lomandra fluviatilis `ABU7`	Shara? Mat Rush	6inch	Pot	H:0.4m W:0.5m	20
							92

02 TYPICAL TIMBER SCREENING DETAIL

Scale 1 : 20 @ A1



PRELIMINARY

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DESIGN . PLAN . MANAGE

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Dubbo NSW 2830
phone. 1300 BARNSON (1300 227 676)
email. generalenquiry@barnson.com.au
web. barnson.com.au

Rev.	Date.	Amendment.
A	21.02.2024	FOR DA
B	22.02.2024	FOR DA
C	18.03.2024	FOR DA

Project.
PROPOSED LANDSCAPING

Site Address.
13 FAIRYDALE LANE MUDGEE NSW 2850

Client.
SANDERSON & MACDONALD PTY LTD

Drawing Title.
OVERALL SITE PLAN

Scale. As indicated @ A1
Sheet. 01 of 01
Project No. 37880
Drawn. BP
Checked. BP
Revision. C

Drawing No.
37880-LA01

barnson.

APPENDIX E

Preliminary Site Investigation

barnson.
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Site Contamination Investigation

Client: Sanderson & Macdonald Pty Ltd

Site Address: 13 Fairydale Lane, Mudgee, NSW 2850

11 January 2024

Our Reference : 37880-ER01_A

DISCLAIMER

This report has been prepared solely for Sanderson & MacDonald Pty Ltd (the client) in accordance with the scope provided by the client and for the purpose(s) as outlined throughout this report.

Barnson Pty Ltd accepts no liability or responsibility for or in respect of any use or reliance upon this report and its supporting material by anyone other than the client. Material may not be extracted, copied or altered from this report without the written permission of BARNSON. Barnson does not accept responsibility arising from modifications to this or previous reports.

Project Name:	Preliminary Site Investigation at 13 Fairydale Lane, Mudgee
Client:	Sanderson & MacDonald Pty Ltd (Rep. Buzz Sanderson)
Project Number:	37880
Report Reference:	37880 ER01_A
Date:	23/01/2024

Prepared by:	**Reviewed by:**
[redacted]	[redacted]
Seb Minehan B. Human Geog UOW, U/G Urb. Reg. Plan U/G Town Planner	**Nardus Potgieter** MSc(Chem) BSc(Hons)(Env.Tech.) Senior Environmental Scientist

Executive Summary

Barnson Pty Ltd was engaged by Sanderson & MacDonald Pty Ltd (Rep. Buzz Sanderson) to undertake a preliminary contaminated site investigation (PSI) of the property at 13 Fairydale Lane, Mudgee (the Subject Site).

The investigation had as its objectives to identify contamination issues that may affect the suitability of the Subject Site for future residential development and assess the need for possible further investigations, remediation or management of any contamination issues identified.

The investigation was based on a desktop review of information available for the Subject Site, as well as the findings of a site inspection and confirmatory sampling and analysis of surface soils collected at the site.

A review of the available historical information, including contaminated sites databases and aerial photographs, indicated a low potential for significant environmental contamination to be present across the surface of the Site.

The following potential sources and areas of contamination were identified:

- Use, maintenance, repair and storage of motorised vehicle and equipment
- Building Maintenance and Demolition
- Use of unclassified fill or uncontrolled disposal of waste

A site inspection, supplemented with confirmatory sampling and analysis, was conducted to determine the presence and significance of potential contamination associated with the identified sources.

Based on the findings of the desktop review and site investigation it can be stated with a reasonable level of confidence that the Subject Site is unlikely to be contaminated. This finding is supported with analytical results of surface soil collected at the Subject Site, in which contaminant concentrations detected were shown to be below screening criteria. The Subject Site is therefore considered suitable for the proposed re-development and use for residential purposes.

Although no evidence of underground fuel storage tanks or remnants of former structures or buried demolition waste were discovered on site, development of a Construction Environmental Management Plan (CEMP) for the construction phase of the project is recommended.

Contents

List of Figures

List of Tables

Appendices

1. INTRODUCTION

1.1. Background and Objectives

Barnson Pty Ltd was engaged by Sanderson & MacDonald Pty Ltd to undertake a preliminary contaminated site investigation (PSI) in support of the proposed re-development of the property located at 13 Fairydale Lane, Mudgee, NSW 2850 (hereafter referred to as the Subject Site).

The client is proposing to submit a Development Application to Mid-Western Regional Council to develop the site for residential purposes. In accordance with the State Environmental Planning Policy Resilience and Hazards (2021), a consent authority must determine if land is contaminated and, if so, whether it is suitable for the intended purpose or require remediation, before (future) development consent may be given.

This report therefore presents a general assessment of the conditions at the Subject Site in relation to planning requirements and considers the contaminants potentially relevant to the previous commercial use of the property.

1.2. Objectives

The objectives of the Investigation are:

- Identify contamination that may affect the site's suitability for development, and
- Assess the need for possible further investigations, remediation or management of any contamination identified.

1.3. Scope of Work

To meet the stated objectives, Barnson completed the following scope of work:

- Site identification including a review of site history, site condition, surrounding environment, geology and, where information was available, hydrogeology.
- Desktop review of site history and assessment of potential sources of contamination.
- Development of a Conceptual Site Model (CSM) with information gathered from the data review and site inspection.
- Site inspection to assess site conditions.
- Collection of confirmatory soil samples and analysis to determine nature of possible contamination.
- Provide conclusions as to the suitability of the site for the intended future land use.
- Preparation of a report.

1.4. Purpose of this report

The purpose of this report is to document, with cognisance of the Guidelines for Consultants Reporting on Contaminated sites (NSW EPA, 2020), works undertaken, in accordance with the scope of works as described in Section 1.3, results of the desktop review and site inspection, and recommendations for further actions required to determine fitness of the site for the intended use.

1.5. Assumptions and Limitations

The following assumptions have been made in preparing this report:

- The most sensitive future use of the site will be for residential purposes. This assumption forms the basis for the conceptual site model (Section 4).
- All information pertaining to the contamination status of the site has been obtained through public record searches, a preliminary site inspection and analysis of confirmatory samples collected at the site. All documents and information in relation to the site, which were obtained from public records, are accepted to be correct and has not been independently verified or checked.

It should be recognised that even the most comprehensive site assessments may fail to detect all contamination on a site. This is because contaminants may be present in areas that were not previously surveyed or sampled or may migrate to areas that showed no signs of contamination when sampled. Investigative works undertaken at the Subject Site by Barnson identified actual conditions only at those locations in which sampling and analysis were performed. Opinions regarding the conditions of the site have been expressed based on historical information and analytical data obtained and interpreted from previous assessments of the site. Barnson does not take responsibility for any consequences as a result of variations in site conditions.

2. SITE DESCRIPTION

2.1. Site Identification

Table 2.1 presents a summary of the available information pertaining to the identification of the Subject Site.

Table 2.1: Summary of Site Identification Information

Information	Details
Site address	13 Fairydale Lane, Mudgee, NSW 2850
Lot/Section and Deposited Plan	Lot 9 DP 1218673 Lot 10 DP 1233495
Land Zoning	R1 – General Residential
Area (Approx. m^2)	5,895
County	Wellington
Parish	Mudgee
Local Government Area	Mid-Western Regional Council

Figure 2.1 shows the Subject Site located in the western area of Mudgee.

Figure 2.1: Location of the Subject Site.

2.2. Site Layout and Proposed Development

The Subject Site is identified as Lot 9 DP 1218673 and Lot 10 DP 1233495, otherwise known as 13 Fairydale Lane, Mudgee and operates an area of approximately 5,895m^2. It is located some 1.3km west of the Mudgee CBD. The site is bounded by Fairydale Lane, and Gladstone Street, and vacant land to the south. The Subject Site is currently unoccupied and has been for an extended period of time. The Subject site is covered with maintained grass with trees and stormwater infrastructure located north-east.

Figure 2.2 presents a plan of the Subject Site that is supplemented with photographs showing the different elements of the Site (Figure 2.3 & Figure 2.4: Photo B – View across the site, looking south-west.. Figure 2.2 includes markers indicating the vantage point and direction of the photographs.

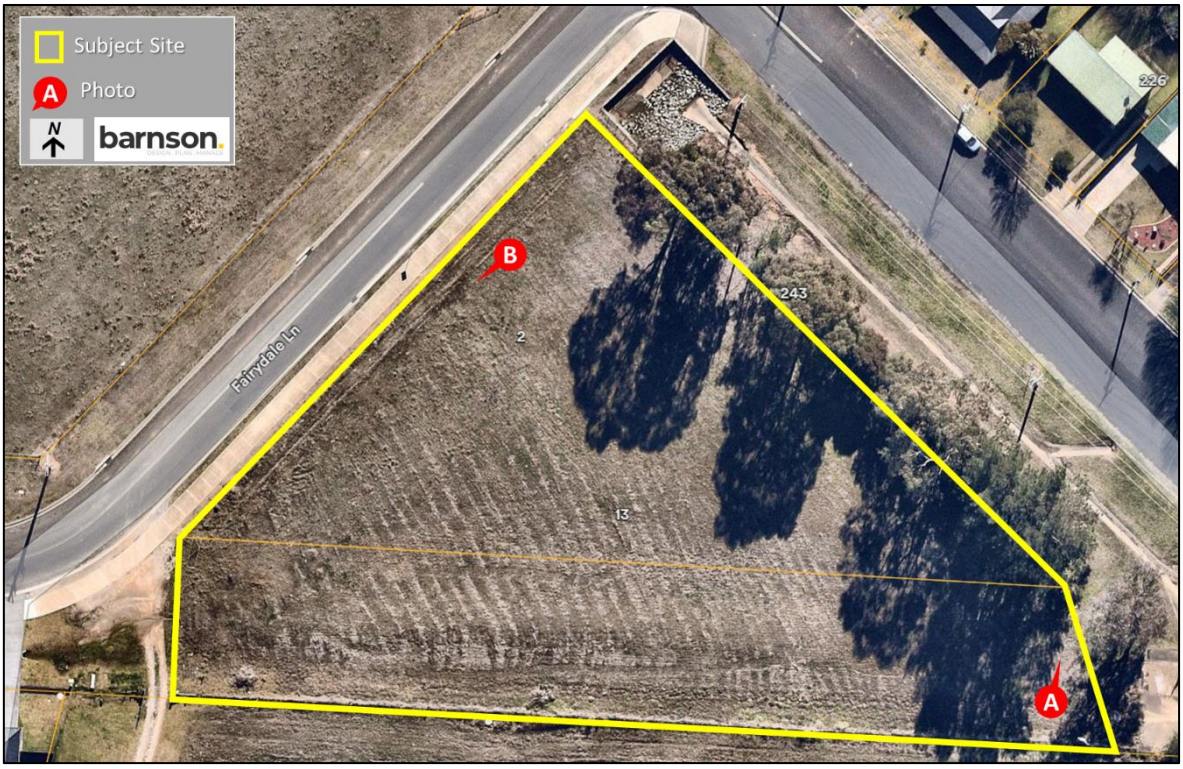

Figure 2.2: Existing Subject Site layout.

Figure 2.3: Photo A – Photo of the existing access, looking north-east.

Figure 2.4: Photo B – View across the site, looking south-west.

2.3. Proposed Development

The proposed development is to support a seven (7) lot subdivision for residential purposes.

2.4. Site History

A review of historical aerial photographs dating back to 1965 was undertaken. Historical aerial photographs are presented in Appendix A. A summary of the Site features is provided as follows:

1965 – The site remains largely vacant with a dam to the south, and developed lots to the east.

1980 to 1995 – by 1980, the site has begun to be used for scrapyard purposes, with vehicles and other metal scrap stored onsite. The same use was evident on site for an extended period of time. Surrounding land uses began to be developed overtime.

2012 – the site has now been cleared with trees and stormwater works on the north-eastern boundary visible.

2015 – Preparations for road construction start along the north western boundary. Between 2015 and 2017 Fairydale Lane is closed and removed from its alignment to the south of the site and realigned along the north-western boundary of the site. Realignment sees stockpiles of fill located along the southern boundary of the Subject Site.

2017 to 2023 – the site remains unoccupied but off-site a new residential subdivision is evident to the west.

The historical aerial photographs reviewed is attached as Appendix A.

2.5. Record of Site Contamination

Datasets maintained by the Office of Environment and Heritage (OEH) including notices under CLM Act, POEO Environment Protection License Register, and environmental incidents were reviewed.

- List of NSW contaminated sites notified to EPA – The sites appearing on the OEH "List of NSW contaminated sites notified to the EPA" indicate that the notifiers consider that the sites are contaminated and warrant reporting to EPA. However, the contamination may or may not be significant enough to warrant regulation by the EPA. The EPA needs to review information before it can make a determination as to whether the site warrants regulation. A search of the listing returned no record for the subject site.
- Contaminated Land Record of Notices – A site will be on the Contaminated Land Record of Notices only if the EPA has issued a regulatory notice in relation to the site under the *Contaminated Land Management Act 1997*. A search of the register in March 2024 returned no record for the subject site.

There is further no record of the Subject Site in any of the following databases:

- Former Gasworks Database
- EPA PFAS Investigation Program
- Defence PFAS Investigation & Management Program

- Air Services Australia National PFAS Management Program
- Defence 3 Year Regional Contamination Investigation Program.

2.6. Previous Site Investigations

No information relating to any previous assessment of contamination at the Subject Site was available for review.

3. SITE SETTING

3.1. Geology

A review of the 1:100000 Geology Map of Mudgee (refer to Figure 3.1) shows that geologically, the Subject Site is underlain by Cainozoic aged alluvial silt, clay and sand, variable humic content, sporadic pebble-to cobble – sized unconsolidated conglomeratic lenses.

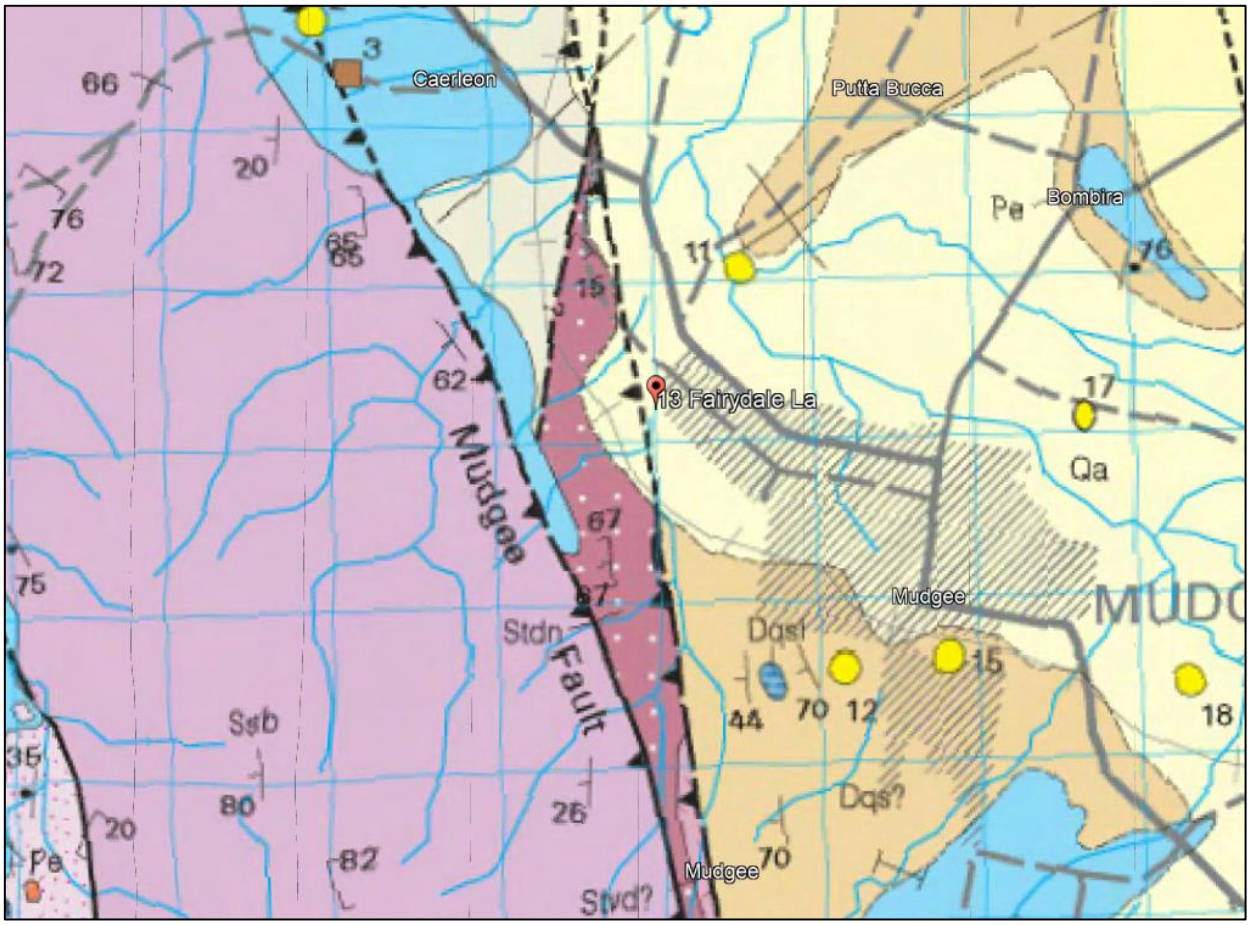

Figure 3.1: Mudgee 1:100,000 geology map showing the location of the Subject Site

Source: Google Earth, accessed 07/08/2023

An examination of the Geological Survey of NSW maps of Naturally Occurring Asbestos (accessed on 12 March 2024), shows that the geological units underlaying the Subject Site area has zero asbestos potential.

3.2. Soils

The Subject Site is mapped within the Craigmore soil landscape. Non-calcic Brown Soils and Red Earths on very old Quaternary alluvium. Yellow Podzolic-Solodic Soils intergrades on lower lying areas. Some Alluvial Soils and leached loams on lower terraces adjacent to major streams.

The Atlas of Australian Acid Sulfate Soil has the subject site in an area of 'extremely low' probability of occurrence (a 1-5% chance of occurrence). Surface soils in the area can be saline in places.

3.3. Topography and Drainage

Figure 3.2 presents topographical information overlain on the map of the Subject Site. The presented data shows that the Subject Site is relatively flat with a general slope to the north-east away from Mount Misery.

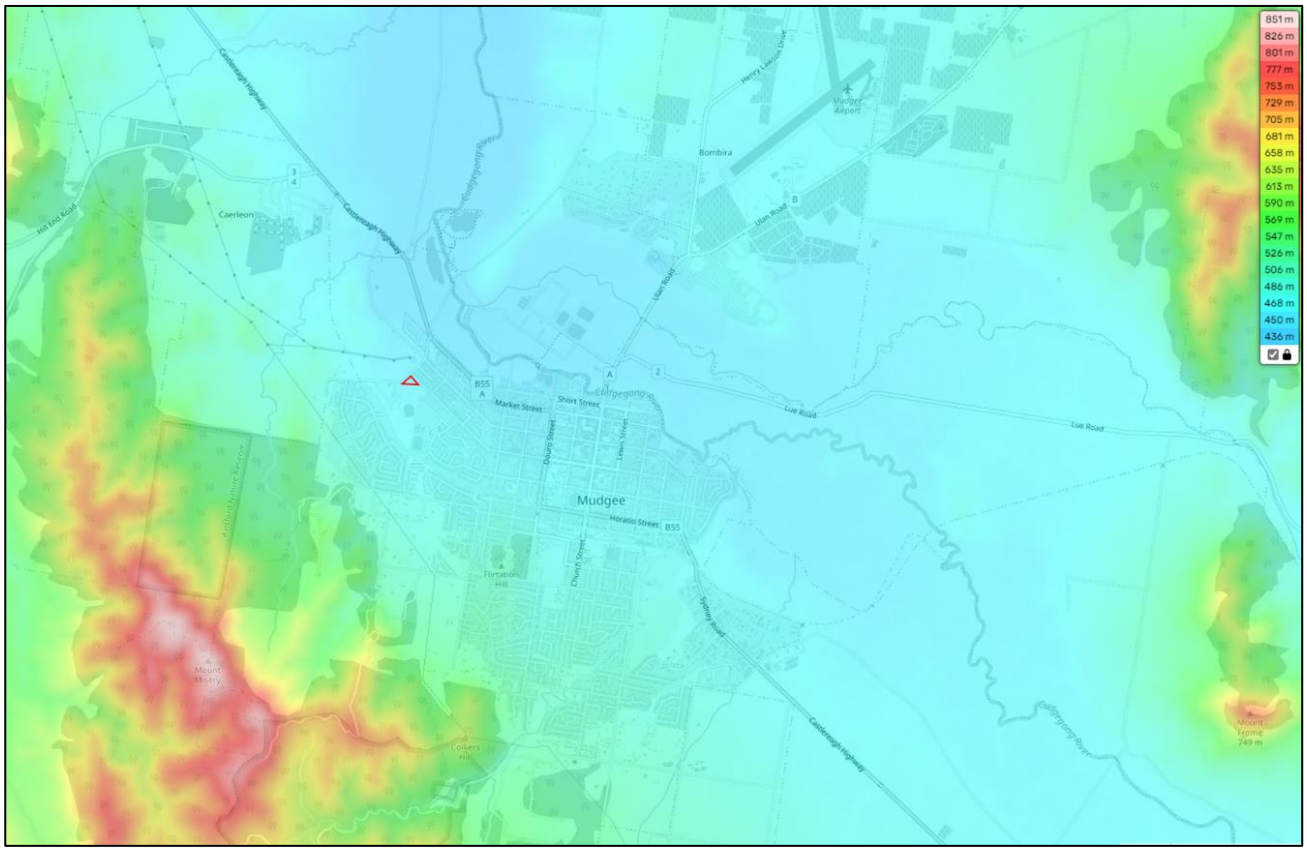

Figure 3.2: Subject Site topography.

Source: en-au.topographic-map.com, accessed 18/03/2024

The closest natural water body is the Cudgegong River located 700m to the north-east of the Subject Site. Water drains predominantly in a north-easterly direction toward the Cudgegong River.

3.4. Groundwater Resources

A review of existing groundwater bore records (WaterNSW, 2024) indicate that no groundwater bores are located within the boundaries of the Subject Site.

Four (4) bores are identified within 500m of the Subject Site. The locations of these nearby groundwater bores are shown in Figure 3.3.

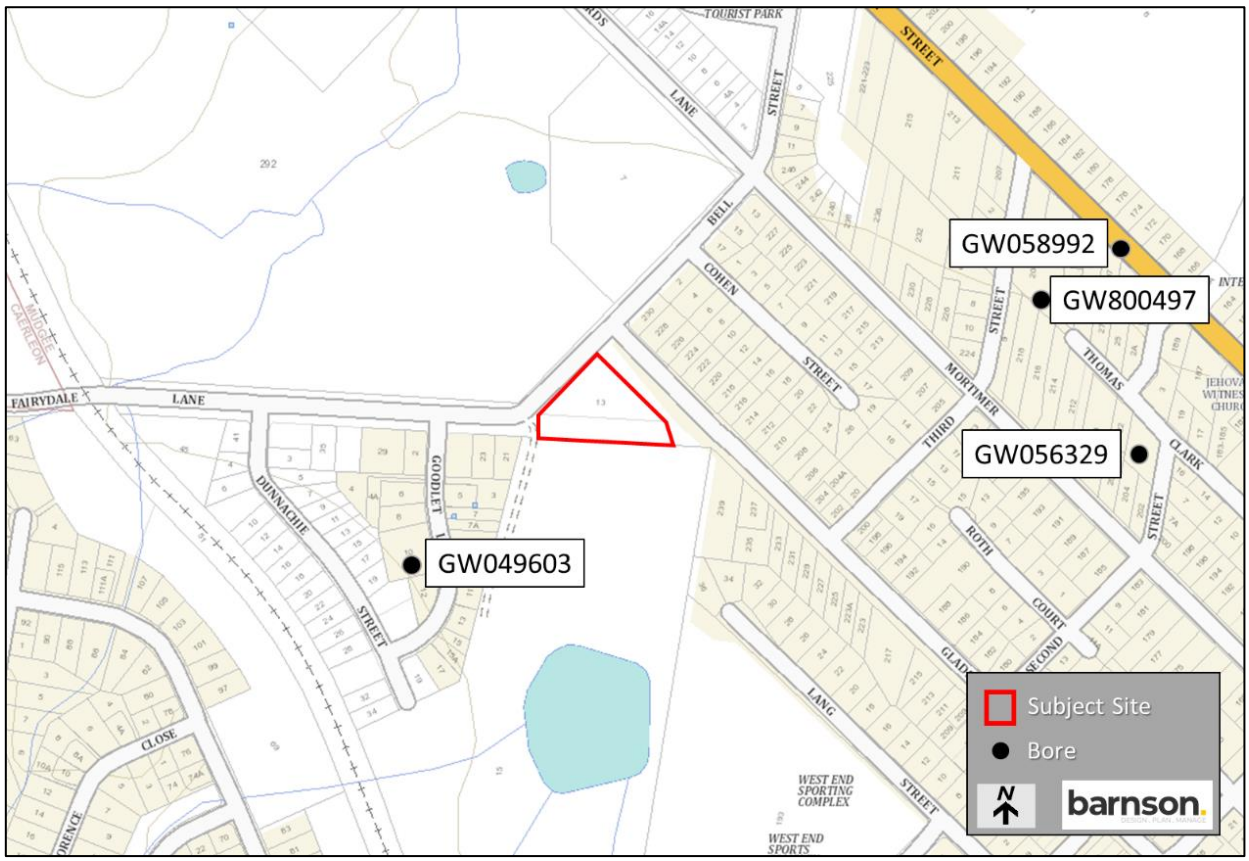

Figure 3.3: Groundwater bores near the subject site

Source: WaterNSW All Goundwater Map, accessed 17/03/2024

The information recorded in the database for the groundwater bores indicates the depth of the bores ranging from 12.50m to 21.0m. With a Standing Water Level (S.W.L) of 8.0m recorded for GW049603, GW800497, and GW058992 and the shallowest a Water Bearing Zone (W.B.Z) of 7.0m for GW049603 and GW056329. According to the database, the bores are utilised for domestic, and stock purposes.

Groundwater Sensitivity mapping obtained from the ePlanning Spatial Viewer, indicate that the Subject Site is located on environmentally sensitive land. Refer to Figure 3.4.

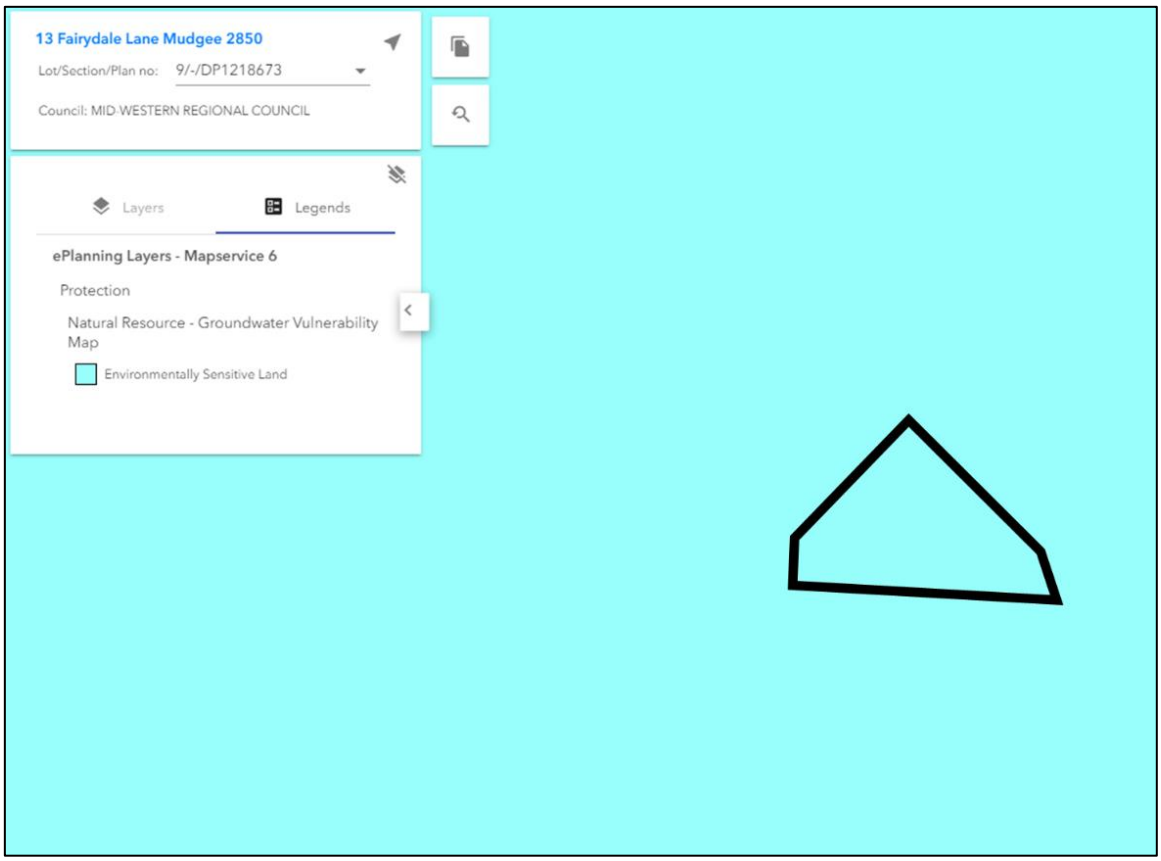

Figure 3.4: Groundwater vulnerability map

Source: ePlanning Spatial Viewer, accessed 17/03/2024

4. CONCEPTUAL SITE MODEL

4.1. General

The Conceptual Site Model (CSM) is intended to provide an understanding of the potential for contamination and exposure to contaminants within the investigation areas. The CSM draws together the available historical information for the site, with site specific geological, and hydrogeological information to identify potential contaminants, contamination sources, migration and exposure pathways and sensitive receptors.

4.2. Sources

The identification of sources presented here is based on the review of available historical information and photographs, as well as an understanding of current conditions at the Subject Site. The following is a summary of the potentially contaminated areas and sources of contamination identified:

• Use, maintenance, repair and storage of motorised vehicle and equipment

Available aerial photographs of the site clearly show the site being used for a scrapyard with metal, stored cars and other associated items such as 44-gallon drums and tyres located throughout the entirety of the site. vehicles and other equipment require various potentially hazardous chemicals (e.g. fuels, lubricants, refrigerants, etc.) for operation and maintenance. If the vehicles had been stored for an extended period of time, there is increased chances these chemicals have leaked, contaminating the surface soil of the site.

- Building Maintenance and Demolition

The potential presence of hazardous materials (e.g. asbestos and lead paint) in the structure of former buildings at the Subject Site could contribute to the introduction of these substances into the surface soils of the site as a result of maintenance to or demolition of these structures.

• Use of unclassified fill or uncontrolled disposal of waste

There is evidence to suggest that quantities of fill material have been imported to the Site for backfill or levelling purposes. The Subject Site is fenced, and it is unlikely that large quantities of domestic or demolition waste would have been disposed of at the Site. However, any foreign or potentially hazardous materials or wastes sporadically disposed of at the site could contribute a variety of contaminants to localised areas of the Site. Contaminants may include hydrocarbons and heavy metals.

4.3. Contaminants of Potential Concern

Considering the potential sources relevant to the Subject Site, a wide variety of contaminants may be present. With the demolition waste and vehicles/equipment at the site considered the primary potential sources of contamination, hazardous materials (i.e. asbestos and lead based paint) as well as heavy metals and hydrocarbons are accepted as the most likely contaminants.

Based on this understanding of the site history and activities, the contaminants of potential concern identified for the investigation of the Subject Site include:

- heavy metals (As, Cd, Cr, Cu, Pb, Hg, Ni and Zn)
- hydrocarbons (mainly fuel and lubricants); and
- asbestos

4.4. Pathways

The primary pathways by which receptors could be exposed to the contaminants outlined above include:

- Inhalation of dust or vapours.
- Dermal contact with contaminated soils.
- Incidental ingestion of contaminated soils.
- Surface runoff, sediment transport and discharge to surface waters.
- Vertical and horizontal migration of contamination through the soils into the underlying groundwater.

Of the listed potential pathways, the contamination of water resources through infiltration is considered the most unlikely. Although the Subject Site is indicated as a groundwater vulnerable zone, the lack of groundwater bores and the presumed depth to groundwater at the site (approximately 20m) would limit vertical migration of any contaminants which may be entering the surface soil from above.

4.5. Receptors

Potential receptors may include:

Human receptor populations

- Future residents of the subdivided lots.
- Visitors to the site (e.g. workers conducting maintenance, contractors, members of the public);
- Workers involved in the construction of residential dwellings for future residents of the Subject Site; and
- Workers conducting agricultural activities on the subdivided lots of the Subject Site.

Environmental Receptors

- Local drainage channels and receiving surface water bodies; and
- Groundwater resources beneath the site (negligible likelihood of contamination expected).

4.6. Potential for Contamination

The Subject Site is not listed in any of the contaminated land databases. Based on the results of the desktop assessment, the overall likelihood for *significant* chemical contamination to be present within the site is moderate, mainly relating to the former land use as scrapyard.

5. SITE INVESTIGATION

5.1. General

The objective of the investigation is to determine whether there are any environmental risks associated with the Subject Site that could affect the proposed future development and would require further investigation or action to render the site suitable for its intended use.

Barnson conducted an inspection of the Subject Site on 11 March 2023. The purpose of the site inspection was to verify the findings of the desktop assessment, as well as to collect confirmatory samples of soil from areas of the Subject Site where development is proposed, or contamination is suspected.

Based on the findings of the CSM the inspection and sampling were focussed on the surface soils (0-150mm). The site inspection included all areas of the Subject Site. During the site inspection the following observations were made:

- The Subject Site is fenced and access to the site is controlled.
- The subject site is covered in semi-maintained vegetation, with trees along north-eastern boundary (Figure 5.1).

Figure 5.1: Photo of the Subject Site looking north-east depicting vegetation onsite.

The surface soils of the Subject Site were investigated with the aid of a motorised hand auger. Holes were drilled to a depth of approximately 700mm (or to refusal). Based on the observations made during this intrusive investigation, different areas can be distinguished at the site. Figure X show a summary of the different areas.

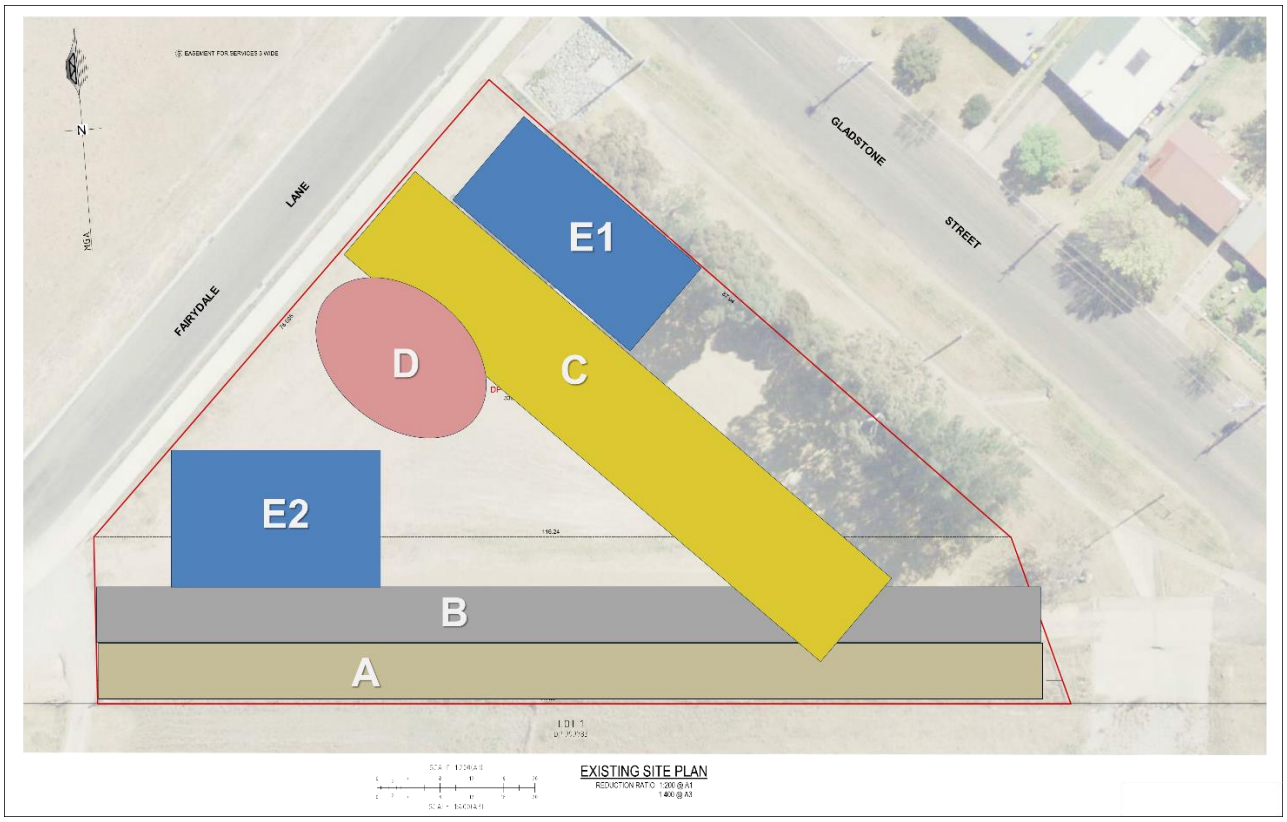

Figure 5.2: Areas with different soil properties observed at the Subject Site.

- The area marked A serves as drainage swale for the Subject Site and the adjoining lot to the south. The soil is a fine homogeneous silty sand which is different in appearance to the remainfer of the site. It is assumed that this material was brought on as fill. Figure 5.3 show Areas A and B looking west along the southern boundary. Area A is densely vegetated as it contains softer soil with a higher moisture holding capacity.
- Area B is the former alignment of Fairydale Road. Here the surface soils are compacted roadbase materials. Although the bitumen paving layer has been removed, remnants of the bitumen is still visible (Figure 5.4).
- Area C is a band of soft fine yellowish sandy silty soil (see Figure 5.5). The same colour of soil is observed in other areas of the site but it was specifically soft an uncompacted along the are indicated.
- Area D is where some demolition waste (mainly fragments of brick and concrete) was observed. A small pile of mainly grass clippings with a few bricks lodged in the pile was observed along the northern boundary fence (Figure 5.6). No other demolition waste was observed here.
- Areas E1 and E2 are where the buildings were formerly located. The soils in these areas were hard compacted but no concrete footings were encountered during excavations made (refer to Figure 5.7). Note the same colour as observed in Area C
- No fragments of fibre reinforced cement products were observed on the surface or from localised excavations undertaken at the Subject Site.

Figure 5.3: View along southern boundary of the Subject Site.

Figure 5.4: Fragment of bitumen road paving.

Figure 5.5: Auger hole in soft yellow sandy silt soil.

Figure 5.6: Brick fragments on surface.

Figure 5.7: Hard compacted soil in footprint of former structures.

- No surface water was present on the Subject Site or in the local drainage channel to the east during the site inspection.

5.2. Confirmatory Sampling

The purpose of collecting confirmatory samples as part of the site inspection is to determine if any of the potential contaminants identified from the CSM are present. The samples are not intended for statistically valid characterisation or quantification of contamination levels.

Based on the findings of the CSM the inspection and sampling were focussed on the surface soils (0-150mm). The site inspection included all accessible areas of the Subject Site. In accordance with the NSW EPA Sampling Design Guidelines (NSW EPA, 2020), an area of 0.6 ha requires a grid spacing of 20m for systematic sampling and a minimum of 15 sample locations. Appendix B presents a map of the Subject Site with a grid spaced at 20m overlain. A sample was collected from a random location in each of the grid cells intersecting the site area. A total of 15 samples were collected. Table 5.1 is a summary description of the collected samples.

The pattern followed for the soil sampling can be described as Systematic, Sampling, where points are selected at regular intervals. It is an efficient sampling method for confirmatory sampling that utilises knowledge of the site history and field observations to direct sample collection (NSW EPA, 2020).

Table 5.1: Summary of sample details.

Reference in Error! Reference source not found.	Sample number	Description
1	TP-01	Surface soil (0-150mm) collected from drainage channel along southern boundary
2	TP-02	
3	TP-03	
4	TP-04	Surface soil (0-150mm) collected from former street alighnment
5	TP-05	
6	TP-06	Surface soil (0-150mm) collected from former building footprint
7	TP-07	Surface soil (0-150mm) collected near former building footprint
8	TP-08	Surface soil (0-150mm) collected from area formerly occupied by stationary cars
9	TP-09	
10	TP-10	
11	TP-11	Surface soil (0-150mm) collected from area where demolition waste was observed.
12	TP-12	Surface soil (0-150mm) collected from former building footprint
13	TP-13	Surface soil (0-150mm) collected from area formerly occupied by stationary cars
14	TP-14	Surface soil (0-150mm) collected near former building footprint
15	TP-15	

Four additional surface soil samples were collected from the 0 to 150 layer of surface soil. The samples were collected from the area of the site where fragments of brick and tiles were observed (TP-10) as well as the two areas formerly occupied by structures (TP-06 and TP-13) and the drainage channel where fill material is suspected to have been applied (TP-02). The four additional samples are intended for screening of asbestos.

The samples submitted for analysis were submitted to the Australian Laboratory Services (ALS) laboratory in Mudgee, for determination of the following parameters:

- metallic element (cadmium, chromium, copper, lead, nickel and zinc) concentrations, including arsenic and mercury in soil;
- extraction with organic solvent and analysis of Total Recoverable Hydrocarbons (TRH) fractions C6 to C40, benzene, toluene, ethylbenzene and total xylene (BTEX), Polycyclic Aromatic Hydrocarbons (PAHs), polychlorinated biphenyls (PCBs) and phenols;
- extraction with organic solvent and analysis of Organochlorine (OCP) and Organophosphorus (OPP) pesticide compounds; and
- asbestos screening.

The ALS laboratory is NATA accredited for all the analysis indicated above. Table 5.2 present a summary of the samples submitted for analysis as well as the sample numbers assigned to each analytical sample and the analysis requested for each.

Table 5.2: Summary of analysis undertaken on soil and water

Sample Number	Analysis
TP-01	TRH, BTEX, PAH, OC, PCB, Metals
TP-02	TRH, BTEX, 8 Metals
TP-03	TRH, BTEX, 8 Metals
TP-04	TRH, BTEX, 8 Metals
TP-05	TRH, BTEX, PAH, OC, PCB, Metals
TP-06	TRH, BTEX, 8 Metals
TP-07	TRH, BTEX, 8 Metals
TP-08	TRH, BTEX, 8 Metals
TP-09	TRH, BTEX, 8 Metals
TP-10	TRH, BTEX, 8 Metals
TP-11	TRH, BTEX, PAH, OC, PCB, Metals
TP-12	TRH, BTEX, 8 Metals
TP-13	TRH, BTEX, 8 Metals
TP-14	TRH, BTEX, 8 Metals
TP-15	TRH, BTEX, 8 Metals
TP-A	asbestos
TP-B	asbestos
TP-C	asbestos

TP-D	asbestos

5.3. Analytical Results

The ALS report for the samples is attached as Appendix C. The laboratory report indicates that heavy metals and hydrocarbons (petroleum) were detected in the soil. The concentrations of all, pesticides, polycyclic organic compounds as well as total polychlorinated biphenyls are indicated as below the limits of detection in all surface soil and sediment samples.

The metals detected include arsenic (As), chromium (Cr), copper (Cu), lead (Pb), nickel (Ni), and zinc (Zn). Concentrations of cadmium (Cd) and mercury (Hg) were shown to be at or below the limit of reporting in all samples.

Table 5.3 presents a summary of the metals detected above the limit of detection in surface soil samples. Table 5.4 present the same for petroleum hydrocarbon fractions.

Table 5.3: Summary of metals detected in soil samples collected from the Subject Site.

Sample Number	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
	mg.kg^{-1}							
TP-01	10	<1	15	11	23	<0.1	11	45
TP-02	<5	<1	14	8	17	<0.1	13	33
TP-03	<5	<1	15	9	16	<0.1	10	30
TP-04	<5	<1	20	14	26	<0.1	8	40
TP-05	5	<1	20	14	22	<0.1	8	35
TP-06	19	<1	35	46	24	<0.1	19	65
TP-07	8	<1	16	43	160	<0.1	13	102
TP-08	6	<1	14	15	88	0.1	9	134
TP-09	5	<1	12	14	30	<0.1	7	32
TP-10	<5	<1	13	27	79	<0.1	29	100
TP-11	6	<1	13	10	22	<0.1	5	19
TP-12	9	<1	30	28	79	<0.1	10	58
TP-13	5	<1	27	13	52	<0.1	8	41
TP-14	11	<1	21	32	69	<0.1	10	76
TP-15	7	<1	14	16	92	0.1	9	133

No asbestos fibres were detected in any of the surface soil samples submitted for analysis.

Table 5.4: Summary of hydrocarbon compounds detected in soil samples collected from the Subject Site.

Sample Number	C6 - C10 (F1)	>C10 - C16 (F2)	>C16 - C34 (F3)	>C34 - C40 (F4)	>C10 - C40 Fraction (sum)
	mg.kg^{-1}				
TP-07	<10	60	730	230	1020
TP-09	<10	<50	130	<100	130
TP-10	<10	50	710	260	1020
TP-11	<10	<50	210	<100	210
TP-12	<10	<50	390	180	570
TP-13	<10	<50	160	<100	160
TP-14	<10	<50	560	210	770
TP-15	<10	<50	110	<100	110

5.4. Analytical Data Quality

Samples were collected in new, clean containers using cleaned equipment and soils were placed in glass jars provided by the laboratory that were refrigerated after filling and transported in an insulated container to the laboratory. Chain of custody was recorded for all samples. A copy of the signed sheet is attached as Appendix C.

The analyses were undertaken at a NATA accredited laboratory. The laboratory quality control procedures in the form of duplicates as well as analyte and surrogate spikes were applied to all contaminant classes analysed. The results reported for the duplicate is within the Relative Percent Difference range of the acceptance criteria for a duplicate sample. The analyte spike recoveries reported for the different sets of organic analytes are indicated as within the acceptance criteria (see Appendix C).

All media appropriate to the objectives of this investigation have been adequately analysed and no area of significant uncertainty exist. It is concluded the data is suitable for the purposes of the contaminated site investigation.

6. ASSESSMENT

6.1. Assessment Criteria – Human Health and Environmental Risk

Screening for human health and ecological risk, utilises published human health investigation levels (HILs) and ecological screening and investigation levels (ESLs & EILs) from the National Environment Protection (Assessment of Site Contamination) Measure (NEPC, 1999) to identify contaminant concentrations in soil that may pose a risk to future residents, people visiting the site, or to ecological receptors.

HILs are scientifically based, generic assessment criteria designed to be used in the screening of potential risks to human health from chronic exposure to contaminants. HIL's are conservatively derived and are designed to be protective of human health under the majority of circumstances, soil types and human susceptibilities and thus represent a reasonable 'worst-case' scenario for specific land-use settings.

The HILs selected for evaluation of the Investigation Areas are those derived for a standard residential scenario (HIL-A), which assumes typical residential land use with garden/accessible soil (home grown produce <10% fruit and vegetable intake, and no poultry). The standard residential scenario is conservative to use for evaluation. Although all of the exposure pathways included in the residential scenario are unlikely to exist in the proposed development, the more conservative HILs are used to account for sensitive receptors such as children, the elderly or persons with illnesses which may be residing in the proposed development.

Although the primary concern in most site assessments is protection of human health, the assessment should also include consideration of ecological risks and protection of groundwater resources that may result from site contamination. Ecological investigation levels (EILs) provide screening criteria to assess the effect of contaminants on a soil ecosystem and afford species level protection for organisms that frequent or inhabit soil and protect essential soil processes.

EILs have been derived for common metallic contaminants in soil. The values selected for the evaluation of the heavy metals detected in the soil samples from the Subject Site considers the physicochemical properties of soil and contaminants and the capacity of the soil to accommodate increases in contaminant levels above natural background while maintaining ecosystem protection for identified land uses.

Table 6.1 presents a summary of the health-risk based criteria and ecological investigation levels selected for assessment of the detected metal concentrations.

The health risks associated with petroleum hydrocarbon compounds are assessed using Health Screening Levels (HSLs) developed to be protective of human health by determining the reasonable maximum exposure from sources for a range of situations commonly encountered on contaminated sites. HSLs are derived for soil, groundwater and soil vapour and relate to exposure to petroleum hydrocarbons through the vapour inhalation exposure pathway only. Direct exposure pathways such as incidental soil ingestion and dermal exposure pathways are generally not the risk drivers when compared to inhalation exposure (NEPC, 1999). HSLs have been developed for BTEX and naphthalene plus four hydrocarbon fractions namely:

- C6-C10- Fraction number F1
- >C10-C16- Fraction number F2
- >C16-C34- Fraction number F3
- >C34-C40- Fraction number F4

Table 6.1: Human health and ecological risk screening levels.

	Health-based Investigation Levels HIL A Residential	Ecological Investigation Levels (EIL) Urban residential and public open space
Element	mg.kg^{-1}	mg.kg^{-1}
Arsenic (As)	100	100
Cadmium (Cd)	20	NA
Chromium	NR	190
Copper (Cu)	6,000	190
Lead (Pb)	300	1,100
Mercury (Hg)	40	NA
Nickel (Ni)	400	30
Zinc (Zn)	7,400	230

Note: NR=not relevant due to low human toxicity of Cr(III). NA=No applicable screening level. EILs selected are most conservative values relevant to residential land use scenario.

Ecological risks associated with hydrocarbons are evaluated by using ecological screening levels (ESLs), which are based on EC_{25} weight-of-evidence ecotoxicity data, evaluated for a commercial/industrial land use scenario (NEPC, 1999). The ESLs (Table 6.2) are evaluated for the same four carbon chain fraction ranges (F1 to F4) listed above. Screening values for a commercial/industrial exposure scenario are listed.

Table 6.2: Human health and ecological risk screening levels for hydrocarbon fractions.

	Management limits for TPH in Soil Urban residential and public open space (fine)	Health Screening Levels (HSLs) for vapour intrusion Low density residential 0-1m)	Ecological Screening Levels (ESL) Urban residential and public open space (fine)
Fraction	mg.kg^{-1}	mg.kg^{-1} (soil)	mg.kg^{-1}
F1	800	210	180
F2	1,000	160	120
F3	3,500	NA	1,300
F4	10,000	NA	5,600

NA=No applicable screening level.

It was confirmed that limits of detection reported by the laboratory are below the criteria values. All other contaminants analysed for in the soil samples that are reported below the limit of detection by the laboratory can therefore be excluded from further assessment.

6.2. Findings

Direct comparison of the analytical results presented in Table 5.3 with the assessment criteria (refer Table 6.1 and Table 6.2) show that the detected metal and hydrocarbon concentrations in samples collected from the Subject Site are well below residential health and ecological risk based criteria values. The general low concentrations of heavy metals detected suggest naturally occurring element abundance. The mostly trace quantities of hydrocarbons detected are typical for a former commercial site with sources such as stationary vehicles and vehicle repair.

The elevated concentrations of hydrocarbon compounds appear to be limited to the eastern half of the Subject Site, which is also the area where historical photos showed stationary vehicles as well as the down-slope site of the site. Nevertheless, concentrations of all metals and hydrocarbons detected in samples from this area of the site are low and are well below the Health and Ecological Screening criteria. The detected concentrations therefore do not indicate issues of potential concern and do not require further investigation or mitigation.

Although fragments of brick and tile were observed on the surface of the Subject Site, no evidence of any hazardous were encountered and none of the soil samples analysed included any asbestos fibres. The concentrations of all pesticides, polycyclic organic compounds as well as total polychlorinated biphenyls are indicated as below the limits of detection in all surface soil.

The confirmatory samples collected and analysed as part of this investigation thus support the assertion that significant and widespread chemical contamination is unlikely to be present within the Subject Site.

7. CONCLUSIONS AND RECOMMENDATIONS

7.1. Conclusions

In accordance with the objectives stated in Section 1.2, and based on the information contained within this assessment, the following conclusions are presented (subject to the limitations noted in Section 1.5):

- Activities associated with the historical use of the Subject Site were identified as having a potential to contaminate surface soil at the site.
- The following potential sources of contamination were identified:
    - Use, maintenance, repair and storage of motorised vehicle and equipment
    - Building Maintenance and Demolition
    - Use of unclassified fill or uncontrolled disposal of waste
- A review of the available historical information, including contaminated sites databases and aerial photographs, indicated a low potential for significant environmental contamination to be present across the surface of the Site.
- Confirmatory sampling confirmed that concentrations of all contaminants investigated were below screening criteria in all surface soil samples collected. No hydrocarbons, persistent pesticides or herbicides were detected in any of the samples collected.
- No hazardous materials were detected in any of the surface soil samples collected at the Subject Site.
- The screening criteria used in the evaluation of the contaminant concentrations were appropriately conservative and suitable for assessment of the proposed residential land use categories.
- Based on the findings of the site investigation it is concluded that the concentrations of heavy metals and hydrocarbons detected in the surface soils of the Subject Site does not represent any potential risk to human health or the environment.

7.2. Recommendations

- Based on the findings of the desktop review and site investigation it can be stated with a reasonable level of confidence that the Subject Site is suitable for the intended development of the land for residential use.
- A Construction Environmental Management Plan (CEMP) must be prepared, prior to construction works being started. The purpose of the CEMP is for the management of excavated soils and should include procedures for the management of sediment and erosion.
- It is recommended that any material excavated at the Subject Site as part of the redevelopment, be classified in accordance with the general solid waste (NSW EPA, 2014) and excavated natural material (NSW EPA, 2014a) guidelines (ENM Order), and appropriately disposed.

8. REFERENCES

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NSW EPA. (2020). *Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites.* NSW Environmental Protection Agency.

NSW EPA. (2020). *Sampling Design Part 1 - Application, Contaminated Land Guidelines.* Sydney: NSW EPA.

WaterNSW. (2024). *Real Time Data.* Retrieved March 18, 2024, from Water NSW: https://realtimedata.waternsw.com.au/water.stm

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Appendix A

Historical Site Photographs

1965

1980

1990

1995

2009

2015

2017

2023


Bell St
Cohen St
Cohen St
Gladstone St
Fairydale Ln
ydale Ln
McEwan
McEwan
243
2
13
33A
29
27
25
23
21
17
19
21A
239
237
235-237
235
233
231
229
227
225
34
36
32
30
238
236
227
225
223
221
219
217
215
213
211
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224
222
220
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214
212
210
208
206
204A
204
200
198
196
194

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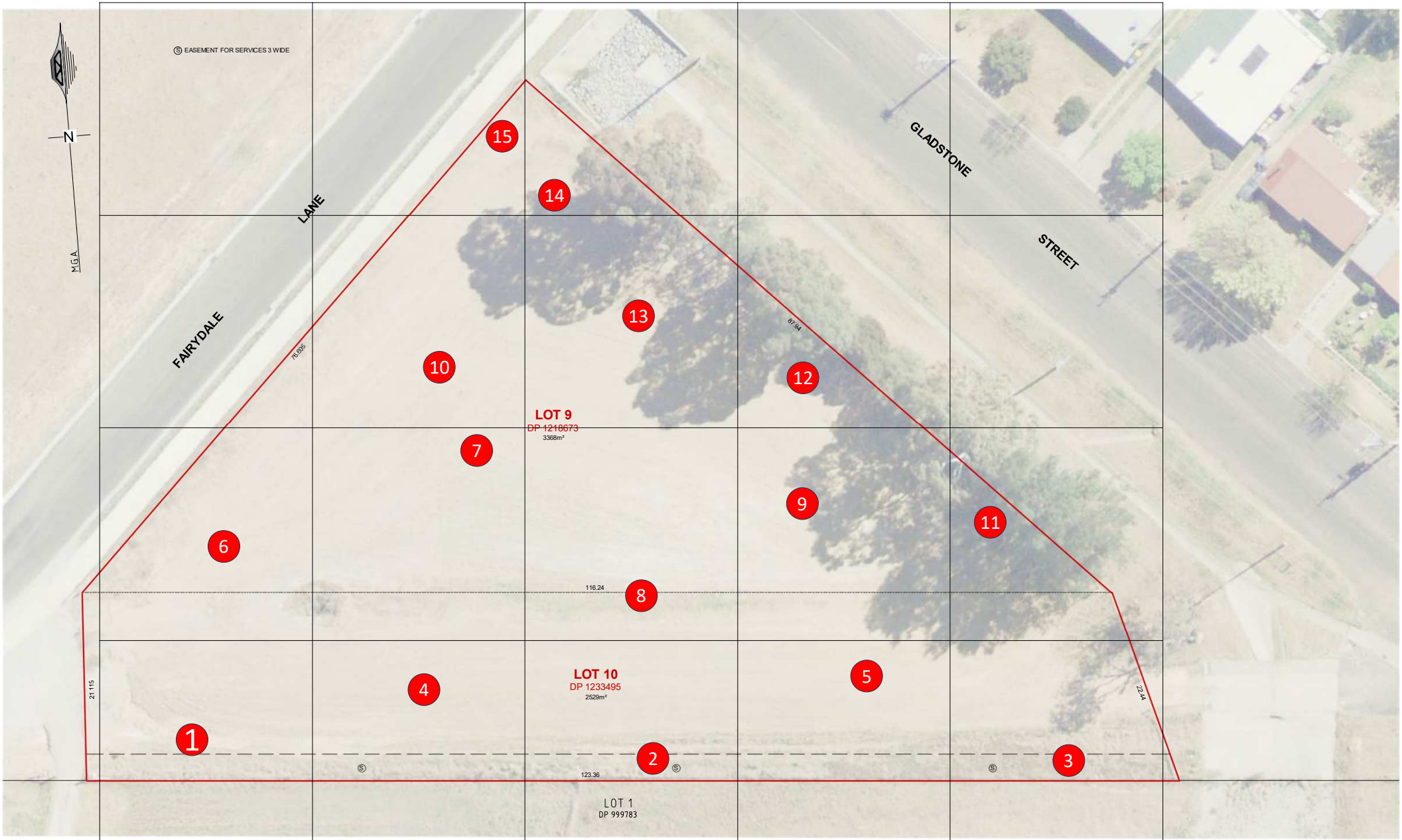
Appendix B

Sample Plan



SCALE 1:200(A1)

SCALE 1:400(A3)

EXISTING SITE PLAN

REDUCTION RATIO 1:200 @ A1
1:400 @ A3

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Client: Sanderson & MacDonald Pty Ltd
Project: PROJECT LINE 1
PROJECT LINE 2
Drawing Title: EXISTING SITE PLAN

Rev	Date	Amendment
A		

Survey XX
Drawn XX
Check XX
Original Sheet Size = A1

Certification

Drawing Number 37880

Revision

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Appendix C

Chain of Custody and Analytical Results

Environmental Division
Mudgee
Work Order Reference
ME2400498

barnson

Unit 4 / 108-110 Market Street
Mudgee, NSW 2850
300 BARNSON (1300 227 676)
generalenquiry@barnson.com.au
Telephone : 02 6372 6735

CHAIN OF CUSTODY AND ANALYTICAL REQUEST

Job Number	37880	Date	18 March 2024
Laboratory	ALS Mudgee	Report to	Nardus Potgieter npotgieter@barnson.com.au
Sample Temperature on Receipt		Notes	
11-20 °C	Signature:		

Sample ID	Sample Description	Sample Date	Sample type	Analysis request				
				1	2	3	4	5
TP-01	Surface soil	15/03/2023	Soil	X				
TP-02	Surface soil	15/03/2023	Soil		X			
TP-03	Surface soil	15/03/2023	Soil		X			
TP-04	Surface soil	15/03/2023	Soil		X			
TP-05	Surface soil	15/03/2023	Soil	X				
TP-06	Surface soil	15/03/2023	Soil		X			
TP-07	Surface soil	15/03/2023	Soil		X			
TP-08	Surface soil	15/03/2023	Soil		X			
TP-09	Surface soil	15/03/2023	Soil		X			
TP-10	Surface soil	15/03/2023	Soil		X			
TP-11	Surface soil	15/03/2023	Soil	X				
TP-12	Surface soil	15/03/2023	Soil		X			
TP-13	Surface soil	15/03/2023	Soil		X			
TP-14	Surface soil	15/03/2023	Soil		X			
TP-15	Surface soil	15/03/2023	Soil		X			
TP-A	Surface soil	15/03/2023	Soil			X		
TP-B	Surface soil	15/03/2023	Soil			X		
TP-C	Surface soil	15/03/2023	Soil			X		
TP-D	Surface soil	15/03/2023	Soil			X		

Analysis request		Method Code
1	TRH (C6-C40) / BTEXN / PAH / OC / PCB / 8 Metals	S-8
2	TRH (C6-C40) / BTEXN / 8 Metals	S-5
3	Asbestos – in 50g Soil (Grab sample) presence for free fibres	EA200G
4		
5		

[redacted]		Ac[redacted]		Date
	/ Barnson		/ ALS Mudgee	18 March 2024

1352

Esky x1

Ice bricks.

CERTIFICATE OF ANALYSIS

Work Order	: **ME2400498**	Page	: 1 of 15
Client	: **BARNSON**	Laboratory	: Environmental Division Mudgee
Contact	: Nardus Potgieter	Contact	: Mary Monds (ALS Mudgee)
Address	: Unit 4 108-110 Market Street MUDGEE NSW 2850	Address	: 1/29 Sydney Road Mudgee NSW Australia 2850
Telephone	: 0429 464 067	Telephone	: +61 2 6372 6735
Project	: Soil	Date Samples Received	: 18-Mar-2024 13:52
Order number	: ----	Date Analysis Commenced	: 19-Mar-2024
C-O-C number	: ----	Issue Date	: 22-Mar-2024 15:53
Sampler	: Client Sampler		
Site	: ----		
Quote number	: SY/053/14		
No. of samples received	: 19		
No. of samples analysed	: 19		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Brendan Schrader	Laboratory Technician	Newcastle - Asbestos, Mayfield West, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contract for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP068: Where reported, Total OCP is the sum of the reported concentrations of all Organochlorine Pesticides at or above LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2
- EA200: 'Yes' - Asbestos detected by polarised light microscopy including dispersion staining.
- EA200: 'No*' - No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.
- EA200: 'No' - No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	TP-01 Surface soil	TP-02 Surface soil	TP-03 Surface soil	TP-04 Surface soil	TP-05 Surface soil
			Sampling date / time	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00
Compound	CAS Number	LOR	Unit	ME2400498-001	ME2400498-002	ME2400498-003	ME2400498-004	ME2400498-005
				Result	Result	Result	Result	Result
EA055: Moisture Content								
Moisture Content	----	1.0	%	**----**	**14.2**	**14.0**	**8.1**	**----**
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**9.3**	**----**	**----**	**----**	**10.4**
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**10**	<5	<5	<5	**5**
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	**15**	**14**	**15**	**20**	**20**
Copper	7440-50-8	5	mg/kg	**11**	**8**	**9**	**14**	**14**
Lead	7439-92-1	5	mg/kg	**23**	**17**	**16**	**26**	**22**
Nickel	7440-02-0	2	mg/kg	**11**	**13**	**10**	**8**	**8**
Zinc	7440-66-6	5	mg/kg	**45**	**33**	**30**	**40**	**35**
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	**----**	**----**	**----**	<0.1
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	**----**	**----**	**----**	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	**----**	**----**	**----**	<0.05
beta-BHC	319-85-7	0.05	mg/kg	<0.05	**----**	**----**	**----**	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	**----**	**----**	**----**	<0.05
delta-BHC	319-86-8	0.05	mg/kg	<0.05	**----**	**----**	**----**	<0.05
Heptachlor	76-44-8	0.05	mg/kg	<0.05	**----**	**----**	**----**	<0.05
Aldrin	309-00-2	0.05	mg/kg	<0.05	**----**	**----**	**----**	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	**----**	**----**	**----**	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	**----**	**----**	**----**	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	**----**	**----**	**----**	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	**----**	**----**	**----**	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	TP-01 Surface soil	TP-02 Surface soil	TP-03 Surface soil	TP-04 Surface soil	TP-05 Surface soil
				Sampling date / time	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00
Compound	CAS Number	LOR	Unit		ME2400498-001	ME2400498-002	ME2400498-003	ME2400498-004	ME2400498-005
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	----	----	----	<0.05
Dieldrin	60-57-1	0.05	mg/kg		<0.05	----	----	----	<0.05
4.4`-DDE	72-55-9	0.05	mg/kg		<0.05	----	----	----	<0.05
Endrin	72-20-8	0.05	mg/kg		<0.05	----	----	----	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg		<0.05	----	----	----	<0.05
^ **Endosulfan (sum)**	115-29-7	0.05	mg/kg		<0.05	----	----	----	<0.05
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	----	----	----	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg		<0.05	----	----	----	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg		<0.05	----	----	----	<0.05
4.4`-DDT	50-29-3	0.2	mg/kg		<0.2	----	----	----	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg		<0.05	----	----	----	<0.05
Methoxychlor	72-43-5	0.2	mg/kg		<0.2	----	----	----	<0.2
^ **Sum of Aldrin + Dieldrin**	309-00-2/60-57-1	0.05	mg/kg		<0.05	----	----	----	<0.05
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-2	0.05	mg/kg		<0.05	----	----	----	<0.05
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	----	----	----	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	----	----	----	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	----	----	----	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	----	----	----	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	----	----	----	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	----	----	----	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	----	----	----	<0.5
Pyrene	129-00-0	0.5	mg/kg		<0.5	----	----	----	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	----	----	----	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	----	----	----	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	----	----	----	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	TP-01 Surface soil	TP-02 Surface soil	TP-03 Surface soil	TP-04 Surface soil	TP-05 Surface soil
				Sampling date / time	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00
Compound	CAS Number	LOR	Unit		ME2400498-001	ME2400498-002	ME2400498-003	ME2400498-004	ME2400498-005
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	----	----	----	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	----	----	----	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	----	----	----	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	----	----	----	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	----	----	----	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	----	----	----	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	----	----	----	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	----	----	----	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	----	----	----	**1.2**
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	TP-01 Surface soil	TP-02 Surface soil	TP-03 Surface soil	TP-04 Surface soil	TP-05 Surface soil
				Sampling date / time	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00
Compound	CAS Number	LOR	Unit		ME2400498-001	ME2400498-002	ME2400498-003	ME2400498-004	ME2400498-005
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of BTEX**	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**85.3**	----	----	----	**115**
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		**84.4**	----	----	----	**83.4**
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		**89.2**	----	----	----	**85.5**
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**77.7**	----	----	----	**75.0**
2-Chlorophenol-D4	93951-73-6	0.5	%		**77.8**	----	----	----	**76.6**
2.4.6-Tribromophenol	118-79-6	0.5	%		**53.2**	----	----	----	**58.8**
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		**83.4**	----	----	----	**76.5**
Anthracene-d10	1719-06-8	0.5	%		**83.4**	----	----	----	**78.3**
4-Terphenyl-d14	1718-51-0	0.5	%		**96.2**	----	----	----	**88.9**
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**72.4**	**74.6**	**79.8**	**84.5**	**76.7**
Toluene-D8	2037-26-5	0.2	%		**88.8**	**96.7**	**98.0**	**96.4**	**92.7**
4-Bromofluorobenzene	460-00-4	0.2	%		**103**	**104**	**107**	**108**	**104**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	TP-06 Surface soil	TP-07 Surface soil	TP-08 Surface soil	TP-09 Surface soil	TP-10 Surface soil
			Sampling date / time	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00
Compound	CAS Number	LOR	Unit	ME2400498-006	ME2400498-007	ME2400498-008	ME2400498-009	ME2400498-010
				Result	Result	Result	Result	Result
EA055: Moisture Content								
Moisture Content	----	1.0	%	**3.2**	**4.1**	**6.0**	**2.4**	**1.5**
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**19**	**8**	**6**	**5**	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	**35**	**16**	**14**	**12**	**13**
Copper	7440-50-8	5	mg/kg	**46**	**43**	**15**	**14**	**27**
Lead	7439-92-1	5	mg/kg	**24**	**160**	**88**	**30**	**79**
Nickel	7440-02-0	2	mg/kg	**19**	**13**	**9**	**7**	**29**
Zinc	7440-66-6	5	mg/kg	**65**	**102**	**134**	**32**	**100**
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	**0.1**	<0.1	<0.1
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	**480**	<100	<100	**460**
C29 - C36 Fraction	----	100	mg/kg	<100	**390**	<100	<100	**390**
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	**870**	<50	<50	**850**
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg	<50	**60**	<50	<50	**50**
>C16 - C34 Fraction	----	100	mg/kg	<100	**730**	<100	**130**	**710**
>C34 - C40 Fraction	----	100	mg/kg	<100	**230**	<100	<100	**260**
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	**1020**	<50	**130**	**1020**
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	**60**	<50	<50	**50**
EP080: BTEXN								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	TP-06 Surface soil	TP-07 Surface soil	TP-08 Surface soil	TP-09 Surface soil	TP-10 Surface soil
				Sampling date / time	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00
Compound	CAS Number	LOR	Unit		ME2400498-006	ME2400498-007	ME2400498-008	ME2400498-009	ME2400498-010
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	**0.9**	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of BTEX**	----	0.2	mg/kg		<0.2	**0.9**	<0.2	<0.2	<0.2
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	**0.9**	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**84.5**	**86.5**	**84.2**	**80.2**	**79.1**
Toluene-D8	2037-26-5	0.2	%		**102**	**108**	**110**	**104**	**101**
4-Bromofluorobenzene	460-00-4	0.2	%		**116**	**114**	**117**	**109**	**106**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	TP-11 Surface soil	TP-12 Surface soil	TP-13 Surface soil	TP-14 Surface soil	TP-15 Surface soil
			Sampling date / time	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00
Compound	CAS Number	LOR	Unit	ME2400498-011	ME2400498-012	ME2400498-013	ME2400498-014	ME2400498-015
				Result	Result	Result	Result	Result
EA055: Moisture Content								
Moisture Content	----	1.0	%	**----**	**4.3**	**3.0**	**3.2**	**5.4**
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**2.3**	**----**	**----**	**----**	**----**
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**6**	**9**	**5**	**11**	**7**
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	**13**	**30**	**27**	**21**	**14**
Copper	7440-50-8	5	mg/kg	**10**	**28**	**13**	**32**	**16**
Lead	7439-92-1	5	mg/kg	**22**	**79**	**52**	**69**	**92**
Nickel	7440-02-0	2	mg/kg	**5**	**10**	**8**	**10**	**9**
Zinc	7440-66-6	5	mg/kg	**19**	**58**	**41**	**76**	**133**
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	**0.1**
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	**----**	**----**	**----**	**----**
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	**----**	**----**	**----**	**----**
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	**----**	**----**	**----**	**----**
beta-BHC	319-85-7	0.05	mg/kg	<0.05	**----**	**----**	**----**	**----**
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	**----**	**----**	**----**	**----**
delta-BHC	319-86-8	0.05	mg/kg	<0.05	**----**	**----**	**----**	**----**
Heptachlor	76-44-8	0.05	mg/kg	<0.05	**----**	**----**	**----**	**----**
Aldrin	309-00-2	0.05	mg/kg	<0.05	**----**	**----**	**----**	**----**
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	**----**	**----**	**----**	**----**
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	**----**	**----**	**----**	**----**
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	**----**	**----**	**----**	**----**
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	**----**	**----**	**----**	**----**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	TP-11 Surface soil	TP-12 Surface soil	TP-13 Surface soil	TP-14 Surface soil	TP-15 Surface soil
				Sampling date / time	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00
Compound	CAS Number	LOR	Unit		ME2400498-011	ME2400498-012	ME2400498-013	ME2400498-014	ME2400498-015
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg		<0.05	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg		<0.05	----	----	----	----
Endrin	72-20-8	0.05	mg/kg		<0.05	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg		<0.05	----	----	----	----
^ **Endosulfan (sum)**	115-29-7	0.05	mg/kg		<0.05	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg		<0.05	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg		<0.2	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg		<0.05	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg		<0.2	----	----	----	----
^ **Sum of Aldrin + Dieldrin**	309-00-2/60-57-1	0.05	mg/kg		<0.05	----	----	----	----
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-29-3	0.05	mg/kg		<0.05	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	----	----	----	----

Analytical Results

Sub-Matrix: SOIL
(Matrix: SOIL)

Compound	CAS Number	LOR	Unit	Sample ID	TP-11 Surface soil	TP-12 Surface soil	TP-13 Surface soil	TP-14 Surface soil	TP-15 Surface soil
				Sampling date / time	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00
					ME2400498-011	ME2400498-012	ME2400498-013	ME2400498-014	ME2400498-015
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	----	----	----	----
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	mg/kg		<0.5	----	----	----	----
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	mg/kg		<0.5	----	----	----	----
^ **Benzo(a)pyrene TEQ (half LOR)**	----	0.5	mg/kg		**0.6**	----	----	----	----
^ **Benzo(a)pyrene TEQ (LOR)**	----	0.5	mg/kg		**1.2**	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		**150**	**240**	**110**	**360**	<100
C29 - C36 Fraction	----	100	mg/kg		<100	**250**	<100	**320**	<100
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg		**150**	**490**	**110**	**680**	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		**210**	**390**	**160**	**560**	**110**
>C34 - C40 Fraction	----	100	mg/kg		<100	**180**	<100	**210**	<100
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg		**210**	**570**	**160**	**770**	**110**
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	TP-11 Surface soil	TP-12 Surface soil	TP-13 Surface soil	TP-14 Surface soil	TP-15 Surface soil
				Sampling date / time	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00
Compound	CAS Number	LOR	Unit		ME2400498-011	ME2400498-012	ME2400498-013	ME2400498-014	ME2400498-015
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of BTEX**	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**99.0**	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		**103**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		**102**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**78.6**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		**79.7**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%		**61.9**	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		**78.8**	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%		**79.9**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		**91.0**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**84.4**	**88.5**	**80.8**	**83.8**	**79.7**
Toluene-D8	2037-26-5	0.2	%		**102**	**109**	**108**	**102**	**102**
4-Bromofluorobenzene	460-00-4	0.2	%		**110**	**116**	**116**	**110**	**110**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	TP-A Surface soil	TP-B Surface soil	TP-C Surface soil	TP-D Surface soil	----
			Sampling date / time	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00	15-Mar-2024 00:00	----
Compound	CAS Number	LOR	Unit	ME2400498-016	ME2400498-017	ME2400498-018	ME2400498-019	--------
				Result	Result	Result	Result	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	**No**	**No**	**No**	**No**	**----**
Asbestos (Trace)	1332-21-4	-	-	**No**	**No**	**No**	**No**	**----**
Asbestos Type	1332-21-4	-	--	**-**	**-**	**-**	**-**	**----**
Sample weight (dry)	----	0.01	g	**222**	**219**	**187**	**253**	**----**
APPROVED IDENTIFIER:	----	-	--	**B.SCHRADER**	**B.SCHRADER**	**B.SCHRADER**	**B.SCHRADER**	**----**
Synthetic Mineral Fibre	----	-	--	**No**	**No**	**No**	**No**	**----**
Organic Fibre	----	-	--	**No**	**No**	**No**	**No**	**----**

Analytical Results

Descriptive Results

Sub-Matrix: **SOIL**

Method: Compound	Sample ID - Sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in Soils		
EA200: Description	TP-ASurface soil - 15-Mar-2024 00:00	A soil sample.
EA200: Description	TP-BSurface soil - 15-Mar-2024 00:00	A soil sample.
EA200: Description	TP-CSurface soil - 15-Mar-2024 00:00	A soil sample.
EA200: Description	TP-DSurface soil - 15-Mar-2024 00:00	A soil sample.

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	39	149
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	49	147
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	35	143
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	63	125
Toluene-D8	2037-26-5	67	124
4-Bromofluorobenzene	460-00-4	66	131

Inter-Laboratory Testing

Analysis conducted by ALS Newcastle, NATA accreditation no. 825, site no. 1656 (Chemistry) 9854 (Biology).

(SOIL) EA200: AS 4964 - 2004 Identification of Asbestos in Soils

Analysis conducted by ALS Sydney, NATA accreditation no. 825, site no. 10911 (Chemistry) 14913 (Biology).

(SOIL) EP080: BTEXN

(SOIL) EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions

(SOIL) EP080S: TPH(V)/BTEX Surrogates

(SOIL) EP075(SIM)B: Polynuclear Aromatic Hydrocarbons

(SOIL) EP075(SIM)S: Phenolic Compound Surrogates

(SOIL) EP075(SIM)T: PAH Surrogates

(SOIL) EP068A: Organochlorine Pesticides (OC)

(SOIL) EP068T: Organophosphorus Pesticide Surrogate

(SOIL) EP068S: Organochlorine Pesticide Surrogate

(SOIL) EA055: Moisture Content

(SOIL) EG005(ED093)T: Total Metals by ICP-AES

(SOIL) EG035T: Total Recoverable Mercury by FIMS

(SOIL) EP080/071: Total Petroleum Hydrocarbons

(SOIL) EA055: Moisture Content (Dried @ 105-110°C)

(SOIL) EP066: Polychlorinated Biphenyls (PCB)

(SOIL) EP066S: PCB Surrogate

barnson.

APPENDIX F

Flood Information

FIGURE 1

PEAK FLOOD DEPTH AND LEVEL CONTOURS
1% AEP EVENT

N

Meters
0 10 20 30 40

Bell Street
Cohen Street
Gladstone Street
Fairydale Lane

453
454
455
456
457
458

A
B
G
H
D
C
F
E

Legend

- Flood Level Sample
- Flood Level Contours (1m interval)
- 13 Fairydale Lane, Mudgee
- Cadastre

Peak Flood Depth (m)

- <= 0.2
- 0.2 - 0.5
- 0.5 - 1.0
- 1.0 - 1.5
- 1.5 - 2.0
- > 2.0

Point ID	1% AEP Peak Flood Level (mAHD)
A	454.03
B	454.18
G	454.54
D	454.88
F	456.15
E	455.40
C	454.83
H	454.56

WMAWATER HAS PROVIDED THE ATTACHED ADVICE BASED ON OUR HIGH LEVEL REVIEW OF THE SITE. NO ASSESSMENT OF IMPACT, OR THE REQUIREMENT TO DO AN IMPACT ASSESSMENT HAS BEEN UNDERTAKEN.

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FIGURE 2

PEAK FLOOD VELOCITY
1% AEP EVENT

N

Meters
0 10 20 30 40

Bell Street
Cohen Street
Gladstone Street
Fairydale Lane

A
B
C
D
E
F
G
H

Legend

- Flood Level Sample
- 13 Fairydale Lane, Mudgee
- Cadastre

Peak Flood Velocity (m/s)

- 0 - 0.1
- 0.1 - 0.2
- 0.2 - 0.5
- 0.5 - 1.0
- > 1.0

Point ID	1% AEP Peak Flood Velocity (m/s)
A	0.3
B	0.5
G	0.4
D	0.0
F	0.3
E	0.3
C	1.5
H	0.5

WMAWATER HAS PROVIDED THE ATTACHED ADVICE BASED ON OUR HIGH LEVEL REVIEW OF THE SITE. NO ASSESSMENT OF IMPACT, OR THE REQUIREMENT TO DO AN IMPACT ASSESSMENT HAS BEEN UNDERTAKEN.

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