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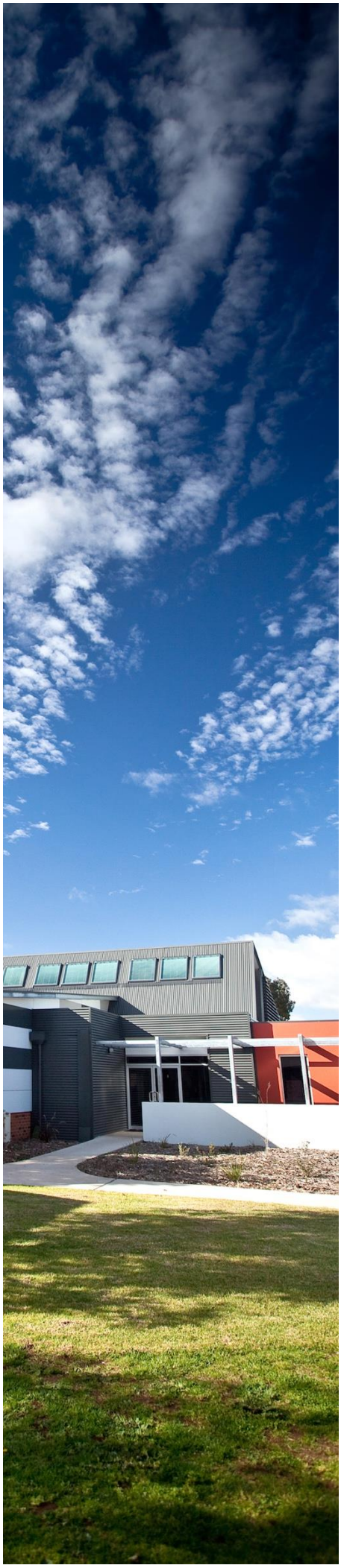

Planning Proposal

Rezoning and Reduction in Minimum Lot Size
148 Wyoming Road, Stubbo

(Our Reference: 38948-PR01_B)

Disclaimer

This report has been prepared solely for Brian & Frances Munro (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.

Report Title:	Planning Proposal
Project Name:	Rezoning and Reduction in Minimum Lot Size
Client:	Brian & Frances Munro
Project No.	38948
Report Reference	38948-PR01_B
Date:	7/06/2023

Prepared by:	Reviewed by:
	
Luke Bonnell B. Social Science Grad Dip. Urb. & Reg. Planning Graduate Town Planner	Jack Massey *MPIA* B. Urb & Reg. Planning Senior Town Planner

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1 Introduction

1.1 Planning Proposal

Barnson Pty Ltd has been engaged by Brian & Frances Munro to prepare a Planning Proposal (PP) to support an amendment to the *Mid-Western Regional Local Environmental Plan 2012* (MWRLEP). The subject site is Lot 101 DP 1221461, known as 148 Wyoming Road, Stubbo.

This PP has been prepared in accordance with Section 3.33 of the *Environmental Planning and Assessment Act 1979* (EP&A Act), and *A Guide to Preparing Planning Proposals* prepared by the NSW Department of Planning and environment (now known as the NSW Department of Planning, Infrastructure and Environment).

The Planning Proposal seeks to undertake a review of the site that has a current land zoning of RU1 Primary Production under the MWRLEP. The Planning Proposal seeks to rezone the land to R5 Large Lot Residential and reduce the Minimum Lot Size to 12ha to facilitate the subdivision of the site. The objective of the PP is to provide rural lifestyle development opportunities on the property.

The Planning Proposal will amend both the *Mid-Western Regional Local Environmental Plan 2012* and associated Local Environmental Plan mapping. Plans associated with the Planning Proposal are provided in Appendix A of this report.

Consistent with the NSW Department of Planning, infrastructure and Environment's guidelines, this Planning Proposal has been prepared in the following format:

- Part 1 – Objectives or intended outcomes
- Part 2 – Explanation of Provisions
- Part 3 – Justification and strategic and site-specific merit
- Part 4 – Maps
- Part 5 – Community Consultation
- Part 6 – Project Timeline

1.2 Proponent

The proponent for this proposal is Brian & Frances Munro.

1.3 Consultant

Barnson Pty Ltd

Jack Massey

Unit 4, 108-110 Market Street

Mudgee NSW 2850

2 Planning Proposal Context

2.1 Location and Title

The subject site of this Planning Proposal (PP) is legally described as Lot 101 in DP 1221461 and is known as 148 Wyoming Road, Stubbo.

The site is located just off Wyoming Road, which connects to Cope Road to the north west of the site. The Sandy Hollow Gulgong Railway runs along the south eastern boundary of the site.

The site is located approximately 9.5km north east of Gulgong and 39km north of Mudgee, as shown in the aerial image of the site in Figure 1 below.

Figure 1: - The Site and the Planning Proposal Area
Source: ePlanning Spatial Viewer

2.2 Existing Land Use

The site is located within the Local Government Area (LGA) of Mid-Western Regional and is therefore subject to the provisions of the *Mid-Western Regional Local Environmental Plan* (MWRLEP). The MWRLEP establishes a policy framework for land use planning decisions and guides the community in terms of how land can and cannot be used within the LGA.

The site is located in an area characterised by primary production, managed grasslands and scattered residential development. The site has been used for primary production purposes, predominately grazing and cropping, for an extended period of time.

The site is zoned RU1 Primary Production with adjoining R5 Large Lot Residential within proximity to the north and west. Refer to **Figure 2** below.

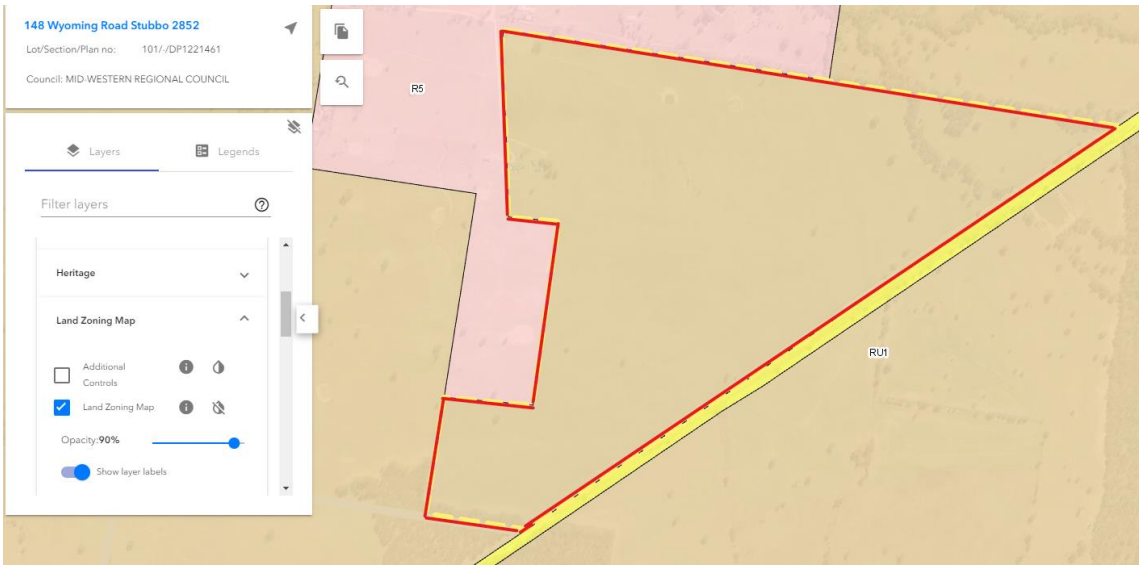


Figure 2: Existing Land Use Zones

Source: ePlanning Spatial Viewer

Tables 1 provides a summary of the lot subject to this Planning Proposal.

Table 1: Subject Land Details Summary	
Legal Description and Property Address	
Street Address:	148 Wyoming Road
Suburb:	Stubbo
Subject Land Property Description:	Lot 1 in DP 1221461
Land Zoning:	RU1: Primary Production
Names of Landowner:	Brian & Frances Munro
Local Government Area:	Mid-Western Regional Local Government Area.

A copy of the title and deposited plans has been provided at **Appendix B** of this report.

2.3 Existing Minimum Lot Size

The subject site is mapped to have a Minimum Lot Size pursuant of MWRLEP of 100 hectares.

Figure 3 is an extract of MWRLEP Sheet LZN_005, with the site outlined in red.

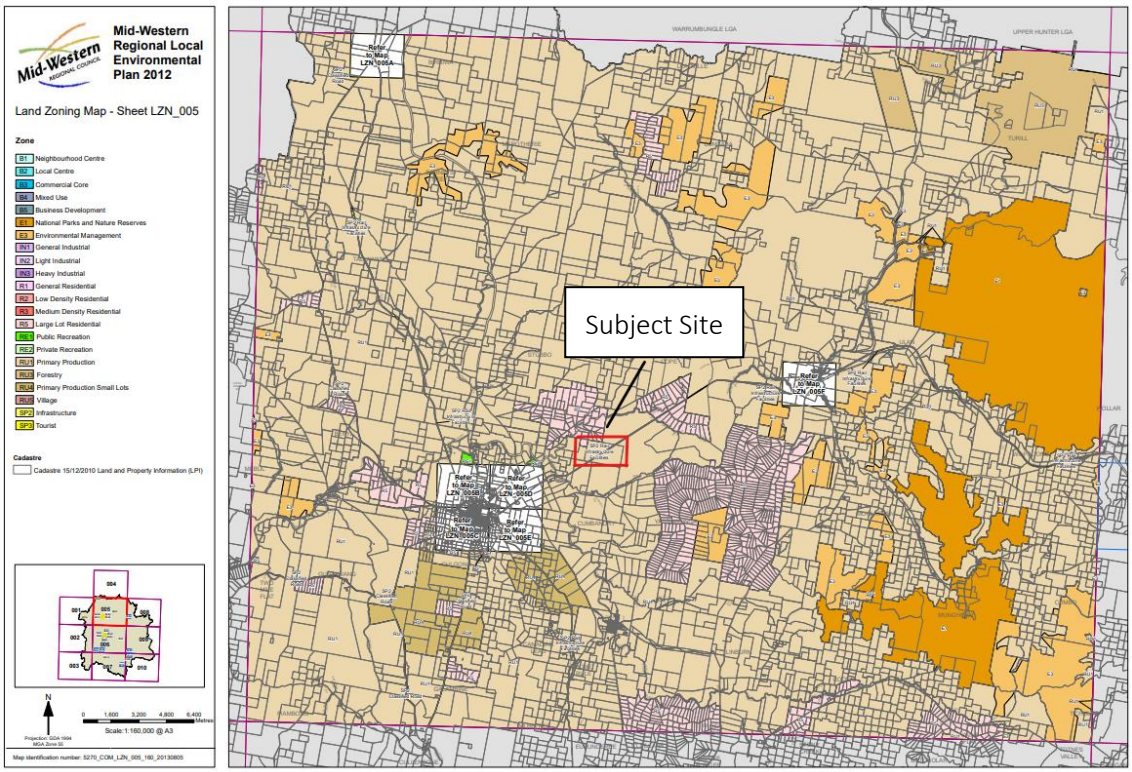


Figure 3: Existing Minimum Allotment Size – MWRLEP 2012

Source: NSW Legislation – Edited by Barnson Pty td

2.4 Topography and Soils

The subject site is generally flat throughout. The subject site includes multiple watercourses mainly along the north and west boundaries.

The site is classed as 5 Severe Limitation in accordance with SEED Mapping and is shown in Figure 4 below.

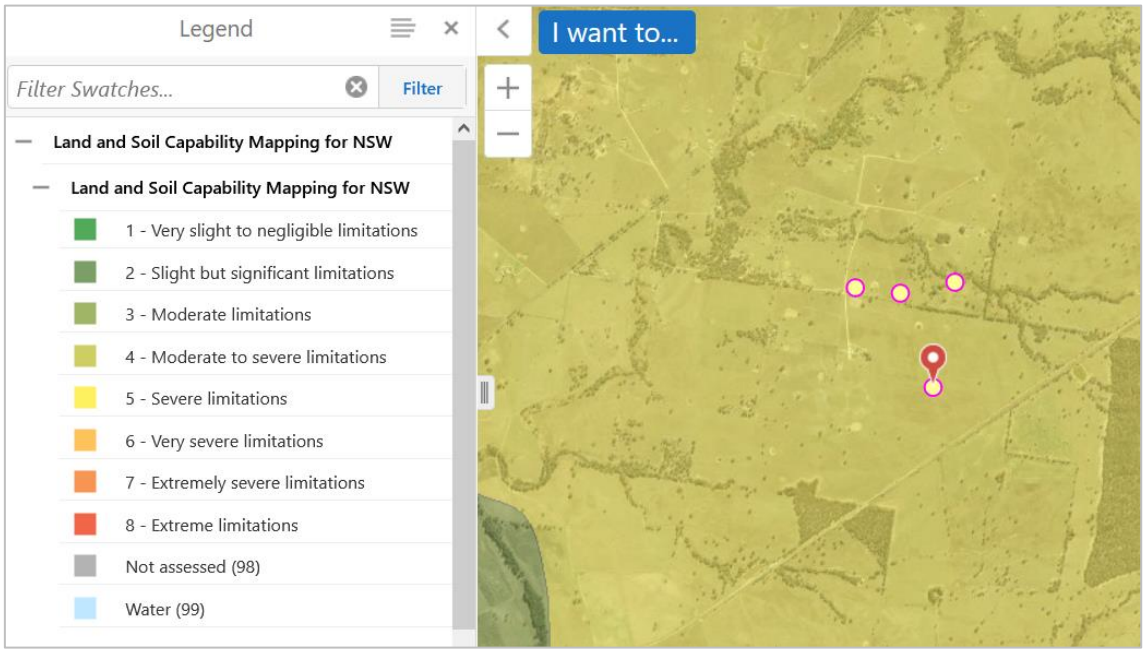


Figure 4 – SEED Land and Soil Capability Mapping

Source: Office of Environment & Heritage

2.5 Heritage

European Heritage

The site and immediate surrounding area have been identified on the existing *Mid-Western Regional Local Environmental Plan 2012* Heritage Map (sheet HER_005) in Figure 5.

Figure 5 illustrates that the site does not accommodate any Heritage Items (General or Archaeological), nor does it fall within a Conservation Area – General. In addition, the site does not sit adjacent or in close proximity to any heritage item or conservation area.

A review of Schedule 5 of the MWRELP does not locate any items within proximity to the subject site.

Figure 5: Heritage Map

Source: NSW Legislation - Edited Barnson Pty Ltd

Aboriginal Cultural Heritage

An Aboriginal Heritage Information Management System search was conducted for the subject site and immediate surround (search extent shown in **Figure 6** below).

There are no known items or sites of significance or Aboriginal cultural heritage significance that have been identified as being recorded on or within the vicinity of the site. Refer to AHIMS Search provided in **Appendix C** of this report.

A walkover was conducted by Tony Lonsdale, CEO of Mudgee Local Aboriginal Lands Council (LALC). It was concluded that based on a review of previous Aboriginal Cultural Heritage Assessments conducted in the vicinity, the AHIMS database and a walkover of the site, that no aboriginal Cultural Heritage materials were identified as potentially being impacted by the proposal. The Mudgee LALC clearance letter has been provided in **Appendix E** of this report.

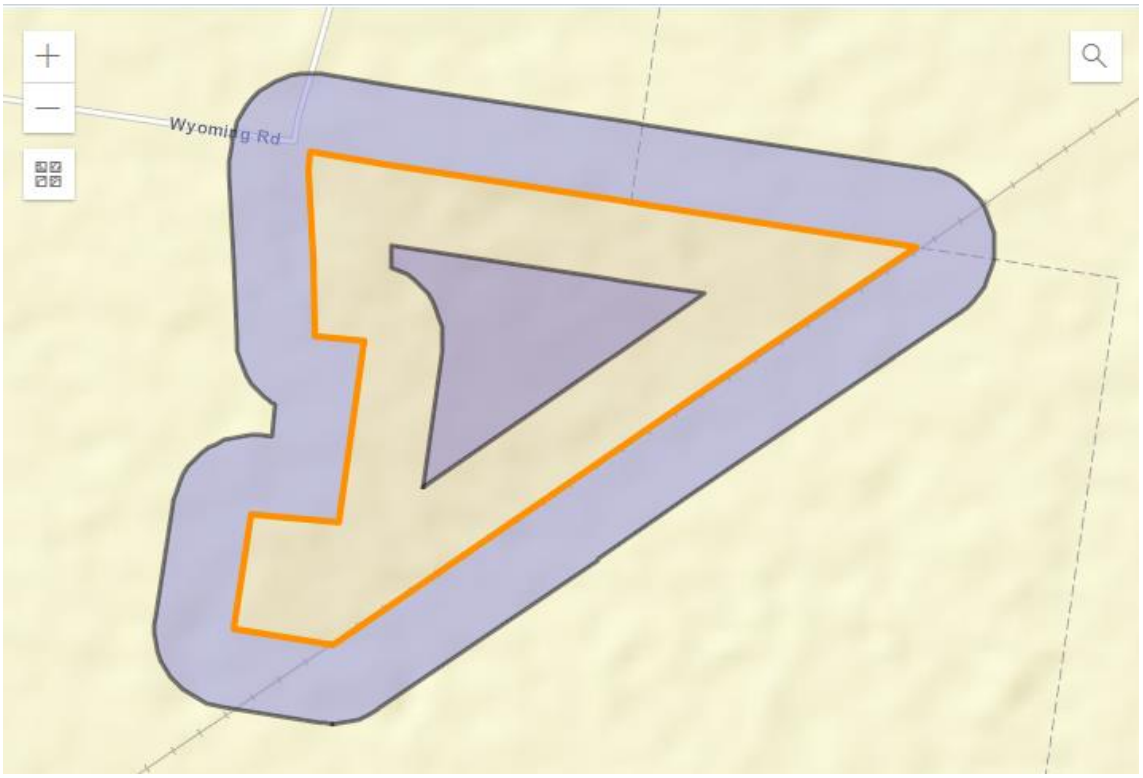


Figure 6: Aboriginal Heritage Information Management System Search Extent

Source: Heritage NSW (AHIMS)

2.6 Flora and Fauna

The site contains minimal Plant Community Types (PCT's) as shown in Figure 7 below. The site is heavily disturbed as a result of previous activities on the site. It is predominately grassland with scattered trees along the northern boundary. The grassland is frequently mowed/slashed and well managed. No threatened species have been recorded on the site as shown in Figure 8 below.

PCT ID 277 is partly positioned near the north east corner of the site and is summarised below:

PCT Name: Blakeley's Red Gum – Yellow Box grassy tall woodland of the NSW South Western Slope Bioregion
Vegetation Formation: Grassy Woodlands
Vegetation Class: Western Slopes Grassy Woodlands

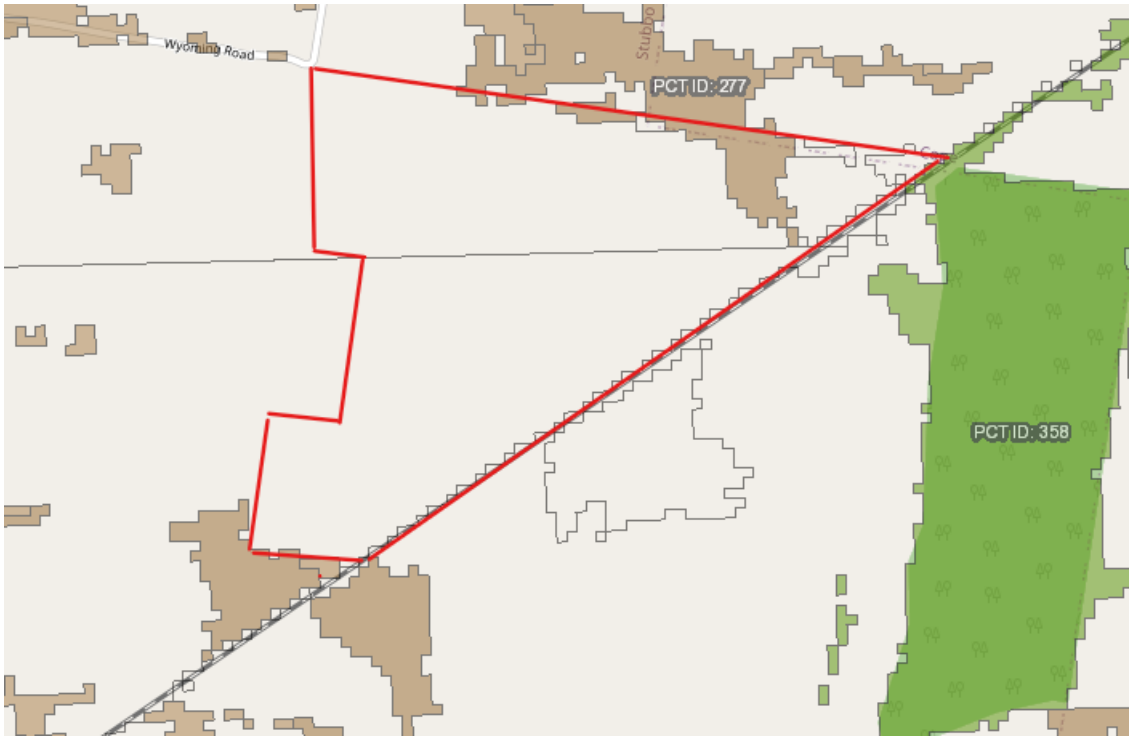


Figure 7: PCT Mapping

Source: Office of Environment & Heritage

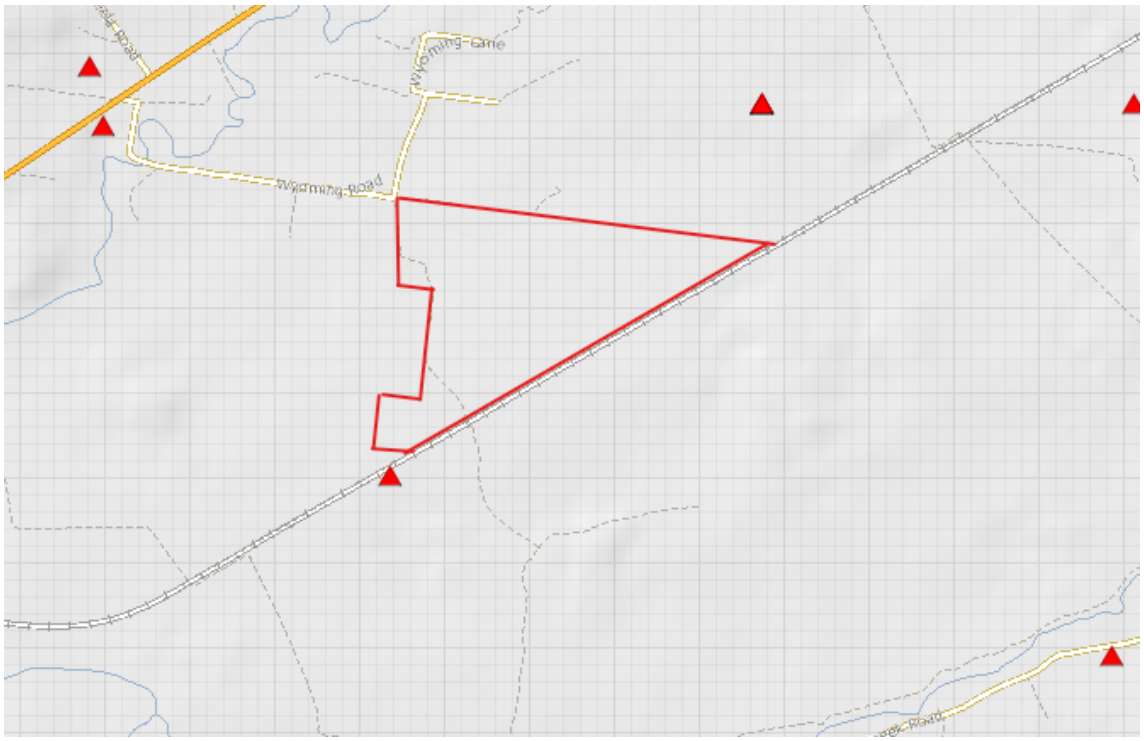


Figure 8: BioNet Atlas Search

Source: BioNet Atlas

2.7 Noise Environment

A noise assessment has not been undertaken as part of this Planning Proposal. The site is located within an area characterised by primary production and scattered residential activities. Noise levels are consistent with these land uses.

There is a railway line located to the east of the site which adjoins the subject site. The railway line is known as the Sandy Hollow Gulgong Railway, pursuant to SIX maps. It is understood that the railway is used for transporting copper from Nyngan to the port of Newcastle within sealed containers and also for freight services to central west NSW. There are no coal mines nearby that utilise this section of the railway.

2.8 Natural Hazards

The site is not mapped as being bushfire prone or within a Flood Planning Area under the *Mid-Western Regional Local Environmental Plan 2012*, NSW Planning Portal or the RFS' Online Mapping Tool.

2.9 Contamination and Acid Sulphate Soils

The site is not known to have previously contained any of the land uses listed in Table 1 of the Contaminated Land Planning Guidelines that are likely to cause contamination. A Preliminary Site Infestation (PSI) has been undertaken and is provided in Appendix D of this report. The recommendations are summarised as follows:

- Based on the findings of the desktop review and site investigation it can be states with a reasonable level of confidence that the subject site is suitable for the intended rezoning and subdivision; and
- It is recommended that the elevated Arsenic concentration identified by investigated further, only in the event of this specific portion of the subject site having to be disturbed for further development. At that time, the level and extent of the elevated heavy metal concentration will determine if further remedial action is required.

Refer to PSI in Appendix D of this report for the findings.

2.10 Services

The subject site contains existing onsite services such as suitable road access, onsite effluent management, rainwater tanks for storage and reuse, stormwater management mechanisms, electricity and telecommunications.

2.11 Access and Traffic

Access is gained to the site off Wyoming Road, which is a gravel road. An internal driveway is established that provides access to the existing dwelling located on the site.

3 Planning Proposal Particulars

3.1 General

This Planning Proposal seeks Mid-Western Regional Council's support to rezone approximately 100 hectares of land from RU1 Primary Production to R5 Large Lot Residential, with a corresponding reduction to the minimum lot size from 100 hectares to 12 hectares.

The intention of rezoning the land is to permit the future subdivision of the site and its development for rural residential purposes consistent with the objectives of the R5 Large Lot Residential zone within the MWRLEP.

The PP is generally consistent with the *Mid-Western Regional Comprehensive Land Use Strategy* (CLUS) and Council's Local Strategic Planning Statement, as outlined later in this report. The proposed will deliver a much needed supply of rural residence blocks in a suitable and accessible location within proximity to Gulgong and Mudgee.

3.2 Lot Yield

The Planning Proposal Area comprises a total area of approximately 100 hectares. Under the current RU1 Primary Production zoning, the minimum lots size is 100 hectares, and a compliant subdivision would not allow for further subdivision of land. The land is predominately cleared with scattered trees and vegetation within the southeast and north extremities of the Planning Proposal area.

Barnson have provided an indicative subdivision layout. This layout should be considered to determine the maximum yield for the site based on the proposed rezoning and any potential constraints. A copy of the concept subdivision has been provided in Appendix A of this report. The plan demonstrates a maximum yield of eight (8) R5 Large Lot Residential Lots consistent with MWLEP provisions. The purpose of the concept subdivision plan is to show an ideal scenario for subdividing the site and providing a maximum yield for the proposed zoning and corresponding minimum lot size. The final arrangement would be subject to a detailed Development Application.

The opportunity area met specific criteria in the *Mid-Western Regional Comprehensive Land Use Strategy* and was identified as suitable land for future development. The opportunity is to specifically create small rural lots/large residential lots which consist of a minimum of 12 hectares where reticulated water and sewer is not available to ensure more sustainable use of local groundwater and surface water resources with regard to the Rural SEPP Principles. The Planning Proposal will provide an additional residential opportunity area that will add diversity to the market and facilitate the delivery of new lots.

The concept Subdivision Plan shown in Figure 8 below and Appendix A of this report.

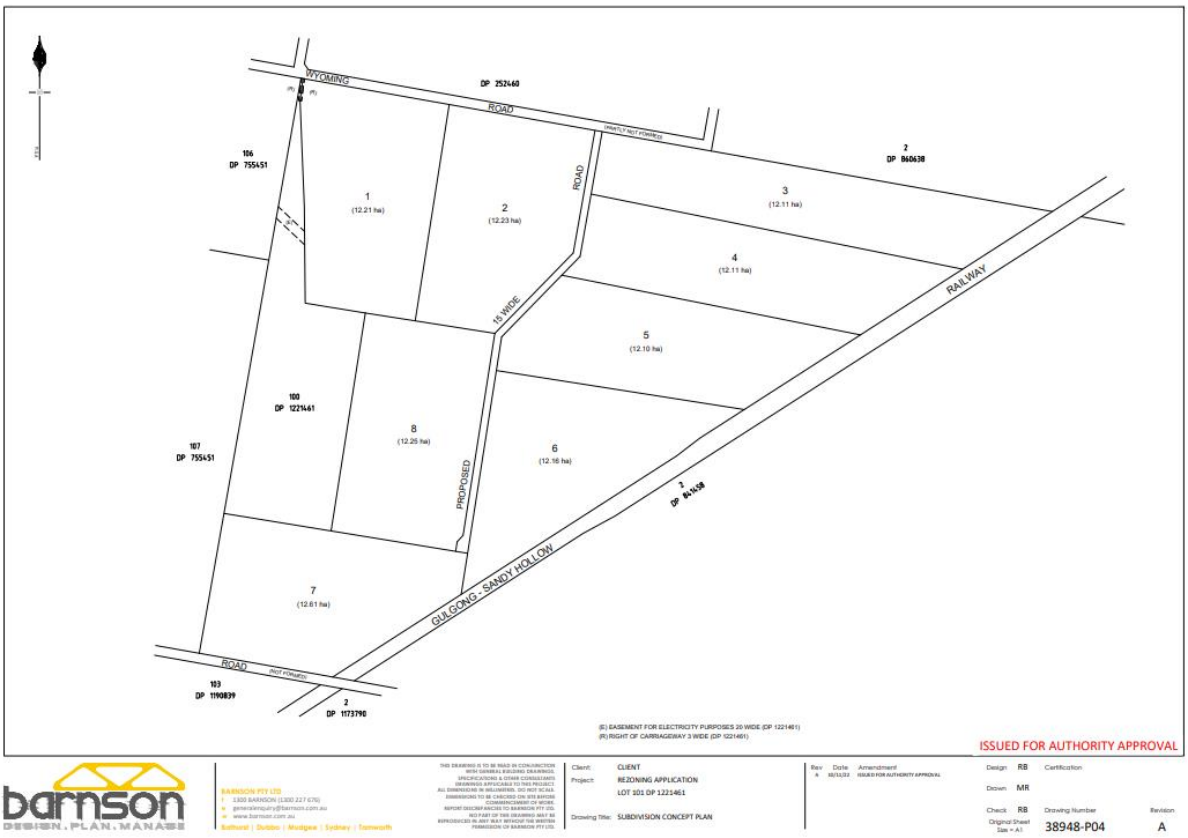


Figure 9: concept Subdivision Plan

Source: Barnson Pty Ltd

3.3 Water Supply and Effluent Management

The Mudgee and Gulgong Urban Release Strategy recommends that Council undertake further analysis into costs of providing reticulated water and sewer to service future subdivisions in the LGA.

Given the semi-rural location, existing development patterns of the site and high costs that would be involved with reticulating this area, it is considered that enforcing this infrastructure would be uneconomic and would not achieve a reasonable return on the costs of installation. Accordingly, it is proposed to provide onsite effluent management systems and water supply via rainwater tanks, as follows.

3.3.1 Onsite Effluent Management

Onsite effluent systems shall be installed for new Lots established on the site and would be subject to assessment as part of the subdivision stage. For sites that may be subject to groundwater vulnerability, alternative systems such as Aerated Wastewater Treatment Systems shall be considered. As part of the future subdivision application, a

Water Cycle Management Report shall be prepared for each Lot within the subdivision to determine that there is suitable area capable of the disposal of onsite wastewater.

A 4,000m^2 Lot is widely cited throughout Australia as a minimum lot size for unsewered residential properties (i.e. dwellings), which can adequately manage effluent with appropriate setback buffers. With a lot size of 120,000m^2 (12 hectares), it is considered that each new Lot would have adequate area to manage effluent.

3.3.2 Water Supply

Onsite rainwater collection tanks will be established as part of future residential developments to service each dwelling on the 12 hectare Lots. Based on data from the Bureau of Meteorology, Gulgong has a recorded mean average of 692mm a year. The highest month for rainfall is January at an average of 86mm and the lowest is in June at an average of 44mm. The amount of rainfall collected would depend on the roof catchment area of dwellings and outbuildings on future Lots. The rainwater harvesting requirements for each household would be dependent on occupancy capacity. Sufficient rainwater would also need to be provided for landscaping and general maintenance.

Given the yearly variation of rainfall in this area, it is recommended that water tanks be specified for future dwellings with a capacity to support those dwellings. The size of collection tanks would be subject to development assessment as part of future applications.

If feasible and allowable by Council and WaterNSW, a bore could be established with associated Water Scheme for non-potable water for each Lot (I.e. landscaping). An assessment of the groundwater availability should be undertaken prior to investigating this option. However, given the proposed size of the Lots, it is not considered necessary as each Lot would be self-sufficient.

3.4 Electricity and Telecommunications

There is existing electricity infrastructure in the locality that supports existing dwellings. The design of additional substations in order to service the proposed Lots would form part of a future subdivision application of the site. There are no known complications on servicing the proposed Lots with electricity in future. Should reticulated electricity not be possible to any of the Lots, solar and battery systems can be investigated, which is quickly becoming popular in rural locations throughout NSW.

It is not proposed to connect the new Lots to reticulated telecommunications infrastructure. This is due to the fact that wireless NBN technology allows for sites to be connected to the NBN via the wireless network, which accommodates both telecommunications and the internet. As such, physical infrastructure is considered unnecessary for this type of subdivision. Nevertheless, should telecommunication lines be required to each proposed Lot, investigations can be undertaken as part of a future

subdivision application. There are no known complications on servicing the proposed Lots with telecommunications in future.

4 Existing Legislative Framework

4.1 Introduction

The *Mid-Western Regional Local Environmental Plan 2012* commenced on the 10th August 2012. MWRLEP 2012 adopts the Standard Instrument LEP Template required by the NSW Government.

4.2 RU1 Primary Production Land Zone

The Planning Proposal area subject to the proposed rezoning is existing RU1 – Primary Production zoned land.

A copy of the Landuse Table relating to RU1 – Primary Production from Mid-Western Regional Local Environmental Plan 2012 has been included below:

Zone RU1 Primary Production

1 Objectives of zone

· To enable sustainable primary industry production by maintaining and enhancing the natural resource base.

· To encourage diversity in primary industry enterprises and systems appropriate to the area

· To minimise the fragmentation and alienation of resource lands

· To minimise conflict between land uses within this zone and land uses within adjoining zones.

· To maintain the visual amenity and landscape quality of Mid-Western Regional by preserving the area's open rural landscape and environmental and cultural heritage values

· To promote the unique rural character of Mid-Western Regional and facilitate a variety of tourist land uses

2 Permitted without consent

Environmental protection works; Extensive agriculture; Home businesses;; Home occupations; Intensive plant agriculture; Roads; Water reticulation systems

3 Permitted with consent

Aquaculture; Building identification signs; Business identification signs; Cellar door premises; Dwelling houses; Extractive industries; Farm buildings; Home industries; Intensive livestock agriculture; Landscaping material supplies; Markets; Open cut mining; Plant nurseries; Restaurants or cafes; Roadside stalls; Any development not specified in item 2 or 4

4 Prohibited

Amusement centres; Attached dwellings; Backpackers' accommodation; Boarding houses; Boat building and repair facilities; Car parks; Centre-based child care facilities; Commercial Premise; Correctional centres; Crematoria; Educational

establishments; Exhibition homes; Exhibition villages; Freight transport facilities; Group homes; Health service facility; Heavy industrial storage establishments; Hostels; Industrial retail outlets; Industries; Local distribution premise; Marinas; Mortuaries; Multi-dwelling housing; Passenger transport facilities; Places of public worship; Public administration buildings; Pubs; Recreation facilities (indoor); Registered clubs; Residential flat buildings; Respite day care centres; Restricted premises; Semi-detached dwellings; Seniors housing; Service stations; Sex services premises; Shops; Shop-top housing; Signage; Storage premises; Transport depots; Truck depots; Vehicle body repair workshops; Vehicle repair stations; Warehouse or distribution centres; Wholesale supplies.

It is noted that the site is currently being managed however no significant sustainable primary industry is currently operating on the site.

4.3 Existing Minimum Allotment Size.

The subject site is mapped to have a Minimum Allotment Size of 100 hectares.

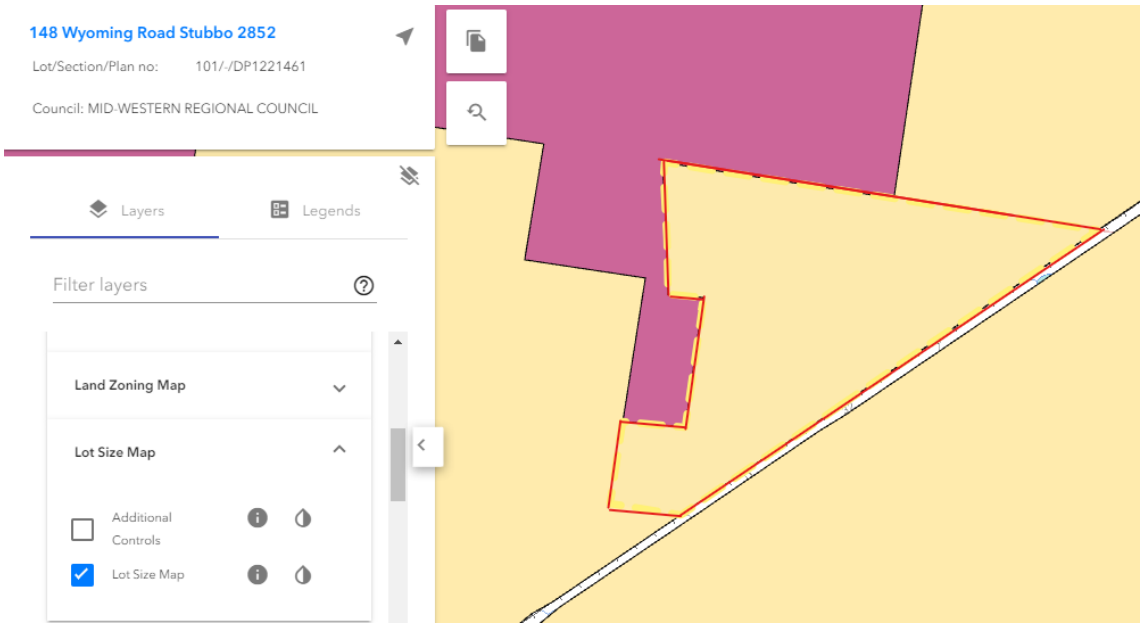


Figure 10: Minimum Lot Size Mapping

Source: ePlanning Spatial Viewer

5 Proposed Legislative Framework

5.1 Introduction

The Planning Proposal is seeking to rezone the subject site from RU1 Primary Production to R5 Large Lot Residential under the *Mid-Western Regional Local Environmental 2012*. The Planning Proposal also seeks to amend the minimum lot size from 100 hectares to 12 hectares.

5.2 Land Zoning R5 Large Lot Residential

The Planning Proposal is seeking to rezone land to R5 – Large Lot Residential land. The proposed land zoning has been included below:

The objectives of the R5 zone are:

- *To provide residential housing in a rural setting while preserving, and minimising impacts on, environmentally sensitive locations and scenic quality.*
- *To ensure that large residential lots do not hinder the proper and orderly development of urban areas in the future.*
- *To ensure that development in the area does not unreasonably increase the demand for public services or public facilities.*
- *To minimise conflict between land uses within this zone and land uses within adjoining zones.*

The land use table for the R5 zone is as follows:

2 Permitted without consent

Extensive agriculture; Home-based child care; Home businesses; Home occupations; Roads; Water reticulation systems

3 Permitted with consent

Bed and breakfast accommodation; Cellar door premises; Dual occupancies; Dwelling houses; Garden centres; Home industries; Intensive plant agriculture; Landscaping material supplies; Markets; Neighbourhood shops; Oyster aquaculture; Plant nurseries; Pond-based aquaculture; Roadside stalls; Secondary dwellings; Serviced apartments; Tank-based aquaculture; Waste or resource transfer stations; Water recycling facilities; Any other development not specified in item 2 or 4

4 Prohibited

Advertising structures; Agriculture; Air transport facilities; Airstrips; Amusement centres; Animal boarding or training establishments; Boarding houses; Boat building and repair facilities; Boat launching ramps; Boat sheds; Car parks; Cemeteries; Charter and tourism boating facilities; Commercial premises; Correctional centres; Crematoria; Dairies (pasture-based); Electricity generating works; Entertainment facilities; Environmental facilities; Exhibition homes; Exhibition villages; Forestry; Freight transport facilities; Function centres; Heavy industrial storage establishments; Helipads; Highway service centres; Home occupations (sex services); Industrial retail outlets; Industrial training

facilities; Industries; Jetties; Marinas; Mooring pens; Moorings; Mortuaries; Passenger transport facilities; Public administration buildings; Recreation facilities (indoor); Recreation facilities (major); Registered clubs; Research stations; Residential accommodation; Restricted premises; Rural industries; Service stations; Sex services premises; Storage premises; Tourist and visitor accommodation; Transport depots; Truck depots; Vehicle body repair workshops; Vehicle repair stations; Veterinary hospitals; Warehouse or distribution centres; Waste or resource management facilities; Water recreation structures; Water supply systems; Water treatment facilities; Wharf or boating facilities

The Planning Proposal will require the revisions of the Land Zoning Maps of the Mid-Western Regional Local Environmental Plan 2012.

5.3 Minimum Allotment Size

No changes are proposed to Clause 4.1 of the LEP.

The Planning Proposal is seeking to reduce the Minimum Subdivision Size to 12ha to correlate with the land zoning changes. Therefore, the Planning proposal will require modification to the Minimum Subdivision Lot Size Map.

6 Planning Proposal

6.1 Part 1 – Objectives or Intended Outcomes

The Intention of this Planning Proposal is:

To amend the *Mid-Western Regional Local Environmental Plan 2012* to enable Large Lot Residential development.

The key outcomes of the site investigation carried out for this Planning Proposal are:

- Mapping and rezoning of the subject site which is zoned R5 Large Lot Residential Land.
- Providing additional land to support the continuous growth of the area within proximity to Gulgong and the larger Mid-Western region.
- Provisions for alternative housing and land supply.

The Planning Proposal includes comprehensive supporting information to:

- Describe the subject land, its locality, the current zoning and justification to provide for additional large lot residential development on the subject land.
- Request an amendment to the LEP to permit large lot residential development.
- Address the 'Gateway Determination Assessment' Criteria under Part 3 of the EP&A Act 1979.
- Provide justification for the LEP amendment and demonstrate the net community benefits which follow.
- Demonstrate that the Planning Proposal is consistent with NSW Department of Planning, Industry and Environment and Council broad strategic direction for the locality.

6.2 Part 2 – Explanation of Provisions

The Principal Planning Instrument is the *Mid-Western Regional Local Environmental Plan 2012*.

Amendment applies to	Explanation of Provision
The land zoning of the subject site.	Amending land governed by the Mid-Western Regional Local Environmental Plan 2012 that is zoned RU1 Primary Production to R5 Large Lot Residential. Refer to Figures 11 & 12.
The Minimum Lot Size of the subject site.	Amending land governed by the Mid-Western Regional Local Environmental Plan 2012 that has a Minimum Lot Size of 100ha to 12ha to correlate with the land

	proposed to be zoned R5 Large Lot Residential.

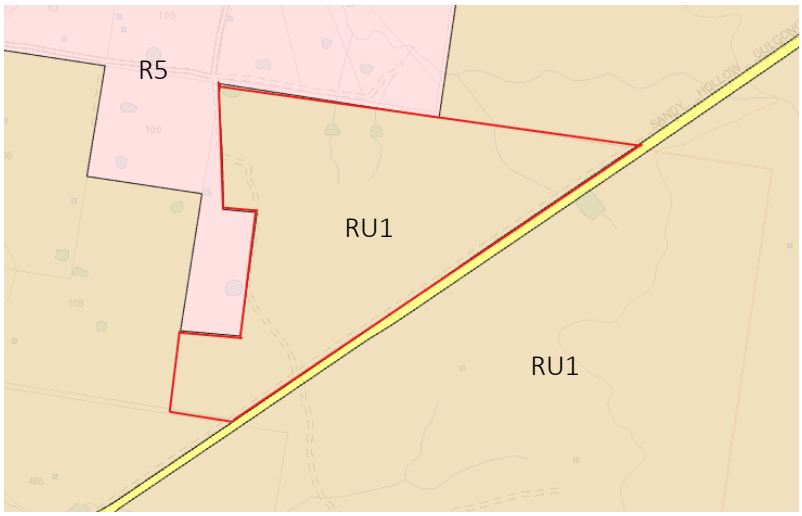


Figure 11: Existing Land Zoning

Existing Land Zoning

All land within the Planning Proposal Area is currently zoned RU1 – Primary Production

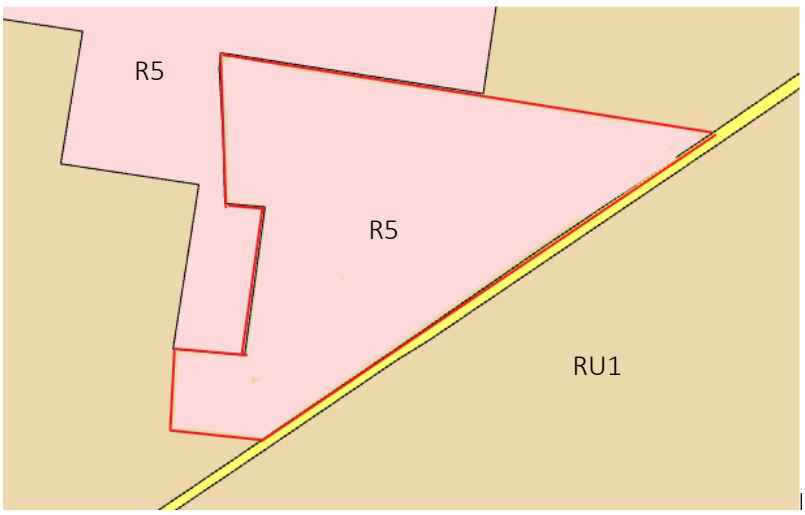


Figure 12: Proposed Land Zoning

Proposed Land Zoning

The Planning Proposal seeks to make amendments to the current land zoning by altering the existing land zoning to R5 – Large Lot Residential.

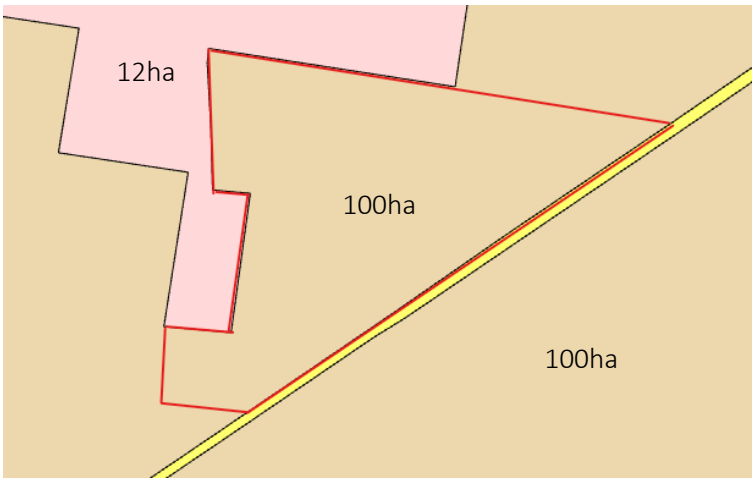


Figure 13: Existing Minimum Allotment Size

Existing Minimum Allotment Size

All land zoned RU1 and land within the Planning Proposal Area has a Minimum Allotment Size of 100ha.

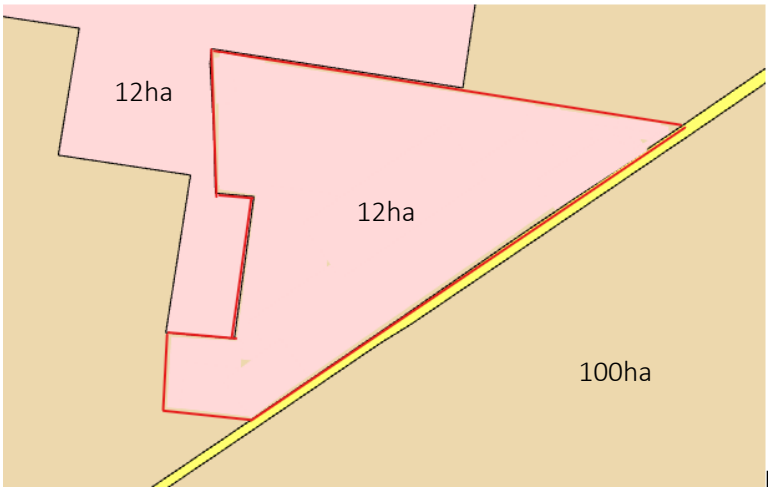


Figure 14: Proposed Minimum Allotment Size.

Proposed Minimum Allotment Size

The Planning Proposal seeks to make amendments to the current Minimum Allotment Size by altering the current lot size map to correspond with the proposed R5 Land Zone (12ha) amendment and to facilitate future subdivision of land.

If the land was to retain its existing zone provisions, the result would be:

- Retention of land zoned RU1 with little agriculture potential.
- Inconsistency with Council adopted strategic document, including Growth Management Strategies; and,
- A potential shortfall in projected large lot residential housing stock in the LGA.

The proposed outcome for the PP will be achieved by:

- Rezoning of land would facilitate the use of land to be used for residential purposes and ultimately support the housing needs for the community of Gulgong/Stubbo and the Mid-Western Regional Local Government Area.
- Supporting the rezoning of land that will facilitate the release of additional large lot residential land in an appropriate location near Gulgong.

6.3 Part 3 – Justification

6.3.1 Section A – Need for the Planning Proposals

Is the planning proposal a result of an endorsed LSPS, strategic study or report?

Yes. The Planning Proposal will deliver additional R5 Large Lot Residential lands as anticipated under the *Mid-Western Comprehensive Land Use Strategy* (and shall support the planning priorities stipulated within the *Mid-Western Regional Local Strategic Planning Statement (LSPS).*

Local Strategic Planning Statement

Council's LSPS was prepared in accordance with Section 3.9 of the *Environmental Planning and Assessment Act 1979*. The objective of the LSPS is to provide a strategic framework for land use planning in the Mid-Western LGA. The LSPS included the following planning priorities that a relevant to the subject Planning Proposal.

Planning Priority 2 *''make available diverse, sustainable, adaptable, and affordable housing options through effective land use planning''.*

The proposal is consistent with Planning Priority 2 as it shall increase the number of large lot residential land in the LGA. The need for increased supply for large lot residential blocks is noted in the LSPS, with the focus on identifying additional opportunity areas within the next 20 years. The subject Planning Proposal will assist Council in achieving Planning Priority 2 and assist with stabilising demand for large lot residential blocks in the LGA. This would ensure that affordability in the market can be maintained.

Section 3 (page 10) of the LSPS states ''Council will continue to ensure a range of residential housing options are available including varying lot sizes and rural lifestyle opportunities. Council will strive to improve the build outcomes of housing stock''. The proposal is consistent with this part in that it shall provide additional rural lifestyle blocks for the LGA, where the is a significant shortfall.

Comprehensive Land Use Strategy

Council's Comprehensive Land Use Strategy (CLUS) is a strategic policy for land use within the Mid-Western Regional LGA. Council adopted the CLUS in 2010 with the purpose to:

- *Provide a decision making toll based on clarity, certainty and accurate data to assist Council in the decisions making process; and*
- *Determine the optimal location for development.*

The CLUS acknowledges the need for additional rural lifestyle blocks in the LGA by identifying more suitable areas for lifestyle development. The criteria provided three scales of delivery, being Short (2010-2015 – Areas C and E), Medium (2015-2025 – Area F) and Long (2025-2035 – Areas A, B and D) Term Opportunity Areas. The subject site is located within the Long Term Area B area. An extract of the mapped areas is shown in Figure 15 below.

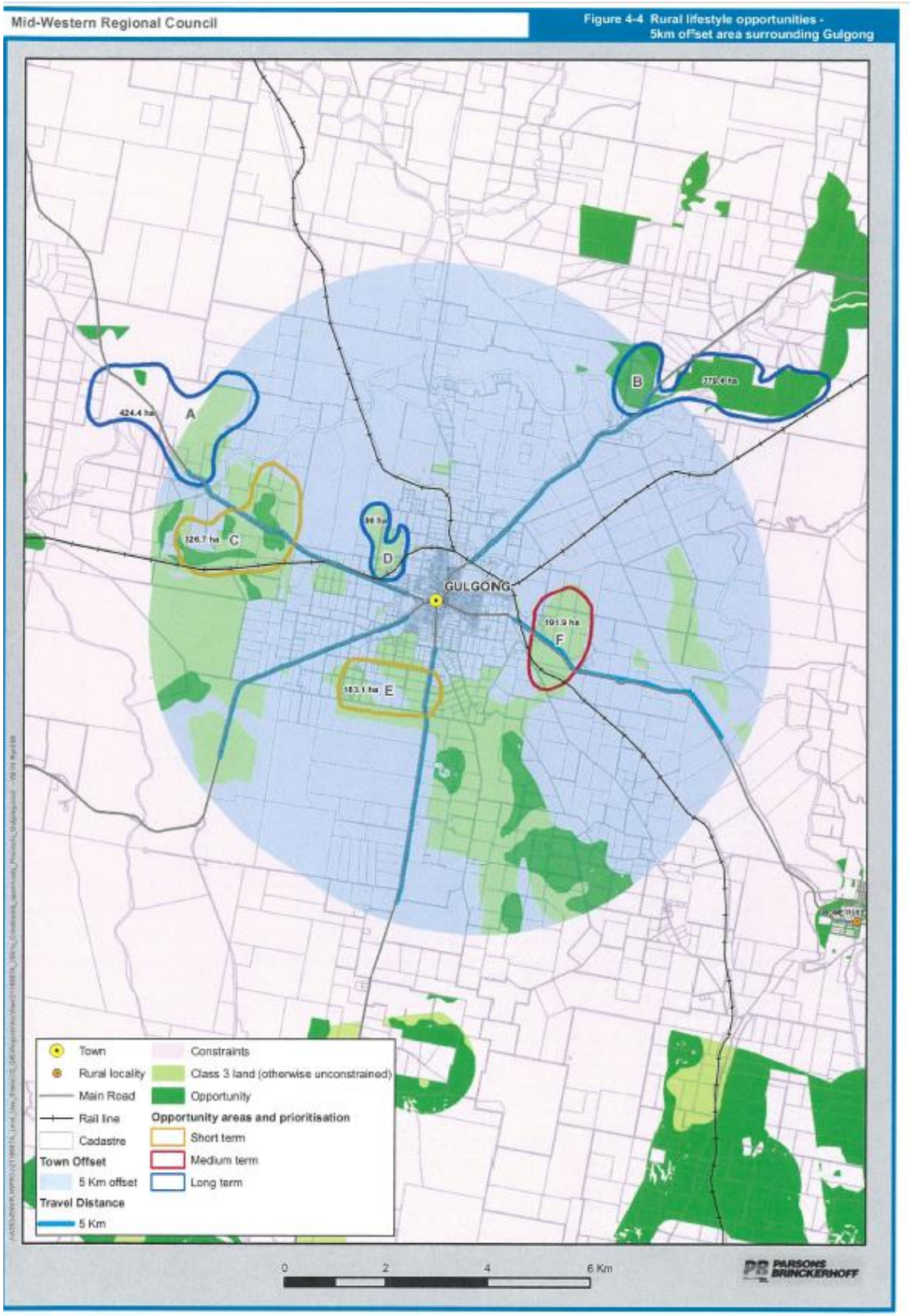


Figure 15 – CLUS Mapping

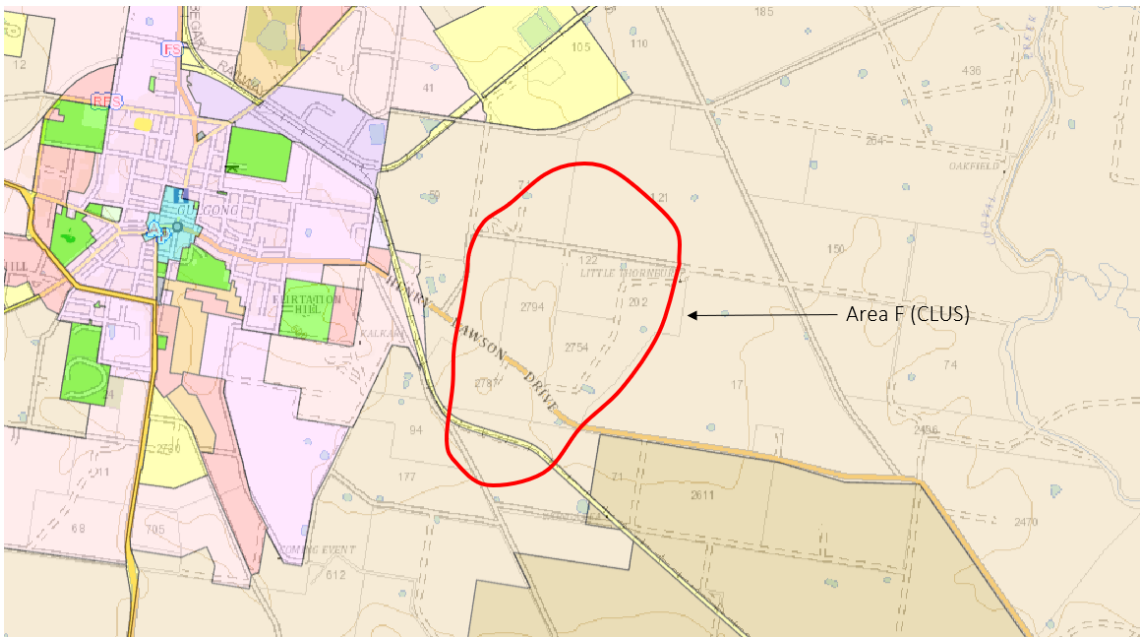
The CLUS stipulated that the release of these lands would be subject to a Rural Release Strategy, however Barnson is yet to locate the strategy within Council's files, therefore it is assumed that the strategy was never prepared.

It is understood that the Short Terms opportunity areas (Area C and E) have been taken up and that there has been zero take up of the Medium Term Area (Area F).

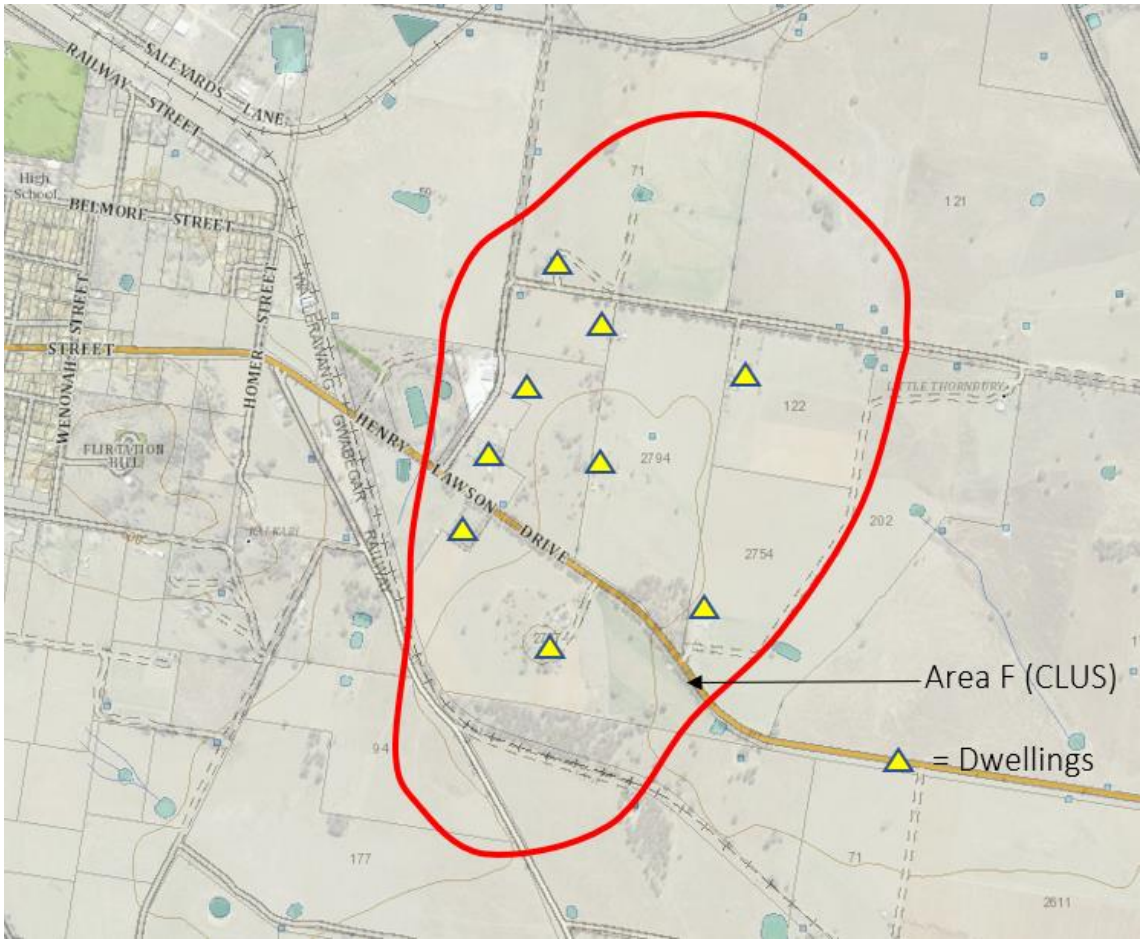
Prelodgement discussions were undertaken prior to the submission of this PP. The relevant Council officer provided the following advice via email:

> *"Figure 4-4 Rural lifestyle opportunities – 5km offset area surrounding Gulgong (CLUS Part C Strategy) identifies opportunity areas. We specifically spoke about the supply remaining in opportunity F. The CLUS states a lot yield of 11, 12 hectare lots. Council acknowledges the lots within this area have not been rezoned, however after the consideration of the established dwelling pattern and the size of lots, it is unlikely this opportunity area will deliver the yield of 11 lots. Accordingly, Council will consider Planning Proposals for rezoning in the long term opportunity areas. These Planning Proposals would attract the consistent fee.*
>
> *The Planning Proposal should provide at least this level of detail regarding the supply available in Area F."*

As shown in the image below, Area F is situated in a rural area zoned RU1 Primary Production. There are R5 lands to the west and RU4 lands to the south east of this mapped area.



As mentioned above, Area F provides a potential Lot yield of 11 Lots across the mapped area, being 191 hectares. As shown in the figure below, there are approximately nine (9) existing dwellings located within the mapped Area F. Therefore, it is difficult to determine where the additional 11 Lots that would accommodate new dwellings would come from in this area, given the presence of existing dwellings and dwellings patterns in this area. Therefore it is highly unlikely that the Area F opportunity area would deliver the eleven (11) lots as stipulated within the CLUS.



The subject site, being approximately 100 hectares in size, shall accommodate for the shortfall that Area F presents. Noting that there is only one (1) dwelling positioned on the subject site, and that the potential yield discussed earlier in this report is demonstrated as highly achievable.

The CLUS is broken up into three (3) parts, and each part is discussed below.

Part A – Introduction and Background

This section of the CLUS provides the general context of the strategy. It focuses on addressing rural settlement and addresses the demand for rural lifestyle development in the LGA. In particular, Section 10.9 of Part A deals with addressing the demand for rural lifestyle development, and an extract is provided below.

> *10.9 Addressing the demand for rural lifestyle*
> *Living in the rural landscape is increasingly a popular lifestyle choice across the Mid-Western Regional local government area. One of the aims of rural settlement planning is to address the demand for the rural lifestyle, while minimising impacts upon agricultural land. It aims to curb unnecessary subdivision of agricultural land in less desirable locations. Council recognises and supports the need to provide a range and choice of dwelling opportunities, both urban and rural. By the same token, we need to recognise that land is a finite resource both in terms of providing for rural lifestyle and maintaining an agricultural base.*
> *There are approximately 2,066 lots within the Mid-Western Regional local government area and of these lots it is estimated that about 90 per cent have an existing dwelling. There is limited evidence to suggest that many of the more*

isolated lots are used as temporary accommodation with a shed, electricity but no permanent dwelling. Anecdotal evidence suggests that the demand is strong for rural lifestyle lots within close proximity to Mudgee.

As discussed, reports from local real estate agents suggest that there is an increasing demand for rural lifestyle. This is supported by the projected gross allotment demands produced by Ratio Consultants (2007), as summarised in Table 10-12, which indicated growth in the rural areas surrounding Mudgee and Rylstone 20 2031.

The CLUS discusses the demand for tree changers. This demand has grown significantly since the CLUS was published in 2010. This is predominately due to a change in people working remotely and moving away from metropolitan areas. The COVID pandemic has played a big part in this change, allowing people to work from home more regularly. This has allowed people to explore their options in terms of living and look to more affordable housing options outside of the metropolitan areas.

The CLUS acknowledged that there is insufficient land zoned to satisfy the anticipated demand for future rural lifestyle development. This leads us into Part B, where a constraints and opportunity analysis has been undertaken to determine the suited areas for future rural lifestyle accommodation.

Part B – Constraints and Opportunities

Part B of the CLUS provides an in depth understanding of the environmental, social and economic issues to determine the most suitable locations for additional rural lifestyle development within the LGA.

Chapter 2.2 outlines the relevant constraints for rural land use conflicts as a result of additional rural lifestyle development. The proposal is consistent with all constraints listed within this chapter.

The CLUS also discussed the suitability of the land in terms of infrastructure, services, value of agricultural land etc. The site is located in a suitable location for rural residential development.

Part C – Strategy

Part C of the strategy consolidates the information and analysis in Parts A and B, and provides recommendations moving forward. Section 4.8 (Page 63) states:

"Evidence suggests that the demand is strong for rural lifestyle lots within close proximity to Mudgee, ideally within a commuting distance of 10-15 minutes from the town centre. The area surrounding Mudgee is picturesque and desirable for those seeking a 'treechange' and proximity to the higher order services of Mudgee. This is consistent with the direction of the Strategy, which focuses future rural lifestyle opportunities around the main settlements in the local government area".

The subject site is located approximately 9.5km north east of Gulgong, which is a 10-12 minute drive.

This section of the Strategy talks about the release of lifestyle Lots, being approximately 40- 50 Lots per annum, and the location of those lots in relation to townships. A desktop review of the LGA has revealed that there is a significant shortfall in lifestyle blocks in the area. If Council are delivering 40-50 lots per annum, in accordance with the strategy, it is difficult to determine where these lots are being delivered. This PP has been prepared having regard to the aims and objectives of the CLUS, and is deemed necessary in order to assist with the delivery of additional lifestyle blocks for the LGA.

Is the planning proposal the best means of achieving the objectives or intended outcomes, or is there a better way?

Proposed Option 1: Planning Proposal seeking to rezone land from RU1 – Primary Production to R5 – Large Lot Residential and adjust the Minimum Allotment Size accordingly.

Option 1 is this planning proposal and is found to be the most appropriate options as the Planning Proposal is not inconsistent with the objectives of several strategic planning policies that pertain to the region.

Retaining the zoning and reducing the lot size would result in the lot sizes not being conducive with the zone objectives which is why the rezone was determined most suitable in order to subdivide the subject site to produce the in demand R5 lots.

6.3.2 Section B – Relationship to the strategic planning framework

Will the planning proposal give effect to the objectives and actions of the applicable regional or district plan or strategy (including any exhibited draft plans or strategies?

Central West and Orana Regional Plan 2041

The Central West and Orana Regional Plan 2041 is a 20-year blueprint for the future of the Central West and includes five (5) overarching goals. The goals and the Planning Proposals consistency have been addressed below.

Part 1 – Region-Shaping Investment

Objective 1: Deliver the Parkes Special Activation Precinct and share its benefits

The Planning Proposal will not impact on the intention of the Parkers Special Activation precinct.

Objective 2: Support the State's transition to Net Zero by 2050 and deliver the Central-West Orana Renewable Energy Zone

The Planning Proposal is believed to be consistent with Objective 2 as the subject land has been identified as most suitable for rural lifestyle opportunities, not a location for renewable energy generation.

Objective 3: Sustainability manage extractive resource land and grow the critical minerals sector

The Planning Proposal is believed to be consistent with Objective 3 as the proposal is not located on land identified suitable for mineral and energy resource extraction. The proposed rezoning will also contribute to the development of the township of Gulgong increasing its resilience for potential mining transitions experienced by the community.

Objective 4: Leverage inter-regional transport connections

The planning proposal does not produce incompatible land uses for the surrounding road network and does not adversely impact on the connections or efficiency of freight transport in the locality.

Part 2 – A Sustainable and Resilient Place

Objective 5: identify, protect and connect important environmental assets

The planning proposal site is not considered to have adverse impacts on any high environmental value assets and does not contain heritage or aboriginal heritage sites or items. Refer to Mudgee LALC clearance Letter In Appendix E of this report.

As shown below, proposed Lots 3 and 4 are subject to Plant community Types under the SEED portal. These mapped lands may contain High Environmental Value Lands. However, considering the proposed Lot layout and large 12 hectares sites, future dwellings/developments on the land can remain clear of these mapped lands. By providing building envelopes as part of future subdivision applications, the lands can be avoided and therefore no impact to these potentially HEV lands are triggered.

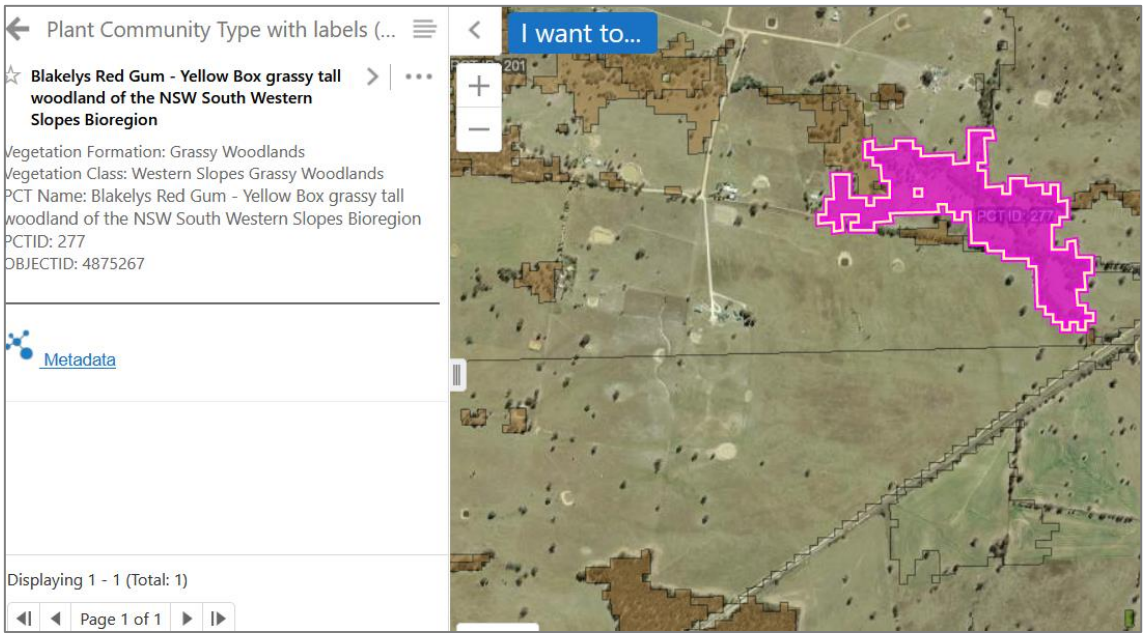


Figure 16 – PCT Mapping

There are some Biodiversity Values mapped areas located to the rear of proposed Lots 3 and 4 and form part of the watercourse traversing through that portion of the site. Future dwellings and associated outbuildings shall be kept clear of these areas, which can be formalised by nominating buildings envelopes as part of future subdivision applications.

Therefore the Planning Proposal is consistent with the strategies under this part as retaining those potentially High Environmental Value Lands can be achieved.

Objective 6: Support connected and healthy communities

The Planning Proposal does not impact upon parks, open spaces, bushland and waterways in the locality.

Objective 7: Plan for resilient places and communities

There are no major natural hazards applicable to the land. Future dwellings on the subject site would have the option of exploring energy efficient and resilient dwellings, thereby ensuring consistency with this objective. In addition, adequate water storage shall be implemented for future dwellings to ensure that the dwellings can be fully serviced with water during drought events. There is no vulnerability or major risks with regard to this site that would trigger an inconsistency with the objective.

Objective 8: Secure resilient regional water resources

The Planning Proposal is believed to be consistent with Objective 8 as the proposal does not adversely impact on the implementation of the *Murray-Darling Basin Plan*, or any other known water resource plan. Future dwellings on the site shall be provided with rainwater tanks for storage and reuse, and as such, there shall be no impact on any regional water sources in the locality, therefore the proposal is consistent with this objective.

Objective 9: Ensure site selection and design embraces and respects the region's landscapes, character and cultural heritage

The Planning Proposal is consistent with this objective as it will provide housing opportunities in a scenic location. Future dwellings on the site shall consider the regions landscape, character and cultural heritage.

Objective 10:- Protect Australia's Sark Sky Park

The subject site is located on the periphery of the 200km radius from Siding Spring Observatory. Future dwellings will emit minimal light, and considering the site is approximately 197km from the observatory, it is considered that no impact of artificial light will occur.

Part 3: People, Centres, Housing and Communities

Objective 11: Strengthen Bathurst, Dubbo and Orange as innovative and progressive regional cities

The planning proposal is consistent with Objective 11 as it supports future investment, increases housing choices, diversifies the housing stock in the Gulgong area and is

strategically located to support rural lifestyle whilst being located within proximity to the abovementioned regional cities to allow access and an attractive lifestyle.

Objective 12: Sustain a network of healthy and prosperous centres

The Planning Proposal is consistent with this objective as it shall provide an increase and more diverse housing choice for the LGA.

Objective 13: Provide well located housing options to meet demand

The planning proposal is consistent with Objective 13 as it will produce and increase in housing stock (from further development), especially the highly demanded rural lifestyle residential opportunities which contributes to a greater mix of housing options in the greater Gulgong township.

The subject site is identified in Council's Comprehensive Land Use Strategy and Urban Release Strategy as suitable for future R5 Large Lot Residential zoning and development. Therefore the proposal is consistent with this objective as it provides for additional housing to meet the demand and supply needs for the LGA.

Objective 14: Plan for diverse, affordable, resilient and inclusive housing

The Planning Proposal is consistent with this objective as it shall provide additional diverse housing with the LGA. This shall assist in improving housing affordability for the region, especially given that Mid-Western Regional experiences the highest average house sale price increase.

Objective 15: Manage rural residential development

Objective 15 provides the following objective:

"Enable new rural residential development only where it has been identified in a local strategy prepared by the relevant council and endorsed by the department."

The subject site is mapped under Council's comprehensive Land Use Strategy as suitable for rural residential development. Therefore, the Planning Proposal is consistent with this objective. The planning proposal is also consistent with all objectives under Strategy 15.1 of this objective.

Objective 16: Provide accommodation options for seasonal, temporary and key workers

The Planning Proposal does not impact upon temporary workers accommodation in the LGA.

Objective 17: Coordinate smart and resilient utility infrastructure

The planning proposal site has been identified in the CLUS as land with rural residential potential consisting of minimum 12ha lots where reticulated water and sewer is not

available. Onsite sewage management and rainwater collection shall be provided to future dwellings, thereby having no impact on utility infrastructure in the area.

Part 4 – Prosperity, Productivity and Innovation

Objective 18: Leverage existing industries and employment areas and support new and innovative economic enterprises

Not applicable.

Objectives 19: Protect agricultural production values and promote agricultural innovation, sustainability and value-add opportunities

The Planning Proposal is believed to be consistent with Objective 19 as the proposal seeks to rezone underutilised primary production land to R5 – Large Lot residential land (rural lifestyle opportunity).

The subject site is not mapped as important agricultural land and is identified as an emerging opportunity for R5 large lot residential land that enables rural lifestyle residential opportunities. It does not conflict with the adjoining properties land uses, nor does it impact on the primary production land use of the locality and does not impede on any buffers in the locality.

The PP contributes to the wellbeing and prosperity of the region promoting a diverse range of rural lifestyle residential opportunities and further development opportunities in the Gulgong township.

Objective 20: Protect and leverage the existing and future road, rail and air transport networks and infrastructure

The planning proposal will have no adverse impacts on air travel or public transport within the locality and has been identified as rural lifestyle opportunity land due to its close proximity to the Gulgong CBD and Gulgong services.

Objective 21: Implement a precinct-based approach to planning for higher education and health facilities

Not applicable.

Objective 22: Support a diverse visitor economy

There are short term/tourist accommodation opportunities for the proposed land zone. As such, the Planning Proposal is capable of contributing to a diverse visitor economy for the LGA.

Objective 23: Support Aboriginal aspirations through land use planning

Engagement with Mudgee's LALC was undertaken as part of this Planning Proposal to undertake a walk over of the site to determine if any Aboriginal heritage items or relics are present. No items of significance were found as shown in Appendix E of this report.

Part 5 – Mid-Western Regional

The Planning Proposal is consistent with the Mid-Western Regional objectives under Part 5 in that the Planning Proposal shall provide diverse, sustainable, adaptive and affordable housing opportunities by rezoning the subject site for large lot residential purposes. This is consistent with the first dot point under Council's priorities list.

Is the planning proposal consistent with a council LSPS that has been endorsed by the Planning Secretary or GSC, or another endorsed local strategy or strategic plan?

Mid-Western Regional Local Strategic Planning Statement (Our Place 2040)

The Mid-Western Regional Local Strategic Planning Statement (Our Place 2040) provides the basis for, and the delivery of, strategic planning in the local area and is a link to the NSW Government's Central West and Orana Regional Plan 2036.

In particular, the Planning Proposal is consistent with *Planning Priority 1 – Make available diverse, sustainable, adaptable and affordable housing options through effective land use planning*

Planning Priority 2 highlights the need to identify suitable sites for future large lot residential opportunities should the region experience high levels of demand.

The CLUS identified the proposed planning site as large lot residential opportunity land and the migration from Sydney CBD and other city areas during the COVID-19 pandemic combined with the increase in flexible working arrangements has resulted in a higher demand for rural lifestyle (large lot residential) lots.

Therefore, the Planning Proposal for land zoning and map amendments is consistent with the LSPS as:

- It aligns with the strategic directions of the LSPS.
- Meets a specific need identified by the LSPS.

The proposed amendments will support the orderly and economic development of the land to meet the identified need in the LSPS.

Mid-Western Regional Comprehensive Land Use Strategy. (CLUS)

The CLUS is a plan to meet the long term urban and rural growth needs of the community. The Planning Proposal for land zoning and map amendments is consistent with the CLUS as:

- The CLUS identifies a key approach to achieving its economic, environmental, and social objectives is creating opportunities for large lot residential lifestyles near existing towns and villages where existing road access and services are available.
- The CLUS specifically identifies the planning proposal site as opportunity land for large residential lots

Is the planning proposal consistent with any other applicable State and regional studies or strategies?

The Planning Proposal is found to be consistent with the following policies:

- Mid-Western Regional Local Strategic Planning Statement.
- Mid-Western Regional Comprehensive Land Use Strategy
- Mudgee and Gulgong Urban Release Strategy (Large Lot Residential Demand)

Is the planning proposal consistent with applicable SEPPS

State Environmental Planning Policies – Schedule of Consideration	
SEPP	Relevance/Comment
SEPP (Exempt and Complying Development Codes) 2008	Consistent with SEPP
SEPP (Planning Systems) 2021	Consistent with SEPP
SEPP (Biodiversity and Conservation) 2021	Consistent with SEPP The site is not considered to comprise potential koala habitat as defined by *State Environmental Planning Policy (Koala Habitat Protection) 2020*. The planning proposal does not include any clearing of vegetation and the future subdivision of the site shall be subject to a Development Application/assessment. The site is not identified in Schedule 5 of the *Mid-Western Regional Local Environmental Plan 2012* (LEP). An Aboriginal Heritage Information Management System (AHIMS) search was undertaken for the site and immediate surrounds. The AHIMS search revealed that there are no Aboriginal sites recorded within 200m of

State Environmental Planning Policies – Schedule of Consideration	
SEPP	Relevance/Comment
	the subject site. Refer to AHIMS search in **Appendix C** of this report.
SEPP (Resilience and Hazards) 2021	**Consistent with SEPP** There are no known previous contaminating land uses on the subject site. The rezoning would not result in potentially hazardous or offensive land use or activities. The site is not located in a coastal area. A Preliminary Site Investigation (PSI) has been prepared and is provided in **Appendix D** of this report.
SEPP (Transport and Infrastructure) 2021	**Consistent with SEPP** The proposed rezoning would result in the potential for further subdivision of the subject site producing up to 8 resultant lots. The SEPP demonstrates that subdivisions producing 200 or more resultant lots need to be referred to TfNSW for traffic generating consideration, however the potential subdivision only results in 8 resultant lots, which is under the threshold for referral. The rezoning would result in residential lots adjacent to a rail corridor. Future residential development on the subject site adjacent to the railway corridor would require referral to the rail authority for the rail corridor, and consent authorities must consider if relevant LA levels are exceeded.
SEPP (Industry and Employment) 2021	**Consistent with SEPP**
SEPP (Resources and Energy) 2021	**Consistent with SEPP**
SEPP (Primary Production) 2021	**Consistent with SEPP** The SEPP includes an aim to reduce land use conflict and sterilization of rural land by balancing primary production, residential development and the protection of native vegetation, biodiversity, and water resources. The proposed rezoning from RU1 Primary Production to R5 Large Lot residential in this proposal is to utilize land that does not significantly contribute to agricultural production in the area and helps to meet the

State Environmental Planning Policies – Schedule of Consideration	
SEPP	Relevance/Comment
	unmet demand for rural residential lots in the Gulgong area. It is considered to contribute to the balance of primary production and residential development in the Gulgong area.
SEPP (Precincts Regional) 2021	Consistent with SEPP

Is the planning proposal consistent with the applicable Ministerial Directions (Section 9.1)

Table 2:Section 9.1 Directions		
Direction	Applicable	Comment
1. Focus Area 1: Planning Systems		
1.1 Implementation of Regional Plans	Yes	The Planning Proposal is found to be consistent with the overall intent of the Central West and Orana Regional Plan 2036 and the direction and actions within. The PP will result in permitting the future developing of the land unconstrained which is currently being underutilised.
1.2 Development of Aboriginal Land Council Land	No	The site has not been identified within the Land Application Map of the State Environmental Planning Policy (Planning Systems) 2021.
1.3 Approval and Referral Requirements	Yes	Noted.
1.4 Site Specific Provisions	Yes	Noted
2. Focus Area 1: Planning System – Place based		
1.5 Parramatta Road Corridor Urban Transformation Strategy	No	N/A
1.6 Implementation of North West Priority Growth Area Land Use and Infrastructure	No	N/A

Table 2:Section 9.1 Directions		
Implementation Plan		
1.7 Implementation of Greater Parramatta Priority Growth Area Interim Land Use and Infrastructure Implementation Plan	No	N/A
1.8 Implementation of Wilton Priority Growth Area Interim Land Use and Infrastructure Implementation Plan	No	N/A
1.9 Implementation of Glenfield to Macarthur Urban Renewal Corridor	No	N/A
1.10 Implementation of the Western Sydney Aerotropolis Plan	No	N/A
1.11 Implementation of Bayside West Precincts 2036 Plan	No	N/A
1.12 Implementation of Planning Principles for the Cooks Cove Precinct	No	N/A
1.13 Implementation of St Leonards and Crows Nest 2036 Plan	No	N/A
1.14 Implementation of	No	N/A

Table 2:Section 9.1 Directions		
Greater Macarthur 2040		
1.15 Implementation of the Pyrmont Peninsula Place Strategy	No	N/A
1.16 North West Rail Link Corridor Strategy	No	N/A
3. Focus Area 2: Design and Place		
N/A	N/A	This focus area was blank when the Directions were made
4.Focus Area 3: Biodiversity and Conservation		
3.1 Conservation Zones	No	N/A
3.2 Heritage Conservation	No	An Aboriginal Heritage Information Management System search was conducted for the subject site and immediate surround. There are no known items or sites of significance or Aboriginal cultural heritage significance that have been identified as being recorded on or within the vicinity of the site. The site is not listed in **Schedule 5** of the LEP or on the State Heritage Register.
3.3 Sydney Drinking Water Catchments	No	N/A
3.4 Application of C3 and C3 Zones and Environmental Overlays in Far North Coast LEPs	No	N/A
3.5 Recreation Vehicle Area	No	N/A
3.6 Strategic Conservation Planning	No	N/A
5. Focus Area 4: Resilience and Hazards		
4.1 Flooding	No	The subject site is not mapped as being flood prone land under the Mid-Western Regional Local Environmental Plan 2012 or NSW Planning Portal.

Table 2:Section 9.1 Directions		
4.2 Coastal Management	No	N/A
4.3 Planning for Bushfire Protection	No	The site is not mapped as being bushfire under the Mid-Western Regional Local Environmental Plan 2012, NSW Planning Portal or the RFS' Online Mapping Tool.
4.4 Remediation of contaminated land	No	The subject site has not had any known contaminating land uses. The site has previously been used for cropping and grazing and is considered to be consistent with this direction.
4.5 Acid Sulfate Soils	No	The subject site is not mapped as containing Acid Sulfate Soils under the NSW Planning Portal.
4.6 Mine Subsidence and unstable land	No	The subject site is not mapped as containing a Mine Subsidence District under the NSW Planning Portal.
6. focus Area 5 – Transport and Infrastructure		
5.1 Integrating land use and transport	Yes	This direction applies as the Planning Proposal creates additional R5 Large Lot Residential zoned land. Increasing Large Lot Residential development within an area served by an existing public road network will support the local school bus service and may potentially result in additional transport services in the area.
5.2 Reserving land for public purposes	Yes	The Planning Proposal is consistent with this direction.
5.3 Development near regulated airports and defence airfields	No	N/A
5.4 shooting ranges	No	N/A
6. Focus Area 6: Housing		
6.1 Residential Zones	Yes	The Planning Proposal seeks to modify the existing LEP by altering the Land Zoning from RU1 – Primary Production to R5 – Large Lot Residential and having a Minimum Allotment Size of 12ha, which will facilitate the further development/subdivision of land. This will potentially allow the Planning Proposal area to be subdivided into 12ha lots which will add to the existing large lot residential land within the area.
6.2 Caravan Parks and Manufactured Home Estates	No	The PP would not impact on any zonings or reservations of land for public purposes.

Table 2:Section 9.1 Directions		
7. Focus Area 7: Industry and Employment		
7.1 Business and industrial Zones	No	N/A
7.2 Reduction in non-hosted short term rental accommodation period	No	N/A
7.3 Commercial and Retail Development along the Pacific Highway, North Coast	No	N/A – not within applicable LGAs.
8.Focus Area 8 Resources and Energy		
8.1 Mining, Petroleum Production and Extractive Industries	No	N/A – not within applicable precinct.
9. Focus Area 9: Primary Production		
9.1 Rural Zones	Yes	The planning proposal seeks to rezone lane from RU1 Primary Production to R5 Large Lot residential. The proposal is consistent with the recommendations of the CLUS. The subject site is not identified as Class 1-3 as shown in Figure 4 of this report. Therefore, it is not considered to be prime agricultural land and given the proposed minimum lot size of 12 hectares, will still be capable of supporting small scale agricultural activities such as animal grazing. Furthermore, the locality generally consists of R5 lands that have had minimal impact on the context of the total land area available for agricultural purposes in the LGA. R5 Rural residential land was identified as a priority under the Central West Orana Regional Plan 2041 which included the identification of new rural residential area opportunities. This was achieved by the Mid-Western CLUS of which it identified the subject site specifically for rural residential opportunity land. The R5 Large Lot Residential is a more appropriate and logical land use zone than the existing RU1 Primary Production Land zone given that the site is located within proximity to the existing R5 zoned land to the North and West and bordered by a railway line to the southeast and

Table 2:Section 9.1 Directions		
		identified as 'opportunity land' specifically for the proposed land use change from RU1 to R5. The planning proposal is considered to be consistent with the intent of this direction. Any observed inconsistencies with this direction are considered to be of minor significance.
9.2 Rural Lands	Yes	As in the comments for Direction 9.1 (Rural Zones), this Planning Proposal is inconsistent with the direction as it applies to existing land zoned rural. Any observed inconsistencies with this direction are considered to be of minor significance.
9.3 Oyster Aquaculture	No	N/A
9.4 Farmland of State Regional Significance on the NSW Far North Coast	No	N/A

6.3.1 Section C – Environmental, Social and Economic Impact

is there any likelihood that critical habitat or threatened species, populations or ecological communities, or their habitats, will be adversely affected because of the proposal?

No. The nature of the proposal does not lead to an assumption that significant land clearing or vegetation removal would be required due to the nature of the R5 land use/s and minimum lot size of 12 hectares. That being said, the *Biodiversity Conservation Act 2016* (BC Act) includes provisions that allow clearing the be undertaken in accordance with relevant thresholds and associated impacts.

The subject site contains minimal vegetation, as shown in the aerial image below. The site predominately contains grasslands that have been cultivated and slashed for an extended period, with some established trees/riparian vegetation within the north eastern corner of the site.

Figure 17 – Aerial Image of site

SEED data has been obtained for Plant Community Types located on the site and is shown in **Figure 18** below. Note that the PCT mapped area is limited to the cluster of vegetation located within the northeastern corner of the site, which is easily shown within the aerial imagery above.

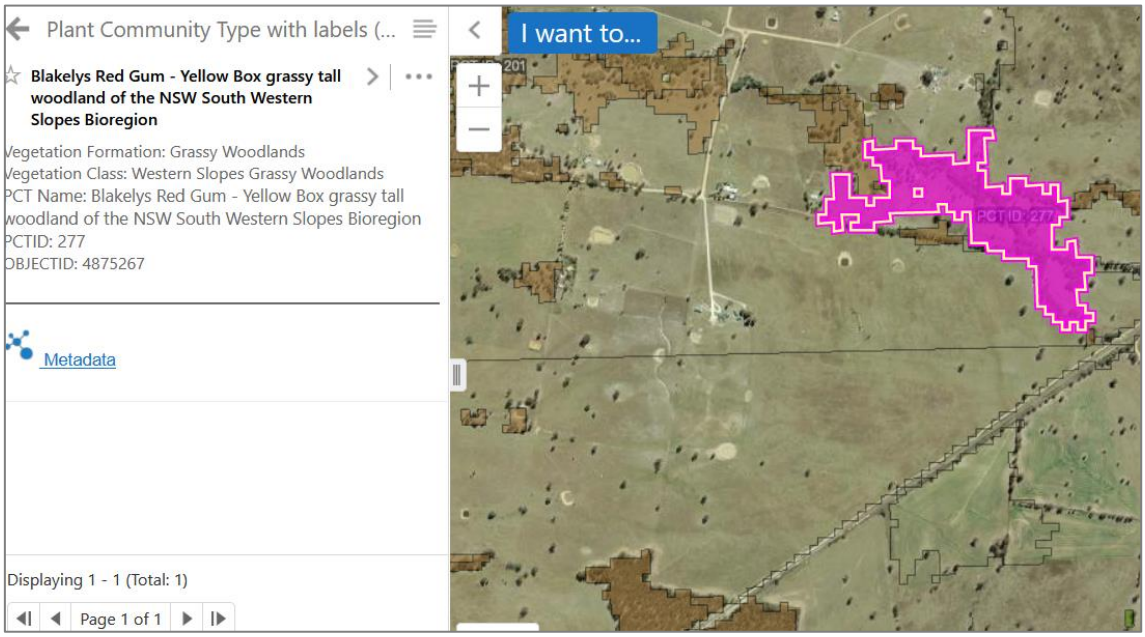


Figure 18 – PCT Mapping

A concept subdivision layout has been prepared and is provided in Appendix A of this report. The layout has been strategically designed in order to retain and not impact upon the native vegetation, as mapped above. Proposed Lots 3 and 4 identified within Appendix A would be subject to the PCT mapping. There is ample area within these proposed Lots to allow residential development to proceed without impact upon the mapped PCT biodiversity. Therefore there is no likelihood that the subject planning proposal and subsequent subdivision of the land would adversely affect critical habitat or threatened species, populations or ecological communities, or their habitats.

Are there any other likely environmental effects of the planning proposal and how are they proposed to be managed?

The following is a summary of other likely environmental effects as result of the Planning Proposal or any other constraints within the Planning Area.

Constraints	Comments
Noise/Vibration	The rezoning of the subject site would require consideration to the vibration and noise pollution from the railway corridor and its impact on future residential development. The *Noise Policy for Industry 2017* (NPfI) provides recommendations for amenity noise levels in rural environments. The recommended amenity noise levels will protect against noise impacts for rural and residential land uses within the vicinity of the

<table>
<tr>
<td></td>
<td>site. Given that there is no industrial noise in the locality, an assessment of existing noise levels in the area is not required in this instance.

The site is located in a rural locality. The main contributor to noise in the area would be from rural machinery, traffic utilising the local roads and the nearby rail corridor.

The recommended amenity noise levels under the NPfI for the site and locality are as follows (in accordance with Table 2.2 of the NPfI):
<table>
<tr><th>Receiver</th><th>Noise amenity area</th><th>Time of day</th><th>L_{AEQ} dB</th></tr>
<tr><td rowspan="3">Residential</td><td rowspan="3">Rural</td><td>Day</td><td>50dB</td></tr>
<tr><td>Evening</td><td>45dB</td></tr>
<tr><td>Night</td><td>40dB</td></tr>
</table>
Pursuant to Section 2.5 Maximum noise level event assessment of the NPfI, the maximum night time noise level for the subject site would be 40dB plus 5dB (i.e. 45dB max).

Proposed Lots 3, 4, 5, 6 and 7 are adjacent to the nearby rail corridor.

Generally, rail corridors produce between 80-90dB at the source.

It is anticipated that noise and vibration assessments would be undertaken as part of the future development of each Lot.

Where a noise impact has been found as a result from an assessment, noise treatments can be implemented to reduce internal noise levels to avoid sleep disturbance. Consideration to the design layout of proposed dwellings and construction materials renders the site suitable for large lot residential accommodation. The suitability of individual property designs for each lot would be assessed on a case by case basis as part of future applications, which would determine the layout of dwellings and proposed construction/noise attenuation materials. Given the size of the proposed Lots, construction materials and dwelling orientation can readily achieve noise level reductions, as required. Noise is not anticipated to be a nuisance for the proposed rezoning and the assessment noise and vibration would be more suited for future applications of development on the site once rezoned.</td>
</tr>
<tr>
<td>Land Use Conflict</td>
<td>The locality generally consists of large lot residential land uses and rural land uses, which is consistent with the proposed rezoning and intended use of the site. Therefore, considering the proposed rezoning and end use of the proposed Lots/site is consistent with other landuses in the locality, the proposed rezoning fits in with the locality and there is no land use conflict as a result.</td>
</tr>
</table>

Aboriginal Heritage	There are no known items or sites of significance or Aboriginal cultural heritage significance that have been identified as being recorded on or within the vicinity of the site. Refer to AHIMS Search provided in Appendix C of this report. A walkover was conducted by Tony Lonsdale, CEO of Mudgee Local Aboriginal Lands Council (LALC). It was concluded that based on a review of previous Aboriginal Cultural Heritage Assessments conducted in the vicinity, the AHIMS database and a walkover of the site, that no aboriginal Cultural Heritage materials were identified as potentially being impacted by the proposal. The Mudgee LALC clearance letter has been provided in Appendix E of this report.
Agricultural Land Capability	The property has historically been used for light grazing and has been frequently mown/slashed and managed. The site is classified as class 5 severe as shown in Figure 4 of this report. The CLUS identified approximately 37% or 320,000 hectares as being clause 4-5 land. The subject site barely contributes to the total amount of class4-5 land, therefore the impact is negligible. Grazing and small scale agriculture will be able to be continued on the site with the rezoning and associate 12 ha minimum lot site.
Traffic	The introduction of additional dwellings on the subject site *may* have some level of additional traffic impact to the area. It is essential to assess traffic implications against Council's local controls, being the Mid-Western Regional Development Control Plan (DCP). Pursuant to the Rural Subdivision principles under Council's DCP, a Traffic Impact Assessment would not be required for the future subdivision of the site (refer to i and ii of page 87 of the DCP and provided below). *New rural subdivisions be appropriately connected to the existing road network;* *i. All roads within a rural subdivision are to be sealed or connected to the sealed road network if the proposed lots are less than 500 metres from the sealed road network.* *ii. Road upgrades should extend from the new subdivision to a point where the existing road network is satisfactory* In relation to i), the site is located 1.5km from the nearest sealed network. In relation to ii), the existing road network complies with the standards applicable to the site, discussed below. Further, iii) of

this part of the DCP states that a Traffic Report is only required alternative to i) and ii).

Traffic generation rates for relevant land uses are provided in the *RTA Guidelines to Traffic Generating Developments 2002* and recent TfNSW adoptions, as follows:

> *Low density Residential Dwellings*
>
> *Weekday average evening peak hour vehicle trips = 0.99 per dwelling in Sydney (maximum 1.39), 0.78 per dwelling in regional areas (maximum 0.90).*
>
> *Weekday average morning peak hour vehicle trips = 0.95 per dwelling in Sydney (maximum 1.32), 0.71 per dwelling in regional areas (maximum 0.85).*

Given the rural locality of the site, the average regional provision is adopted. Therefore, the following estimated traffic generation is summarised.

Use	Scale	Peak	Generation Rate	Trips
Low density Residential	8 dwellings	AM	0.71 per dwelling	5.68
		PM	0.78 per dwelling	6.24

As shown in the above table, the expected traffic generation associated with the future subdivision of the site would be 5.68 vehicle trips in the AM period and 6.24 vehicle trips in the PM period, resulting in a total amount of trips of 11.92 per day. Pursuant to Council's Table on page 88 of the DCP, a 4.0m – 6.0m wide gravel carriageway would be required.

Across the entire length of Wyoming Road to the subject site is a 6m gravel carriageway width, and any new roads would easily comply with this requirement.

As such, the future subdivision would comply with Council's local DCP standards, which also explicitly state that a Traffic Impact Assessment or Report would not be required in this instance.

Other	There are no other constraints such as natural hazards, or significant adverse impacts the planning proposal is likely to have as a result of the rezoning of the subject site.

Has the planning proposal adequately addressed any social and economic effects?

Social and economic effects arising from the Planning Proposal will be positive in terms of the provision for additional Large Lot Residential Land for new housing in the locality for the following reasons:

- The potential yield is not high enough to be detrimental in a social sense or create excessive demands on existing services.
- New large lot residential allotments will be similar in land use and character to surrounding properties.
- Increased choice for housing in the locality that would also benefit the residential building industry and employment within the industry.
- There is adequate social infrastructure in the area to cater for the proposed increase in large lot residential lots (potentially 8 additional lots) that will ultimately be created as a result of the Planning Proposal.
- There is established demand (identified in the regional plan and other relevant strategies and reports) for R5 rural residential lots in the Mid-Western region.

6.3.2 Section D – State and Commonwealth Interests

Is there adequate public infrastructure for the planning proposal?

The Planning Proposal is not expected to result in a noticeable increase in demand for public infrastructure. Existing service infrastructure would be augmented to support future development and onsite management services shall be utilised.

The opportunity identified by the Mid-Western CLUS was for R5 rural residential lots of which reticulated water and sewer is not available, as to ensure a more sustainable use of local groundwater and surface water resources with regard to the Rural/Primary Production SEPP Principles.

No limitations to existing services are known to exist.

What are the views of state and federal public authorities and government agencies consulted in order to inform the Gateway determination?

Should the proposal be supported, the Department of Planning, Industry and Environments Gateway Determination will specify consultation requirements.

6.4 Part 4 – Mapping

The plans provided in Appendix A clearly outline the PP and associated likely development requirements. The plans include:

- 38948-P01 – Site Plan
- 38948-P02 – Existing Zoning Map
- 38948-P02 – Proposed Zoning Map
- 38948-P03 – Existing Minimum Lot Size Map
- 38948-P03 – Proposed Minimum Lot Size Map
- 38948-P04 – Subdivision Concept Plan

Refer to Appendix A of this report.

6.5 Part 5 – Community Consultation

The EP&A Act provides statutory requirements for community consultation and public exhibition of Planning Proposal's. Consultation shall occur in accordance with the Gateway Determination made by the Minister, in accordance with clause 3.34 and Schedule 1 of the EP&A Act.

It is anticipated that the Planning Proposal would be required to be exhibited for a period of 28 days.

6.6 Part 6 -Project Timeline

The following indicative project timeline is provided:

Table 7 Indicative Project Timing

Stage	Timing
Consideration by Council	TBA
Council Decisions	TBA
Gateway Determination	25 Working Days
Post-Gateway	50 Working Days
Public Exhibition and Assessment	95 Working Days
Consideration of submission	TBA
Finalisation	55 Working Days

7 Conclusion

This Planning Proposal applies to the site known as Lot 101 DP 1221461.

It has been prepared in accordance with the NSW Department of Planning, Industry and Environment's '*Local environmental Plan Making Guidelines* and is consistent with the Central West and Orana Regional Plan 2036, relevant State Environmental Planning Policies, section 9.1 Ministerial Directions and Council's shire strategies.

Any inconsistencies have been appropriately justified by the inclusion of ameliorative measures or by acknowledging the need for further consultation with the relevant Minister to which the inconsistency applies.

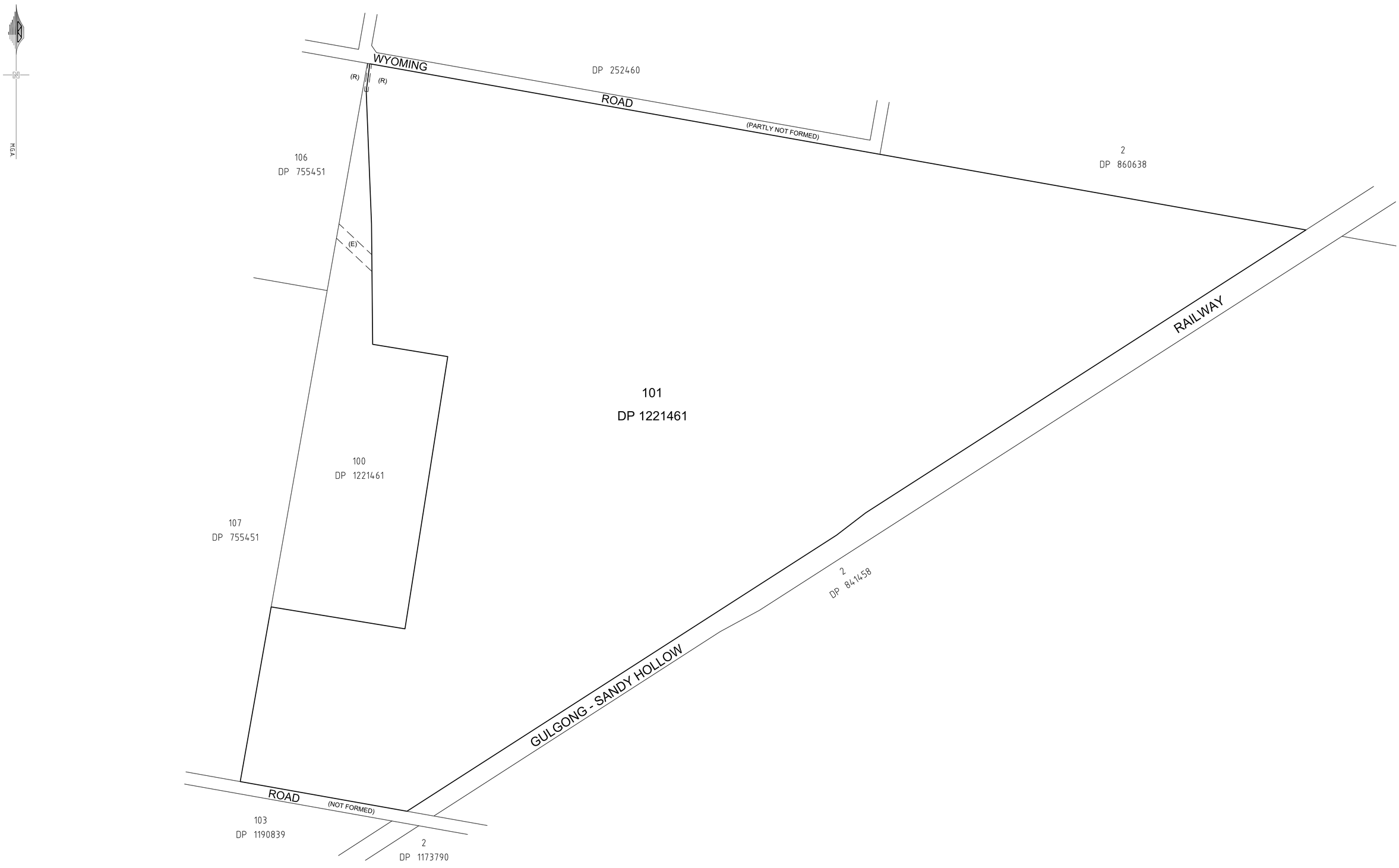
The Planning Proposal Area is currently zoned RU1 – Primary Production under the provisions of *Mid-Western Regional Local Environmental Plan 2012*. One of the main objectives of this Planning Proposal is to amend Mid-Western Regional Local Environmental Plan 2012 and change the Land Zoning to R5 Large Lot Residential and subsequently Minimum Allotment Size. It is requested that Council:

(a) Support this preliminary Planning Proposal based on the information provided in this report; and

(b) Resolve to refer this Planning Proposal to NSW Planning, Industry and Environment (DPIE) for a Gateway Determination to endorse its public exhibition.

Pending endorsement by NSW DPIE, the Planning Proposal will be exhibited in accordance with the criteria outlined in the Gateway Determination. The outcome of the exhibition and referrals to various government departments will be subsequently reported to Council for determination.

Appendix A – Plan Package



(E) EASEMENT FOR ELECTRICITY PURPOSES 20 WIDE (DP 1221461)
(R) RIGHT OF CARRIAGEWAY 3 WIDE (DP 1221461)

ISSUED FOR AUTHORITY APPROVAL

barnson
DESIGN.PLAN.MANAGE

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w www.barnson.com.au
Bathurst | Dubbo | Mudgee | Sydney | Tamworth

Client: CLIENT
Project: REZONING APPLICATION
LOT 101 DP 1221461
Drawing Title: EXISTING SITE PLAN

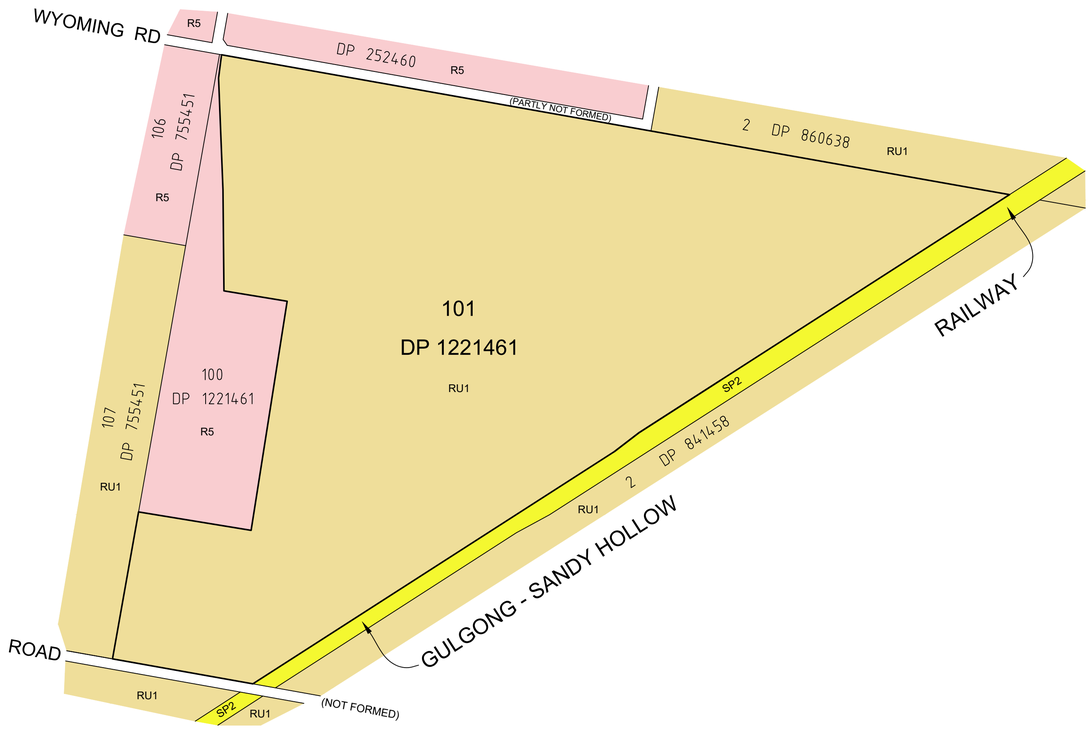
Rev	Date	Amendment
A	10/11/22	ISSUED FOR AUTHORITY APPROVAL

Design RB
Drawn MR
Check RB
Certification
Drawing Number 38948-P01
Revision A
Original Sheet Size = A1

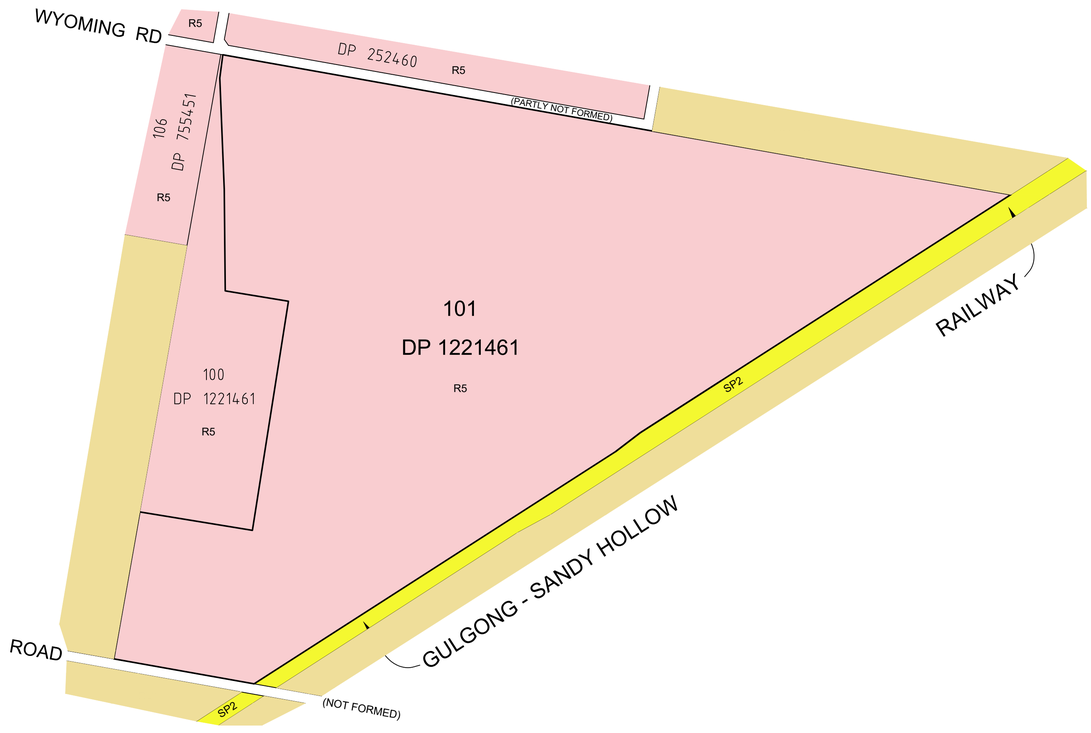
MGA

KEY

SP2	INFRASTRUCTURE
R5	LARGE LOT RESIDENTIAL
RU1	PRIMARY PRODUCTION



EXISTING ZONING MAP
REDUCTION RATIO 1:6000 @ A1
1:12000 @ A3



PROPOSED ZONING MAP
REDUCTION RATIO 1:6000 @ A1
1:12000 @ A3

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Client: CLIENT
Project: REZONING APPLICATION
LOT 101 DP 1221461
Drawing Title: EXISTING AND PROPOSED ZONING MAP

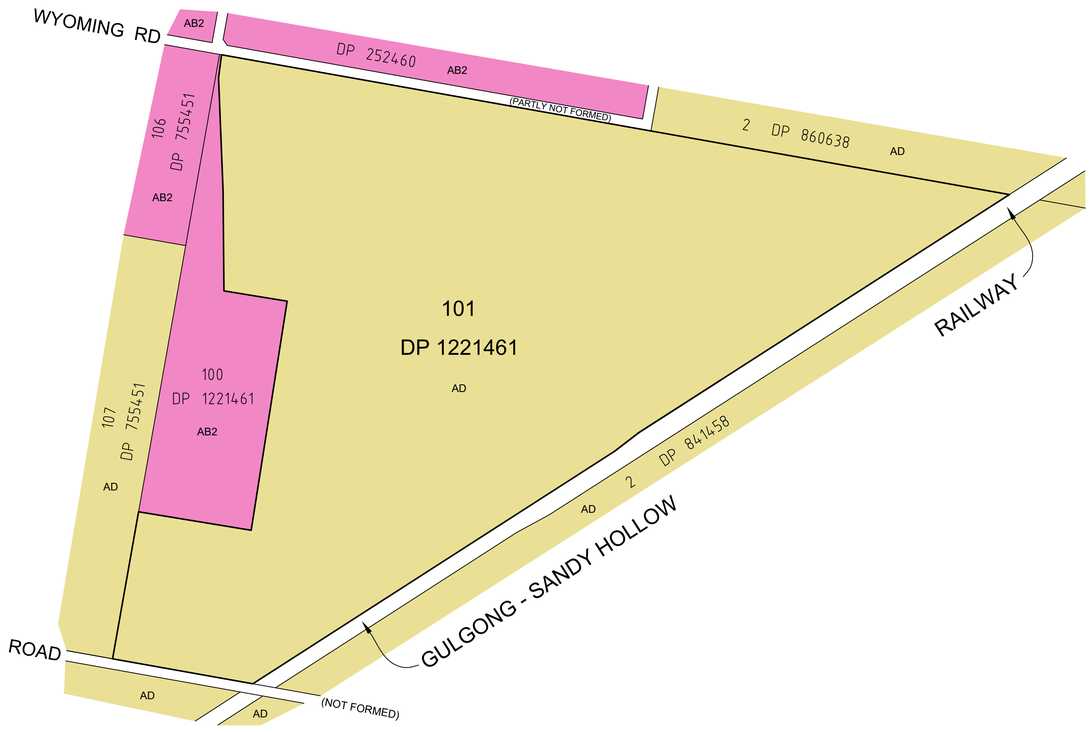
Rev	Date	Amendment
A	10/11/22	ISSUED FOR AUTHORITY APPROVAL

Design RB
Drawn MR
Check RB
Certification
Drawing Number 38948-P02
Revision A
Original Sheet Size = A1

MGA

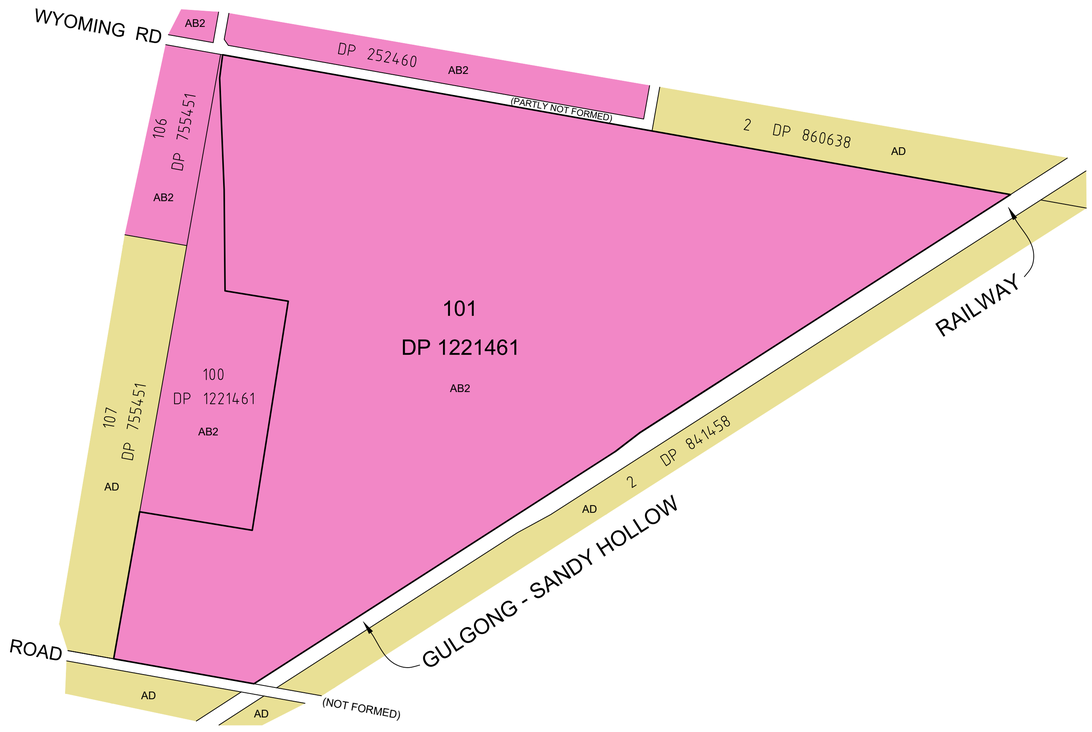
KEY

AD	100 ha
AB2	12 ha



EXISTING MINIMUM LOT SIZE MAP

REDUCTION RATIO 1:6000 @ A1
1:12000 @ A3



PROPOSED MINIMUM LOT SIZE MAP

REDUCTION RATIO 1:6000 @ A1
1:12000 @ A3

ISSUED FOR AUTHORITY APPROVAL

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Client: CLIENT

Project: REZONING APPLICATION
LOT 101 DP 1221461

Drawing Title: EXISTING AND PROPOSED MINIMUM LOT SIZE MAP

Rev	Date	Amendment
A	10/11/22	ISSUED FOR AUTHORITY APPROVAL

Design RB
Drawn MR
Check RB
Certification
Drawing Number 38948-P03
Revision A
Original Sheet Size = A1

(E) EASEMENT FOR ELECTRICITY PURPOSES 20 WIDE (DP 1221461)
(R) RIGHT OF CARRIAGEWAY 3 WIDE (DP 1221461)

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Client: CLIENT
Project: REZONING APPLICATION
LOT 101 DP 1221461
Drawing Title: SUBDIVISION CONCEPT PLAN

Rev	Date	Amendment
A	10/11/22	ISSUED FOR AUTHORITY APPROVAL

Design RB
Drawn MR
Check RB
Certification
Drawing Number 38948-P04
Revision A
Original Sheet Size = A1

Appendix B – Titles and Deposited Plan

Appendix C – Aboriginal Heritage Information Management System (AHIMS) Report

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : 38948

Client Service ID : 714033

Luke Bonnell

539 Armidale Road
East Tamworth New South Wales 2340

Attention: Luke Bonnell

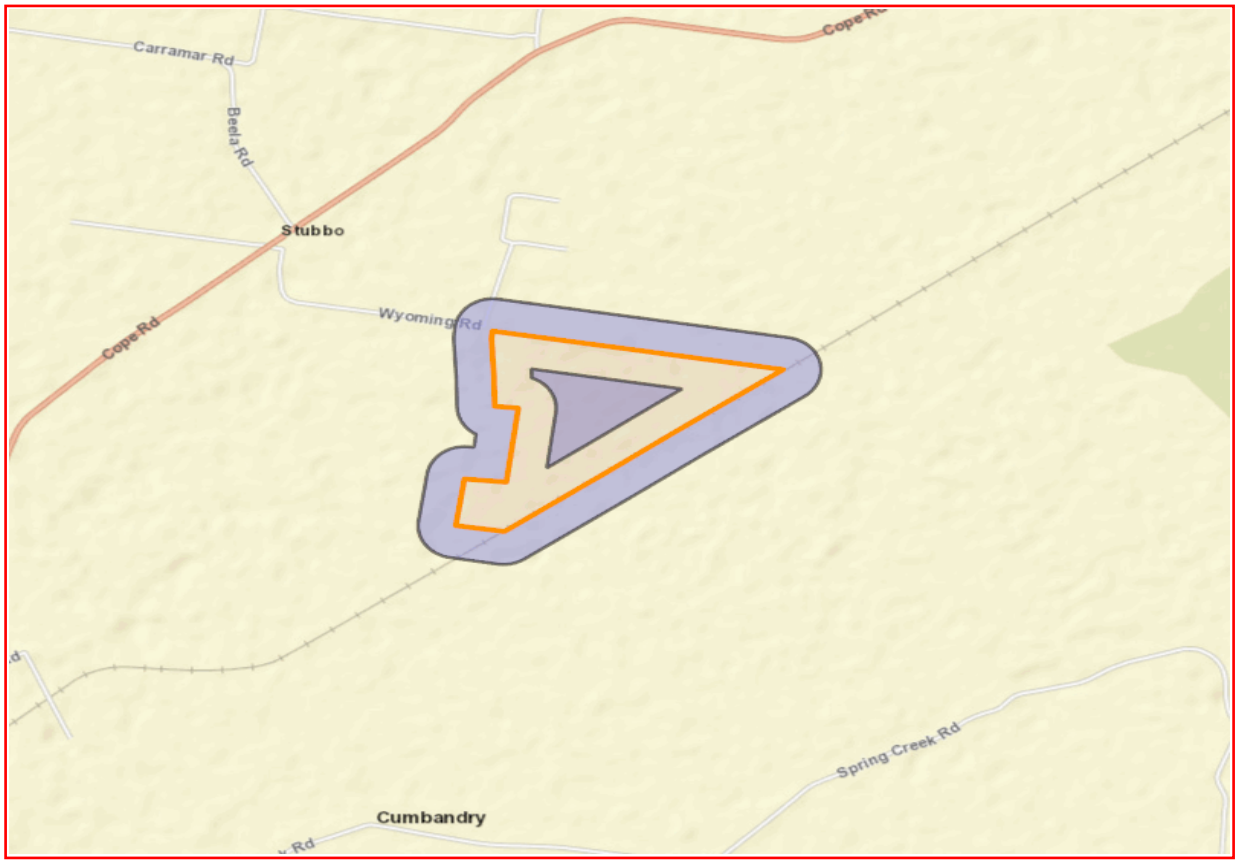
Email: lbonnell@barnson.com.au

Date: 02 September 2022

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot : 101, DP:DP1221461, Section : - with a Buffer of 200 meters, conducted by Luke Bonnell on 02 September 2022.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	**Aboriginal sites are recorded in or near the above location.**
0	**Aboriginal places have been declared in or near the above location. ***

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the NSW Government Gazette (https://www.legislation.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Heritage NSW and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

Level 6, 10 Valentine Ave, Parramatta 2150
Locked Bag 5020 Parramatta NSW 2124
Tel: (02) 9585 6345

ABN 34 945 244 274
Email: ahims@environment.nsw.gov.au
Web: www.heritage.nsw.gov.au

Appendix D – Preliminary Site Investigation

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Site Contamination Investigation

Client: Brian & Frances Munro

Site Address: 148 Wyoming Road, Stubbo 2850

24 May 2023

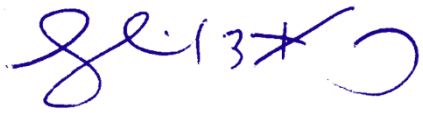
Our Reference: 38948-ER01_A

DISCLAIMER

This report has been prepared solely for Brian & Frances Munro (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 - 148 Wyoming Road, Stubbo NSW 2850
Client:	Brian & Frances Munro
Project Number:	38948
Report Reference:	38948 ER01_A
Date:	31/05/2023

Prepared by:	**Reviewed by:**
	
Nardus Potgieter MSc(Chem) BSc(Hons)(Env.Tech.) Senior Environmental Scientist	**Jim Sarantzouklis MAIBS (Assoc) MEHA MAICD RPIA** BA, Grad Dip URP, Dip Env H & B Director

Executive Summary

Barnson Pty Ltd was engaged by Brian & Frances Munro to undertake a preliminary contaminated site investigation (PSI) of the property at 148 Wyoming Road, Stubbo NSW 2850.

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, indicated no recorded activities with the potential to significantly contaminate the site.

Although the potential for *significant* environmental contamination to be present across the site was concluded to be low, activities associated with the current and historical use of the Subject Site were identified as having a potential to contaminate surface soil. The following potential sources and areas of contamination were identified:

- Historical and current livestock farming and grazing activities;
- Historical and current feed-crop cultivation;
- Use, maintenance and storage of motorised vehicles and equipment; and
- Indiscriminate 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.

The investigation revealed localised levels of arsenic in surface soil that are elevated in comparison with other areas of the Subject Site investigated. The concentrations of all other contaminants investigated were below screening criteria in all surface soil samples collected.

Although the concentration of Arsenic detected exceed both health and ecological risk-based screening values, it was concluded that the contamination does not represent a risk to the proposed re-zoning and sub-division of the Subject Site, as it does not represent a significant risk to human health or the environment in the location it was discovered. It is recommended that the elevated Arsenic concentration identified be investigated further, only in the event of this specific portion of the Subject Site having to be disturbed for further development.

Based on the findings of the desktop review and site investigation it can be stated with a reasonable level of confidence that the areas comprising the Subject Site are unlikely to be contaminated. The Subject Site is therefore considered suitable for the proposed re-zoning and sub-division.

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1. INTRODUCTION

1.1. Background and Objectives

Barnson Pty Ltd was engaged by Brian & Frances Munro to undertake a preliminary contaminated site investigation (PSI) in support of a Planning Proposal for the rezoning and future subdivision of the property located at 148 Wyoming Road, Stubbo (hereafter referred to as the Subject Site).

The Client is submitting a planning proposal to Mid-Western Regional Council for portions of the Subject Site to be rezoned for large lot residential development. 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 presents a general assessment of the conditions at the Subject Site in relation to general planning requirements and considers the contaminants potentially relevant to the current agricultural use of the property and proposed future residential land use scenario.

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 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. Figure 2.1 shows the Subject Site located to the north-east of Gulgong.

Table 2.1: Summary of Subject Site

Information	Details
Site address	148 Wyoming Road, Stubbo
Lot/Section and Deposited Plan	Lot 101 DP 1221461
Land Zoning	RU1 – Primary Production
County	Phillip
Parish	Wialdra
Local Government Area	Mid-Western Regional Council

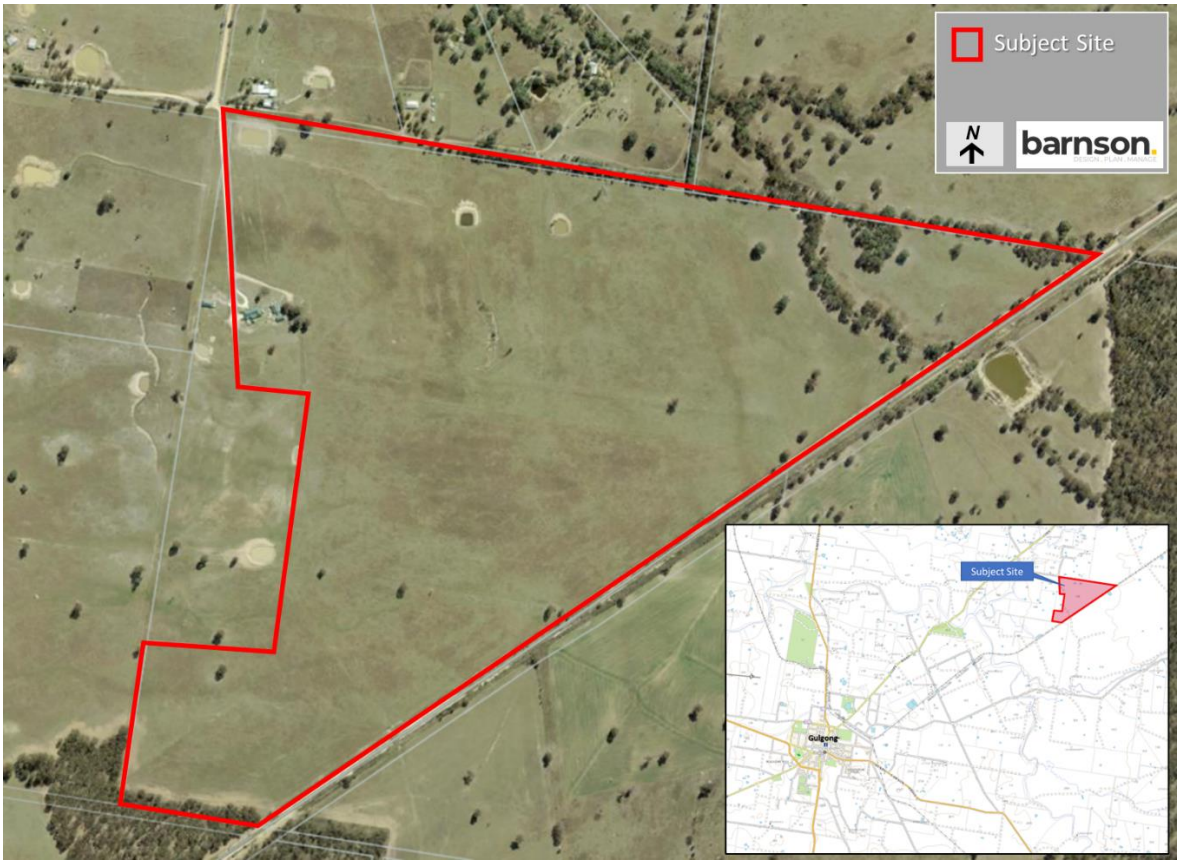

Figure 2.1: Location of the Subject Site.

2.2. Site Layout and Proposed Development

The Subject Site is identified as Lots 17 and 18 of DP 136209 occupying an area of approximately 98.73ha, located to the south of Wyoming Road. The south-eastern boundary of the Site, at approximately 1.7km long, is formed by the Sandy Hollow / Gulgong railway.

The Subject Site is used for agricultural (pastoral) purposes and is largely unoccupied except for a dwelling and associated shed structures located on the western boundary of the Site. The site is sectioned into several paddocks with steel wire fencing, and include races and pens used for cattle management purposes. The Subject site is covered with maintained grass and there are several earthen farm dams present in the different paddocks on the property. Three unnamed tributaries to the Wialdra Creek pass through the northern and eastern portion of the Subject Site.

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 to Figure 2.7). Figure 2.2 includes markers indicating the vantage point and direction of the photographs.

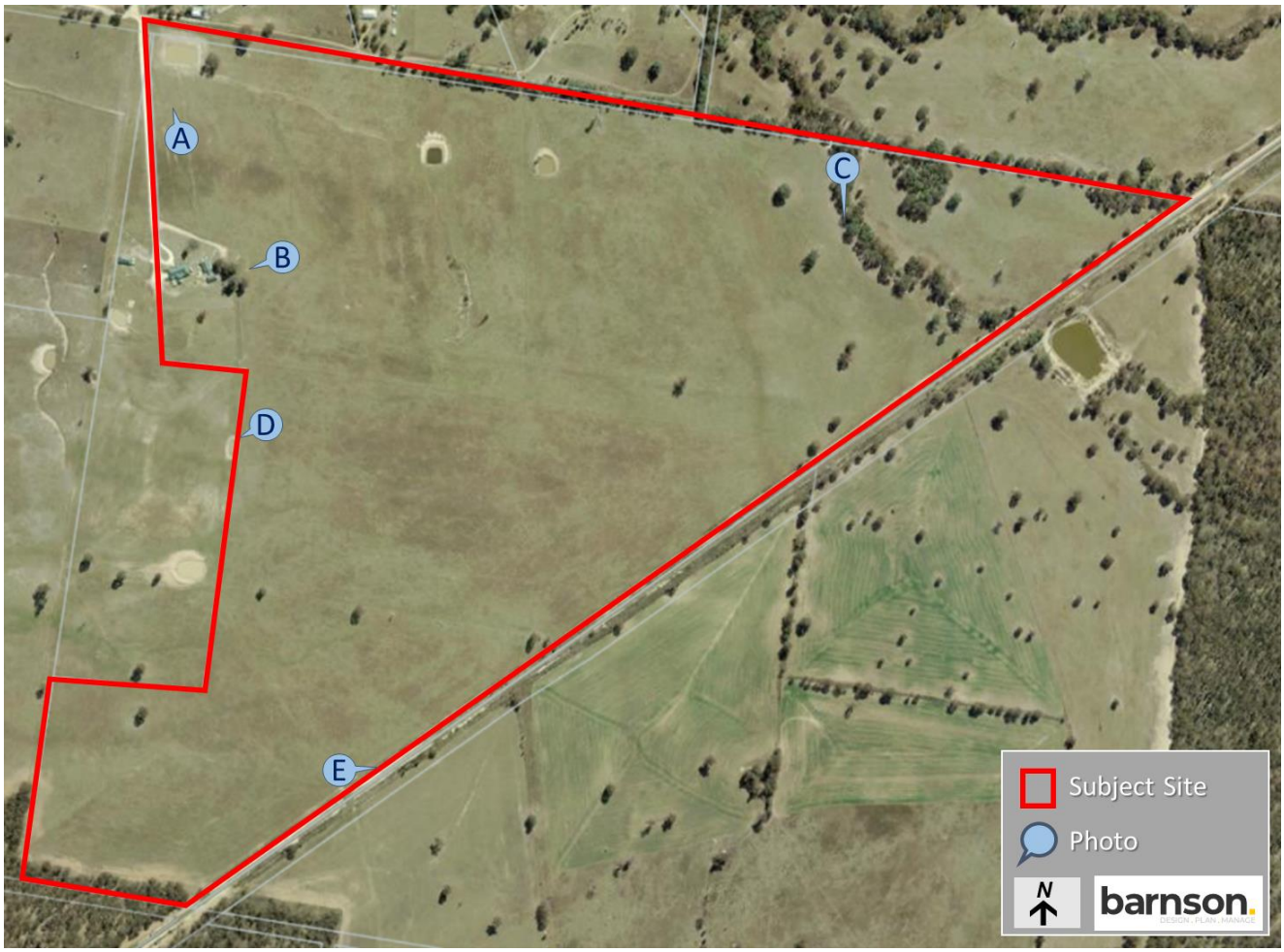

Figure 2.2: Existing Subject Site layout.

Figure 2.3: Photo A –Unpaved access driveway.

Figure 2.4: Photo B – View of existing dwelling across paddock looking west.

Figure 2.5: Photo C – Crossin at unnamed creek tributary in east of site.

Figure 2.6: Photo D – New dam in west of Subject Site.

Figure 2.7: Photo E – Gate in southeastern boundary fence along railway.

2.3. Proposed Development

The proposal is to (future) rezone the Subject Site of approximately 100 hectares from RU1 Primary Production to R5 Large Lot Residential, with a corresponding reduction to the minimum lot size from 100 hectares to 12 hectares.

The intention of rezoning the land is to permit the future subdivision of the site and its development for rural residential purposes. Figure 2.8 shows an indicative subdivision layout. This preliminary layout provides the maximum yield for the site based on the proposed rezoning and any potential constraints.

2.4. Site History

The Subject Site previously formed part of a larger property which was subdivided in 2015. The larger property and current lots (Lot 100 and Lot 101 DP 1221461) have been in use for rural residential purposes and pastoral agriculture for an extended period of time.

Historical aerial photographs of the Subject Site shows that no structures were present on site prior to 2010. The existing development comprises a detached dual occupancy with the principal dwelling having a detached garage and studio. Both dwellings are located towards the western boundary of the site, approximately 400m south of the gate entry from Wyoming Road.

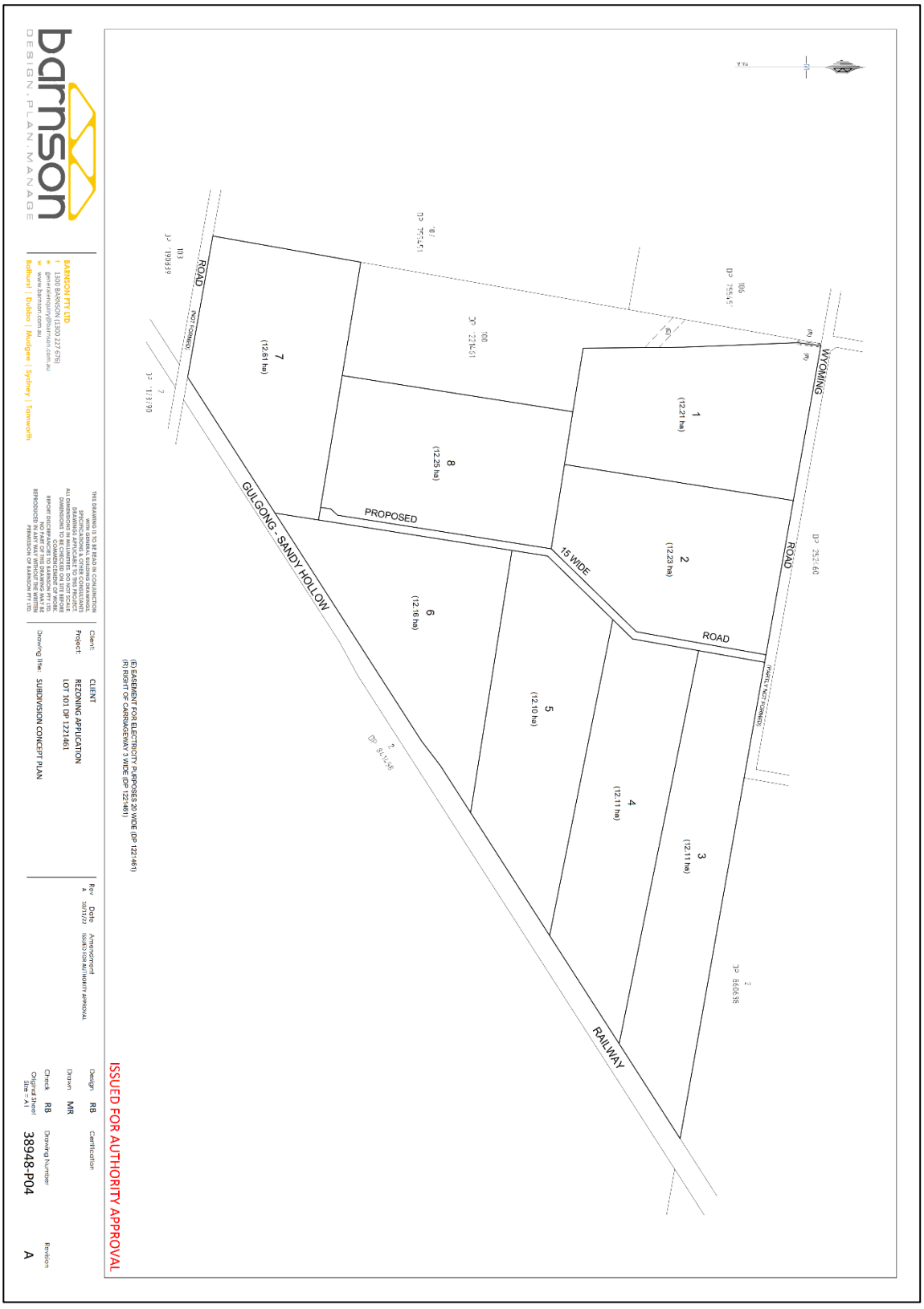

Figure 2.8: Proposed lot layout for the re-zoning and subdivision of the Subject Site.

2.5. Historical 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 May 2023 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 were available for review.

3. SITE SETTING

3.1. Geology

A review of the 1:100000 Geology Map of Gulgong (refer to Figure 3.1) shows that geologically, the Subject Site is underlain by alluvium and colluvium derived from the Gulgong and Rouse Granites.

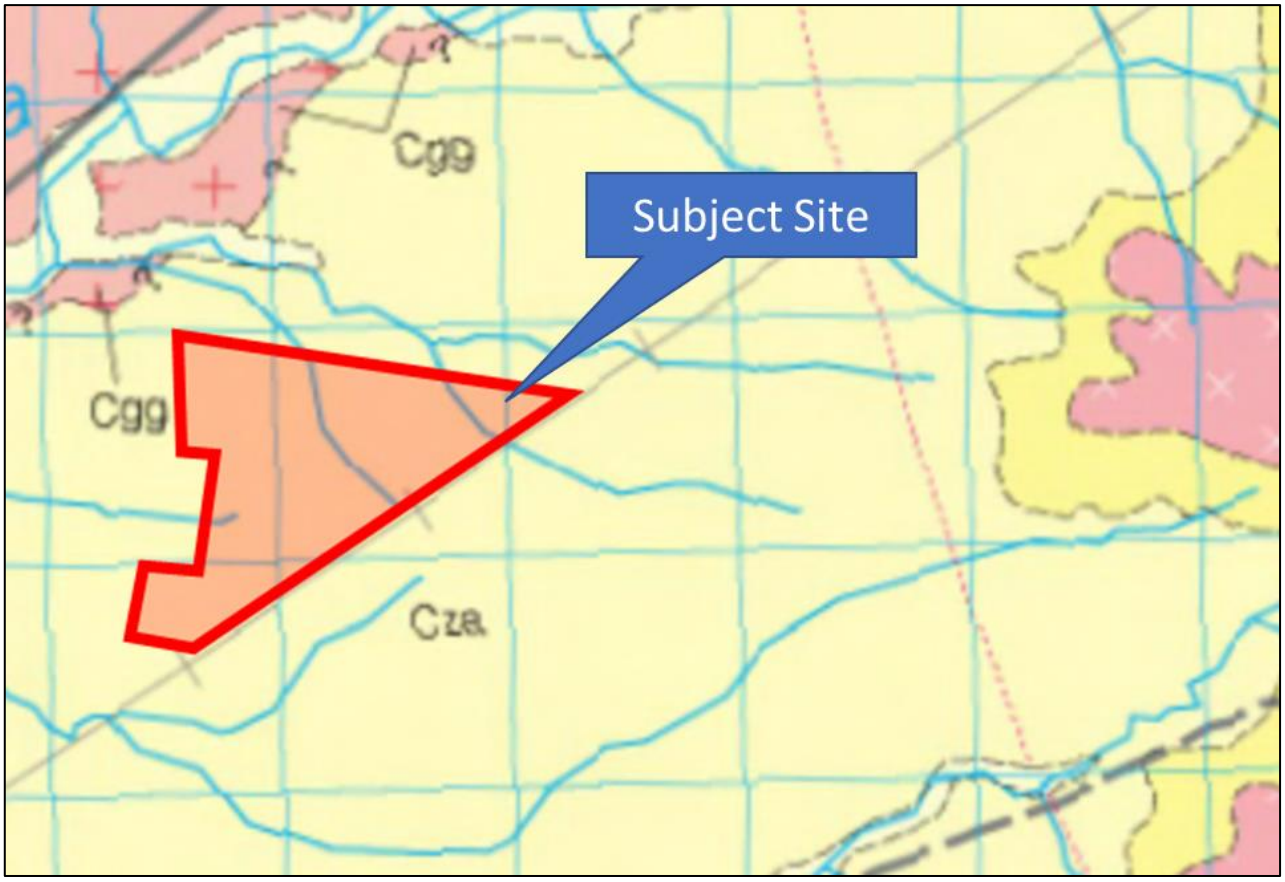

Figure 3.1: Gulgong 1:100,000 geology map showing the location of the Subject Site

Source: Google Earth, accessed 05/05/2023

An examination of the Geological Survey of NSW maps of Naturally Occurring Asbestos (accessed on 05 May 2023), shows that the geological units underlaying the Subject Site area has no asbestos potential.

3.2. Soils

The Subject Site is mapped within the Home Rule Soil Landscape. Soils at the Subject site is described as hardsetting brown to dark brown earthy sands that change to pale brown sandy loams below 40 cm. These are underlain by Yellowish-brown sandy loam to loamy sand.

Soils are described as having very low fertility, low available waterholding capacity, acidic surface soils, seasonal waterlogging, sodic subsoils in lower slopes; and moderate to high erosion hazard under cultivation.

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 are not considered saline but sub-soils are.

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 in largely flat with a mild westerly slope toward the Wialdra Creek.

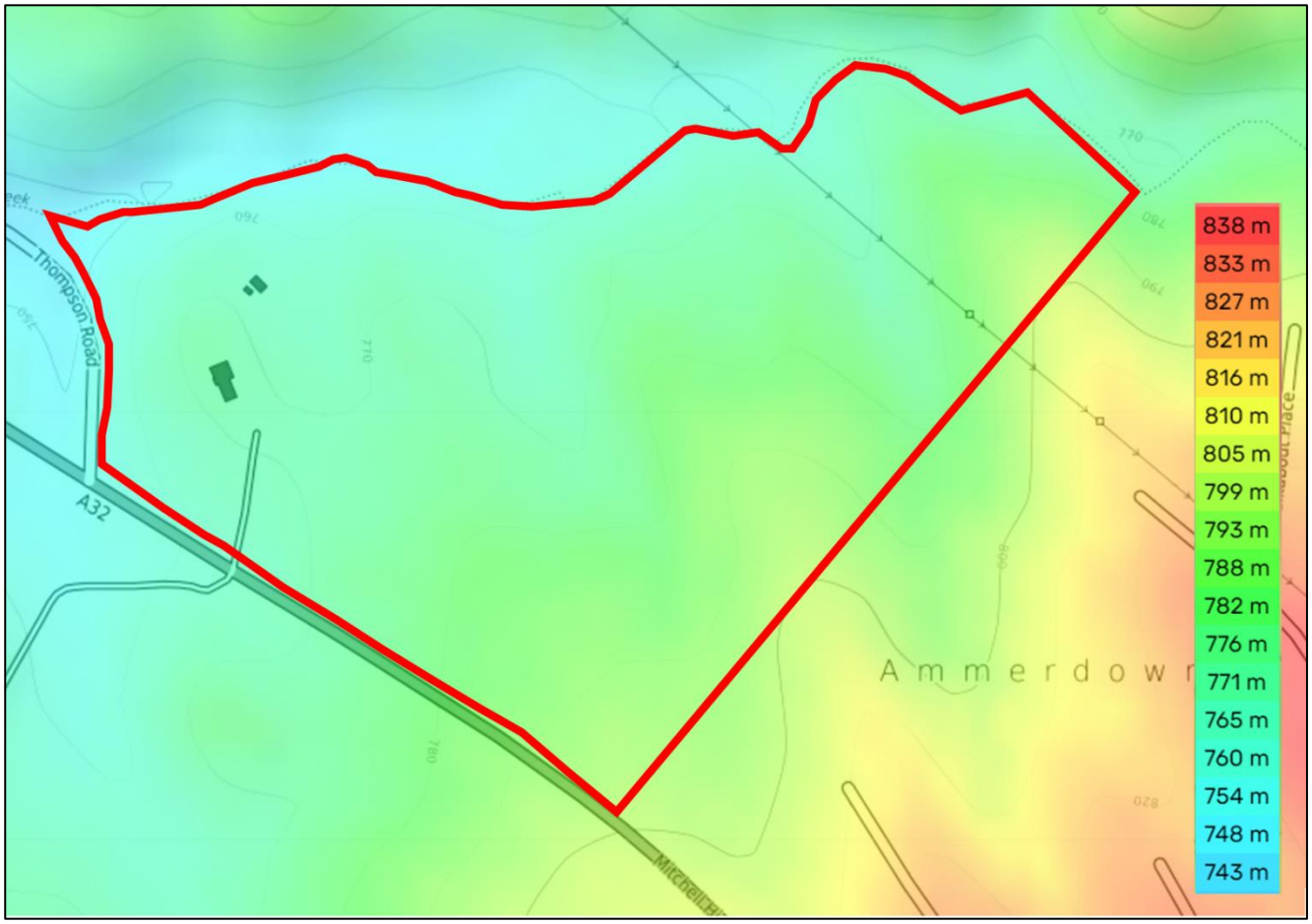

Figure 3.2: Subject Site topography.

Source: en-au.topographic-map.com, accessed 01/05/2023

The closest natural water body is the Wialdra Creek located to the northern of the Subject Site. There are three drainage lines mapped in the northern portion of the Site (see Figure 3.3). Water drains predominantly in a northerly direction toward the Wialdra Creek.

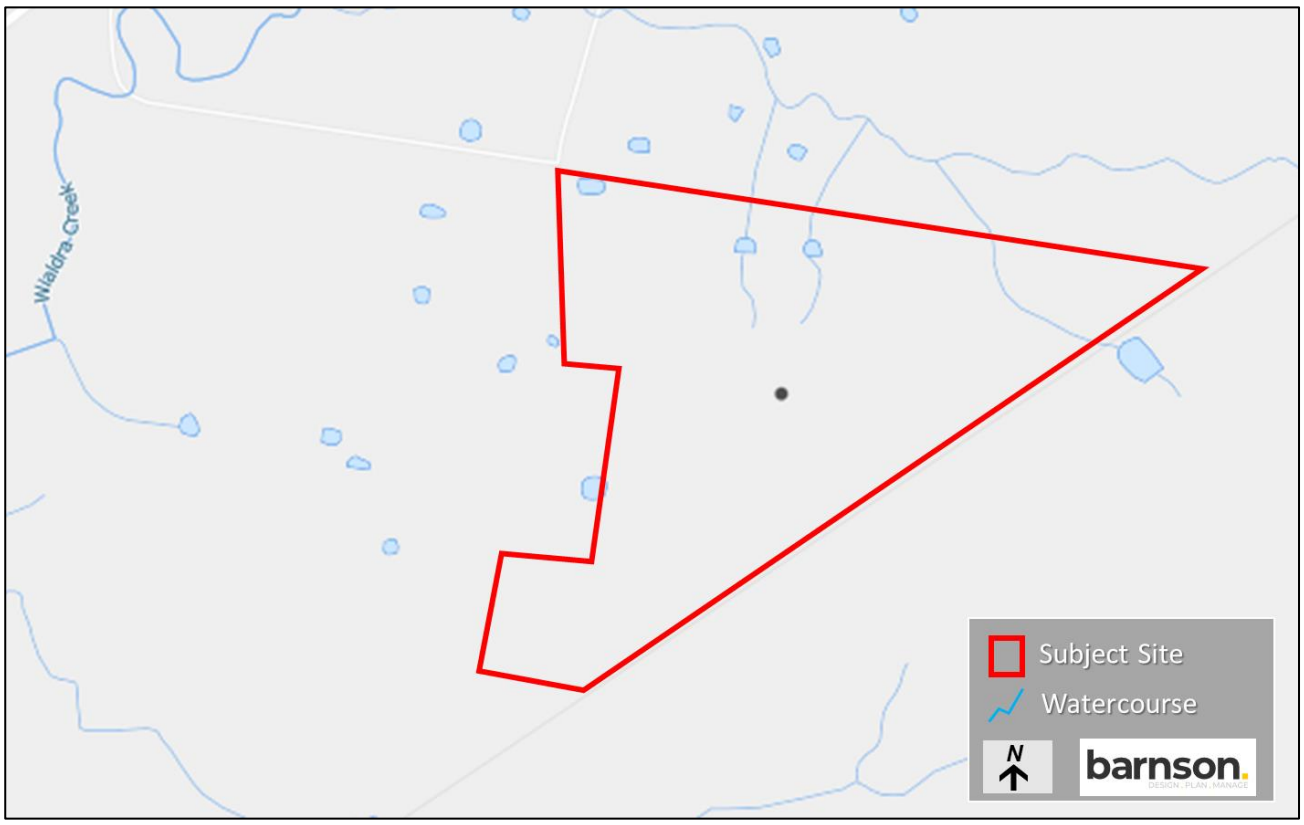

Figure 3.3: Drainage lines mapped across the Subject Site.

Source: en-au.topographic-map.com, accessed 01/05/2023

3.4. Groundwater Resources

A review of existing groundwater bore records (WaterNSW, 2023) indicate one groundwater bore located within the boundaries of the Subject Site, with one bore are identified within 500m of the Subject Site. The database contain no records for the on-site bore (GW807228). The off-site bore (GW061597) is located approximately 350m to the north west of the Site. The location of these groundwater bores are shown in Figure 3.4.

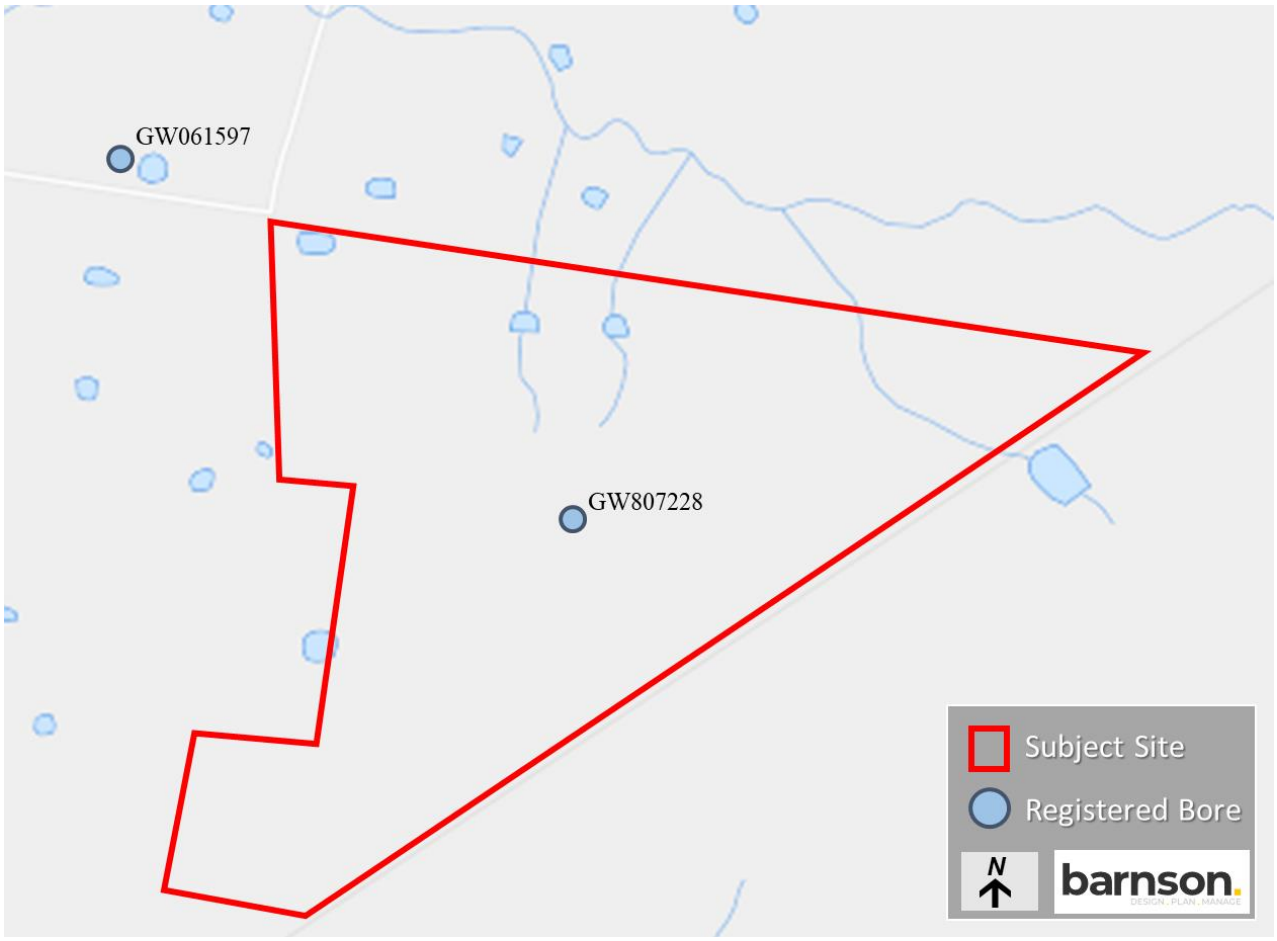

Figure 3.4: Groundwater bores near the subject site

Source: WaterNSW All Goundwater Map, accessed 03/05/2023

The information recorded in the database for the off-site groundwater bore indicates the depth of the bore reach final depth of 53.0m. No Standing Water Level (S.W.L) or Water Bearing Zone (W.B.Z) data is recorded for this bore. According to the database the bores are utilised for domestic or stock watering purposes.

Groundwater Sensitivity mapping obtained from the ePlanning Spatial Viewer, indicate that the Subject Site is located in an area of groundwater vulnerability. The riparian corridor traversing through the north-eastern corner of the site is mapped by the LEP as Sensitive Biodiversity.

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:

- Historical farming activities.

The Subject Site has historically been used in the operation of the livestock farming activities. Potential sources of contamination associated with these activities include the animal pens and yards, as well as the disposal of animal wastes. Activities associated with the management of animal health, including sheep dip or spraying for the control of parasites could further result in localised contamination. Potential contaminants include pesticides, hydrocarbons, heavy metals, and elevated nutrients.

- Cropping and feed production.

Historical photographs of the Subject Site indicate periodic feed crop (oats) farming activities in the centre of the Site. Crop farming in low fertility soils likely required the use of chemicals such as fertilisers and pesticides in the maintenance of the crops. Potential contaminants associated with these chemicals include heavy metals, organochlorine and organophosphate pesticides. Intensive use of fertiliser can also lead to the build-up of heavy metals in surface soil particularly zinc and cadmium, depending on the type and source of the fertiliser.

- Vehicles and equipment.

Operation of farm often involves the use of motorised vehicles and equipment used for a variety of applications such as transport, earth moving or pumping water. The use, storage, maintenance and refuelling of the equipment and vehicles has the potential to contribute to localised contamination of surface soils.

- Use of unclassified fill or uncontrolled disposal of waste.

There is no evidence to suggest that significant quantities of fill material have ever been imported to the Site for levelling or construction purposes. The Subject Site is further fenced and it is unlikely that large quantities of domestic or demolition waste would have been disposed of at the Site. However, 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 historical agricultural activities considered the primary potential source of contamination, the residues of agricultural chemicals such as pesticides and fertilisers are accepted as the most likely contaminants. Of interest here are chlorinated organic compounds which historically have been widely used as insecticides, fungicides, herbicides and soil fumigants in agriculture and which are stable enough in the environment (persistent) to remain in soil for extended periods of time. Inorganic compounds that contain heavy metal including arsenic, copper, lead and mercury were also historically used as pesticides, particularly in the control of external parasites on sheep. The use of fertiliser, although not commonly considered a source of soil contamination, potentially could lead to a build-up of heavy metals such as cadmium in soils in areas where it has been extensively applied.

The potential presence of fuels and lubricants are further potentially relevant to the on-site storage, maintenance or movement of vehicles and equipment in the operation of the farm.

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

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

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 50m) 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 low.

Although former land use and activities at the site is reasoned to have a potential for contaminating surface soils, the type and quantity of contaminants introduced through this land use is not expected to have led to significant contamination.

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.

The desktop evaluation of the site history and current use of the site did not identify any significant risks in this regard but did identify both historical and current land use activities that could contribute to contamination of the surface soils of the Subject Site.

Barnson conducted an inspection of the Subject Site on 27 April 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. There are several informal vehicle paths traversing the site and there are multiple access gates and paths both from the Wyoming road frontage and the rail corridor along the south-east boundary.
- At the time Barnson conducted the site inspection, most of the Subject Site was covered with tall pasture grass. All areas of the site was attended by vehicle, where vehicle paths were available, and all visible open ground and prominent features were inspected. No visible discoloration or staining of open ground or soil, and no obvious discoloration or irregularities in the occurrence of vegetation was observed during the site inspection.
- Evidence of waste disposal was discovered in two localised areas. The first is a stockpile of mainly cut vegetation (Figure 5.1) located in the north-eastern corner of the site. This is understood to originate from clearing of the a nearby area to allow access for recreational purposes. The second was near the southern corner of the site where a heap of animal bones and a mound of soil suggest the burial of dead animals (Figure 5.2). No demolition waste was observed in any other part of the Subject Site during the site inspection.
- The Subject Site is divided into different paddocks with steel wire fencing and gates allowing access to the different areas. No livestock were observed during the site inspection.
- There is a livestock yard and pens located near the existing main dwelling at the Subject Site (see Figure 5.3).

Figure 5.1: Photo vegetation waste stockpile.

Figure 5.2: Animal bone fragments and mound of soil.

Figure 5.3: Livestock yard in the west of the property.

- The surface water observed on site were confined to one of four dams located on the property. Water from paddocks comprising the Subject Site drain to the dams from where it may overflow from time to time to enter the Creek to the north.
- Other than the existing dwelling there was no evidence found to indicate that any other area of the Subject Site has previously included any structures. No evidence of demolition waste or footings of any previous structures were observed during the site investigations.

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. Samples of soil were collected from the paddocks and livestock management infrastructure. The disposal areas discovered in the north and south of the Subject Site were also specifically investigated with separate surface soil samples collected. Table 5.1 is a summary description of the collected samples submitted for analysis. Figure 5.4 presents a map of the Subject Site with the locations of the surface soil samples indicated.

Table 5.1: Summary of sample details.

Reference in Figure 5.4	Description	Assigned Sample Number
A	Surface soil/sediment (0-150mm) sample collected from on-site dam inlet.	BM-01
B	Surface soil (0-150mm) samples collected from area where surface water seem to settle.	BM -02
C	Surface soil (0-150mm) samples collected from disturbed soil inside entry gate from rail corridor.	BM -03
D	Surface soil/sediment (0-150mm) samples collected from watercourse draining through Subject Site.	BM -04
E	Surface soil/sediment (0-150mm) samples collected from cleared field.	BM -05
F	Surface soil/sediment (0-150mm) samples collected from inflow to Dam.	BM-06
G	Surface soil/sediment (0-150mm) samples collected from inflow to Dam	BM-07
H	Surface soil (0-150mm) samples collected from paddock historically used for feed cropping.	BM-08
I	Surface soil (0-150mm) samples collected from livestock yard area.	BM -09
I	Surface soil (0-150mm) samples collected from livestock yard area.	BM -10
J	Surface soil (0-150mm) samples collected from waste disposal area.	BM -12

The pattern followed for the soil sampling can be described as Judgement Sampling, where points are selected on the basis of the investigator's knowledge of the proposed land use and likely distribution of contaminants at a site. 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, 1995).

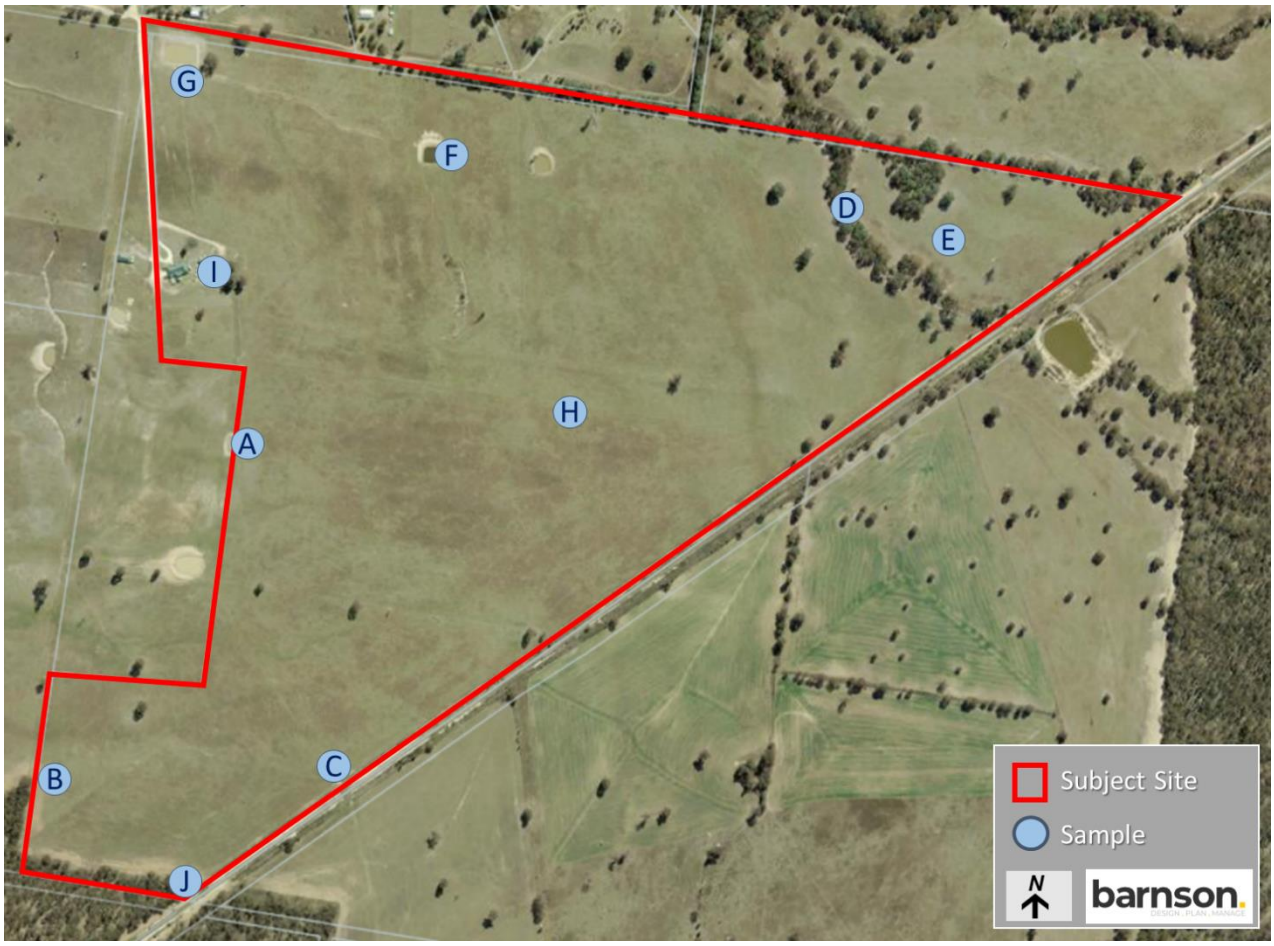

Figure 5.4: Surface soil sample locations.

All samples 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; and
- Extraction with organic solvent and analysis of Organochlorine (OCP) and Organophosphorus (OPP) pesticide compounds.

A composite sample of sediment (WF-11) from the on-site watercourse and dams were submitted for asbestos screening.

The ALS laboratory is NATA accredited for all the analysis indicated above.

5.3. Analytical Results

5.3.1. Surface Soil

The ALS report for the samples is attached as Appendix A. The laboratory report indicates that only heavy metals and trace quantities of petroleum hydrocarbons 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 below the limit of reporting in all samples.

Table 5.2 presents a summary of the compounds and elements detected above the limit of detection in surface soil samples.

Table 5.2: Summary of metals and hydrocarbons detected in soil samples collected from the Subject Site.

Element	BM-01	BM-02	BM-03	BM-04	BM-05	BM-06	BM-07	BM-08	BM-09	BM-10	BM-12
	mg.kg^{-1}										
Arsenic (As)	<5	<5	167	<5	<5	<5	<5	<5	<5	<5	<5
Cadmium (Cd)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chromium (Cr)	8	10	4	2	8	3	8	3	<2	4	8
Copper (Cu)	<5	<5	9	<5	<5	<5	<5	<5	6	<5	<5
Lead (Pb)	8	9	22	<5	<5	<5	6	6	<5	10	10
Mercury (Hg)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel (Ni)	<2	4	3	<2	<2	<2	<2	<2	<2	<2	3
Zinc (Zn)	<5	5	58	<5	<5	<5	<5	<5	82	22	11
>C10-C40 Fraction (sum)	<50	<50	<50	<50	<50	<50	<50	<50	490	<50	<50
>C16-C34 Fraction (F3)	<100	<100	<100	<100	<100	<100	<100	<100	290	<100	<100
>C34 - C40 Fraction (F4)	<100	<100	<100	<100	<100	<100	<100	<100	110	<100	<100

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 A.

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 A).

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 future 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. 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.

Ecological investigation levels (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:

Table 6.1: Human health and ecological risk screening levels.

Element	Health-based Investigation Levels HIL A Residential mg.kg^{-1}	Ecological Investigation Levels (EIL) Urban residential and public open space 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.

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

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 residential 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 residential/public open space exposure scenario are listed.

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

Fraction	Management limits for TPH in Soil Residential/public open space mg.kg^{-1}	Health Screening Levels (HSLs) for vapour intrusion Residential/public open space (silt) mg.kg^{-1} (soil)	Ecological Screening Levels (ESL) Residential/public open space (fine) mg.kg^{-1}
F1	800	40	180
F2	1,000	230	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 5.2 with the assessment criteria (refer Table 6.1 and Table 6.2) show that the detected metal and hydrocarbon concentrations in all but one of the 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. A single elevated concentration of arsenic, exceeding health and ecological screening criteria, was detected in a sample of surface soil collected from a disturbed area located just inside an access gate in the south-eastern boundary of the site. Arsenic is generally associated with historic use of livestock drenching liquids that contain heavy metals for insect and fungus control. The source of the elevated arsenic observed in this particular location is uncertain.

Hydrocarbons were detected in a sample of soil collected just outside the livestock yards where vehicles and equipment are likely parked. No stained or discoloured soil were observed in this area.

The concentrations of metals and hydrocarbons detected most likely do not relate to large scale contamination anywhere on Site. No other contaminants evaluated were detected at concentrations exceeding screening criteria. The soil samples collected at the waste disposal area (BM-12) and the livestock pens (BM-09 and -10) show no elevated levels of pesticides, hydrocarbons or heavy metals.

The confirmatory soil samples 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 and current 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:
  - Historical and current livestock farming and grazing activities;
  - Historical and current feed-crop cultivation;
  - Use, maintenance and storage of motorised vehicles and equipment, and
  - Localised waste disposal
- 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 Subject Site.
- A site investigation and confirmatory sampling revealed localised arsenic levels in surface soil that exceed health and ecological risk-based criteria.
- The concentrations of all other contaminants investigated were below screening criteria in all surface soil samples collected. No persistent pesticides or herbicides were detected in any of the samples collected from cropping areas or the livestock management areas (yards and races).
- 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 single incidence of an elevated arsenic concentration detected in surface soil at the Subject Site represent a limited risk to the proposed future land use. The elevated concentration of arsenic detected is likely localised to the area just inside the access gate and was not observed in any of the samples collected near any of the livestock management infrastructure or surface water dams. The potentially contaminated soil is therefore accepted to have a very low probability of dispersion to other areas of the site and present no significant risk to human health and 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 rezoning and subdivision.

- It is recommended that the elevated Arsenic concentration identified be investigated further, only in the event of this specific portion of the Subject Site having to be disturbed for further development. At that time, the level and extent of the elevated heavy metal concentration will determine if further remedial action is required.

8. REFERENCES

NEPC. (1999). *National Environment Protection (Assessment of Site Contamination) Measure (as amended, 2013).* National Environment Protection Council.

NSW EPA. (1995). *Contaminated Sites: Sampling Guidelines.* NSW Environmental Protection Agency.

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

WaterNSW. (2023). *Real Time Data.* Retrieved May 8, 2023, from Water NSW: https://realtimedata.waternsw.com.au/water.stm

barnson.

APPENDIX A

Chain of Custody and Laboratory Report – Surface Soil

Environmental Division
Mudgee
Work Order Reference
ME2300804

barnson

Unit 4 / 108-110 Market Street
Mudgee NSW 2850
1300 BARNSON (1300 227 676)
generalenquiry@barnson.com.au
www.barnson.com.au

Telephone : 02 6372 6735

CHAIN OF CUSTODY AND ANALYTICAL REQUEST

Job Number	38948	Date	01/05/2023
Laboratory	ALS Mudgee	Report to	Nardus Potgieter npotgieter@barnson.com.au
Sample Temperature on Receipt		Notes	
10-13 °C	Signature:		

Sample ID	Description	Sample Date/Time	Sample Matrix	Analysis request					
				1	2	3	4	5	6
BM-01	In-situ soil	28/04/2023	Soil	X					
BM-02	In-situ soil	28/04/2023	Soil	X					
BM-03	In-situ soil	28/04/2023	Soil	X					
BM-04	In-situ soil	28/04/2023	Soil	X					
BM-05	In-situ soil	28/04/2023	Soil	X					
BM-06	In-situ soil	28/04/2023	Soil	X					
BM-07	In-situ soil	28/04/2023	Soil	X					
BM-08	In-situ soil	28/04/2023	Soil	X					
BM-09	In-situ soil	28/04/2023	Soil	X					
BM-10	In-situ soil	28/04/2023	Soil	X					
BM-12	In-situ soil	28/04/2023	Soil	X					

Analysis request		Method Code
1	TRH (C6-C40) / BTEXN / PAH / OC / OP / PCB / 8 Metals	S-16
2		
3		
4		
5		
6		

Relinquished by / Affiliation	Accepted by / Affiliation	Date
/ Barnson	/ ALS Mudgee	01/05/2023 1035

Esky x 1
Ice bricks

CERTIFICATE OF ANALYSIS

Work Order	: **ME2300804**	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	: 01-May-2023 10:35
Order number	: ----	Date Analysis Commenced	: 04-May-2023
C-O-C number	: ----	Issue Date	: 08-May-2023 17:57
Sampler	: Client Sampler		
Site	: ----		
Quote number	: SY/053/14		
No. of samples received	: 11		
No. of samples analysed	: 11		

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
- 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
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.
- EP071: Results of sample BM-09 have been confirmed by re-extraction and re-analysis.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BM-01 In-situ soil	BM-02 In-situ soil	BM-03 In-situ soil	BM-04 In-situ soil	BM-05 In-situ soil
			Sampling date / time	28-Apr-2023 00:00	28-Apr-2023 00:00	28-Apr-2023 00:00	28-Apr-2023 00:00	28-Apr-2023 00:00
Compound	CAS Number	LOR	Unit	ME2300804-001	ME2300804-002	ME2300804-003	ME2300804-004	ME2300804-005
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**14.0**	**5.3**	**2.2**	**1.8**	**2.5**
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	**167**	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	**8**	**10**	**4**	**2**	**8**
Copper	7440-50-8	5	mg/kg	<5	<5	**9**	<5	<5
Lead	7439-92-1	5	mg/kg	**8**	**9**	**22**	<5	<5
Nickel	7440-02-0	2	mg/kg	<2	**4**	**3**	<2	<2
Zinc	7440-66-6	5	mg/kg	<5	**5**	**58**	<5	<5
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	<0.1	<0.1	<0.1
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BM-01 In-situ soil	BM-02 In-situ soil	BM-03 In-situ soil	BM-04 In-situ soil	BM-05 In-situ soil
				Sampling date / time	28-Apr-2023 00:00	28-Apr-2023 00:00	28-Apr-2023 00:00	28-Apr-2023 00:00	28-Apr-2023 00:00
Compound	CAS Number	LOR	Unit		ME2300804-001	ME2300804-002	ME2300804-003	ME2300804-004	ME2300804-005
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
4.4`-DDT	50-29-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ **Sum of Aldrin + Dieldrin**	309-00-2/60-57-1	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-29-3	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BM-01 In-situ soil	BM-02 In-situ soil	BM-03 In-situ soil	BM-04 In-situ soil	BM-05 In-situ soil
				Sampling date / time	28-Apr-2023 00:00	28-Apr-2023 00:00	28-Apr-2023 00:00	28-Apr-2023 00:00	28-Apr-2023 00:00
Compound	CAS Number	LOR	Unit		ME2300804-001	ME2300804-002	ME2300804-003	ME2300804-004	ME2300804-005
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	**0.6**	**0.6**	**0.6**	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	**1.2**	**1.2**	**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
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

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BM-01 In-situ soil	BM-02 In-situ soil	BM-03 In-situ soil	BM-04 In-situ soil	BM-05 In-situ soil
				Sampling date / time	28-Apr-2023 00:00	28-Apr-2023 00:00	28-Apr-2023 00:00	28-Apr-2023 00:00	28-Apr-2023 00:00
Compound	CAS Number	LOR	Unit		ME2300804-001	ME2300804-002	ME2300804-003	ME2300804-004	ME2300804-005
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
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	%		80.5	78.1	83.9	95.2	99.3
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		82.9	78.4	99.2	97.8	102
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		79.8	73.3	96.5	94.3	88.0
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		77.3	82.5	81.1	82.3	80.4
2-Chlorophenol-D4	93951-73-6	0.5	%		79.9	85.9	85.1	84.7	83.5
2.4.6-Tribromophenol	118-79-6	0.5	%		76.5	81.7	74.1	76.3	71.8
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		93.4	100	98.6	97.8	96.9
Anthracene-d10	1719-06-8	0.5	%		92.6	100	98.0	96.5	95.2
4-Terphenyl-d14	1718-51-0	0.5	%		86.8	93.7	91.1	90.4	90.0
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		85.3	125	94.4	95.3	106
Toluene-D8	2037-26-5	0.2	%		93.3	99.1	93.5	98.6	102
4-Bromofluorobenzene	460-00-4	0.2	%		116	103	98.3	93.7	103

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BM-06 In-situ soil	BM-07 In-situ soil	BM-08 In-situ soil	BM-09 In-situ soil	BM-10 In-situ soil
			Sampling date / time	28-Apr-2023 00:00	28-Apr-2023 00:00	28-Apr-2023 00:00	28-Apr-2023 00:00	28-Apr-2023 00:00
Compound	CAS Number	LOR	Unit	ME2300804-006	ME2300804-007	ME2300804-008	ME2300804-009	ME2300804-010
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**8.5**	**4.6**	**3.4**	**7.2**	**1.8**
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	**3**	**8**	**3**	<2	**4**
Copper	7440-50-8	5	mg/kg	<5	<5	<5	**6**	<5
Lead	7439-92-1	5	mg/kg	<5	**6**	**6**	<5	**10**
Nickel	7440-02-0	2	mg/kg	<2	<2	<2	<2	<2
Zinc	7440-66-6	5	mg/kg	<5	<5	<5	**82**	**22**
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	<0.1	<0.1	<0.1
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BM-06 In-situ soil	BM-07 In-situ soil	BM-08 In-situ soil	BM-09 In-situ soil	BM-10 In-situ soil
				Sampling date / time	28-Apr-2023 00:00	28-Apr-2023 00:00	28-Apr-2023 00:00	28-Apr-2023 00:00	28-Apr-2023 00:00
Compound	CAS Number	LOR	Unit		ME2300804-006	ME2300804-007	ME2300804-008	ME2300804-009	ME2300804-010
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
4.4`-DDT	50-29-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ **Sum of Aldrin + Dieldrin**	309-00-2/60-57-1	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-29-3	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL
(Matrix: SOIL)

Compound	CAS Number	LOR	Unit	Sample ID	BM-06 In-situ soil	BM-07 In-situ soil	BM-08 In-situ soil	BM-09 In-situ soil	BM-10 In-situ soil
				Sampling date / time	28-Apr-2023 00:00	28-Apr-2023 00:00	28-Apr-2023 00:00	28-Apr-2023 00:00	28-Apr-2023 00:00
					ME2300804-006	ME2300804-007	ME2300804-008	ME2300804-009	ME2300804-010
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ **Benzo(a)pyrene TEQ (half LOR)**	----	0.5	mg/kg		**0.6**	**0.6**	**0.6**	**0.6**	**0.6**
^ **Benzo(a)pyrene TEQ (LOR)**	----	0.5	mg/kg		**1.2**	**1.2**	**1.2**	**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	**200**	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	**180**	<100
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg		<50	<50	<50	**380**	<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	**90**	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	**290**	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	**110**	<100
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg		<50	<50	<50	**490**	<50
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	50	mg/kg		<50	<50	<50	**90**	<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
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

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BM-06 In-situ soil	BM-07 In-situ soil	BM-08 In-situ soil	BM-09 In-situ soil	BM-10 In-situ soil
				Sampling date / time	28-Apr-2023 00:00	28-Apr-2023 00:00	28-Apr-2023 00:00	28-Apr-2023 00:00	28-Apr-2023 00:00
Compound	CAS Number	LOR	Unit		ME2300804-006	ME2300804-007	ME2300804-008	ME2300804-009	ME2300804-010
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
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	%		89.7	106	122	101	76.7
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		105	112	116	92.3	77.2
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		100	104	106	95.0	63.3
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		78.0	78.9	81.8	80.8	80.1
2-Chlorophenol-D4	93951-73-6	0.5	%		81.6	82.9	82.7	84.3	84.2
2.4.6-Tribromophenol	118-79-6	0.5	%		69.9	69.3	69.8	82.7	79.1
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		97.1	97.6	98.1	98.0	97.6
Anthracene-d10	1719-06-8	0.5	%		95.3	95.7	97.9	97.1	96.3
4-Terphenyl-d14	1718-51-0	0.5	%		89.8	89.8	90.9	90.2	89.8
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		90.1	91.0	90.5	104	100
Toluene-D8	2037-26-5	0.2	%		93.3	98.6	110	97.1	105
4-Bromofluorobenzene	460-00-4	0.2	%		89.5	101	89.0	96.7	97.9

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BM-12 In-situ soil	----	----	----	----
				Sampling date / time	28-Apr-2023 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ME2300804-011	--------	--------	--------	--------
					Result	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		**2.1**	----	----	----	----
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	----	----	----	----
Cadmium	7440-43-9	1	mg/kg		<1	----	----	----	----
Chromium	7440-47-3	2	mg/kg		**8**	----	----	----	----
Copper	7440-50-8	5	mg/kg		<5	----	----	----	----
Lead	7439-92-1	5	mg/kg		**10**	----	----	----	----
Nickel	7440-02-0	2	mg/kg		**3**	----	----	----	----
Zinc	7440-66-6	5	mg/kg		**11**	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<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	----	----	----	----
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	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BM-12 In-situ soil	----	----	----	----
				Sampling date / time	28-Apr-2023 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ME2300804-011	--------	--------	--------	--------
					Result	----	----	----	----
EP068A: Organochlorine Pesticides (OC) - Continued									
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**	72-54-8/72-55-9/50-2	0.05	mg/kg		<0.05	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		<0.05	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg		<0.05	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg		<0.2	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg		<0.05	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg		<0.05	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		<0.05	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg		<0.2	----	----	----	----
Malathion	121-75-5	0.05	mg/kg		<0.05	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg		<0.05	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg		<0.05	----	----	----	----
Parathion	56-38-2	0.2	mg/kg		<0.2	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		<0.05	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg		<0.05	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg		<0.05	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg		<0.05	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg		<0.05	----	----	----	----
Ethion	563-12-2	0.05	mg/kg		<0.05	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg		<0.05	----	----	----	----
Azinphos Methyl	86-50-0	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	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BM-12 In-situ soil	----	----	----	----
				Sampling date / time	28-Apr-2023 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ME2300804-011	--------	--------	--------	--------
					Result	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
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	----	----	----	----
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	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg		<50	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg		<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	----	----	----	----
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg		<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	----	----	----	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg		<10	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg		<50	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg		<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	----	----	----	----
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg		<50	----	----	----	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	50	mg/kg		<50	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BM-12 In-situ soil	----	----	----	----
				Sampling date / time	28-Apr-2023 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ME2300804-011	--------	--------	--------	--------
					Result	----	----	----	----
EP080: BTEXN - Continued									
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg		<0.2	----	----	----	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	----	----	----	----
Naphthalene	91-20-3	1	mg/kg		<1	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		126	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		110	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		56.0	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		77.9	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		85.6	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%		61.4	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		112	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%		90.3	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		100	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		83.0	----	----	----	----
Toluene-D8	2037-26-5	0.2	%		120	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		112	----	----	----	----

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 Sydney, NATA accreditation no. 825, site no. 10911 (Chemistry) 14913 (Biology).

(SOIL) EP068B: Organophosphorus Pesticides (OP)
(SOIL) EP068A: Organochlorine Pesticides (OC)
(SOIL) EP068T: Organophosphorus Pesticide Surrogate
(SOIL) EP068S: Organochlorine Pesticide Surrogate
(SOIL) EA055: Moisture Content (Dried @ 105-110°C)
(SOIL) EP066: Polychlorinated Biphenyls (PCB)
(SOIL) EP066S: PCB Surrogate
(SOIL) EG035T: Total Recoverable Mercury by FIMS
(SOIL) EG005(ED093)T: Total Metals by ICP-AES
(SOIL) EP080/071: Total Petroleum Hydrocarbons
(SOIL) EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions
(SOIL) EP080: BTEXN
(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

Appendix E – Mudgee Local Aboriginal Land Council Clearance Letter

MUDGEE
LOCAL ABORIGINAL LAND COUNCIL

Brian and Frances Munro
PO Box 77
Gulgong, NSW 2852

17/05/23

RE: Clearance Letter for 148 Wyoming Road, Gulgong NSW – Lot 101 DP 1221461

Dear Brian and Frances,

On behalf of the Mudgee LALC I would like to thank you for consulting with us regarding your proposed development at 148 Wyoming Road, Gulgong NSW – Lot 101 DP 1221461.

Following a review of the Aboriginal Cultural Heritage Assessments previously conducted in the vicinity, the AHIMS Database and a walkover we can advise you that whilst there are Aboriginal sites recorded in the area no Aboriginal Cultural Heritage materials were identified as being potentially impacted by your development.

As such the Mudgee Local Aboriginal Land Council has no problem with the development proceeding.

If you have any queries or require any further assistance please do not hesitate to contact our office.

Yours Sincerely,

Tony Lonsdale
CEO
Mudgee LALC

Mudgee Local Aboriginal Land Council
PO Box 1098, Mudgee NSW 2850
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ABN: 54 927 738 589