Appendix D – SUBMITTED AMENDING AND ADDITIONAL INFORMATION

2 September 2024

Cabonne Council
PO Box 17
MOLONG NSW 2866

Responded by:
NSW Planning Portal

Attention: Mr Andrew Crump

Dear Andrew

Re: McNaught's Quarry – PAN-442538
Response to Additional Information Request

R. W. Corkery & Co. Pty Limited (RWC) has reviewed the advice provided in relation to the above by yourself on behalf of Cabonne Council (Council) through the NSW Planning Portal on 1 August 2024. Please see below RWC's response to each of the matters raised.

Council has completed an initial review of the application which has identified the need for either further clarification on certain matters or further information in order to the complete the assessment. To this end the following is requested:

Noise Impacts

The Noise Assessment assesses noise impacts from some sources/activities under the Interim Construction Noise Guideline (ICNG). Section 1.2 of the ICNG clearly states that it does not cover "noise from industrial sources (for example, factories, quarrying, mining, and including construction associated with quarrying and mining)" and that these sources are to be assessed under the NSW Industrial Noise Policy (replaced by the Noise Policy for Industry). It is requested that the noise impact assessment be amended to assess the relevant noise sources/activities under the NSW INP.

The Noise Assessment completed by Muller Acoustic Consulting Pty Ltd (MAC) to accompany the development application for the McNaught's Quarry (the Quarry) was undertaken in accordance with the relevant noise assessment guidelines including:

- the NSW Department of Environment and Climate Change (DECC) – *NSW Interim Construction Noise Guideline* (ICNG), July 2009; and
- the NSW Environment Protection Authority (EPA), *Noise Policy for Industry* (NPI) 2017.

RWC requested a formal response from MAC (see **Attachment 1**). In summary, MAC notes that the ICNG is designed to assess and mitigate noise impacts from construction activities which often include short-term, variable, and temporary noise sources. It addresses a range of construction activities, including site preparation, earthworks, and other noise generating construction activities common in quarries prior to the commencement of extraction and processing activities.

MAC also notes that the NPI is aimed at addressing noise from long-term industrial operations and setting criteria for ongoing industrial activities. Section 1.4 of the NPI states that the policy applies to "extractive industry premises". However, Section 1.5 clearly states that the policy does not apply to "construction activities".

Therefore, when assessing extractive industry projects, the construction components of those projects are assessed in consideration of the ICNG rather than the NPI. This is because the construction activities would occurring prior extraction of the resource and/or processing operations and would be atypical of those operations. Furthermore, those activities would occur at the beginning of a project, are temporary and only occur once, which does not fit into the assessment methodology of the NPI. This approach has been used in many extractive projects and State Significant Developments.

Therefore, MAC contends that the ICNG is the appropriate methodology for assessing construction noise from quarries or mines (prior to the commencement of operations) due to its approach to short-term, variable, and transitional noise impacts typical of construction activities.

Aboriginal Heritage

The SEARs required an ACHAR to be prepared. It's noted that a lower level of assessment has been carried out in relation to Aboriginal Heritage via a Due Diligence Report. Council requests that an ACHAR be undertaken for the development in line with the requirements of the SEARs.

The Aboriginal Heritage impacts for the McNaught's Quarry development application were assessed by OzArk Environment & Heritage (OzArk) as a Due Diligence Aboriginal Heritage Assessment (Heritage Assessment). The Heritage Assessment was completed as a due diligence assessment based on the expectation that no Aboriginal objects would be present in the Quarry Site due to the extensive disturbance history of the site and the general agreement of OzArk that a due diligence assessment would be sufficient for the project.

RWC notes that an email response to the SEARs was submitted to Heritage NSW on 10 April 2024 requesting the removal of the requirement for a full ACHAR, however, with no response received.

RWC requested a formal response to the above request for information from OzArk (see **Attachment 2)**.

In summary, OzArk notes that correspondence received alongside the SEARs from Heritage NSW, dated 6 March 2024, indicated that an ACHAR would be "*generally recommended*" but is not necessarily a requirement. OzArk first undertook a Due Diligence Code of Practice assessment within the study area to determine if further investigation was required. That study was undertaken in accordance with the *Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW* (Section 1.3). No Aboriginal objects were identified within the study area and OzArk considered it very unlikely that any objects exist within the study area. Therefore, OzArk determined that no further investigation was required.

Based on the above, OzArk believes that the Heritage Assessment was a robust assessment of the study area and is confident that is extremely unlikely that Aboriginal objects will be harmed by the Project.

RWC also notes that a similar scale project within the Cabonne Council Local Government Area, namely the Toogong Gravel Quarry, was approved in August 2018, having also prepared a Due Diligence assessment rather than an ACHAR for the site.

I trust that the above provides sufficient information at this stage to address the matters raised. Please do not hesitate to contact me with any questions.

Yours sincerely



Indigo Devane
Environmental Consultant

Encls: Attachment 1 – MAC Noise Justification Letter
Attachment 2 – OzArk Heritage Justification Letter

Attachment 1

MAC Noise Justification Letter

(Total No. of pages including blank pages = 4)

PO Box 678
Kotara NSW 2289
ABN: 36 602 225 132
P: +61 2 4920 1833
www.mulleracoustic.com

14 August 2024

MAC231962-02LR1

Attention: Indigo Devane
RW Corkery & Co Pty Ltd
Suite 12.01, 1/5 Railway Street
Chatswood NSW 2067

Dear Indigo,

McNaughts Quarry

5082 Canowindra Road, Canowindra, NSW

1 Introduction

Muller Acoustic Consulting Pty Ltd (MAC) has been commissioned by RW Corkery & Co Pty Ltd (RWC) to prepare a response to a submission from the Cabonne Shire Council ('Council') regarding the Noise Assessment (NA) for the McNaughts Quarry at 5082 Canowindra Road, Canowindra, NSW.

The NA quantified potential noise emissions from activities associated with the construction and operational stages of the project.

The results of the Noise Assessment demonstrate that modelled noise emissions from construction operational activities would satisfy the relevant noise criteria at all assessed receivers with the implementation the recommended noise mitigation measures.

This letter provides a response to the submission made by Council regarding the assessment methodology of construction noise impacts from the project.

2 Council Submission

The submission made by Council regarding the assessment of construction noise impacts is reproduced below.

The Noise Assessment assesses noise impacts from some sources/activities under the Interim Construction Noise Guideline (ICNG). Section 1.2 of the ICNG clearly states that it does not cover "noise from industrial sources (for example, factories, quarrying, mining, and including construction associated with quarrying and mining)" and that these sources are to be assessed under the NSW Industrial Noise Policy (replaced by the Noise Policy for Industry). It is requested that the noise impact assessment be amended to assess the relevant noise sources/activities under the NSW INP.

2.1 Response

The ICNG is specifically designed to assess and manage noise impacts from construction activities, which often include short-term, variable, and temporary noise sources. It addresses a range of construction activities, including site preparation, earthworks, and other operations common in quarries prior to the commencement of extraction and processing activities. Its aim is to balance the needs of construction with the community's expectations for noise management through the development phase in comparison to the operational phase of a project. The ICNG considers different (standard hours, after hours, and night-time), offering flexibility in noise criteria to accommodate construction's varied working hours and provides guidance on implementing noise mitigation measures specifically tailored to construction scenarios.

The Noise Policy for Industry (NPI) is aimed at assessing noise from long-term industrial operations and setting criteria for ongoing industrial activities. It deals with permanent industrial noise sources, focusing on continuous long-term operational noise rather than temporary and transient nature of construction activities. The NPI aims for projects to comply with stricter criteria (than the ICNG) for continuous operations, often not applicable to short-term construction activities and offers less flexibility in adjusting noise criteria based on the temporary nature of activities.

Section 1.4 of the NPI states that the policy applies to "extractive industry premises". However, Section 1.5 clearly states that the policy does not apply to "construction activities".

Therefore, when assessing extractive projects, construction activities such as earthworks, erection of buildings, roads etc are 'construction activities' and are assessed in consideration of the ICNG. This is because these activities occur prior to and are atypical of extraction of the resource and/or any processing of the resource. Typically, the activities completed prior to mine/quarry production are

described as early works, establishment works or simply, construction. Furthermore, these activities occur at the beginning of a project, are temporary and only occur once, which does not fit into the assessment methodology of the NPI. Such activities do, however, do fit into the ICNG assessment methodology as it is design to assess and short-term activities.

Activities associated with constructing infrastructure such as noise bunds, once the quarry is operating is not considered a 'construction activity' and is assessed in accordance with the NPI as it is considered a "mining activity" or "quarry activity".

This approach has multiple presidencies and has been used in many extractive projects including State Significant Developments (SSD) and is commonly requested via SEARS by Planning NSW.

Hypothetically, if construction noise from the project were assessed against the NPI, noise levels would exceed NPI criteria by 3dB to 4dB in the daytime period. This would be considered a marginal residual impact being >3dB and <5dB (Section 4.2 NPI). The NPI recommends that for marginal impacts, 'mechanical ventilation/comfort condition systems to enable windows to be closed without compromising internal air quality/amenity' are to be provided. In the context of this project, provision of such measures would be inappropriate and unreasonable for a short term noise impact and hence this is why the NPI is not applicable to the assessment of construction noise impacts.

The ICNG is the appropriate methodology for assessing construction noise from quarries or mines (prior to the commencement of operations) due to its approach to short-term, variable, and transitional noise impacts typical of construction activities. The ICNG's flexibility, specific assessment criteria, and focus on community engagement make it well-suited for construction projects, whereas the NPI is better suited for long-term industrial noise assessment.

Yours sincerely



Rod Linnett
Lead Acoustic Consultant
MAAS, MIOA
rlinnett@mulleracoustic.com
Reviewed: Oliver Muller, Principal Acoustic Scientist, BSc (REM & HGeog) | MAAS

Attachment 2

OzArk Heritage Justification Letter

(Total No. of pages including blank pages = 3)

OzArk Environment & Heritage **ABN 29 675 720 564**

Dubbo | Queanbeyan
Wollongong | Newcastle
Katoomba

T: 02 6882 0118
enquiry@ozarkehm.com.au
www.ozarkehm.com.au

145 Wingewarra St
PO Box 2069
DUBBO NSW 2830

14 August 2024

Indigo Devane
Environmental Consultant
R.W. Corkery & Co
indigo@rwcorkery.com

ADVICE LETTER

MCNAUGHT'S GRAVEL QUARRY, 5082 CANOWINDRA ROAD NSW

OzArk Environment & Heritage (OzArk) has been engaged by R.W. Corkery & Co on behalf of McNaught Earthworks Pty Ltd (the proponent) to provide advice regarding the Aboriginal heritage assessment for the proposed quarry (the project) located at 5082 Canowindra Road.

It is OzArk's understanding that the project is being assessed under Part 4 of the *Environment Planning and Assessment Act 1979* (the EP&A Act) as a Designated Development. The project has been preliminarily reviewed by the Cabonne Shire Council which has identified the need for either further clarification on certain matters to the complete the Aboriginal heritage assessment.

Regarding Aboriginal cultural heritage, Cabonne Shire Council has noted that the Planning Secretary's Environmental Assessment Requirements (SEARs) issued for the project require that an Aboriginal Cultural Heritage Assessment Report (ACHAR) be prepared whereas a lower level of assessment has been carried out in relation to Aboriginal heritage via a Due Diligence assessment. Cabonne Shire Council therefore requested that an ACHAR be undertaken for the project in line with the requirements of the SEARs.

The SEARs for the project request:

- The ACHAR must be prepared in accordance with the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (OEH, 2011) and the *Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW* (Code of Practice, DECCW, 2010), including results of thorough archaeological survey and test excavations (where required)
- Include evidence of adequate and continuous consultation with Aboriginal stakeholders in determining and assessing impacts, developing and selecting options for avoidance of Aboriginal cultural heritage and mitigation measures (including the final proposed measures), having regard to the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW, 2010).

OzArk notes in the correspondence dated 6 March 2024 from Heritage NSW in providing advice on the SEARs that they stated that the requirements set out above would be "*generally recommended*" but are not necessarily a requirement.

In response to the requirements of the SEARs to follow the Code of Practice, OzArk notes that the Code of Practice (Section 1.3) states:

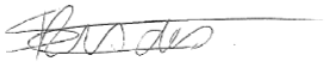
> *Before undertaking an archaeological investigation, you must establish that further investigation is required. For guidance on whether further investigation is required you should refer to the Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW.*

Following the Code of Practice, OzArk first undertook a Due Diligence Code of Practice assessment within the study area to determine if further investigation was required.

OzArk completed an archaeological survey for the project in May 2024 which followed the Code of Practice. No Aboriginal objects or areas of archaeological potential were identified within the study area. Further, no identified landforms of archaeological sensitivity were identified and the OzArk survey confirmed that most of the study area meets the Due Diligence Code of Practice criteria for 'disturbed land' including an excavated borrow pit, ploughing, vegetation clearing, and road construction.

As it is very unlikely that Aboriginal objects exist within the study area and the levels of prior disturbance preclude the presence of subsurface archaeological deposits, OzArk has assessed that further investigation is not required.

While following the Due Diligence Code of Practice does not satisfy the SEARs' requirements, OzArk believes that the Due Diligence assessment has provided a robust assessment of the study area and confidence that it is extremely unlikely that Aboriginal objects will be harmed by the project. Had Aboriginal objects been recorded, OzArk would have recommended that further investigation, including Aboriginal community consultation, be undertaken. However, as this was not the case, OzArk believes that the assessment has satisfied the intention of the Code of Practice.



STEPHANIE RUSDEN, OZARK ENVIRONMENT & HERITAGE SENIOR ARCHAEOLOGIST

24 October 2024

Ms Heather Nicholls
Cabonne Council
PO Box 17
MOLONG NSW 2866

Sent by email to:
council@cabonne.nsw.gov.au

Dear Ms Nicholls

Re: DA 2024/166 – Extractive industry, Canowindra Road, Canowindra
Response to Requests for Additional Information

1. Introduction

On 2 September 2024, McNaught Earthworks Pty Limited (the 'Applicant') submitted development application (DA) 2024/166 to Cabonne Shire Council (Council) for the proposed McNaught's Quarry ('the Quarry'). The DA was accompanied by an *Environmental Impact Statement* (EIS) prepared by R.W. Corkery and Co. Pty Limited (RWC).

In summary, the proposed development ('the Proposal') comprises the following.

- Extraction of up to 960,000m^3 of material, or approximately 2.3 million tonnes (Mt) of material, for a period of approximately 30 years at:
  - an average rate of 80,000 tonnes per annum (tpa); and
  - a maximum rate of 150,000tpa.
- Crushing, screening and stockpiling of the extracted material and Quarry products as required.
- Transportation of Quarry products from the Project Site.
- Construction of site infrastructure (site office, ablutions facilities, etc.).

The Proposal was placed on public exhibition by Council between 31 July 2024 and 28 August 2024. One submission was received from a member of the public. Additionally, requests for additional information were received from the following Government agencies and stakeholders.

- Cabonne Shire Council
- Transport for NSW (TfNSW)
- Department of Primary Industries and Regional Development (DPIRD)
- Department of Planning and Environment (DPE) – Water
- Essential Energy

Copies of the public submission and requests for additional information were compiled by Council and are presented as **Appendix 1**.

This document has been prepared by RWC on behalf of the Applicant to provide a response to the public submission and stakeholder requests received. Where relevant, text extracted or paraphrased from the relevant submission/request is presented in *italics*, with responses provided in normal text.

Attachments/Appendices:

Appendix 1 Requests for Additional Information (Council, 2024)

Appendix 2 Updated Intersection Strategic Designs (Duncan Priestly, 2024)

Appendix 3 Road Safety Audit (TTPP, 2024a)

Appendix 4 TTPP Response to TfNSW (TTPP, 2024b)

Appendix 5 Land Use Conflict Risk Analysis (RWC, 2024)

Appendix 6 Dial Before You Dig

2. Updates Following Submission

The following updates to the Proposal have been made in response to submissions and requests for information received following the exhibition of the EIS.

- **Figure 2.1** has been updated in response to comments raised in relation to comments from Council regarding powerlines and storage and parking area identification.
- Removal of blasting from the application.
- Utilisation of existing amenities at the residence, therefore, no installation or construction of amenities or office buildings will be required at the Project Site
- Update of intersection design to include surveyed sight distance to demonstrate that the access achieves SISD, Minimum Gap Sight Distance, Approach Sight Distance and Safe Stopping Distance in accordance with the guidelines and swept path analysis.
- Acceptance of intersection design mitigation measures including the following
  - Provision of a short length of guard rail on the western side of Canowindra Road on the northbound departure side of the intersection.
  - Treatment of the polished pavement on Canowindra Road near the intersection during the upgrading of the intersection or as part of regular road maintenance programs to improve its skid resistance particularly in wet weather.
  - Ensure that the intersection design allows for the swept paths of rigid truck and dog trailer combinations that will access the Quarry.
  - Undertake all road/intersection upgrade design and construction in accordance with Austroads guidelines, including design of culverts, and provision of line markings, signage, raised reflective pavement markers (RRPM) and guideposts compliant with current guidelines.

3. Public Submission

In correspondence dated 28 August 2024, a member of the public expressed concerns with the following matters.

3.1 Noise Pollution

Noise Pollution - my family house is approximately 2.8km from the quarry site and I am very concerned about the constant quarry noise activities such as bull dozers, trucks, exhaust brakes, reversing alarms, blasting, crushing, screening and constant truck movements. Over the years various earthworks activities have taken place in close proximity to our farm, however this is only for a short period. The proposed quarry will create continuous noise disruption all day, every day to a once peaceful countryside for the next 30 years.

Response

Section 4.1 of the EIS presents the results of the Noise Impact Assessment completed by Muller Acoustic Consultants (MAC 2024). This assessment modelled the noise-related environmental impacts that may result as a consequence of the Proposal, including noise associated with construction activities, operational activities, and Proposal-related traffic. Additionally, MAC (2024) recommended a number of management and mitigation measures which the Applicant has committed to implementing should the Proposal be approved.

MAC (2024) completed the assessment of potential noise impacts associated with the Proposal in accordance with the requirements of the following guidelines.

- *Noise Policy for Industry*
- *Interim Construction Noise Guideline*
- *Road Noise Policy*
- *ANZEC Blasting Guidelines*

Based on the outcomes of the noise impact assessment, MAC (2024) concluded that the Proposal meets the requirements of the relevant guidelines and will therefore not result in significant adverse noise impacts for any sensitive receivers (including residences) in the vicinity of the Project Site. The Applicant contends that the noise impacts generated by the Quarry will not result in excessive noise pollution or adverse impacts on amenity for surrounding residents.

3.2 Decrease to Land Value

Decrease to Land Value - this quarry application will significantly decrease the value of our land some of which is located directly opposite the quarry. I estimate 40ha of our land is directly facing the quarry, a significate portion and value of my property. I will have little opportunity to develop this land to create a nice living environment for future generations due to the points already outlined above (as bull dozers, trucks, exhaust brakes, reversing alarms, blasting, crushing, screening and constant truck movements).

Response

The Applicant acknowledges concerns in relation to property value. However, land values and the value potential purchasers may place on a particular property are subject to many variables and are highly subjective. It has been RWC's experience that reduced land values are not a matter that has been identified at other extractive operations of similar scale to the Proposal.

The EIS presents assessments of potential environmental impacts associated with the Proposal, including noise, air quality, traffic, and visual amenity. As these assessments have concluded that

potential (or worst-case scenario) environmental impacts associated with the Proposal are likely to be negligible, it is not anticipated that the Proposal will adversely impact the level of amenity enjoyed by residents in the vicinity of the Project Site. The Proposal is unlikely to have a perceptible impact upon property prices.

3.3 Increased Truck Movements

Increase truck usage on local gravel roads & dust pollution – Batty's Lane is an access road used by the local area. It should not be accessed by truck using the quarry as it will damage the road and create dust pollution for homes on Batty's Lane. With more trucks entering the quarry site, the entrance to Batty's Lane will be far more hazardous due to slowing traffic and driver distraction of the quarry.

Response

Section 2.6 of the EIS presents the Transportation Operations of the Proposal. Section 2.6.3 states that once loaded within the Extraction Area, trucks will exit the Project Site via the Site Access Road. Trucks will then turn either right (to the north) or left (to the south) onto Canowindra Road. The Applicant has clarified that Batty's Lane will not be required or used as a transport route by Proposal related trucks.

The Applicant will install signage on Canowindra Road before to the intersection with the Site Access Road to provide appropriate warning for vehicles using Canowindra Road. The updated design for the intersection at the Quarry is included as **Appendix 2,** and also shows the location of the signage to be installed to help alleviate safety concerns in relation to slowing traffic.

3.4 Clarification of Maximum Extraction

Clarification of maximum extraction - proposed average extraction is 80,000tpa which equates to a significant number of trucks entering and leaving this site for the next 30 years which is what is proposed. This is approximately 40 B-Double (38mt) each week using the Canowindra Road. With this many trucks slowing down to enter the quarry and manoeuvring around it, the exhaust braking will be relentless and continuous. Has any consideration gone into the maintenance of the Canowindra Road? Will Councils budget be able to handle this many more truck on the road, including the turn lanes at the site? This is only the average extraction proposed. The maximum extraction amount per year is 150,000tpa however this needs clarification as the application quotes 150,0000tpa? Even with 150,000tpa this equates to approximately 75 B-Double (38mt) each week which is significant.

Response

The '150,0000tpa' maximum extraction rate as stated in the Executive Summary, Section 1 and Section 2 of the EIS was the result of a typographical error. All impact assessments undertaken for the Proposal were conducted with the correct150,000tpa maximum extraction rate.

Section 2.6.3 of the EIS describes the proposed off-site transport operations and states that, assuming an average of 33t per load and the average production rate of 80,000tpa, approximately 2,424 laden trucks would be dispatched from the Project Site each year on average. When distributed evenly throughout the year, this would equate to approximately 9 laden trucks per day. However, as

production and therefore product delivery would be undertaken on a campaign basis, the typical daily transportation rate would be substantially higher than this. Consequently, traffic-related impacts for the Proposal were assessed based on a maximum of 44 laden trucks per day being despatched from the Project Site.

Section 4.3 of the EIS describes the Traffic Impact Assessment conducted by The Transport Planning Partnership 2024 (TTPP), including the traffic management and mitigation measures to be adopted (e.g. upgrading the Canowindra Road / Site Access Road intersection). Section 4.3.4 of the EIS states that in light of the fact that the Proposal would not result in a reduction in the existing level of service on the Canowindra Road, there would be no significant traffic-related impacts as a result of the Proposal.

Any contributions required by Council or TfNSW for the maintenance of Canowindra Road will be determined by the relevant authorities prior to the commencement of transportation operations. However, whilst the Applicant acknowledges that contributions for road maintenance works may be required, undertaking any such works would be the responsibility of Council and/or TfNSW.

3.5 Water Diversion

Water diversion - increase water flows due to funnelling of water above the quarry could have a major impact on the fencing of my property requiring me to repair or replace fences that get knocked down in major rain events.

Response

Section 3.9.3 of the EIS states that surface water flows from undisturbed sections of the Project Site will be diverted around proposed disturbance areas using clean water diversions (e.g. drains, bunding). The locations of proposed clean water diversions at the Project Site are shown on **Figure 2.1** and a commitment to detail the design of these surface water control structures in an *Erosion and Sediment Control Plan* for the Proposal is included in Section 4.6.2 of the EIS.

Due to the relatively small scale of the proposed clean water diversion structures and associated catchment areas, and given the fact that clean water will be directed towards rather than away from existing flow paths and watercourses, it is not anticipated that diverted water will adversely impact infrastructure at or in the vicinity of the Project Site.

3.6 Hours of Operation

No disclosure of hours of operation. How can this quarry be given approval when there is no mention of operating hours in the Application. This needs to be made public.

Response

Section 2.8 of the EIS presents the proposed hours of operation in Table 2.2. The proposed hours of operation are reproduced in **Table 1**.

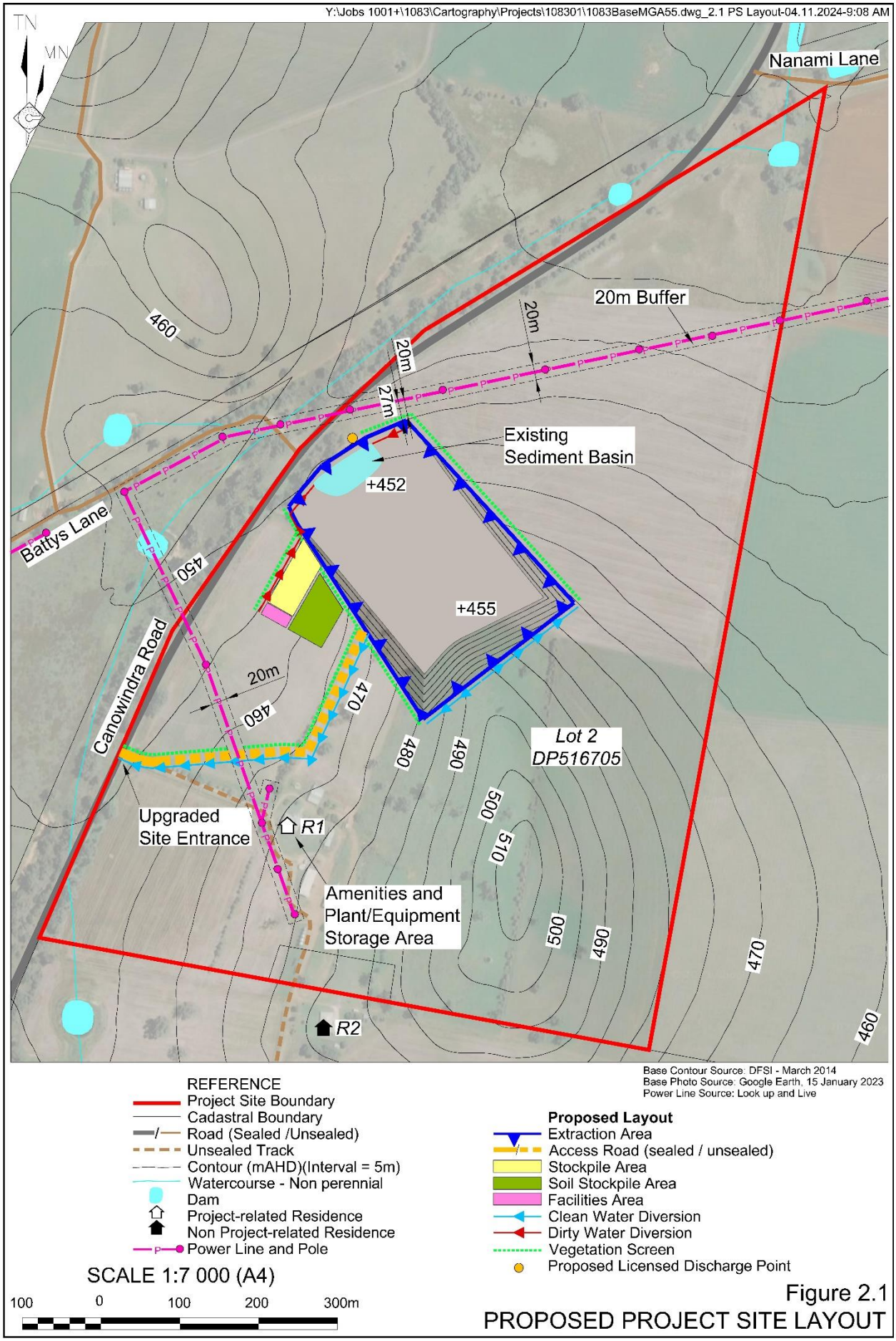


Figure 2.1
PROPOSED PROJECT SITE LAYOUT

Table 1
Proposed Hours of Operation

Activity	Monday to Friday[1,2]	Saturday[1,2]	Sunday and Public Holidays[2]
Extraction Operations	7:00am to 6:00pm	8:00am to 1:00pm	-
Loading and Transportation Operations	7:00am to 6:00pm	8:00am to 1:00pm	-
Rehabilitation Operations	7:00am to 6:00pm	8:00am to 1:00pm	-
Note 1: Excludes public holidays which would operate as per the proposed hours of operation for Sunday			
Note 2: Except in the case of emergency works to be undertaken by the Applicant, Transport for NSW or other public authority			

3.7 Dirty Water Overflow

Dirty Water overflow from the quarry into the waterway below the site. This is an unknown consequence to the water way.

Response

Section 4.6 of the EIS details the water-related impacts associated with the Proposal and Section 4.6.2 describes the management and mitigation measures to be adopted.

The proposal will capture all potentially-sediment laden water generated at the Project Site while diverting any clean water around disturbed areas. No discharge of sediment laden water is proposed.

With the adoption and construction of the design controls detailed in Section 4.6.2 of the EIS, it is anticipated that there will be a very low likelihood that sediment-laden water will be discharged to surrounding water courses. In the event that discharge of water is required, it will be undertaken only in accordance with the requirements of any Environment Protection Licence issued for the Proposal and with the approval of the NSW EPA.

3.8 Blasting Activities

No disclosure of blasting activities on this site? The Application does not mention that blasting will occur, please clarify what blasting activities will occur, if any.

Response

Following concerns raised by TfNSW regarding the safety of blasting and the disallowance of road closures during blasting operations for the Quarry, the Applicant sought advice from a specialist blasting consultant, Prism Mining, regarding proposed blasting operations. Based on the outcomes of this consultation, the Applicant no longer proposes to undertake blasting as part of the Proposal and will instead rely on standard rip and push methods using a bulldozer and/or excavator for the extraction of gravel material.

3.9 Project Need and Local Quarries

Why is another quarry required when there are numerous quarries available in the district? I believe this quarry is not necessary as there are already a number of working quarries in the area and this quarry in my opinion creates a disruption to the peaceful countryside and creates problems which are mention above.

Response

The Cabonne Local Government Area (LGA) is host to numerous extractive industry operations and mining operations which supply products for local and regional projects. The Applicant is aware of the following existing extraction operations in or in close proximity to the Cabonne LGA.

- Toogong Gravel approximately 10.5km from the Project Site.
- Earth Quarries Molong approximately 33km from the Project Site (non-operational).
- Central West Quarries approximately 38km from the Project Site.
- Boomey Quarry approximately 52km from the Project Site.
- Boral Quarries (Orange LGA) approximately 45km from the Project Site.

Quarry products such as gravel are a non-renewable resource, requiring new extractive industry developments to be approved to replace those where the resource and/or life of existing developments are exhausted. Additionally, the Applicant is aware that the customer demand for gravel products frequently exceeds the existing supply of gravel products in the Cabonne LGA, particularly following significant rainfall events resulting in damage to infrastructure.

The Proposal will produce a high quality, competitively priced product that will contribute to the ongoing economic and social development of the Cabonne Shire. The addition of the Proposal to the market will increase supply, resulting in more competitive prices for consumers and improved access to gravel products during periods of high demand.

4. Cabonne Shire Council

4.1 Greenhouse Gas Report

State Environmental Planning Policy (Resources and Energy) 2021 requires that in determining a development application for the purposes of an extractive industry, the consent authority must consider "an assessment of the greenhouse gas emissions (including downstream emissions) of the development", having regard to State or national policies, programs and guidelines concerning greenhouse gas emissions (Section 2.20(2)). The submitted Environmental Impact Statement (EIS) only briefly notes greenhouse gases, and has not assessed emissions relating to the development against relevant guidelines etc. It is requested that a greenhouse gases report is submitted to demonstrate that the development is acceptable in this regard.

Response

An assessment of Greenhouse Gas (GHG) emissions for the Proposal was undertaken to develop an understanding of the likely emissions generated as a result of the Proposal. The emissions calculations were completed based on a worst-case scenario (i.e. operations at maximum capacity for 270 days out of the year). Consumption of diesel fuel in mobile plant and equipment at the Project Site, consumption of unleaded fuel for employee transportation, and diesel fuel consumption for transport of product from the Project Site were the project components considered to contribute to GHG emissions.

Scope 1 emissions are defined as direct (or point-source) emission factors give the kilograms of carbon dioxide equivalent (CO2-e) emitted per unit of activity at the point of emission release (i.e. fuel use, energy use, manufacturing process activity, mining activity, on-site waste disposal, etc.).

Scope 2 emissions are defined as emissions that are physically produced by the burning of fuels (coal, natural gas, etc.) at the power station. Scope 3 emissions are defined as indirect emissions which are not included in scope 2, occurring within an organisation's value chain, the majority of a company's value chain greenhouse gas emissions may lie outside their own operations.

Table 2 presents the Scope 1 and Scope 2 GHG emissions for the Proposal. No Scope 2 emissions will be generated by the Proposal as no mains connected power will be used at the site.

Table 2
Calculated Proposal GHG emissions

Scope		Activity Rate	Units	Emission Factor		CO_2-e (t/yr^{-1})
1	Diesel fuel in plant	135	kL/year-1	2 709.7	kg CO2-e/kL-1	365.8
					Scope 1 (subtotal)	**365.8**
3	Diesel fuel in plant	135	kL/year-1	3.6	kg CO2-e/kL-1	0.5
	Employee travel	0.02	kL/year-1	123.1	kg CO2-e/kL-1	0.002
	Product transport from Site	905.3	kL/year-1	2,717.4	kg CO2-e/kL-1	2,460.1
					Scope 3 (subtotal)	**2,460.6**
					TOTAL	**2,826.4**

The Proposal is calculated to result in Scope 1 GHG emissions of 365.8t CO2-e per annum and Scope 3 emissions of 2,460.9t CO2-e per annum.

A comparison of the calculated direct (Scope 1) GHG emissions associated with the Proposal against the latest Australian (2023 year) and NSW (2019 year) total GHG emissions is presented in **Table 3**. These data indicate that the operation of the Proposal would contribute 0.000267 % of NSW total GHG and 0.0000786 % of Australian total GHG emissions.

Table 3
Proposal GHG emissions in context

	Emissions (t CO_2-e per annum)		
	Project	**NSW (2019)**	**Australia (2023)**
		Total	**Total**
Project Phase		**136,579,000**	**465,200,000**
Operation	365.8	2.67 x 10^{-4} % (0.000267%)	7.86 x 10^{-5} % (0.0000786%)

The Applicant is committed to investigating and implementing measures to minimise the emission of GHG over the life of the Proposal, which may include:

- considering the use of alternative fuels and/or electricity sources where economically and practically feasible;
- the review of extraction practices to minimise double handling of materials and ensure that ore and overburden haulage is undertaken using the most efficient routes;
- ongoing scheduled and preventative maintenance to ensure that diesel and electrically powered plants operate efficiently;
- regular maintenance of diesel powered equipment to ensure operation at peak efficiency; and
- ensuring that transport trucks are fully loaded to maximise productivity and efficiency.

4.2 Buildings and Structures

The submitted application is unclear and ambiguous with regards to construction / installation of buildings and structures. The application form notes that the proposal includes 'temporary' buildings and/or structures; the EIS notes that the proposal includes lunchroom, ablutions/amenities, storage shed, and an office; while another submitted document states that the proposal does not involve construction of any buildings. Site plans do not show any buildings or structures as part of the proposal, other than a general 'facilities area'.

State Environmental Planning Policy (Resources and Energy) 2021 has exempt provisions for toilets, showers, and a shed. However, the submitted application does not provide enough information to determine whether these proposed structures meet the relevant exempt provisions (i.e. setbacks, floor area, heights, etc).

With regards to the other proposed structures, is it noted that the exempt temporary provisions (pursuant to State Environmental Planning Policy (Exempt and Complying Development Codes) 2008) relate to builders' offices, site sheds etc. used during the construction phase of a project, and do not apply for ongoing operations associated with an approved use. Furthermore, given the proposed lifespan of operations (30 years) these ancillary buildings would not be considered 'temporary' in nature.

It is requested that a response to these matters be prepared and submitted, and that siting, dimensions and details of all proposed structures / buildings are shown on amended plans.

Response

Section 2.7.2 of the EIS includes a description of the proposed amenities and storage area as described above in Council's response and a general facilities area is identified on **Figure 2.1**. This section of the EIS also identifies the following alternative to the installation of these amenities: "*Alternatively, the Applicant may utilise the currently available amenities located in existing sheds near Residence R1*." Since submission of the EIS, the utilisation of existing amenities has been decided upon as the preferred option for the Proposal. As such, no installation or construction of amenities or office buildings will be required at the Project Site as all required amenities will be provided by the existing infrastructure on site for the life of the project.

Figure 2.1 presents the location of R1 which will be utilised for amenities for the duration of the project.

4.3 Ancillary or Separate Land Use/s

The submitted EIS notes that the site may be used for parking or storage of earthmoving equipment or plant associated with the applicant's earthmoving business and that this does not require consent. However, depending on the scale and nature of this component, it is likely to be considered a separate land use for which development consent needs to be obtained. Details of this proposed use have not been disclosed, however possible land uses are as follows:

(a) *'**Depot":** means a building or place used for the storage of plant, machinery or other goods that support the operations of an existing undertaking (i.e. separate business) when not required for use.*

(b) ***'Transport Depot':** means a building or place used for parking of motor powered/drawn vehicles used in connection with a business undertaking etc.*

(c) ***'Truck Depot':*** *means a building or place used for the parking of trucks, earthmoving machinery, etc.*

A 'depot' or 'truck depot' use is permitted in the RU1 zone with consent. A 'transport depot' is not permitted in the zone.

It is requested that a response to this matter be prepared and submitted. If this component requires development consent, please advise whether you wish to formally amend this application to this effect, and provide all relevant details (please note that in doing so, the application may need to be re-advertised in accordance with the Regulations). If this component is only ancillary to the proposed quarry, please provide justification, taking into account the ancillary planning principles established by the Courts and by the Department of Planning. Alternatively, this component can be removed from the application at this stage, and a separate DA can be sought in the future.

Please also show all proposed parking and storage areas associated with the quarry and (if applicable) the earthmoving business on amended plans.

Response

Section 2.2.3 of the EIS stated that the Applicant may continue to store or park equipment or plant related to the wider earthmoving business within the Project Site. This comment reflects the existing use of the Amenities and Plan/Equipment Storage Area associated with R1 located within the Project Site (see **Figure 2.1**). No changes to the existing storage area infrastructure are included as part of the Proposal.

The majority of plant and equipment required for Quarry operations will be stored within either the proposed Extraction Area, Stockpile Area, and Facilities Area. However, some plant and equipment which are already stored at R1 and used for farming or earthmoving works will also be utilised at the Quarry as required (e.g. grader for site access road surface maintenance).

4.4 Power Lines

The land is burdened by overhead powerlines within two separate easements, however the submitted application only shows and addresses the location of one of these, being the one that is located furthest from the quarry area.

Response

Figure 2.1 displays the Project Site Layout including the Access Road, powerlines and power poles on the site. All powerlines and power poles shown on the Essential Energy Network Information Portal are displayed in **Figure 2.1**. The *State Environmental Planning Policy (Transport and Infrastructure) 2021* (Transport and Infrastructure SEPP) sets out the considerations for development applications adjacent to electricity transmission infrastructure. Clause 2.48 (1(a)(b)) of Subdivision 2 of Division 5 of the Transport and Infrastructure SEPP identify the requirements to be considered for development likely to affect an electricity transmission or distribution network, reproduced below.

2.48 Determination of development applications—other development

(1) This section applies to a development application (or an application for modification of a consent) for development comprising or involving any of the following—

(a) the penetration of ground within 2m of an underground electricity power line or an electricity distribution pole or within 10m of any part of an electricity tower,

(b) development carried out—

(i) within or immediately adjacent to an easement for electricity purposes (whether or not the electricity infrastructure exists), or

(ii) immediately adjacent to an electricity substation, or

(iii) within 5m of an exposed overhead electricity power line,

The nearest excavation associated with the Proposal is located at least 10m away from any exposed overhead electricity power line and at least 20m away from the base of an electricity power pole. No easements for electricity purposes are present within or adjacent to the Project Site.

5. Transport for NSW

In correspondence dated 1 August 2024 TfNSW requested further information on the Proposal in relation to the following matters.

5.1 Sight Distance

TfNSW review of the TIA has identified that the existing access driveway has 280m of available sight distance to the north along Canowindra Road. The assessment of available SISD at the development access has not been applied correctly, whereby SISD should be based upon 110km/h design speed with a 2.5 second reaction time in accordance with Austroads Guide to Road Design Part 4A and TfNSW's supplement (TS 02642:1.0).

In addition, longitudinal drawings and plans of the road geometry is to be provided to illustrate the SISD assessment and any necessary adjustments. The proponent should assess the available SISD at the development access (in both directions) and identify appropriate mitigation works to ensure SISD complies with Austroads Guide to Road Design Part 4A and TfNSW's supplement (TS02642:1.0).

Response

The Applicant engaged Duncan Priestley Civil Engineering Pty Limited to prepare an update to the strategic designs completed for the Project Site (Duncan Priestly, 2024). The updated designs include an illustration of the available SISD and identify appropriate mitigation works to ensure SISD complies with the *Austroads Guide to Road Design Part 4A* and *TfNSW's supplement (TS02642:1.0)*. The updated plans are attached as **Appendix 2**. Mitigation works identified by Duncan Priestly (2024) include the installation of signage on Canowindra Road to identify the Project Site access and a give way sign for vehicles exiting the Project Site.

The Transport Planning Partnership was engaged by the Applicant to prepare a Road Safety Audit (RSA) (TTPP, 2024a), included as **Appendix 3**, as well as a response to the TfNSW request for information regarding SISD (TTPP, 2024b), included as A**ppendix 4**. The RSA included an assessment of the risks relating to sight distance at the site access. In summary, the RSA found that sight distance from the northern approach to the access was approximately 250m, having been obscured by a curve in the road and two mature trees. The RSA stated that, as the sight distance did not meet the Austroads recommended sight distance of 300m, there is a risk of crashes at the intersection involving trucks pulling out of the access and southbound vehicles. However, with the installation of warning signs to mitigate risk, and considering the relatively low traffic volumes, the likelihood of crashes occurring is rare and the risk rating was determined as low.

TTPP (2024b) presented a comparison of the observed sight distance and the sight distance requirements for approach sight distance (ASD), stopping sight distance (SSD), safe intersection sight distance (SISD), minimum gap sight distance (MGSD), and Australian Standard AS2890 for the site access. The sigh distance was considered compliant with Austroads (2023) for property accesses and applying TfNSW's default values for design speed and reaction times, with ASD, SSD and MGSD in both directions being compliant with or exceeding the requirements for intersections (**Appendix 4**).

It is anticipated that, following the implementation of the mitigation measures included in the strategic designs and the implementation of TTPP's recommendations, issues relating sight distance and road safety will be addressed sufficiently.

5.2 Strategic Designs

Following a review of the strategic designs submitted with the application, as prepared by Duncan Priestley Civil Engineering, dated 16 April 2024, TfNSW has identified that further design detail is required. The following matters should be illustrated in strategic designs:

a. Surveyed sight distance intersection plans (including longitudinal section mentioned above) to demonstrate that the access achieves SISD, Minimum Gap Sight Distance, Approach Sight Distance and Safe Stopping Distance in accordance with Austroads Guide to Road Design Part 4A and TfNSW's supplement (TS 02642:1.0),

Response

Appendix 2 presents the strategic designs for the Project Site including the surveyed sight distance intersection plans.

b. Swept path analysis demonstrating the largest design vehicle can enter and exit the development access simultaneously.

Response

Appendix 2 includes a swept path analysis for the largest design vehicle entering and exiting the development. This demonstrates that access can be achieved simultaneously, although it is noted that simultaneous entry and exit of trucks at the Project Site will not occur and will be discouraged from happening in the Driver's Code of Conduct for the Proposal.

Recommendations from TTPP (2024a) and TTPP (2024b) included widening the property access or establishing separate ingress and egress points unless the frequency of truck movements is deemed sufficiently low to avoid collisions. As truck movements will not be frequent enough to allow collisions, it is not deemed necessary to widen the access or to separate ingress or egress points.

c. Consideration to providing lighting of the access as haulage operations will occur in the evening/night.

Response

Haulage or transportation operations will not be occurring in the evening/night time periods. Hours of operation including transportation hours are identified in **Table 1**. Therefore, no lighting of the access will be required at the Project Site.

Note: Any identified road infrastructure upgrades will need to be to the satisfaction of TfNSW and Council. Strategic Designs will be required prior to finalising the application. Such drawings will need to comply with TfNSW Strategic design requirements for DAs. Please refer to link below for information about the procedural pathway and design requirements for strategic designs: https://www.transport.nsw.gov.au/operations/roads-and-waterways/business-andindustry/partners-and-suppliers/private-development-1-3

Response

Noted.

5.3 Road Safety

TfNSW review of the development has identified several road safety risks on Canowindra Road associated with the increase in heavy vehicles volumes turning at the development access. TfNSW requests that an independently peer reviewed Road Safety Audit (RSA) be prepared in accordance with Austroads: Guide to Traffic Management Part 12 and submitted for consideration. The TIA should identify necessary road network infrastructure upgrades required to address the outcomes of the RSA to mitigate the traffic impacts of the proposed development and to ensure the development does not result in an adverse impact to the safety and efficiency of the classified road network. The RSA should finalise the report to state whether the proposed mitigation treatments recommended in the TIA have reduced the crash type severity to ensure the road safety risks identified have been sufficiently managed.

Response

The Transport Planning Partnership was engaged by the Applicant to prepare a Road Safety Audit (RSA) (TTPP, 2024), this report is attached as **Appendix 3**.

The RSA identifies three potential risks, and two potential improvements, ranging from low to medium risk rating in terms of likelihood and severity. These include risks related to a culvert located at the northbound carriageway, sight distances being limited and impacted by curves and mature trees, continuity lines, polishing of road pavement, the site access culvert, and the swept path analysis (Duncan Priestly, 2024). Further mitigation works to improve road safety at the site access include the following.

- Provision of a short length of guard rail on the western side of Canowindra Road on the northbound departure side of the intersection to protect errant vehicles from the existing culvert (RSA Item 1).
- Treatment of the polished pavement on Canowindra Road near the intersection during the upgrading of the intersection or as part of regular road maintenance programs to improve its skid resistance particularly in wet weather (RSA Item 4). Whilst this is an existing issue that is not directly attributable to the impacts of the Quarry, risks may be exacerbated by additional heavy vehicles on Canowindra Road generated by the Quarry.
- Ensure that the intersection design allows for the swept paths of rigid truck and dog trailer combinations that will access the Quarry.
- Undertake all road/intersection upgrade design and construction in accordance with Austroads guidelines, including design of culverts, and provision of line markings, signage, raised reflective pavement markers (RRPMs) and guideposts compliant with current guidelines (RSA Items 3 & 5).

The Applicant has reviewed the recommendations provided by TTPP in regard to the road safety concerns raised by TfNSW and consider the recommendations to be acceptable. Therefore, the Applicant will implement the recommended mitigation measures to ensure the site access has minimal impact on road safety. The Applicant is committed to ensuring the safety of the site access and will engage Duncan Priestley Civil Engineering Pty Limited to prepare an update to the strategic designs to implement the recommendations.

5.4 Blasting

TfNSW's review of the Environmental Impact Statement (EIS) has identified that blasting of material may be required to be conducted when competent material cannot be ripped by machinery. Due to the location of the quarry in proximity to Canowindra Road and direction of excavation, it is likely that blasting activities will increase the potential for debris and dust to impact Canowindra Road. The EIS recommends the closure of Canowindra Road during blasting activities to mitigate anticipated impacts. TfNSW does not support the proposed solution to close Canowindra Road during blasting activities and requests that alternative mitigation measures are proposed to ensure that blasting within the quarry does not adversely impact the safety and operation of Canowindra Road.

Response

Following consultation with blasting specialist consultancy Prism Blasting regarding blasting at the Project Site, the Applicant has determined to remove blasting from the current application. It is anticipated that blasting at the Quarry may be subject to a future application and further consultation with the relevant government agencies will be conducted during the preparation of such an application. Should an application for blasting be submitted later, a blasting assessment will also be completed to ensure the safety and design aspects of blasting are well understood and management and mitigation measures can be suggested and implemented.

5.5 Additional Comment

Please be advised that any works outside the property boundaries required to address road design limitations (e.g. sight distance) should be accompanied by an assessment of the associated environmental impacts and be considered as part of Council's assessment in accordance with Part 4 of the Environmental Planning and Assessment Act 1979.

Response

The environmental impacts of works outside of the property boundary, primarily the construction of the site access intersection, have been assessed as part of the EIS. Section 4 of the EIS present an assessment of the environmental impacts of the Proposal, including the construction of the site access intersection.

6. Department of Primary Industries and Regional development

In correspondence dated 8 August 2024, the Department of Primary Industries and Regional Development (DPIRD) responded with the following.

6.1 LUCRA

It is suggested the EIS is amended to include a LUCRA to gain a detailed understanding of the potential land use conflict issues created by the project with nearby residences, natural features, and ongoing agricultural operations, and guide the scope of mitigation and monitoring measures to be implemented as vegetated screens, (below).

Response

RWC has prepared a Land Use Conflict Risk Analysis (LUCRA) (**Appendix 5**) as requested by DPIRD. In summary, the LUCRA identifies that the Proposal has the potential to create some land use conflicts and adversely impact local landholders. However, with the implementation of management and mitigation measures and maintaining open communication with nearby landholders the probability and consequence of these risks can be reduced to acceptable levels. Management and mitigation measures relating to traffic, dust, and noise were consistent with the measures identified and adopted within the EIS for the Proposal.

6.2 Vegetation Screens

Detailed information on proposed vegetated screen plantings such as width and length of planted areas, number and layout of rows; species types and the height, optimal porosity, and longevity of same. Information on site preparation, fencing, irrigation, maintenance, etc. is required, as is the specification of interim alternative measures to mitigate impacts until vegetation reaches the desired height.

Response

Site preparation activities are described in Section 2.4 of the EIS. Agricultural activities in areas adjacent to the Proposal are likely to be limited to cropping, so animal or livestock access will be limited. A stock fence is already in place around the Project Site and livestock will not be permitted to enter the Project Site during the life of the development.

The proposed vegetation screen will be located as described in the EIS and as shown on **Figure 2.1**. Design characteristics for the proposed vegetation screen areas will include the following.

- Planted area minimum width of 10 metres, with vegetation established through hydromulch application and/or tubestock planting.
- Minimum final density of one shrub/tree stem per $8m^2$ (i.e. planted at 2m centres), with initial and intermediate densities likely to be significantly higher prior to thinning.
- Plant species consistent with existing vegetation communities present in the vicinity of the Project Site (i.e. PCT 277, PCT 53, and PCT 266).
  - Initial species mixes will include groundcover, shrub and tree species to encourage rapid development. It is anticipated that fast-growing shrub species (e.g. *acacia spp*.) provide rapid visual screening up to 5 metres in height, with slower growing tree species eventually providing screening up to and exceeding 10 metres in height.
- Minimum final height of approximately 10 metres.
  - Note: as requested by Essential Energy, no vegetation will be planted below powerlines or within 10m of the centreline of any powerline.

- Target vegetation screen density of ≥60%.
- Minimum life of 30 years (i.e. equal to the life of the Proposal), with vegetation screens to remain as a feature of the post-extraction land use as shown on EIS Figure 2.4.
- Maintenance measures including the following.
  - Watering during the first four weeks (minimum) to support germination/establishment.
  - Supplementary watering during dry periods to ensure survival.
  - Regular inspections to identify pest damage, with pest control programs to be implemented as required.
  - Thinning to achieve tree/shrub stem densities of no more than one per $1m^2$ following the first five years of vegetation screen development.
  - Supplementary infill planting to fill any gaps in the vegetation screen.

All vegetation screens will be established during the initial construction phase of the Proposal. Early establishment of the vegetation screens will ensure that visual shielding is substantially in place before surface preparation and extraction operations commence across the majority of the proposed Extraction Area. Additionally, as outlined in Section 4.5.2 of the EIS, visual amenity during the initial extraction phase will also be managed through the construction of a 3 metre high bund which will be vegetated with groundcover species.

As shown on Figures 4.7 and 4.8 of the EIS, the proposed vegetations screen will entirely shield views of extraction areas from the north (intersection of Canowindra Road and Nanami Lane) and will significantly reduce views of the extraction area from the west (residence R3). The Applicant has consulted with the owners of residence R3 who will have visibility of approximately 13m of the eastern internal Extraction Area face and they indicated that they were comfortable with the residual visual impacts.

6.3 Biosecurity

Biosecurity measures should be explained as part of appropriate weed, pest, and disease management protocols (e.g. Biosecurity plan) to ensure agricultural assets on the site and vicinity are protected. Information on weed management practices and livestock exclusion along the project site boundary would also be valuable before any development of the site.

Response

Biosecurity at the Project Site will be managed as part of existing farming operations. Notwithstanding, biosecurity measures implemented at the Project Site will generally include the following.

- Exclusion of livestock by maintenance of stockproof fencing around the Project Site.
- Opportunistic visual observation and recording of pest species at the Project Site, with pest control programs to be implemented as required in response to pest damage (e.g. to visual screens or revegetated areas) or significant pest numbers.
- Regular (i.e. annual) weed inspection and control program, including mapping of any priority weed species to monitor extent and the effectiveness of control measures.

- Preparation of a *Rehabilitation Management Plan* for the Proposal which will detail weed, pest, bushfire, and revegetation monitoring and management protocols for the Project Site.

7. Department of Planning and Environment – Water

In correspondence dated 26 August 2024 DPE requested further information on the Proposal in relation to the following matters.

7.1 Clean Water Diversions

Documents reference Clean Water Diversion from the proposed site, however no further details or plans have been provided. Plans are required to show the proposed clean water diversion, and any effects it may have to surrounding developments including watercourse to the west of development.

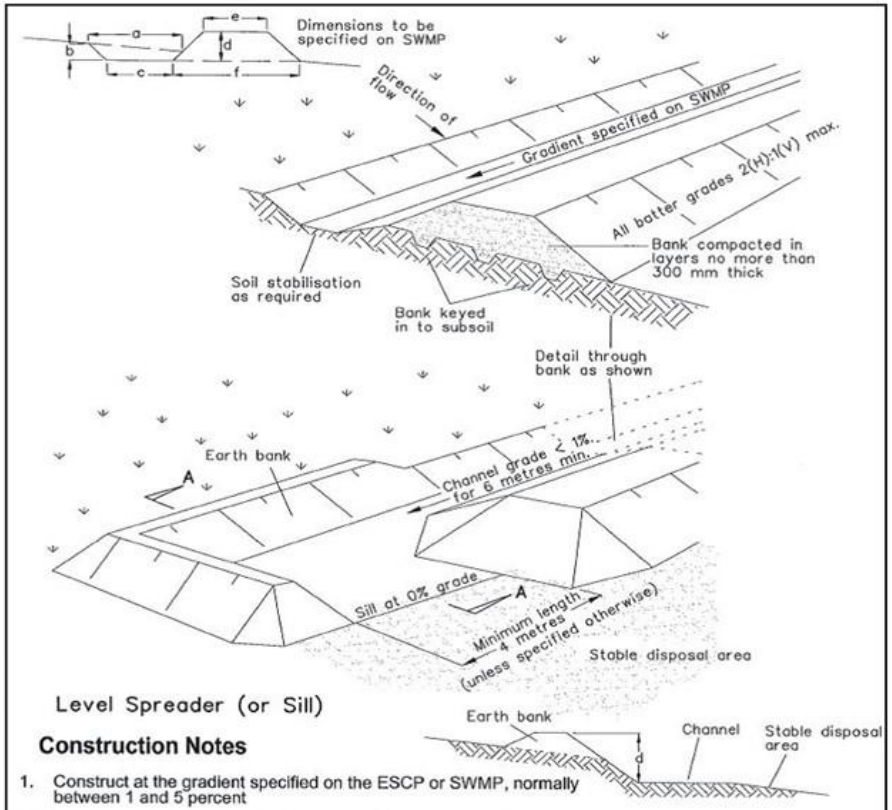
Response

Figure 2.1 shows the locations of the proposed surface water management structures within the Project Site. As identified in Section 4.6.2 of the EIS, detailed design information for individual water and sediment control structures will be presented in an *Erosion and Sediment Control Plan* for the Proposal. Indicatively, key surface water management structures to be constructed at the Project Site will include high flow and low flow earth banks (i.e. bunds).

High flow earth banks will be constructed and maintained in accordance with **Figure SD 5-6** to divert 'clean' runoff away from disturbed areas. The CWD will be constructed with respect to the critical parameter requirements of SD 5-6. The channel and bank of the CWD will be grassed where practical, and where grassing is not possible, rock check dams or straw bales will be constructed or utilised.

Dirty Water Diversions (DWD) at the Project Site will consist of low flow earth banks constructed and maintained in accordance with **Figure SD 5-5**. Downslope of disturbance works, the channel and bank of the DWD will be grassed where practical, where grassing is not possible, rock check dams or straw bales will be constructed or utilised.

All potentially sediment-laden water generated by runoff from disturbed areas within the Project Site will be captured within the Extraction Area. No discharge of potentially sediment-laden water from the Project Site is proposed. Clean water diversion structures will divert water around disturbed areas of the Project Site and into existing flow paths and watercourses. Given the relatively small scale of the Proposal and as proposed disturbance areas are located on the western face of a hill, it is not anticipated that significant runoff volumes will be intercepted by clean water diversions. Therefore, it is not anticipated that diverted clean water will adversely impact infrastructure or natural watercourses in the vicinity of the Project Site.



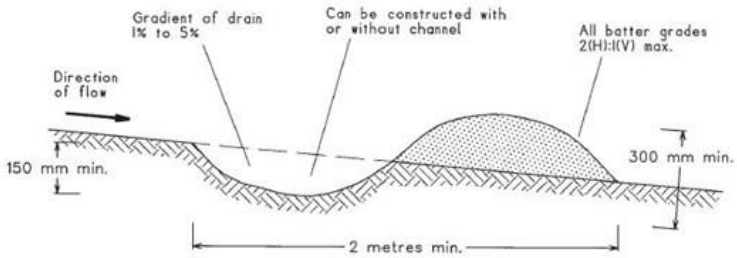
Level Spreader (or Sill)

Section AA

Construction Notes

1. Construct at the gradient specified on the ESCP or SWMP, normally between 1 and 5 percent
2. Avoid removing trees and shrubs if possible - work around them.
3. Ensure the structures are free of projections or other irregularities that could impede water flow.
4. Build the drains with circular, parabolic or trapezoidal cross sections, not V-shaped, at the dimensions shown on the SWMP.
5. Ensure the banks are properly compacted to prevent failure.
6. Complete permanent or temporary stabilisation within 10 days of construction following Table 5.2 in Landcom (2004).
7. Where discharging to erodible lands, ensure they outlet through a properly constructed level spreader.
8. Construct the level spreader at the gradient specified on the ESCP or SWMP, normally less than 1 percent or level.
9. Where possible, ensure they discharge waters onto either stabilised or undisturbed disposal sites within the same subcatchment area from which the water originated. Approval might be required to discharge into other subcatchments.

EARTH BANK (HIGH FLOWS) **SD 5-6**



NOTE: Only to be used as temporary bank where maximum upslope length is 80 metres.

Construction Notes

1. Build with gradients between 1 percent and 5 percent.
2. Avoid removing trees and shrubs if possible - work around them.
3. Ensure the structures are free of projections or other irregularities that could impede water flow.
4. Build the drains with circular, parabolic or trapezoidal cross sections, not V shaped.
5. Ensure the banks are properly compacted to prevent failure.
6. Complete permanent or temporary stabilisation within 10 days of construction.

EARTH BANK (LOW FLOW) **SD 5-5**

8. Essential Energy

In an undated correspondence Essential Energy made comments on the Proposal in relation to the following matters.

8.1 Infrastructure Safe Distances

Essential Energy - The plans provided do not show the distances from Essential Energy's infrastructure to the proposed development. A safe distance of 10 metres is required to the CENTRELINE of the HIGH VOLTAGE NETWORK ON THIS PROPERTY. DO NOT PLANT TREES THAT WILL ENCHOACH ON THESE DISTANCES.

Response

The above comment is noted and apologies are made for the oversight in the preparation of the EIS. **Figure 2.1** now shows both powerlines and power poles within the Project Site as well as the proposed vegetation screen locations. No vegetation will be planted below the powerlines or within 10 of the centreline of the powerlines.

8.2 General Comments

If the proposed development changes, there may be potential safety risks and it is recommended that Essential Energy is consulted for further comment;

Response

The Applicant will consult with the appropriate agencies should the Proposal scope change.

Any existing encumbrances in favour of Essential Energy (or its predecessors) noted on the title of the above property should be complied with;

Response

The above comments are noted and have been considered by the Applicant.

Any activities in proximity to electrical infrastructure must be undertaken in accordance with the latest industry guideline currently known as ISSC 20 Guideline for the Management of Activities within Electricity Easements and Close to Infrastructure;

Response

The Applicant will undertake any works proximal to the electricity transmission infrastructure in accordance with the *ISSC 20 Guideline for the Management of Activities within Electricity Easements and Close to Infrastructure*.

Prior to carrying out any works, a "Dial Before You Dig" enquiry should be undertaken in accordance with the requirements of Part 5E (Protection of Underground Electricity Power Lines) of the Electricity Supply Act 1995 (NSW); and

Response

The Applicant has submitted a Dial Before You Dig application prior to any works relating to the Proposal at the Project Site. The application is attached as **Appendix 6**.

It is the responsibility of the person/s completing any works around powerlines to understand their safety responsibilities. SafeWork NSW (www.safework.nsw.gov.au) has publications that provide guidance when working close to electricity infrastructure. These include the Code of Practice – Work near Overhead Power Lines and Code of Practice – Work near Underground Assets.

Response

The Applicant will ensure all employees are made aware of their safety responsibilities.

9. Conclusion

I trust that this response provides you with all the information required at this stage. Please don't hesitate to contact me (email: indigo@rwcorkery.com; mobile: 0499 858 555) if you have any questions or additional requests for further information.

Yours sincerely



Indigo Devane
Environmental Consultant

Attached: Appendices 1 to 6

Appendices

Appendix 1	Requests for Additional Information (Council, 2024)
Appendix 2	Updated Intersection Strategic Designs (Duncan Priestly, 2024)
Appendix 3	Road Safety Audit (TTPP, 2024a)
Appendix 4	TTPP Response to TfNSW (TTPP, 2024b)
Appendix 5	Land Use Conflict Risk Analysis (RWC, 2024)
Appendix 6	Dial Before You Dig

Appendix 1

Requests for Additional Information (Council, 2024)

(Total No. of pages including blank pages = 26)

Not included at Council/Andrew Crump Town Planning Request

Appendix 2

Updated Intersection Strategic Designs (Duncan Priestly, 2024)

(Total No. of pages including blank pages = 16)

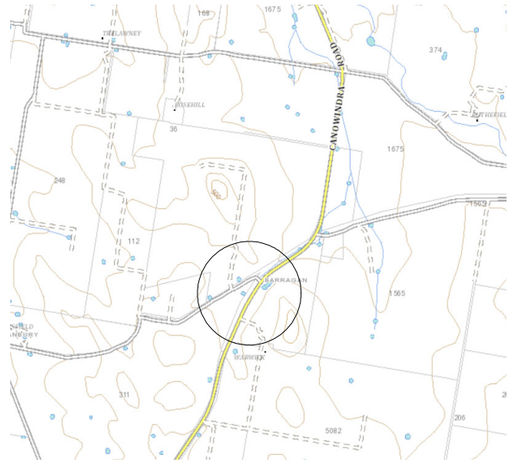
INDEX

Sheet No.

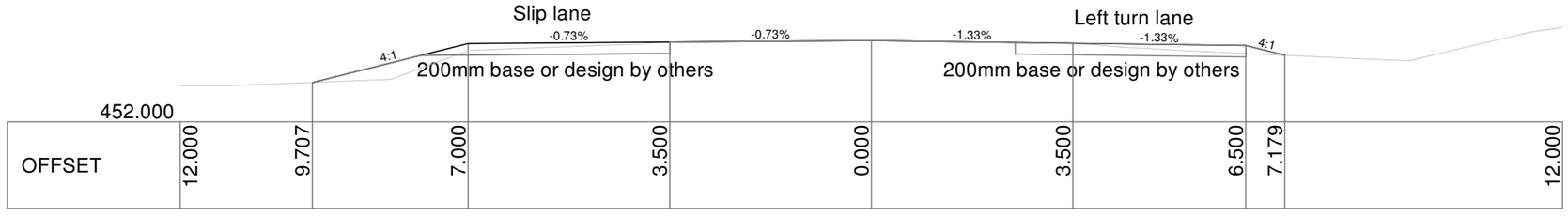
1	Cover
2	Plan and longsections
3 - 8	Cross sections Canowindra Rd
9 - 10	Cross sections Quarry Access Rd
11	ASD SISD and MGSD
12	Turning Paths
13	Culvert Design
14	Linemarking and signs
15	Spare

Point	Easting	Northing	Elevation	Code
1	657658.529	6303402.103	434.850	PM170330
3	656744.884	6302510.236	454.880	ST01

CONTROL



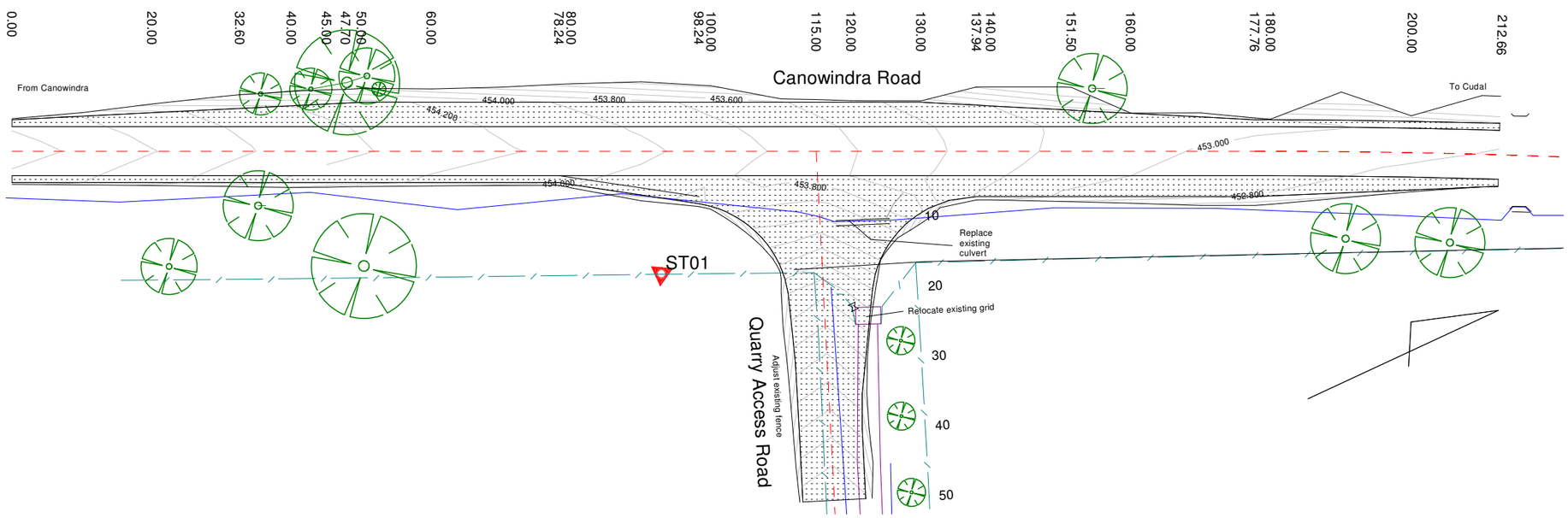
CANOWINDRA ROAD QUARRY ACCESS INTERSECTION

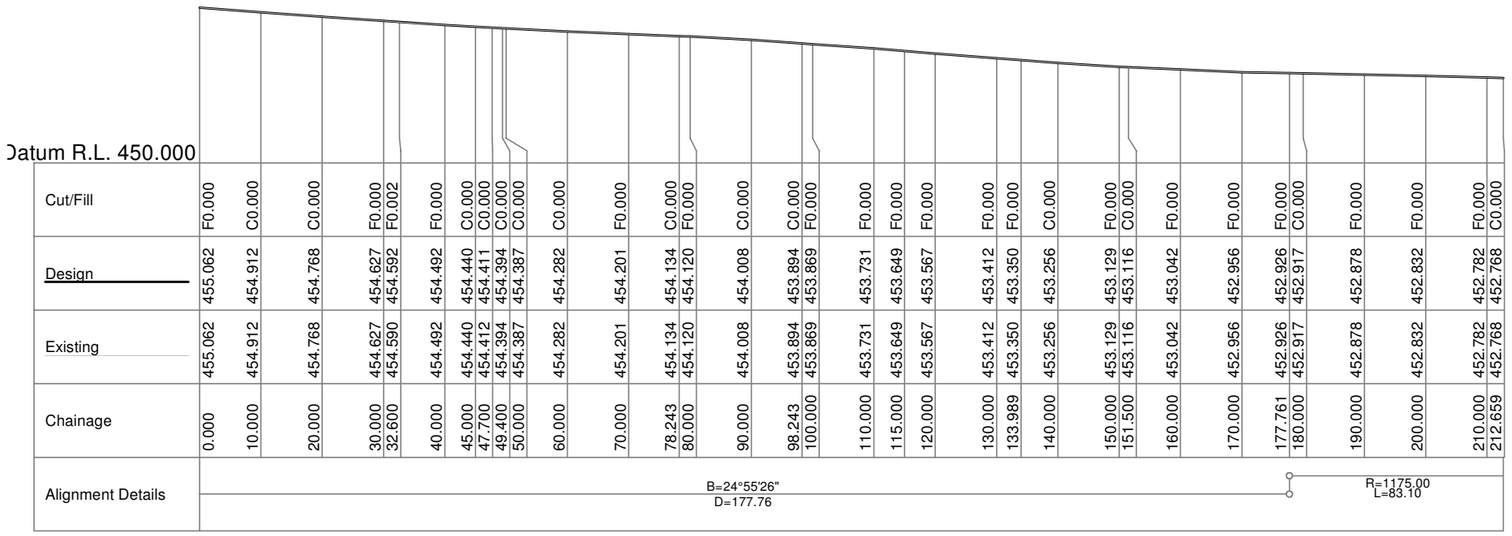


130

TYPICAL CROSS SECTION

ISSUE STATUS	COORD SYSTEM	SURVEY	DESIGN	DUNCAN PRIESTLEY CIVIL ENGINEERING	DRAWING	Total Sheets: 15
	MGA Zone 55	DUNCAN PRIESTLEY CIVIL ENGINEERING	DUNCAN PRIESTLEY CIVIL ENGINEERING	McNAUGHT EARTHMOVING	CANOWINDRA RD ISECT V1 - MP	
12/10/2024	HEIGHT DATUM			CANOWINDRA RD QUARRY ACCESS INTERSECTION	PLAN NUMBER	Sheet Number: 1
SCALE: $SCALE	AHD	SURVEYED: D Priestley	DESIGNED: D Priestley	5083 CANOWINDRA RD		

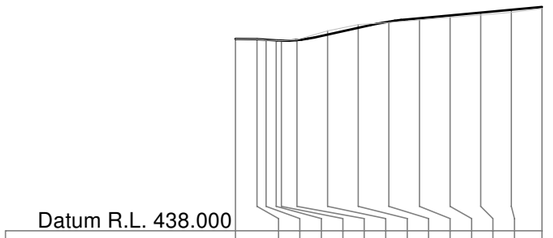




Cut/Fill	Design	Existing	Chainage
F0.000	455.062	455.062	0.000
C0.000	454.912	454.912	10.000
C0.000	454.768	454.768	20.000
F0.000	454.627	454.627	30.000
F0.002	454.592	454.590	32.600
F0.000	454.492	454.492	40.000
C0.000	454.440	454.440	45.000
C0.000	454.411	454.412	47.700
C0.000	454.394	454.394	49.400
C0.000	454.387	454.387	50.000
C0.000	454.282	454.282	60.000
F0.000	454.201	454.201	70.000
C0.000	454.134	454.134	78.243
F0.000	454.120	454.120	80.000
C0.000	454.008	454.008	90.000
C0.000	453.894	453.894	98.243
F0.000	453.869	453.869	100.000
F0.000	453.731	453.731	110.000
F0.000	453.649	453.649	115.000
F0.000	453.567	453.567	120.000
F0.000	453.412	453.412	130.000
F0.000	453.350	453.350	133.989
C0.000	453.256	453.256	140.000
F0.000	453.129	453.129	150.000
C0.000	453.116	453.116	151.500
F0.000	453.042	453.042	160.000
F0.000	452.956	452.956	170.000
F0.000	452.926	452.926	177.761
C0.000	452.917	452.917	180.000
F0.000	452.878	452.878	190.000
F0.000	452.832	452.832	200.000
F0.000	452.782	452.782	210.000
C0.000	452.768	452.768	212.659

Scale Horizontal 1:1000 Vertical 1:200

CANOWINDRA ROAD

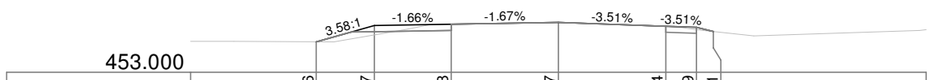


Cut/Fill	Design	Existing	Station
F0.000	453.649	453.649	0.000
F0.006	453.627	453.621	3.500
F0.025	453.580	453.555	5.000
F0.016	453.530	453.514	6.618
F0.000	453.509	453.508	7.479
C0.047	453.545	453.591	10.000
C0.302	454.002	454.304	15.000
C0.261	454.551	454.812	20.000
F0.064	455.052	454.989	25.000
F0.125	455.330	455.205	30.000
F0.144	455.560	455.416	35.000
F0.190	455.790	455.600	40.000
F0.219	456.020	455.801	45.000
F0.117	456.250	456.133	50.000

Scale Horizontal 1:1000 Vertical 1:500

QUARRY ACCESS

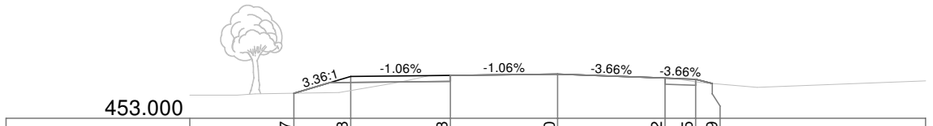
ISSUE STATUS	COORD SYSTEM	SURVEY	DESIGN	DUNCAN PRIESTLEY CIVIL ENGINEERING	DRAWING	Total Sheets: 15
	MGA Zone 55	DUNCAN PRIESTLEY CIVIL ENGINEERING	DUNCAN PRIESTLEY CIVIL ENGINEERING	McNAUGHT EARTHMOVING	CANOWINDRA RD ISECT V1 - MP	
12/10/2024	HEIGHT DATUM			CANOWINDRA RD QUARRY ACCESS INTERSECTION	PLAN NUMBER	Sheet Number: 2
SCALE: $SCALE	AHD	SURVEYED: D Priestley	DESIGNED: D Priestley	5083 CANOWINDRA RD		



453.000

DESIGN		453.996	454.527	454.568	454.627	454.504	454.469	454.331		
NATURAL	454.010	453.996	454.222	454.569	454.627	454.504	454.396	454.331		454.388
OFFSET	12.000	7.897	6.000	3.500	0.000	3.500	4.500	5.051		12.000

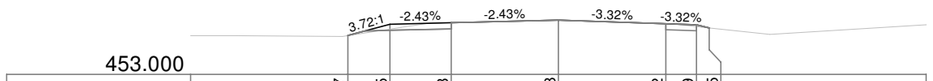
30



453.000

DESIGN		453.817	454.368	454.403	454.440	454.312	454.275	454.139		
NATURAL	453.754	453.817	453.907	454.403	454.440	454.312	454.195	454.139		454.223
OFFSET	12.000	8.605	6.750	3.500	0.000	3.500	4.500	5.044		12.000

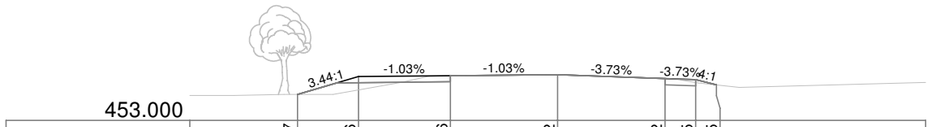
45



453.000

DESIGN		454.267	454.635	454.683	454.768	454.652	454.619	454.515		
NATURAL	454.261	454.267	454.475	454.683	454.768	454.652	454.561	454.515		454.617
OFFSET	12.000	6.869	5.500	3.500	0.000	3.500	4.500	4.916		12.000

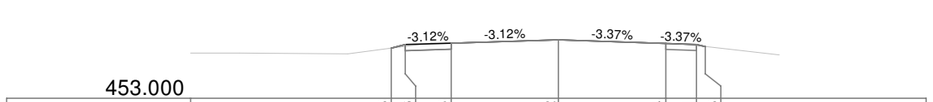
20



453.000

DESIGN		453.847	454.426	454.456	454.492	454.362	454.325	454.155		
NATURAL	453.813	453.847	453.992	454.456	454.492	454.362	454.237	454.155		454.238
OFFSET	12.000	8.486	6.500	3.500	0.000	3.500	4.500	5.179		12.000

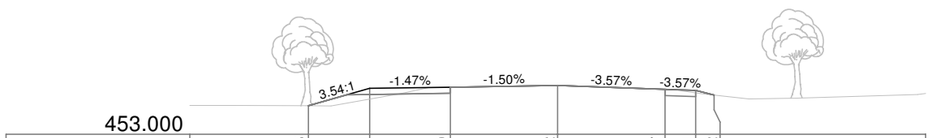
40



453.000

DESIGN		454.638	454.756	454.803	454.912	454.794	454.761	454.688		
NATURAL	454.474	454.638	454.696	454.803	454.912	454.794	454.717	454.688		
OFFSET	12.000	5.458	5.000	3.500	0.000	3.500	4.500	4.789		12.000

10



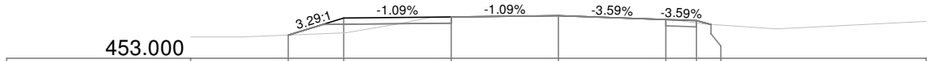
453.000

DESIGN		453.935	454.501	454.539	454.592	454.467	454.431	454.282		
NATURAL	453.945	453.935	454.154	454.539	454.590	454.465	454.353	454.282		454.330
OFFSET	12.000	8.133	6.130	3.500	0.000	3.500	4.500	5.099		12.000

32

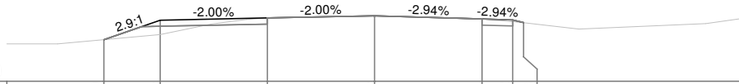
Scale Horizontal 1:200 Vertical 1:200

ISSUE STATUS	COORD SYSTEM	SURVEY	DESIGN	DUNCAN PRIESTLEY CIVIL ENGINEERING	DRAWING	Total Sheets: 15
	MGA Zone 55	DUNCAN PRIESTLEY CIVIL ENGINEERING	DUNCAN PRIESTLEY CIVIL ENGINEERING	McNAUGHT EARTHMOVING	CANOWINDRA RD ISECT V1 - MP	
12/10/2024	HEIGHT DATUM			**CANOWINDRA RD QUARRY ACCESS INTERSECTION**	PLAN NUMBER	**Sheet Number: 3**
SCALE: $SCALE	AHD	SURVEYED: D Priestley	DESIGNED: D Priestley	**5083 CANOWINDRA RD**		



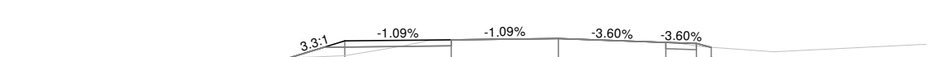
DESIGN		453.759	454.311	454.349	454.387	454.262	454.226	454.106		
NATURAL	453.696	453.759	453.833	454.349	454.387	454.262	454.152	454.106		454.207
OFFSET	12.000	8.819	7.000	3.500	0.000	3.500	4.500	4.980		12.000

50



DESIGN		453.359	453.994	454.064	454.134	454.031	454.002	453.913		
NATURAL	453.224	453.359	453.525	454.064	454.134	454.032	453.949	453.913		454.053
OFFSET	12.000	8.839	7.000	3.500	0.000	3.500	4.500	4.858		12.000

78



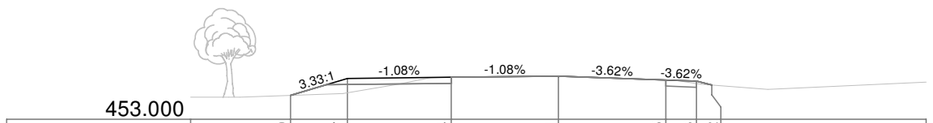
DESIGN		453.764	454.318	454.356	454.394	454.268	454.232	454.110		
NATURAL	453.703	453.764	453.836	454.356	454.394	454.268	454.157	454.110		454.209
OFFSET	12.000	8.798	6.970	3.500	0.000	3.500	4.500	4.986		12.000

49



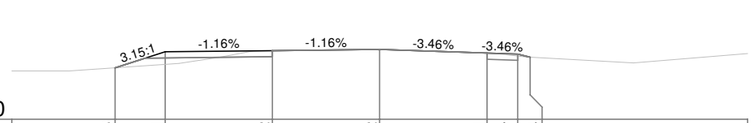
DESIGN		453.508	454.089	454.145	454.201	454.090	454.058	453.966		
NATURAL	453.389	453.508	453.649	454.145	454.201	454.090	454.000	453.966		454.061
OFFSET	12.000	8.748	7.000	3.500	0.000	3.500	4.500	4.868		12.000

70



DESIGN		453.779	454.337	454.374	454.411	454.285	454.248	454.122		
NATURAL	453.723	453.779	453.862	454.374	454.412	454.285	454.172	454.122		454.216
OFFSET	12.000	8.741	6.885	3.500	0.000	3.500	4.500	5.005		12.000

47

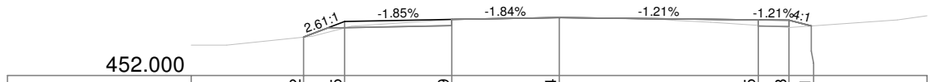


DESIGN		453.683	454.201	454.242	454.282	454.161	454.127	454.024		
NATURAL	453.579	453.683	453.796	454.242	454.282	454.161	454.064	454.024		454.147
OFFSET	12.000	8.635	7.000	3.500	0.000	3.500	4.500	4.909		12.000

60

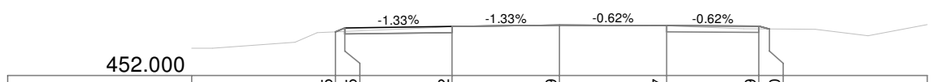
Scale Horizontal 1:200 Vertical 1:200

ISSUE STATUS	COORD SYSTEM	SURVEY	DESIGN		DRAWING	
	MGA Zone 55	DUNCAN PRIESTLEY CIVIL ENGINEERING	DUNCAN PRIESTLEY CIVIL ENGINEERING	**DUNCAN PRIESTLEY CIVIL ENGINEERING**	CANOWINDRA RD ISECT V1 - MP	Total Sheets: 15
12/10/2024	HEIGHT DATUM			**McNAUGHT EARTHMOVING**	PLAN NUMBER	**Sheet Number: 4**
SCALE: $SCALE	AHD	SURVEYED: D Priestley	DESIGNED: D Priestley	**CANOWINDRA RD QUARRY ACCESS INTERSECTION**		
				5083 CANOWINDRA RD		



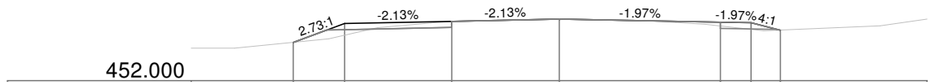
452.000								
DESIGN		453.252	453.765	453.829	453.894	453.815	453.803	453.621
NATURAL	452.997	453.252	453.550	453.829	453.894	453.639	453.575	453.621	453.948
OFFSET	12.000	8.340	7.000	3.500	0.000	6.500	7.500	8.228	12.000

98



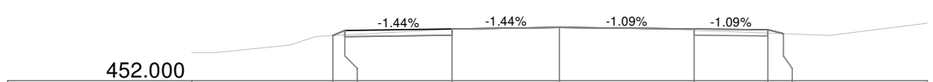
452.000								
DESIGN		453.425	453.555	453.602	453.649	453.627	453.609	453.520
NATURAL	452.895	453.425	453.438	453.602	453.649	453.625	453.523	453.520	453.659
OFFSET	12.000	7.310	7.000	3.500	0.000	3.500	6.500	6.854	12.000

115



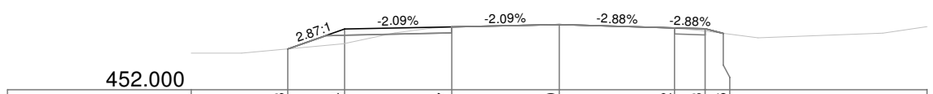
452.000								
DESIGN		453.246	453.859	453.933	454.008	453.904	453.884	453.646
NATURAL	453.055	453.246	453.480	453.933	454.008	453.780	453.669	453.646	454.003
OFFSET	12.000	8.672	7.000	3.500	0.000	5.264	6.264	7.217	12.000

90



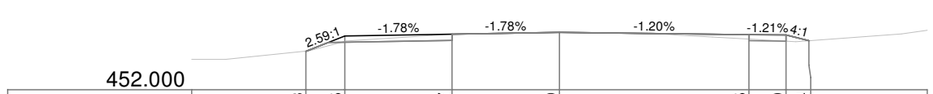
452.000								
DESIGN		453.470	453.630	453.680	453.731	453.683	453.657	453.530
NATURAL	452.914	453.470	453.491	453.680	453.731	453.637	453.549	453.530	453.877
OFFSET	12.000	7.392	7.000	3.500	0.000	4.395	6.798	7.307	12.000

110



452.000								
DESIGN		453.328	453.974	454.047	454.120	454.012	453.983	453.836
NATURAL	453.188	453.328	453.503	454.047	454.120	453.997	453.912	453.836	454.051
OFFSET	12.000	8.854	7.000	3.500	0.000	3.764	4.764	5.351	12.000

80

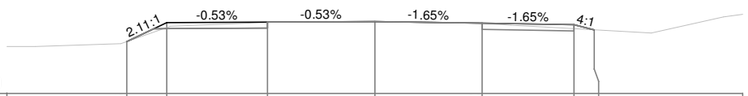


452.000								
DESIGN		453.253	453.745	453.807	453.869	453.795	453.780	453.594
NATURAL	452.984	453.253	453.570	453.807	453.869	453.649	453.580	453.594	453.937
OFFSET	12.000	8.272	7.000	3.500	0.000	6.185	7.395	8.140	12.000

100

Scale Horizontal 1:200 Vertical 1:200

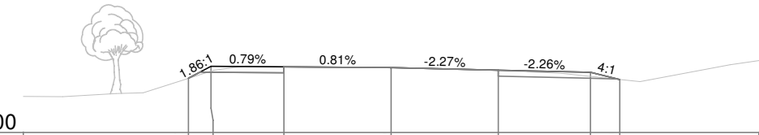
ISSUE STATUS	COORD SYSTEM	SURVEY	DESIGN	DUNCAN PRIESTLEY CIVIL ENGINEERING	DRAWING	Total Sheets: 15
	MGA Zone 55	DUNCAN PRIESTLEY CIVIL ENGINEERING	DUNCAN PRIESTLEY CIVIL ENGINEERING	McNAUGHT EARTHMOVING	CANOWINDRA RD ISECT V1 - MP	
12/10/2024	HEIGHT DATUM			CANOWINDRA RD QUARRY ACCESS INTERSECTION	PLAN NUMBER	**Sheet Number: 5**
SCALE: $SCALE	AHD	SURVEYED: D Priestley	DESIGNED: D Priestley	5083 CANOWINDRA RD		



451.000

DESIGN		452.698	453.314	453.331	453.350	453.292	453.242	453.078	
NATURAL	452.534	452.698	453.152	453.331	453.350	453.292	453.114	453.078	453.586
OFFSET	12.000	8.090	6.791	3.500	0.000	3.500	6.500	7.158	12.000

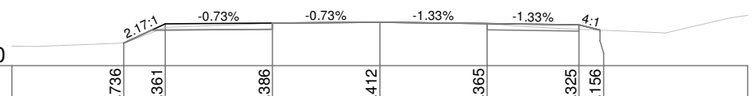
133



451.000

DESIGN		452.767	453.163	453.144	453.116	453.036	452.969	452.729	
NATURAL	452.173	452.767	453.002	453.144	453.116	453.036	452.831	452.729	453.343
OFFSET	12.000	6.612	5.875	3.500	0.000	3.500	6.500	7.459	12.000

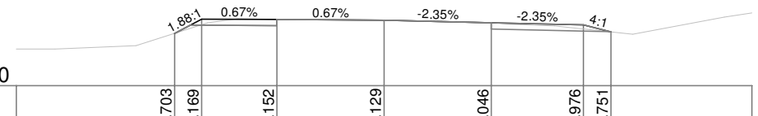
151



452.000

DESIGN		452.736	453.361	453.386	453.412	453.365	453.325	453.156	
NATURAL	452.628	452.736	453.237	453.386	453.412	453.365	453.186	453.156	453.640
OFFSET	12.000	8.352	7.000	3.500	0.000	3.500	6.500	7.179	12.000

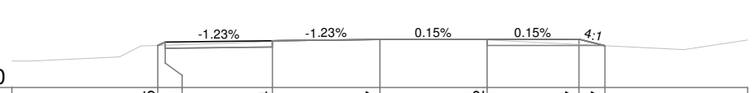
130



451.000

DESIGN		452.703	453.169	453.152	453.129	453.046	452.976	452.751	
NATURAL	452.194	452.703	452.981	453.152	453.129	453.046	452.845	452.751	453.365
OFFSET	12.000	6.830	5.953	3.500	0.000	3.500	6.500	7.401	12.000

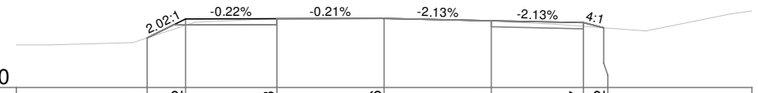
150



452.000

DESIGN		453.375	453.481	453.524	453.567	453.572	453.577	453.367	
NATURAL	452.865	453.375	453.383	453.524	453.567	453.555	453.408	453.367	453.552
OFFSET	12.000	7.245	7.000	3.500	0.000	3.500	6.500	7.341	12.000

120



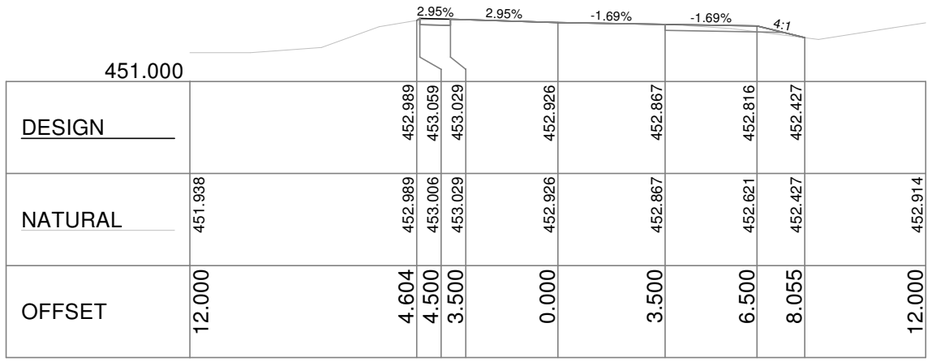
451.000

DESIGN		452.621	453.242	453.248	453.256	453.181	453.117	452.952	
NATURAL	452.392	452.621	453.030	453.248	453.256	453.181	453.001	452.952	453.504
OFFSET	12.000	7.733	6.477	3.500	0.000	3.500	6.500	7.160	12.000

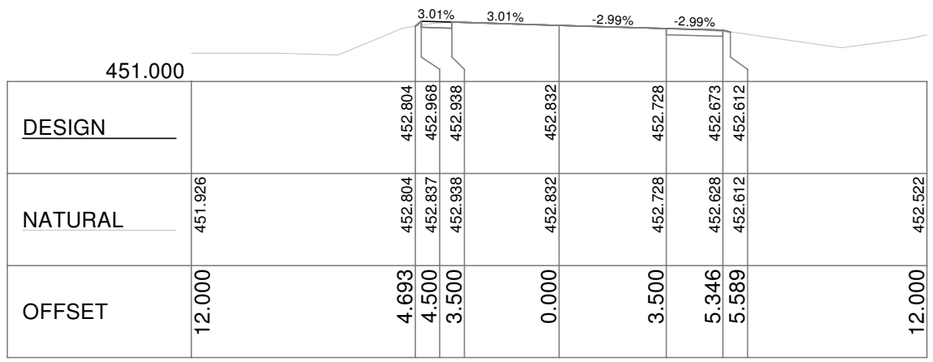
140

Scale Horizontal 1:200 Vertical 1:200

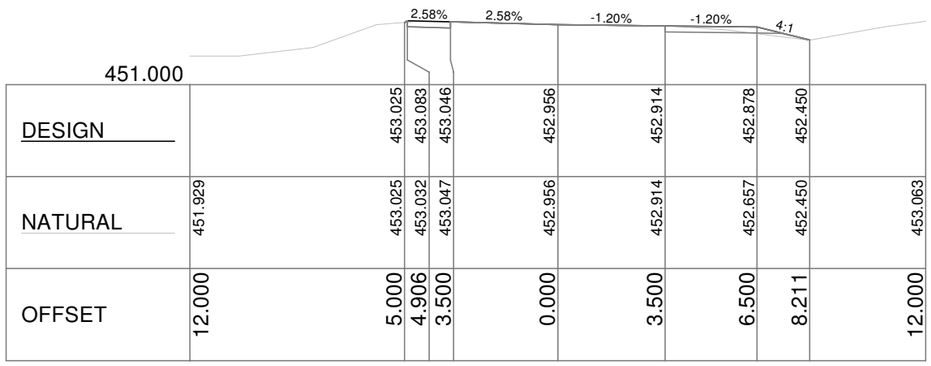
ISSUE STATUS	COORD SYSTEM	SURVEY	DESIGN	DUNCAN PRIESTLEY CIVIL ENGINEERING	DRAWING	Total Sheets: 15
	MGA Zone 55	DUNCAN PRIESTLEY CIVIL ENGINEERING	DUNCAN PRIESTLEY CIVIL ENGINEERING	McNAUGHT EARTHMOVING	CANOWINDRA RD ISECT V1 - MP	
12/10/2024	HEIGHT DATUM			**CANOWINDRA RD QUARRY ACCESS INTERSECTION**	PLAN NUMBER	**Sheet Number: 6**
SCALE: $SCALE	AHD	SURVEYED: D Priestley	DESIGNED: D Priestley	**5083 CANOWINDRA RD**		



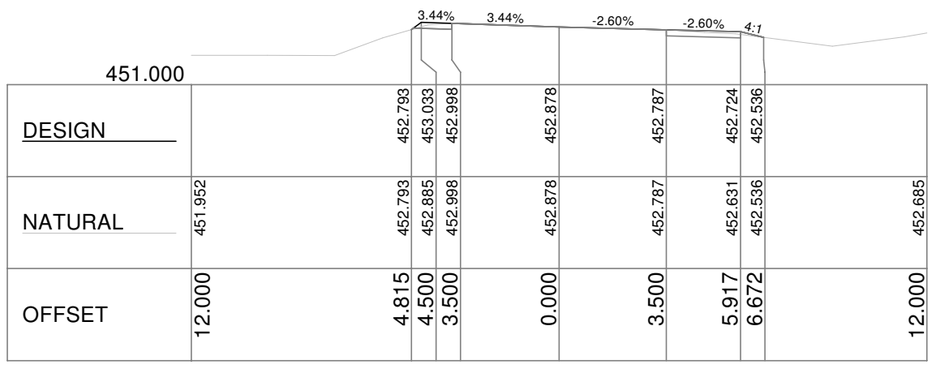
177



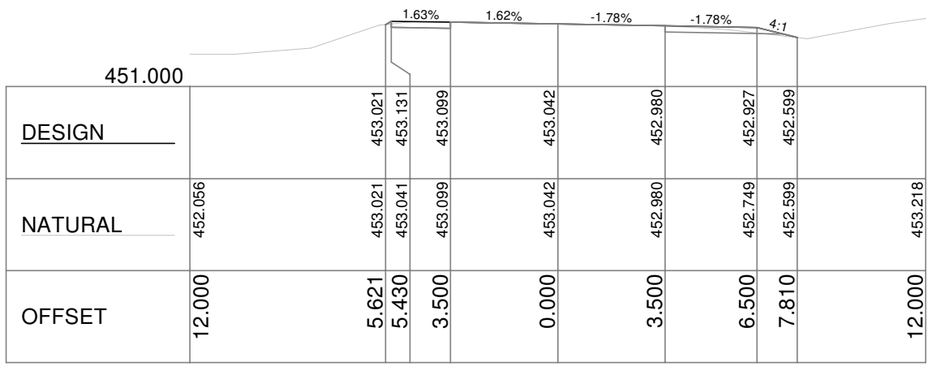
200



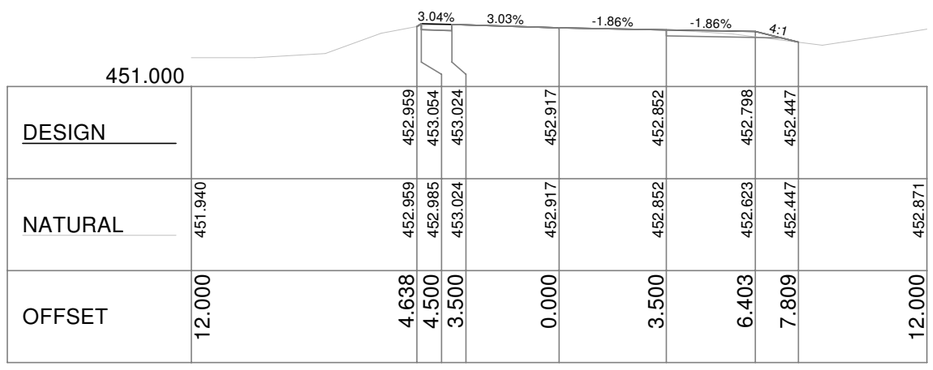
170



190



160



180

Scale Horizontal 1:200 Vertical 1:200

ISSUE STATUS	COORD SYSTEM	SURVEY	DESIGN	**DUNCAN PRIESTLEY CIVIL ENGINEERING**	DRAWING	Total Sheets: 15
	MGA Zone 55	DUNCAN PRIESTLEY CIVIL ENGINEERING	DUNCAN PRIESTLEY CIVIL ENGINEERING	**McNAUGHT EARTHMOVING**	CANOWINDRA RD ISECT V1 - MP	
12/10/2024	HEIGHT DATUM			**CANOWINDRA RD QUARRY ACCESS INTERSECTION**	PLAN NUMBER	**Sheet Number: 7**
SCALE: $SCALE	AHD	SURVEYED: D Priestley	DESIGNED: D Priestley	**5083 CANOWINDRA RD**		

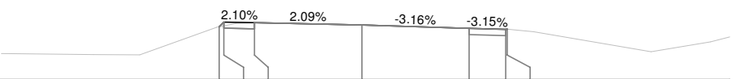
Culvert - End of work



450.000

DESIGN			452.703	452.852	452.833	452.768	452.656	452.624	452.645			
NATURAL			452.703	452.735	452.833	452.768	452.656	452.645	452.645	452.360		
OFFSET	12.000	4.649	4.500	3.500	0.000	3.500	4.500	4.584	12.000			

212



451.000

DESIGN			452.725	452.876	452.855	452.782	452.671	452.634	452.647			
NATURAL			452.725	452.756	452.855	452.782	452.671	452.649	452.647	452.390		
OFFSET	12.000	4.656	4.500	3.500	0.000	3.500	4.689	4.741	12.000			

210

SLIP LANE

Volumes Report
Apr 16, 2024 07:56PM

Job: CANOWINDRA RD ISECT.mjo

ALIGNMENT: ALIGN1
DESIGN SURFACE: DESIGN
NATURAL SURFACE: NATURAL

LEFT LIMIT STRING: LBAT2
RIGHT LIMIT STRING: LLND

Stripping Volume 0.000
Base Volume 119.464

Total Cut 63.421
Total Fill 92.961

Net Volume 29.540 Fill

RIGHT Flare and LH TURN LANE

Volumes Report

Apr 16, 2024 08:24PM

Job: CANOWINDRA RD ISECT.mjo

ALIGNMENT: ALIGN1
DESIGN SURFACE: DESIGN
NATURAL SURFACE: NATURAL

LEFT LIMIT STRING:R3500
RIGHT LIMIT STRING:RBAT1

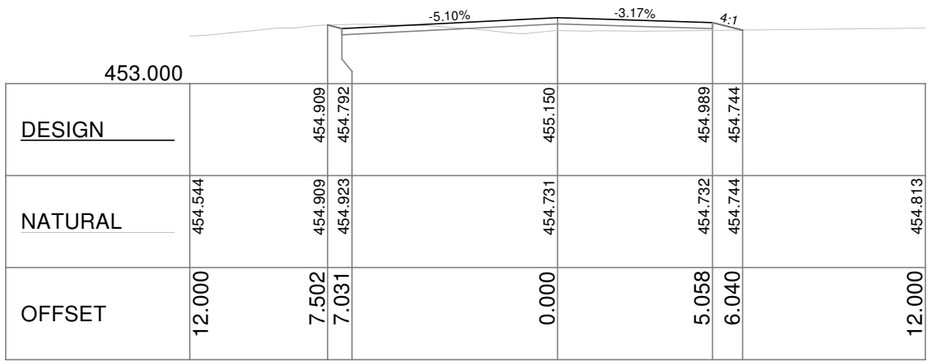
Stripping Volume 0.000
Base Volume 77.482

Total Cut 48.058
Total Fill 4.793

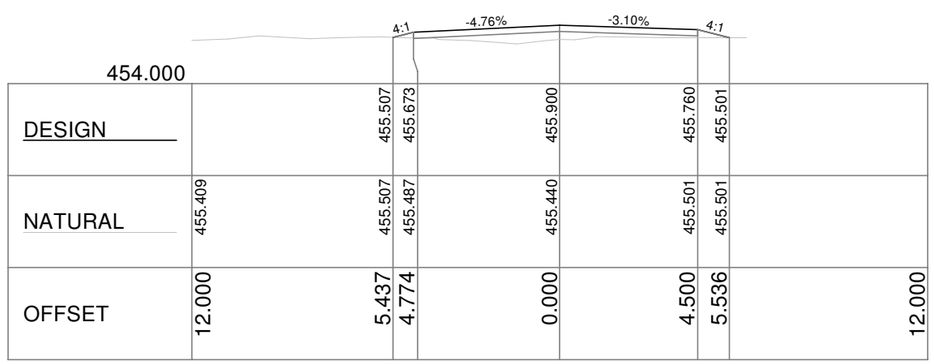
Net Volume 43.265 Cut

Scale Horizontal 1:200 Vertical 1:200

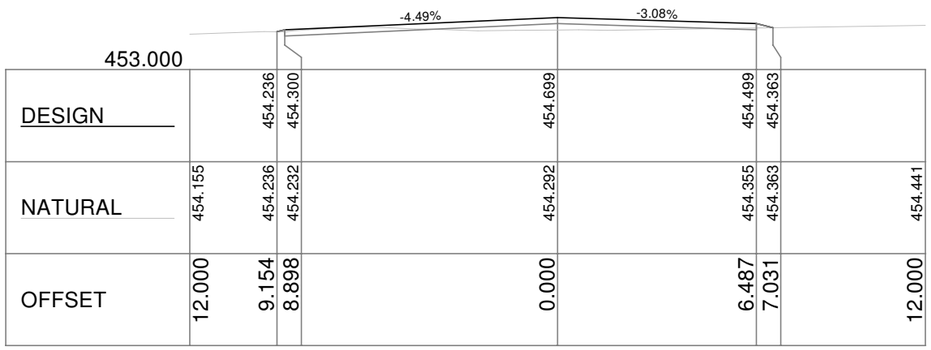
ISSUE STATUS	COORD SYSTEM	SURVEY	DESIGN	DUNCAN PRIESTLEY CIVIL ENGINEERING	DRAWING	Total Sheets: 15
	MGA Zone 55	DUNCAN PRIESTLEY CIVIL ENGINEERING	DUNCAN PRIESTLEY CIVIL ENGINEERING	McNAUGHT EARTHMOVING	CANOWINDRA RD ISECT V1 - MP	
12/10/2024	HEIGHT DATUM			CANOWINDRA RD QUARRY ACCESS INTERSECTION	PLAN NUMBER	Sheet Number: 8
SCALE: $SCALE	AHD	SURVEYED: D Priestley	DESIGNED: D Priestley	5083 CANOWINDRA RD		



20



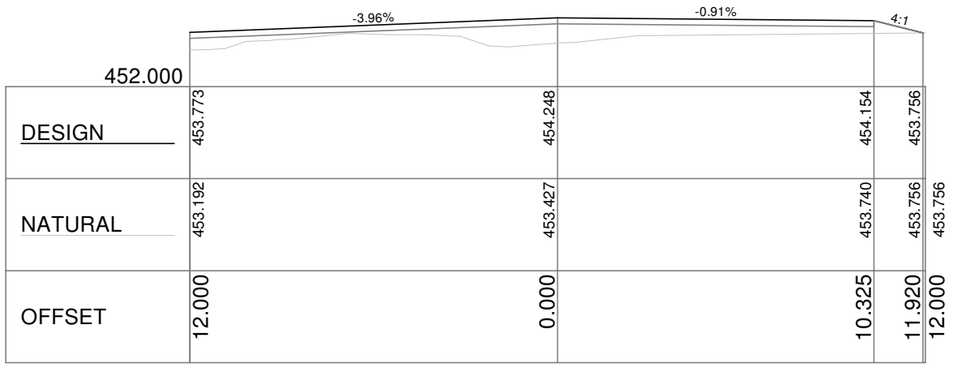
35



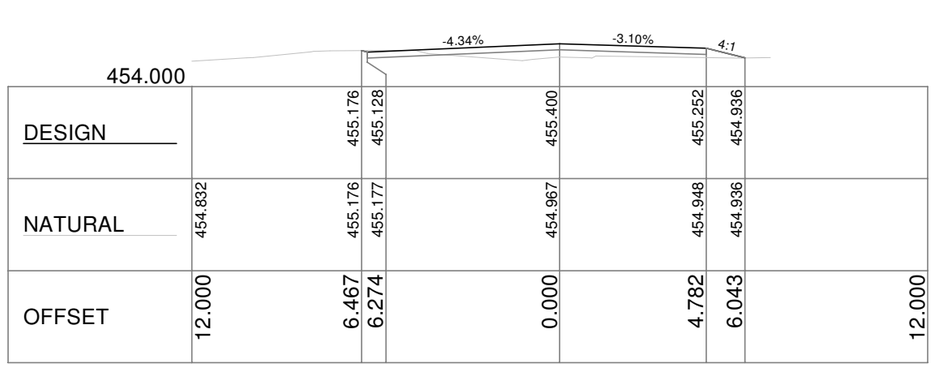
15



30



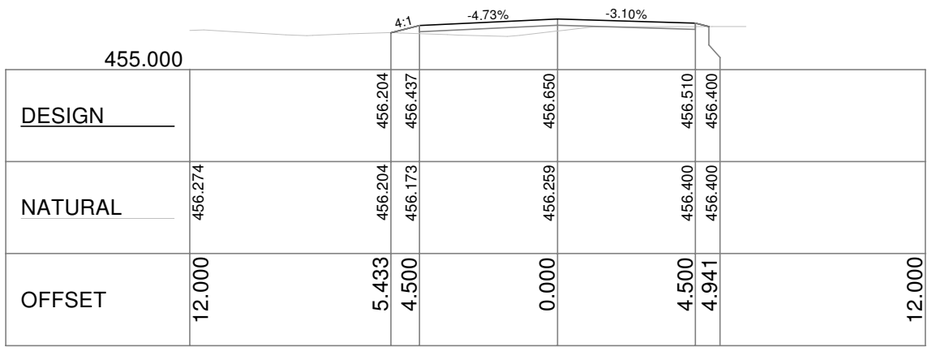
10



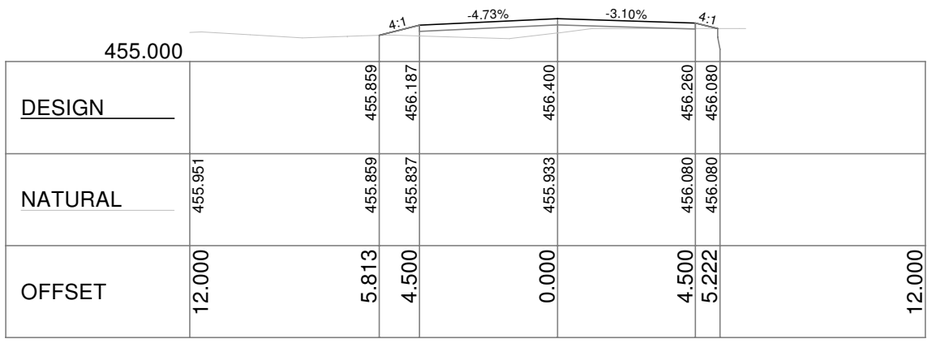
25

Scale Horizontal 1:200 Vertical 1:200

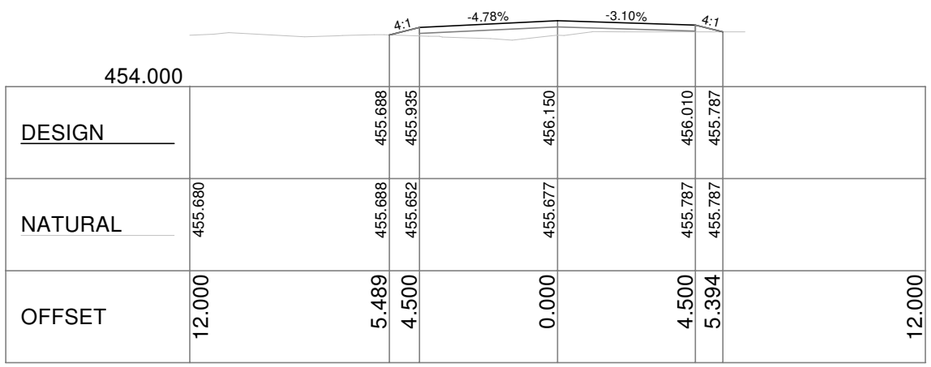
ISSUE STATUS	COORD SYSTEM	SURVEY	DESIGN		DRAWING	Total Sheets: 15
	MGA Zone 55	DUNCAN PRIESTLEY CIVIL ENGINEERING	DUNCAN PRIESTLEY CIVIL ENGINEERING	**DUNCAN PRIESTLEY CIVIL ENGINEERING**	CANOWINDRA RD ISECT V1 - MP	
12/10/2024	HEIGHT DATUM			**McNAUGHT EARTHMOVING**	PLAN NUMBER	
SCALE: $SCALE	AHD	SURVEYED: D Priestley	DESIGNED: D Priestley	**CANOWINDRA RD QUARRY ACCESS INTERSECTION**		**Sheet Number: 9**
				5083 CANOWINDRA RD		



50



45



40

Volumes Report
Apr 16, 2024 10:30PM

Job: ISECT.mjo

ALIGNMENT: ALIGN2
DESIGN SURFACE: DESIGN
NATURAL SURFACE: NATURAL

Stripping Volume 0.000
Base Volume 16.690

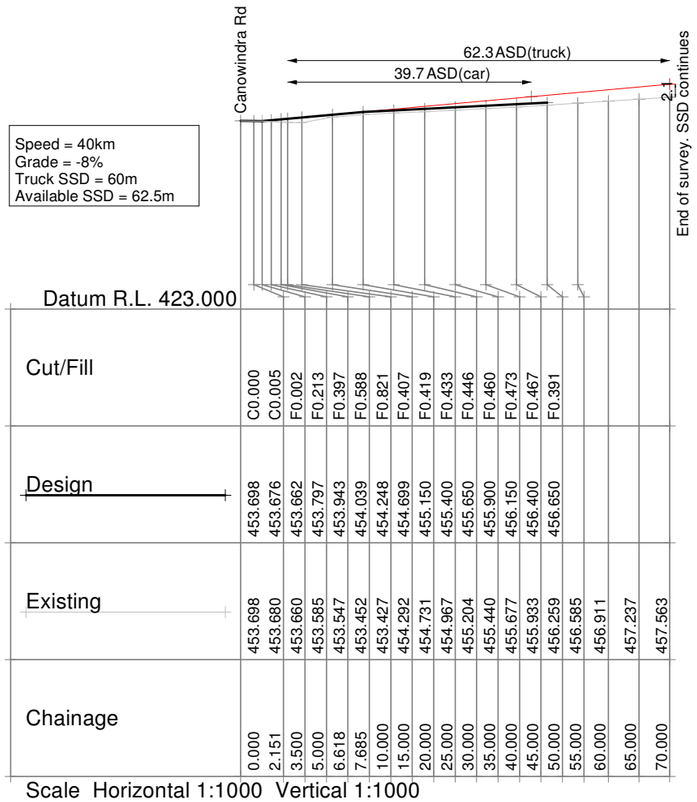
Total Cut 256.290
Total Fill 0.369

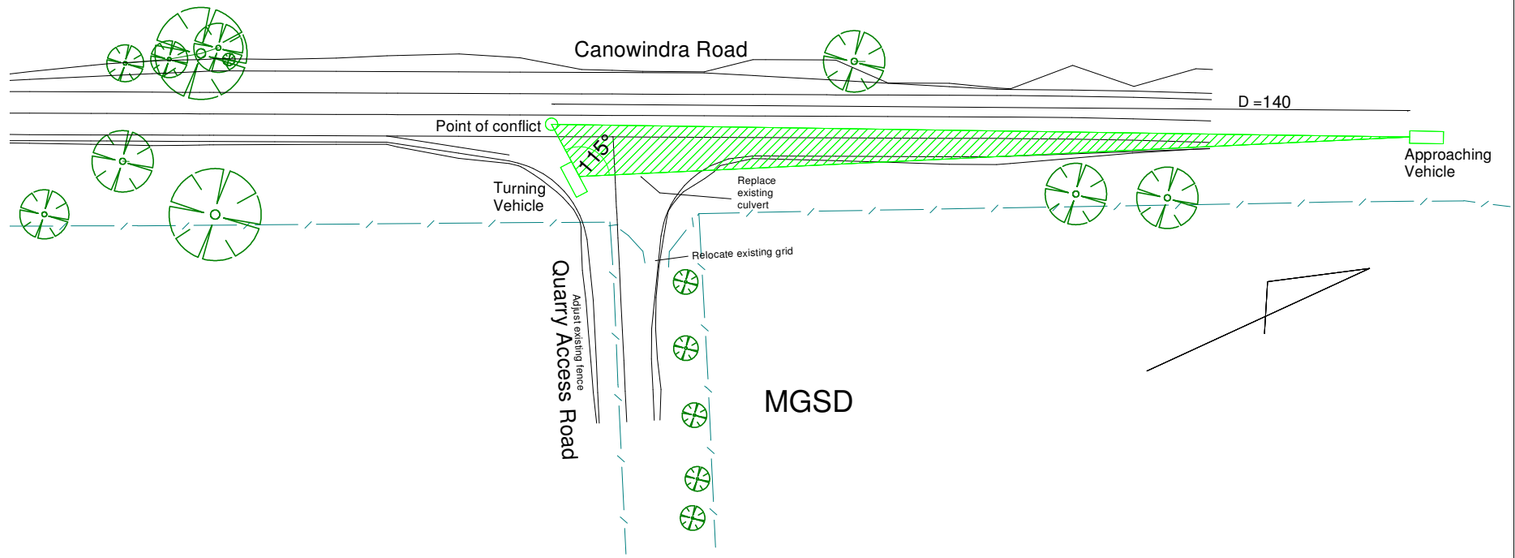
Net Volume 255.920 Cut

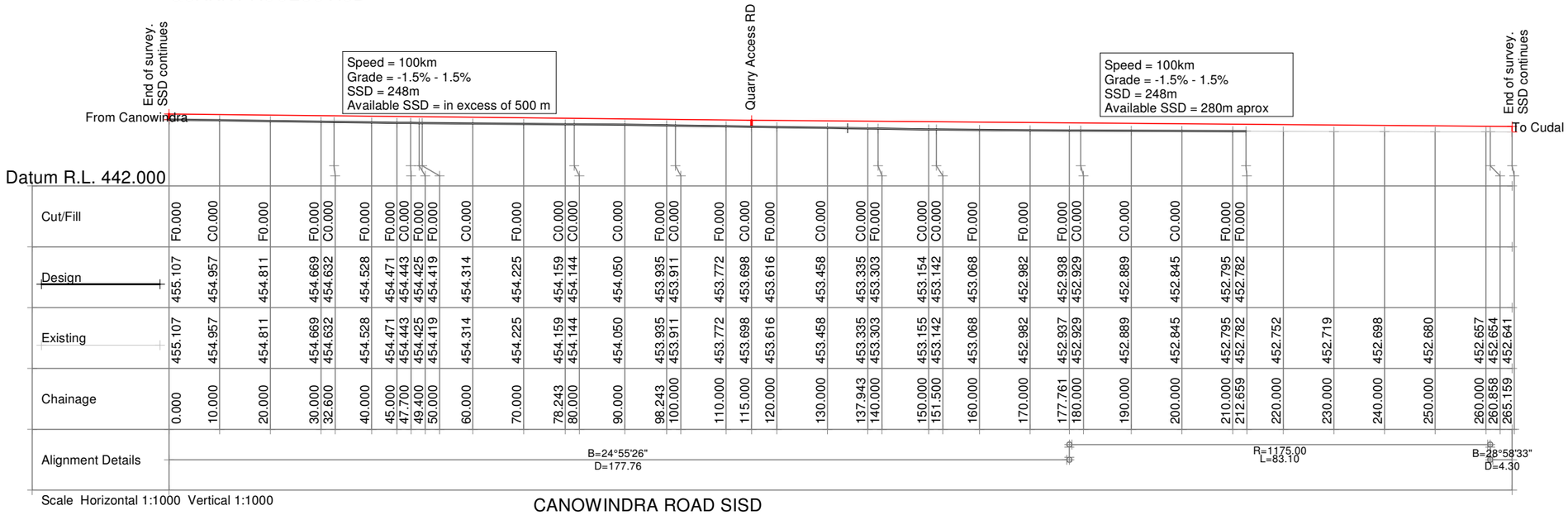
Note: This excess cut could be used on LHT Lane

Scale Horizontal 1:200 Vertical 1:200

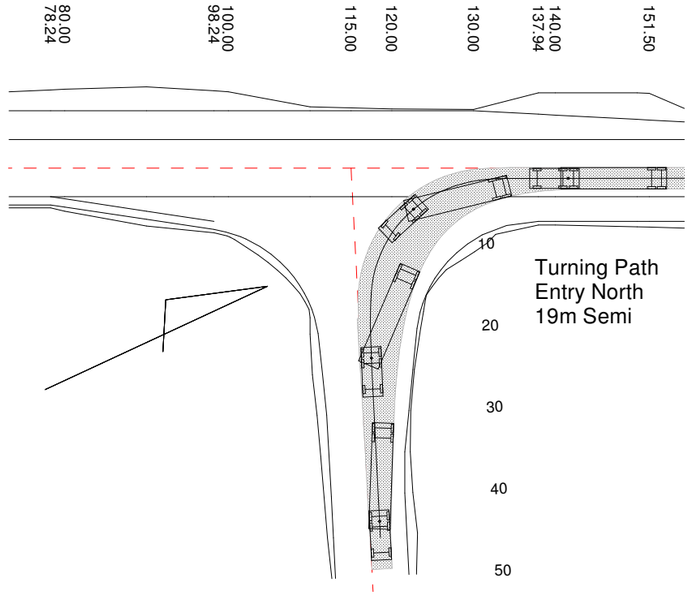
ISSUE STATUS	COORD SYSTEM	SURVEY	DESIGN		DRAWING	Total Sheets: 15
	MGA Zone 55	DUNCAN PRIESTLEY CIVIL ENGINEERING	DUNCAN PRIESTLEY CIVIL ENGINEERING	**McNAUGHT EARTHMOVING**	CANOWINDRA RD ISECT V1 - MP	
12/10/2024	HEIGHT DATUM			**CANOWINDRA RD QUARRY ACCESS INTERSECTION**	PLAN NUMBER	**Sheet Number: 10**
SCALE: $SCALE	AHD	SURVEYED: D Priestley	DESIGNED: D Priestley	**5083 CANOWINDRA RD**		

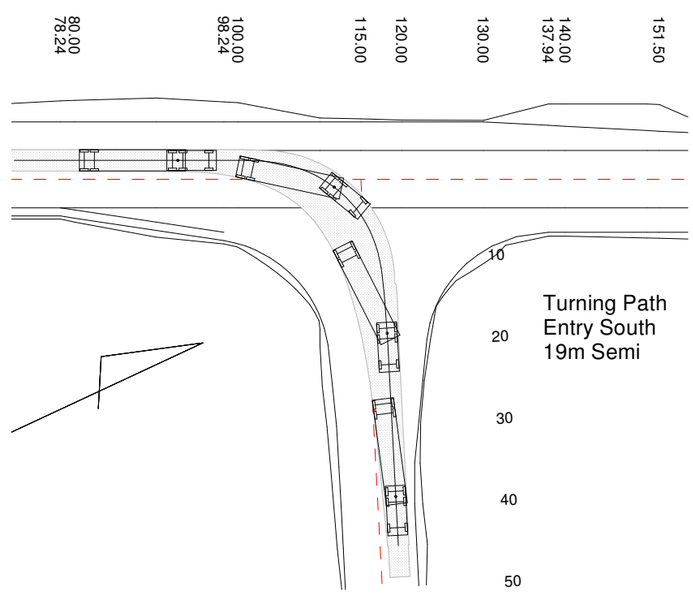


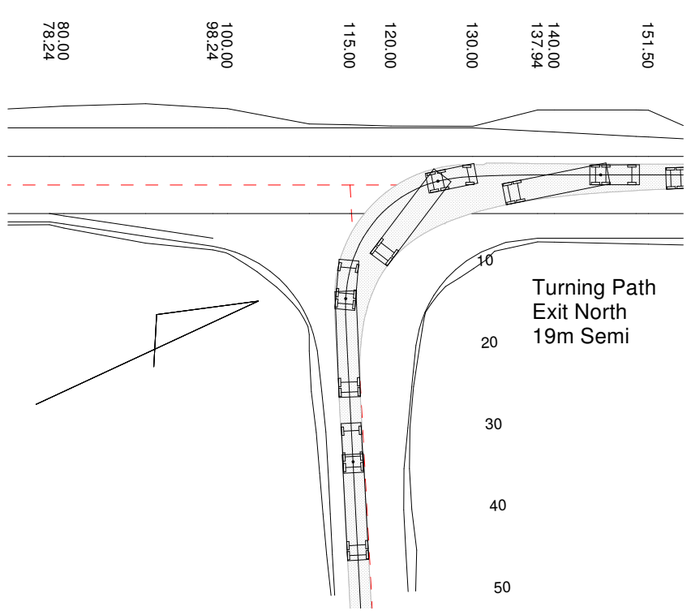


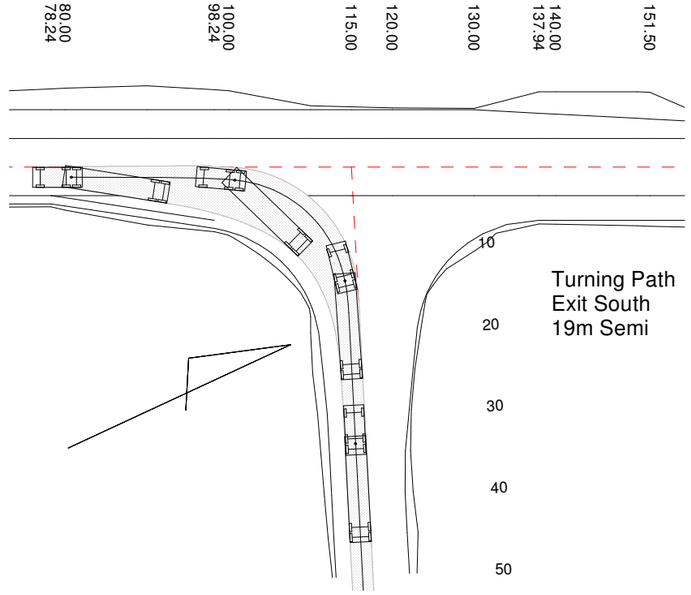


ISSUE STATUS	COORD SYSTEM	SURVEY	DESIGN	DUNCAN PRIESTLEY CIVIL ENGINEERING	DRAWING	Total Sheets: 15
	MGA Zone 55	DUNCAN PRIESTLEY CIVIL ENGINEERING	DUNCAN PRIESTLEY CIVIL ENGINEERING	McNAUGHT EARTHMOVING	CANOWINDRA RD ISECT V1 - MP	
12/10/2024	HEIGHT DATUM			**CANOWINDRA RD QUARRY ACCESS INTERSECTION**	PLAN NUMBER	**Sheet Number: 11**
SCALE: $SCALE	AHD	SURVEYED: D Priestley	DESIGNED: D Priestley	**5083 CANOWINDRA RD**		

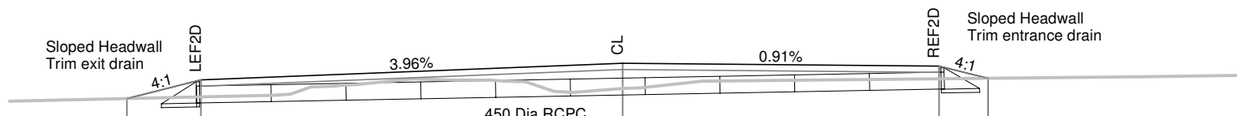








ISSUE STATUS	COORD SYSTEM	SURVEY	DESIGN	DUNCAN PRIESTLEY CIVIL ENGINEERING	DRAWING	Total Sheets: 15
	MGA Zone 55	DUNCAN PRIESTLEY CIVIL ENGINEERING	DUNCAN PRIESTLEY CIVIL ENGINEERING	McNAUGHT EARTHMOVING	CANOWINDRA RD ISECT V1 - MP	
12/10/2024	HEIGHT DATUM			CANOWINDRA RD QUARRY ACCESS INTERSECTION	PLAN NUMBER	**Sheet Number: 12**
SCALE: $SCALE	AHD	SURVEYED: D Priestley	DESIGNED: D Priestley	5083 CANOWINDRA RD		

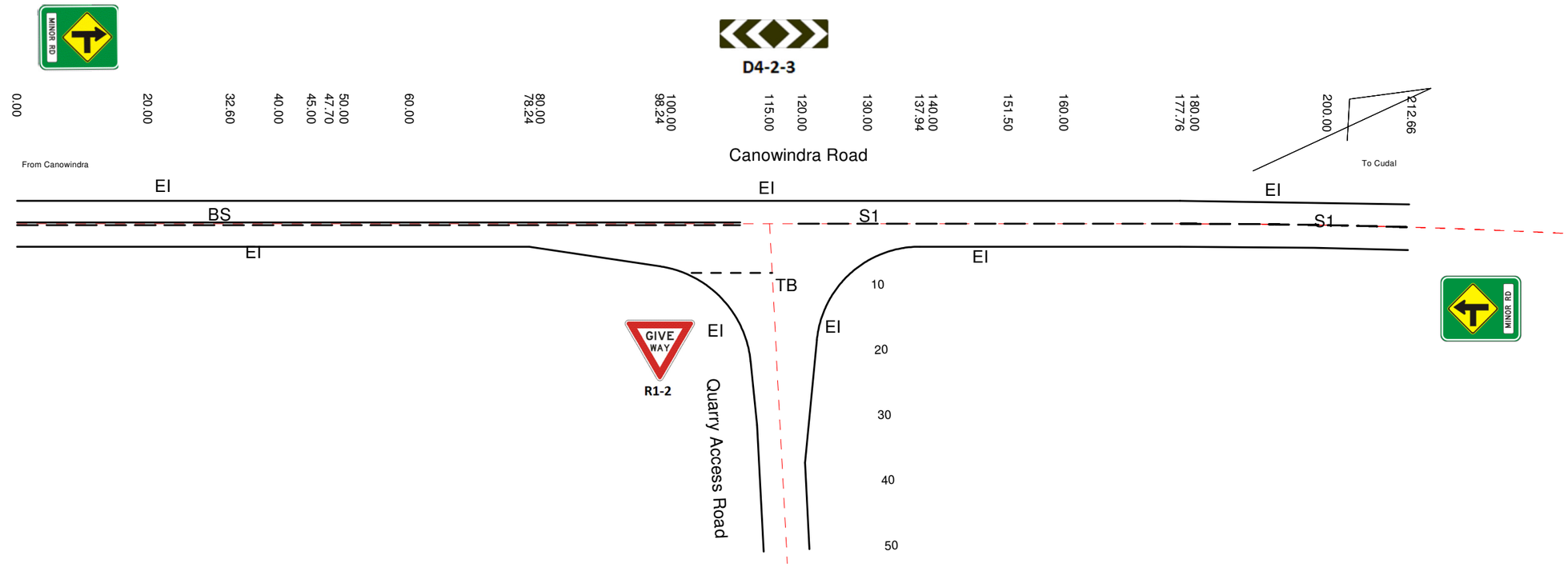


450.000

HT. DIFF	0.000	0.550	0.821	0.415	0.000		
DESIGN	453.100	453.704	454.248	454.154	453.756		
EXISTING	453.015	453.100	453.153	453.427	453.740	453.756	453.849
	20.000	16.170	13.754	0.000	10.325	11.920	20.000

10.000

ISSUE STATUS	COORD SYSTEM	SURVEY	DESIGN	DUNCAN PRIESTLEY CIVIL ENGINEERING	DRAWING	Total Sheets: 15
	MGA Zone 55	DUNCAN PRIESTLEY CIVIL ENGINEERING	DUNCAN PRIESTLEY CIVIL ENGINEERING	McNAUGHT EARTHMOVING	CANOWINDRA RD ISECT V1 - MP	
12/10/2024	HEIGHT DATUM			CANOWINDRA RD QUARRY ACCESS INTERSECTION	PLAN NUMBER	Sheet Number: 13
SCALE: $SCALE	AHD	SURVEYED: D Priestley	DESIGNED: D Priestley	5083 CANOWINDRA RD		



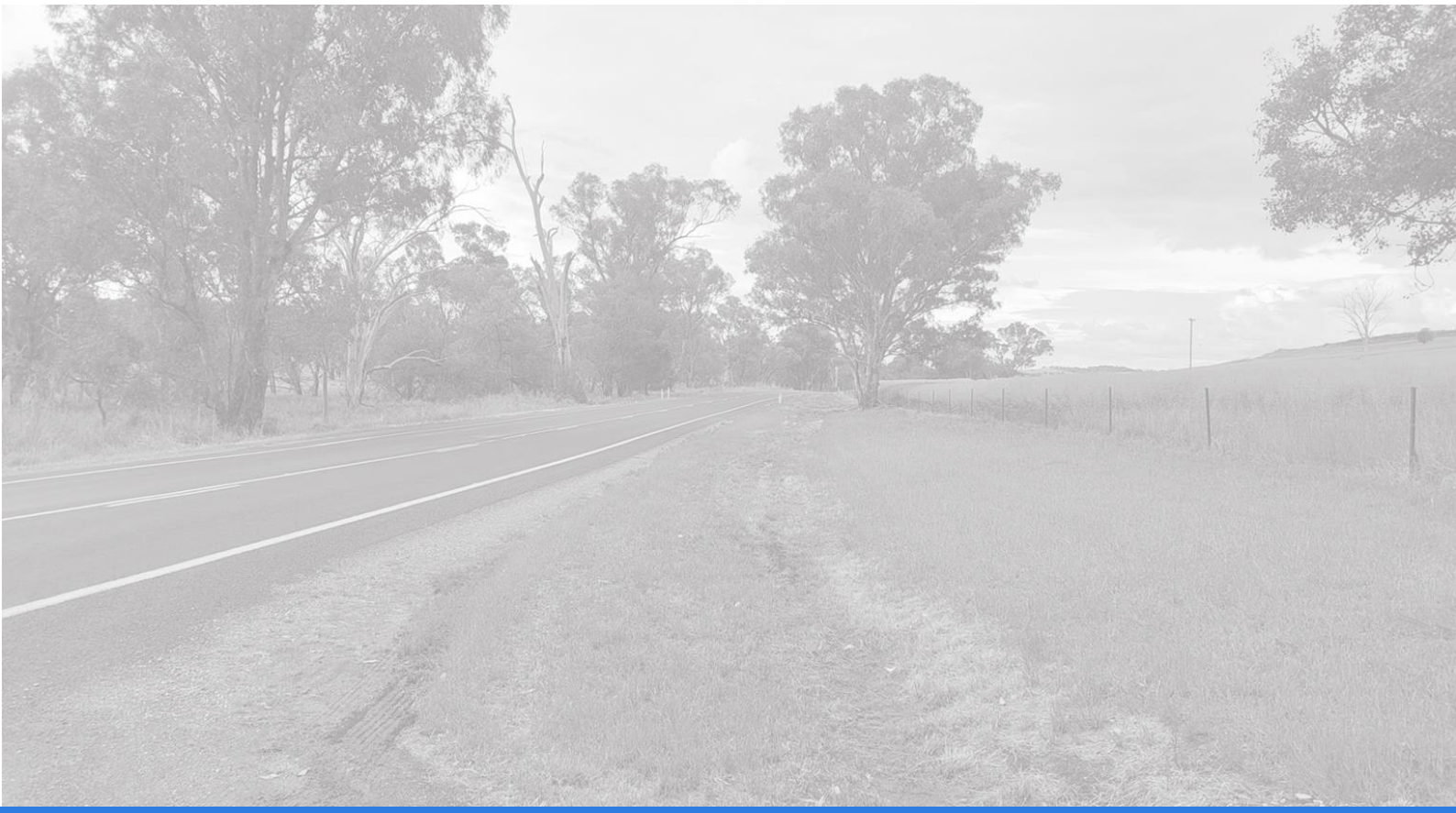
ISSUE STATUS	COORD SYSTEM	SURVEY	DESIGN	DUNCAN PRIESTLEY CIVIL ENGINEERING	DRAWING	Total Sheets: 15
	MGA Zone 55	DUNCAN PRIESTLEY CIVIL ENGINEERING	DUNCAN PRIESTLEY CIVIL ENGINEERING	McNAUGHT EARTHMOVING	CANOWINDRA RD ISECT V1 - MP	
12/10/2024	HEIGHT DATUM			CANOWINDRA RD QUARRY ACCESS INTERSECTION	PLAN NUMBER	**Sheet Number: 14**
SCALE: $SCALE	AHD	SURVEYED: D Priestley	DESIGNED: D Priestley	5083 CANOWINDRA RD		

ISSUE STATUS	COORD SYSTEM	SURVEY	DESIGN	**DUNCAN PRIESTLEY CIVIL ENGINEERING**	DRAWING	Total Sheets: 15
	MGA Zone 55	DUNCAN PRIESTLEY CIVIL ENGINEERING	DUNCAN PRIESTLEY CIVIL ENGINEERING	**McNAUGHT EARTHMOVING**	CANOWINDRA RD ISECT V1 - MP	
12/10/2024	HEIGHT DATUM			**CANOWINDRA RD QUARRY ACCESS INTERSECTION**	PLAN NUMBER	**Sheet Number: 15**
SCALE: $SCALE	AHD	SURVEYED: D Priestley	DESIGNED: D Priestley	**5083 CANOWINDRA RD**		

Appendix 3

Road Safety Audit (TTPP, 2024a)

(Total No. of pages including blank pages = 35)



McNaughts Quarry, 5082 Canowindra Road, Canowindra

Concept Design Road Safety Audit

Prepared for:

RW Corkery and Co Pty Limited

21 October 2024

The Transport Planning Partnership

McNaughts Quarry, 5082 Canowindra Road, Canowindra

Concept Design Road Safety Audit

Client: RW Corkery and Co Pty Limited

Version: 01

Date: 21 October 2024

TTPP Reference: 23354

Quality Record

Version	Date	Prepared by	Reviewed by	Approved by	Signature
01	21/10/24	S.Read	D.Lee	W. Johnson	

Table of Contents

1 Road Safety Audit Summary 1
2 Introduction 2
2.1 Background 2
2.2 Audit Objective 3
2.3 Procedures and Reference Material 3
2.4 Audit Team 4
3 Road Safety Audit Program 5
3.1 Commencement Meeting 5
3.2 Site and Field Audit 5
3.3 Completion Meeting 5
4 Road Safety Audit Findings 6
4.1 Introduction 6
4.2 Responding to the Audit Report 7
4.3 Road Safety Audit Findings 7
5 Concluding Statement 14

Tables

Table 4.1: Risk Matrix 6
Table 4.2: Road Safety Audit Findings 8

Figures

Figure 2.1: Site Location 2
Figure 2.1: Proposed Intersection Layout 3

APPENDICES

A. DESIGN DRAWINGS

1 Road Safety Audit Summary

Audited project:	McNaughts Quarry, 8052 Canowindra Road, Canowindra
Client:	RW Corkery and Co Pty Limited
Project manager:	Indigo Devane
Email address:	indigo@rwcorkery.com
Telephone:	0499 858 555
Audit Team:	Stephen Read (level 3 lead road safety auditor) Doris Lee (level 3 road safety auditor)
Audit type:	Concept Design (Pre-Construction)
Commencement meeting:	Not required
Audit date:	16 October 2024
Completion meeting:	Not required

The objective of this road safety audit is to examine and identify road safety concerns regarding the upgrade of an access road to provide access to a proposed quarry site. The audit is to consider both the existing conditions and future intersection upgrade.

The findings of the road safety audit have been detailed in Section 4.3 of this report.

2 Introduction

2.1 Background

This report has been prepared on behalf of RW Corkery and Co Pty Limited to present road safety audit findings that have been identified for the upgrade of an existing property access road to facilitate heavy vehicle movements to and from the proposed McNaughts Quarry.

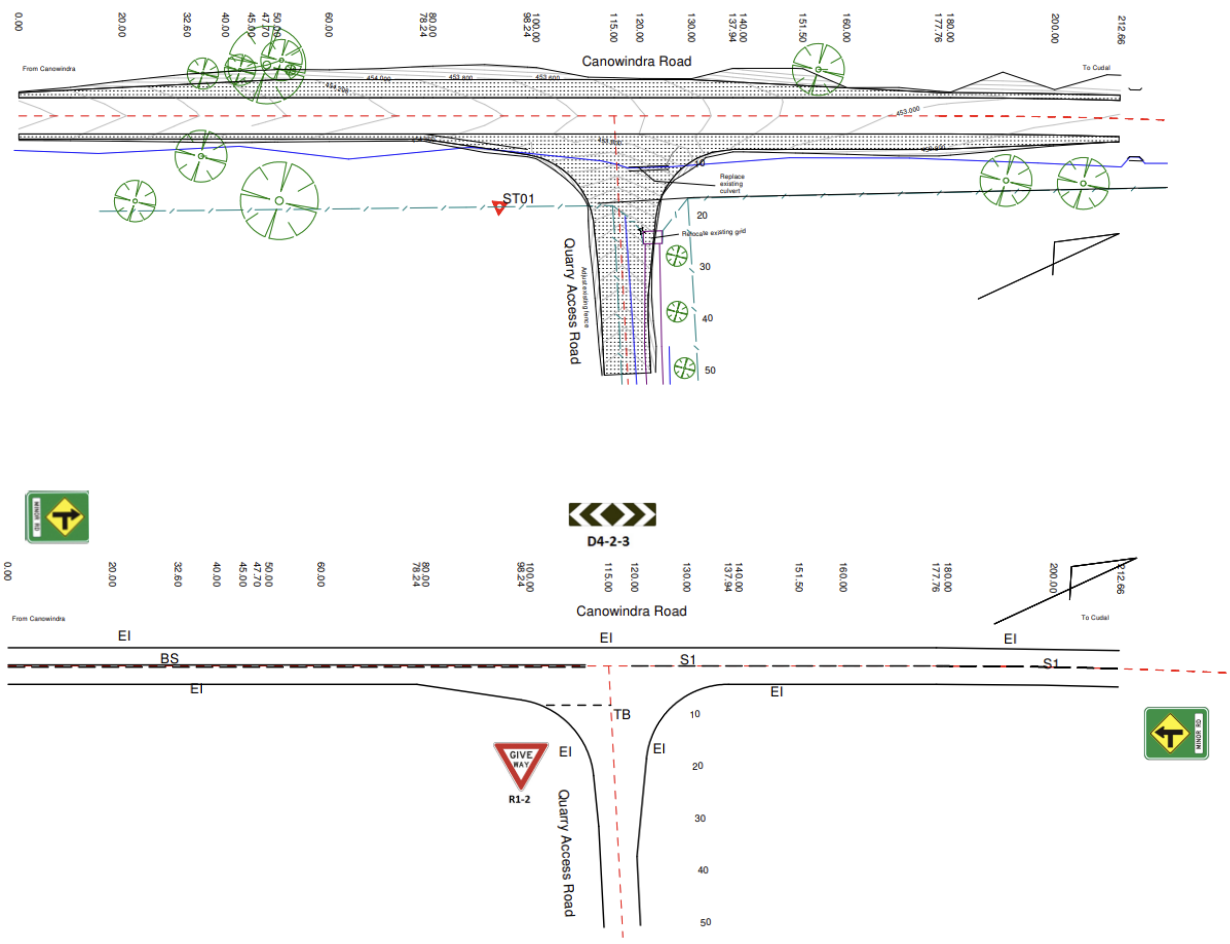
The property access road is located on the eastern side of Canowindra Road some 20 kilometres (km) north of Canowindra as shown in Figure 2.1. Canowindra Road is a two-lane two-way rural road with a default speed limit of 100 kilometres per hour (km/h). The road has good delineation with centre lines and edge line marking as well as regular guide posts that are in good condition.

Figure 2.1: Site Location



The existing access road has a sealed section between Canowindra Road and the property gate/ cattle grid. The proposal is to upgrade the access road to include a Basic Left turn treatment (BAL) and Basic Right turn treatment (BAR). These treatments involve the widening of the shoulder pavement near the intersection to allow vehicles to pass if required. The intersection layout is shown in Figure 2.2.

Figure 2.2: Proposed Intersection Layout



At maximum production, the proposed quarry is forecast to generate an average of approximately 34 heavy vehicle trips per weekday (17 inbound and 17 outbound). During peak campaign periods, heavy vehicle trips would be limited to a maximum of 88 heavy vehicle trips per day (44 inbound and 44 outbound), equivalent to approximately eight trips per hour (four inbound and four outbound) but there is forecast to be up to 18 heavy vehicles per hour on Saturdays.

2.2 Audit Objective

The objective of this Audit was to ensure that there are no fundamental flaws in the geometric layout and existing road layout that may lead to road safety risks.

2.3 Procedures and Reference Material

The procedures used are described in the following guidelines:

- Roads and Maritime Services' 2011 Guidelines for Road Safety Audit Practices

- Austroads Guide to Road Safety 2022: Part 6 Road Safety Audits.

Other guidelines that were considered during the preparation of this audit included:

- TfNSW Traffic control at work sites Technical Manual Version 6 (2020)
- Austroads Safe System Assessment Framework 2016
- Austroads Guide to Traffic Management Part 13: Safe System Approach to Transport Management
- Austroads Guide to Temporary Traffic Management Part 10: Supporting Guidance.

2.4 Audit Team

The RSA was carried out by the following team:

- Stephen Read (RSA-02-0652) – level 3 road safety auditor (lead auditor)
- Doris Lee (RSA-02-0128) – level 3 road safety auditor (team member)

Stephen and Doris are registered road safety auditors with the NSW Centre for Road Safety and are experienced in traffic engineering and design/ inspection of traffic management schemes.

3 Road Safety Audit Program

3.1 Commencement Meeting

A formal meeting was not held.

3.2 Site and Field Audit

A site inspection was carried out on Wednesday 16 October 2024 in fine weather conditions during both daytime and nighttime.

Observations were made by driving along the audited road section. Photographs and video footage were taken during the site inspection and have been included in the audit findings (Section 4).

3.3 Completion Meeting

A completion meeting is not required.

4 Road Safety Audit Findings

4.1 Introduction

Table 4.1 provides specific details of the road safety deficiencies and a risk rating as extreme, high, medium, low or negligible. The risk ratings have been based on the risk matrix presented in Table 4.1, which has been adopted from the latest Austroads Guide to Road Safety: Road Safety Audit (2022).

Table 4.1: Risk Matrix

			Severity				
			Insignificant	**Minor**	**Moderate**	**Serious**	**Fatal**
			Property damage	**Minor first aid**	**Major first aid and/or presents to hospital (not admitted)**	**Admitted to hospital**	**Death within 30 days of the crash**
Likelihood (includes exposure)	Almost Certain	One per quarter	Medium	High	High	Extreme (FSI)	Extreme (FSI)
	Likely	Quarter to 1-year	Medium	Medium	High	Extreme (FSI)	Extreme (FSI)
	Possible	1 to 3 years	Low	Medium	High	High (FSI)	Extreme (FSI)
	Unlikely	3 to 7 years	Negligible	Low	Medium	High (FSI)	Extreme (FSI)
	Rare	7 years+	Negligible	Negligible	Low	Medium (FSI)	High (FSI)

The terms in Table 4.1 are described below.

Likelihood:

- Almost certain – occurrence once per quarter
- Likely – occurrence once per quarter to once per year
- Possible – occurrence once per year to once every three years
- Unlikely – occurrence once every three years to once every seven years
- Rare – occurrence less than once every seven years.

Severity:

- Insignificant – property damage
- Minor – minor first aid
- Moderate – major first aid and/or presents to hospital (not admitted)
- Serious – admitted to hospital
- Fatal – at scene or within 30 days of the crash.

Priority:

- Negligible – no action required
- Low – should be corrected or the risk reduced if the treatment cost is low
- Medium – should be corrected or the risk significantly reduced, if the treatment cost is moderate, but not high
- High – should be corrected or the risk significantly reduced, even if the treatment cost is high
- Extreme – must be corrected regardless of cost.

4.2 Responding to the Audit Report

As set out in the road safety audit guidelines, the responsibility for the road rests with the project manager, not with the auditor. The project manager is under no obligation to accept the audit findings. Neither is it the role of the auditor to agree to or approve the project manager's responses to the audit.

The audit provides the opportunity to highlight potential road safety problems and have them formally considered by the project manager in conjunction with all other project considerations.

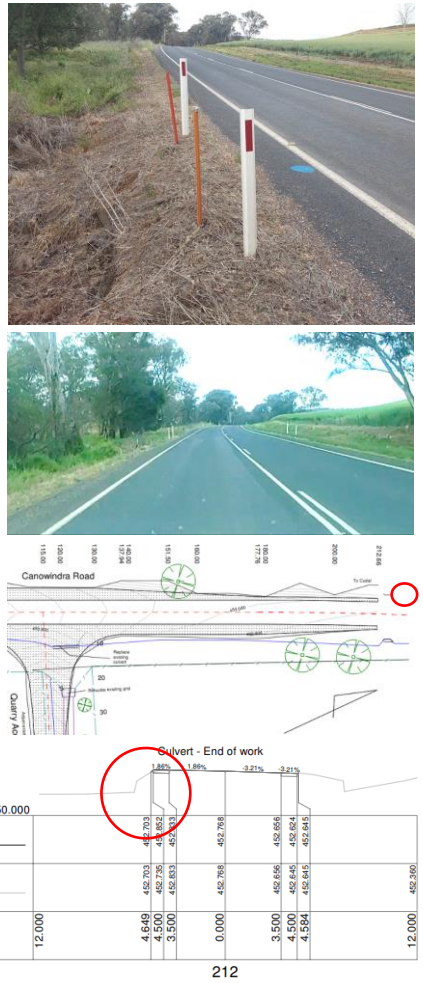
4.3 Road Safety Audit Findings

The audit findings are documented in Table 4.2 which provides:

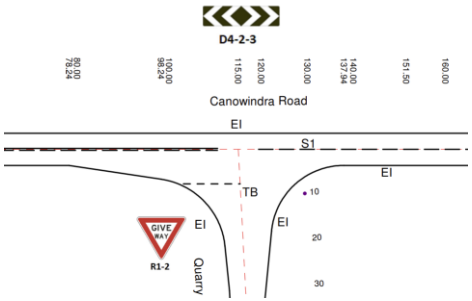
- specific details of the road safety issues identified during the audit
- a risk level rating for each of the road safety audit findings.

It should be acknowledged that positive attributes of the audited road section have not been discussed. Deficiencies that do not cause a safety problem are also not listed.

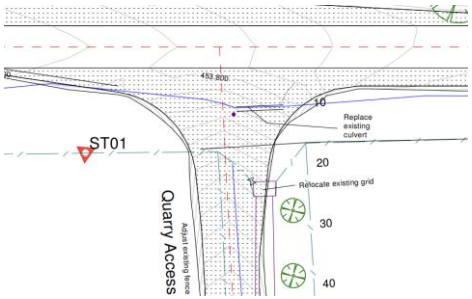
Table 4.2: Road Safety Audit Findings

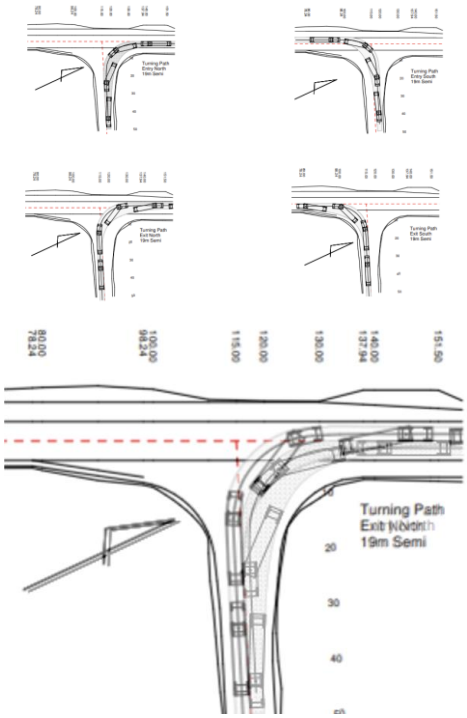
Item No.	Location	Descriptions of Findings	Design/ Photo	Likelihood	Severity	Risk Rating	Designer Response
1.	Canowindra Road, North of Access Road Northbound Direction CH 212	There is a significant culvert located immediately adjacent to the northbound carriageway. The culvert is delineated by two guideposts as is NSW practice. This hazard is located at the end of the proposed widened shoulder and close to the edge of the road. This would create an unforgiving road environment for an errant vehicle. An errant vehicle driving around a right-turning vehicle may be caught by the batter slope and directed into the gully and culvert area. Drivers on the batter slope would have poor recovery before hitting the gulley where the culvert is located. Consider a short length of guard rail on this side of the road to prevent vehicles from driving into the gully.		Rare	Serious	Medium	

Item No.	Location	Descriptions of Findings	Design/ Photo	Likelihood	Severity	Risk Rating	Designer Response
2	Southbound Intersection Sight Distance	Sight distances were checked on-site using a range finder by identifying distances to visible landmarks on a plan. The Safe Intersection Sight Distance from the northern approach was found to be approximately 250m between the roadway and a position 7m from the centre of the carriageway on the existing property access road. The sight distance was obscured due to the curve in the road and two mature trees located at CH 200. Based on a design speed of 110km/h and 2.5 seconds reaction time (TfNSW supplementary guidelines), Austroads indicates a sight distance of 300m. There is a risk of crashes at the intersection involving trucks pulling out of the access road and southbound vehicles. It is noted that intersection warning signs will be installed to help mitigate the risk. With this in place and relatively low traffic volumes, the frequency of these events is considered rare. We also note that the sight distance complies with AS2890.1 for non-domestic driveways as referenced by Austroads, and complies with AS2890.2 sight distance for		Rare	Moderate	Low	

Item No.	Location	Descriptions of Findings	Design/ Photo	Likelihood	Severity	Risk Rating	Designer Response
		commercial heavy vehicle access. Further there would be distance for a vehicle to significantly reduce speed before a crash which would reduce the severity to moderate.					
3	Canowindra Road and Access Road intersection	The plans show a setback give-way hold line, however, there are no continuity lines provided through the intersection. Continuity lines could be considered across the intersection to improve the delineation of the road alignment. However, as this alignment is straight this may not be necessary, and it is considered the probability of causing a crash would be low. Refer to NSW Delineation Manual section 4.				Note Only	

Item No.	Location	Descriptions of Findings	Design/ Photo	Likelihood	Severity	Risk Rating	Designer Response
4	Northbound at the existing property access road	There was some minor pavement polishing on the carriageway near the existing property access road. Polishing can reduce the effective skid resistance of the surface and could contribute to loss of control or rear-end crashes, particularly in wet conditions.	 	Rare	Moderate	Low	

Item No.	Location	Descriptions of Findings	Design/ Photo	Likelihood	Severity	Risk Rating	Designer Response
5	New Access Road Culvert	There were no details provided of the replacement of the existing culvert under the access road and headwall at Canowindra Road. Culvert headwalls can create a hazard if located close to traffic. Safe culvert design should be taken into consideration to reduce roadside hazard risks. Consider traversable headwalls or locating the headwall away from the travel lanes.				Note Only	

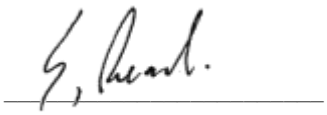
Item No.	Location	Descriptions of Findings	Design/ Photo	Likelihood	Severity	Risk Rating	Designer Response
6	Access Road (swept paths)	The swept paths show that the articulated truck paths would overlap if one truck was entering while the other was leaving. This may result in vehicle damage. The forecast is up to 18 heavy vehicle trips per hour in peak periods and therefore there is a chance two trucks could meet. Consider widening of the property access road or separate ingress and egress points unless the frequency of truck movements is deemed sufficiently low to avoid collisions.		Unlikely	Minor	Low	

5 Concluding Statement

The findings and opinions in the report are based on the examination of the specific road and environs, and might not address all concerns existing at the time of the audit.

The auditors have endeavoured to identify features of the road that could be modified in order to improve safety, although it must be recognised that safety cannot be guaranteed since no road can be regarded as absolutely safe.

While every effort has been made to ensure the accuracy of this report, it is made available strictly on the basis that anyone relying on it does so at their own risk without any liability to the Auditors.



Stephen Read
Level 3 Lead Road Safety Auditor
The Transport Planning Partnership



Doris Lee
Level 3 Road Safety Auditor
The Transport Planning Partnership

Appendix A

Design Drawings

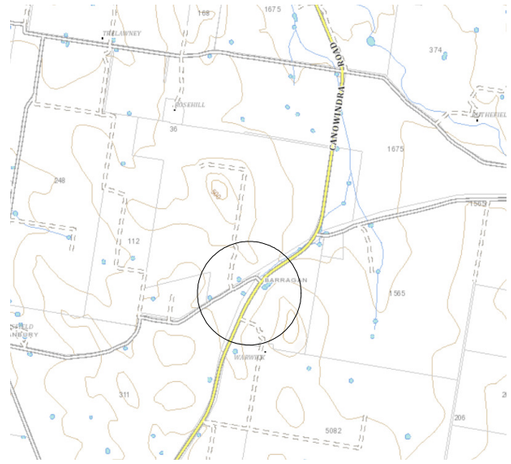
INDEX

Sheet No.

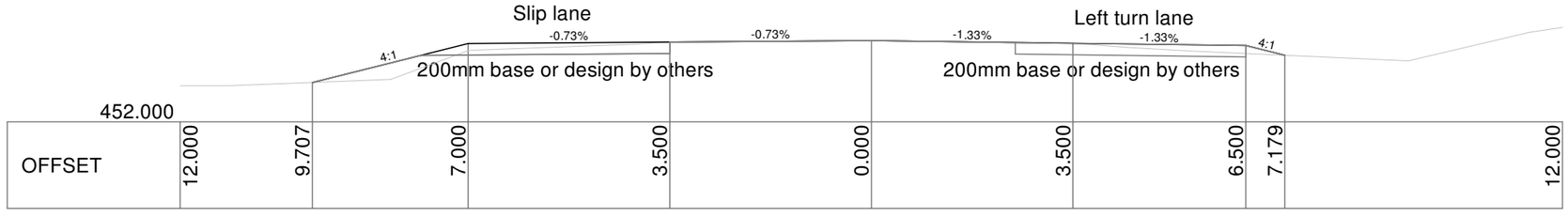
1	Cover
2	Plan and longsections
3 - 8	Cross sections Canowindra Rd
9 - 10	Cross sections Quarry Access Rd
11	ASD SISD and MGSD
12	Turning Paths
13	Culvert Design
14	Linemarking and signs
15	Spare

Point	Easting	Northing	Elevation	Code
1	657658.529	6303402.103	434.850	PM170330
3	656744.884	6302510.236	454.880	ST01

CONTROL



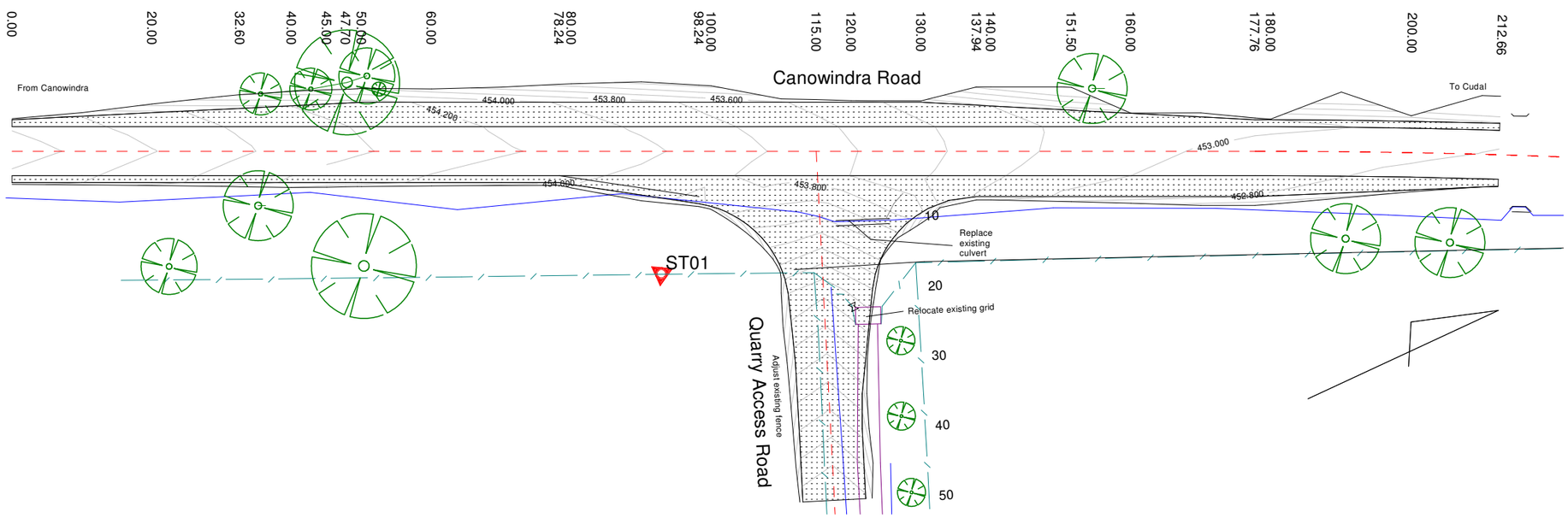
CANOWINDRA ROAD QUARRY ACCESS INTERSECTION

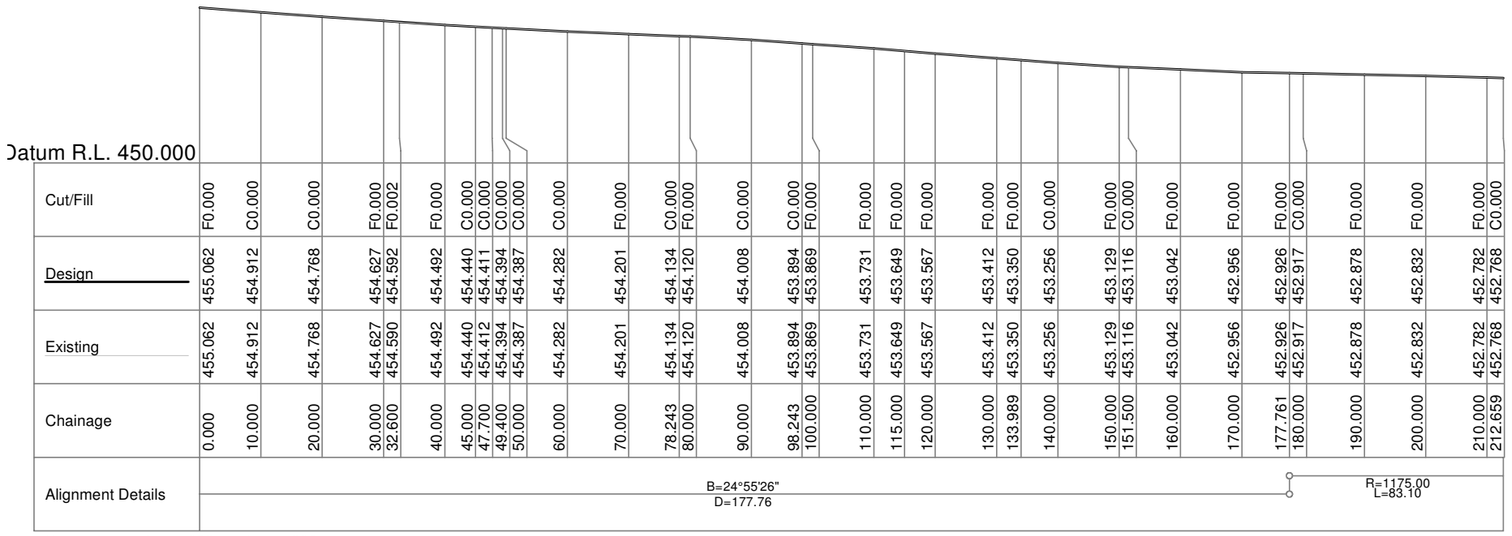


130

TYPICAL CROSS SECTION

ISSUE STATUS	COORD SYSTEM	SURVEY	DESIGN	DUNCAN PRIESTLEY CIVIL ENGINEERING	DRAWING	Total Sheets: 15
	MGA Zone 55	DUNCAN PRIESTLEY CIVIL ENGINEERING	DUNCAN PRIESTLEY CIVIL ENGINEERING	McNAUGHT EARTHMOVING	CANOWINDRA RD ISECT V1 - MP	
12/10/2024	HEIGHT DATUM			CANOWINDRA RD QUARRY ACCESS INTERSECTION	PLAN NUMBER	Sheet Number: 1
SCALE: $SCALE	AHD	SURVEYED: D Priestley	DESIGNED: D Priestley	5083 CANOWINDRA RD		

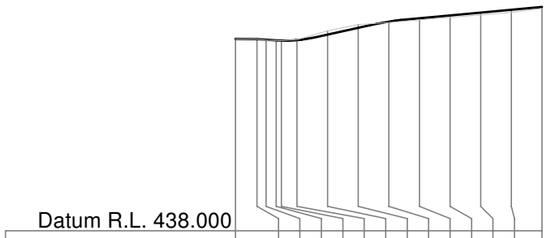




Cut/Fill	Design	Existing	Chainage
F0.000	455.062	455.062	0.000
C0.000	454.912	454.912	10.000
C0.000	454.768	454.768	20.000
F0.000	454.627	454.627	30.000
F0.002	454.592	454.590	32.600
F0.000	454.492	454.492	40.000
C0.000	454.440	454.440	45.000
C0.000	454.411	454.412	47.700
C0.000	454.394	454.394	49.400
C0.000	454.387	454.387	50.000
C0.000	454.282	454.282	60.000
F0.000	454.201	454.201	70.000
C0.000	454.134	454.134	78.243
F0.000	454.120	454.120	80.000
C0.000	454.008	454.008	90.000
C0.000	453.894	453.894	98.243
F0.000	453.869	453.869	100.000
F0.000	453.731	453.731	110.000
F0.000	453.649	453.649	115.000
F0.000	453.567	453.567	120.000
F0.000	453.412	453.412	130.000
F0.000	453.350	453.350	133.989
C0.000	453.256	453.256	140.000
F0.000	453.129	453.129	150.000
C0.000	453.116	453.116	151.500
F0.000	453.042	453.042	160.000
F0.000	452.956	452.956	170.000
F0.000	452.926	452.926	177.761
C0.000	452.917	452.917	180.000
F0.000	452.878	452.878	190.000
F0.000	452.832	452.832	200.000
F0.000	452.782	452.782	210.000
C0.000	452.768	452.768	212.659

Scale Horizontal 1:1000 Vertical 1:200

CANOWINDRA ROAD

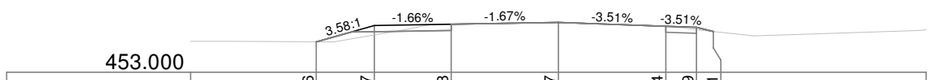


Cut/Fill	Design	Existing	Station
F0.000	453.649	453.649	0.000
F0.006	453.627	453.621	3.500
F0.025	453.580	453.555	5.000
F0.016	453.530	453.514	6.618
F0.000	453.509	453.508	7.479
C0.047	453.545	453.591	10.000
C0.302	454.002	454.304	15.000
C0.261	454.551	454.812	20.000
F0.064	455.052	454.989	25.000
F0.125	455.330	455.205	30.000
F0.144	455.560	455.416	35.000
F0.190	455.790	455.600	40.000
F0.219	456.020	455.801	45.000
F0.117	456.250	456.133	50.000

Scale Horizontal 1:1000 Vertical 1:500

QUARRY ACCESS

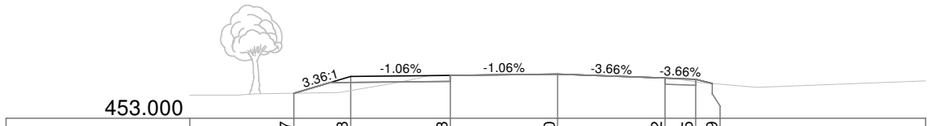
ISSUE STATUS	COORD SYSTEM	SURVEY	DESIGN	DUNCAN PRIESTLEY CIVIL ENGINEERING	DRAWING	Total Sheets: 15
	MGA Zone 55	DUNCAN PRIESTLEY CIVIL ENGINEERING	DUNCAN PRIESTLEY CIVIL ENGINEERING	McNAUGHT EARTHMOVING	CANOWINDRA RD ISECT V1 - MP	
12/10/2024	HEIGHT DATUM			CANOWINDRA RD QUARRY ACCESS INTERSECTION	PLAN NUMBER	Sheet Number: 2
SCALE: $SCALE	AHD	SURVEYED: D Priestley	DESIGNED: D Priestley	5083 CANOWINDRA RD		



453.000

DESIGN		453.996	454.527	454.568	454.627	454.504	454.469	454.331		
NATURAL	454.010	453.996	454.222	454.569	454.627	454.504	454.396	454.331		454.388
OFFSET	12.000	7.897	6.000	3.500	0.000	3.500	4.500	5.051		12.000

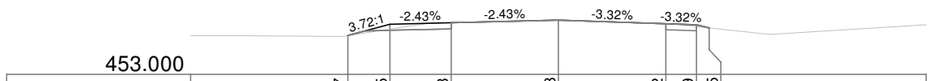
30



453.000

DESIGN		453.817	454.368	454.403	454.440	454.312	454.275	454.139		
NATURAL	453.754	453.817	453.907	454.403	454.440	454.312	454.195	454.139		454.223
OFFSET	12.000	8.605	6.750	3.500	0.000	3.500	4.500	5.044		12.000

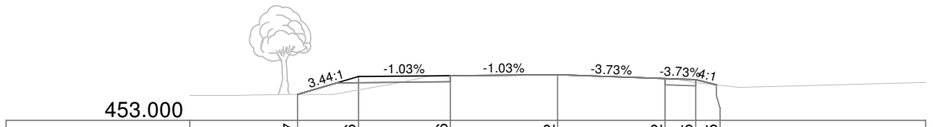
45



453.000

DESIGN		454.267	454.635	454.683	454.768	454.652	454.619	454.515		
NATURAL	454.261	454.267	454.475	454.683	454.768	454.652	454.561	454.515		454.617
OFFSET	12.000	6.869	5.500	3.500	0.000	3.500	4.500	4.916		12.000

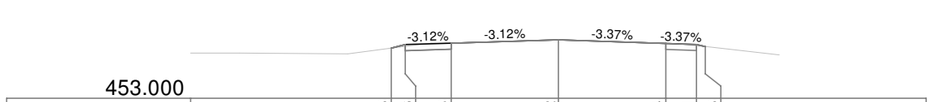
20



453.000

DESIGN		453.847	454.426	454.456	454.492	454.362	454.325	454.155		
NATURAL	453.813	453.847	453.992	454.456	454.492	454.362	454.237	454.155		454.238
OFFSET	12.000	8.486	6.500	3.500	0.000	3.500	4.500	5.179		12.000

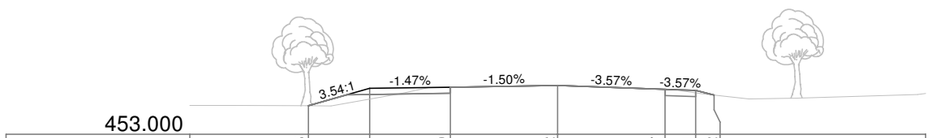
40



453.000

DESIGN		454.638	454.756	454.803	454.912	454.794	454.761	454.688		
NATURAL	454.474	454.638	454.696	454.803	454.912	454.794	454.717	454.688		
OFFSET	12.000	5.458	5.000	3.500	0.000	3.500	4.500	4.789		12.000

10



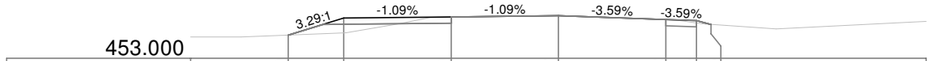
453.000

DESIGN		453.935	454.501	454.539	454.592	454.467	454.431	454.282		
NATURAL	453.945	453.935	454.154	454.539	454.590	454.465	454.353	454.282		454.330
OFFSET	12.000	8.133	6.130	3.500	0.000	3.500	4.500	5.099		12.000

32

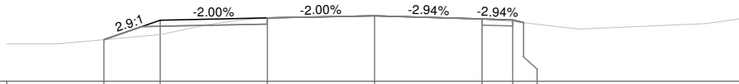
Scale Horizontal 1:200 Vertical 1:200

ISSUE STATUS	COORD SYSTEM	SURVEY	DESIGN	DUNCAN PRIESTLEY CIVIL ENGINEERING	DRAWING	Total Sheets: 15
	MGA Zone 55	DUNCAN PRIESTLEY CIVIL ENGINEERING	DUNCAN PRIESTLEY CIVIL ENGINEERING	McNAUGHT EARTHMOVING	CANOWINDRA RD ISECT V1 - MP	
12/10/2024	HEIGHT DATUM			**CANOWINDRA RD QUARRY ACCESS INTERSECTION**	PLAN NUMBER	**Sheet Number: 3**
SCALE: $SCALE	AHD	SURVEYED: D Priestley	DESIGNED: D Priestley	**5083 CANOWINDRA RD**		



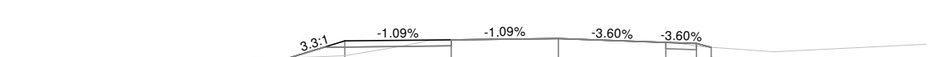
DESIGN		453.759	454.311	454.349	454.387	454.262	454.226	454.106		
NATURAL	453.696	453.759	453.833	454.349	454.387	454.262	454.152	454.106		454.207
OFFSET	12.000	8.819	7.000	3.500	0.000	3.500	4.500	4.980		12.000

50



DESIGN		453.359	453.994	454.064	454.134	454.031	454.002	453.913		
NATURAL	453.224	453.359	453.525	454.064	454.134	454.032	453.949	453.913		454.053
OFFSET	12.000	8.839	7.000	3.500	0.000	3.500	4.500	4.858		12.000

78



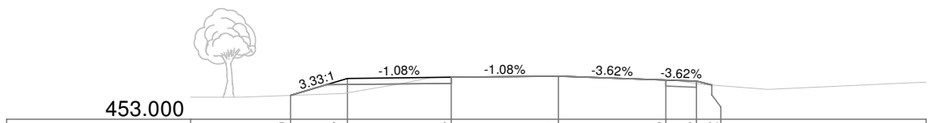
DESIGN		453.764	454.318	454.356	454.394	454.268	454.232	454.110		
NATURAL	453.703	453.764	453.836	454.356	454.394	454.268	454.157	454.110		454.209
OFFSET	12.000	8.798	6.970	3.500	0.000	3.500	4.500	4.986		12.000

49



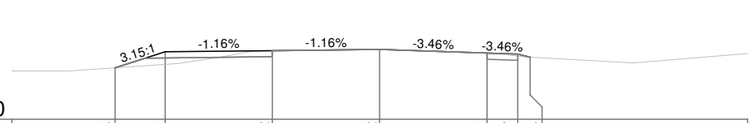
DESIGN		453.508	454.089	454.145	454.201	454.090	454.058	453.966		
NATURAL	453.389	453.508	453.649	454.145	454.201	454.090	454.000	453.966		454.061
OFFSET	12.000	8.748	7.000	3.500	0.000	3.500	4.500	4.868		12.000

70



DESIGN		453.779	454.337	454.374	454.411	454.285	454.248	454.122		
NATURAL	453.723	453.779	453.862	454.374	454.412	454.285	454.172	454.122		454.216
OFFSET	12.000	8.741	6.885	3.500	0.000	3.500	4.500	5.005		12.000

47

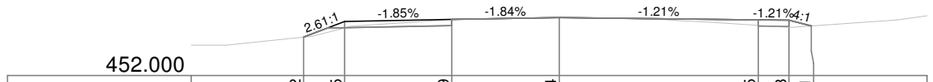


DESIGN		453.683	454.201	454.242	454.282	454.161	454.127	454.024		
NATURAL	453.579	453.683	453.796	454.242	454.282	454.161	454.064	454.024		454.147
OFFSET	12.000	8.635	7.000	3.500	0.000	3.500	4.500	4.909		12.000

60

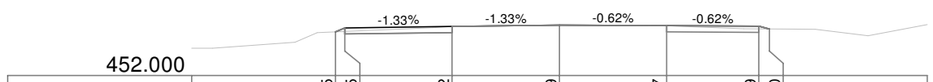
Scale Horizontal 1:200 Vertical 1:200

ISSUE STATUS	COORD SYSTEM	SURVEY	DESIGN		DRAWING	
	MGA Zone 55	DUNCAN PRIESTLEY CIVIL ENGINEERING	DUNCAN PRIESTLEY CIVIL ENGINEERING	**DUNCAN PRIESTLEY CIVIL ENGINEERING**	CANOWINDRA RD ISECT V1 - MP	Total Sheets: 15
12/10/2024	HEIGHT DATUM			**McNAUGHT EARTHMOVING**	PLAN NUMBER	**Sheet Number: 4**
SCALE: $SCALE	AHD	SURVEYED: D Priestley	DESIGNED: D Priestley	**CANOWINDRA RD QUARRY ACCESS INTERSECTION**		
				5083 CANOWINDRA RD		



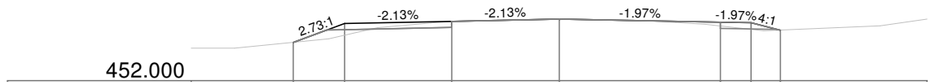
452.000								
DESIGN		453.252	453.765	453.829	453.894	453.815	453.803	453.621
NATURAL	452.997	453.252	453.550	453.829	453.894	453.639	453.575	453.621	453.948
OFFSET	12.000	8.340	7.000	3.500	0.000	6.500	7.500	8.228	12.000

98



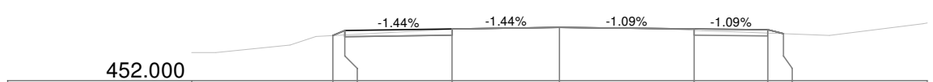
452.000								
DESIGN		453.425	453.555	453.602	453.649	453.627	453.609	453.520
NATURAL	452.895	453.425	453.438	453.602	453.649	453.625	453.523	453.520	453.659
OFFSET	12.000	7.310	7.000	3.500	0.000	3.500	6.500	6.854	12.000

115



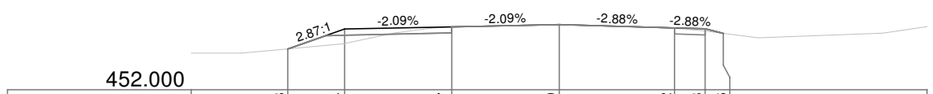
452.000								
DESIGN		453.246	453.859	453.933	454.008	453.904	453.884	453.646
NATURAL	453.055	453.246	453.480	453.933	454.008	453.780	453.669	453.646	454.003
OFFSET	12.000	8.672	7.000	3.500	0.000	5.264	6.264	7.217	12.000

90



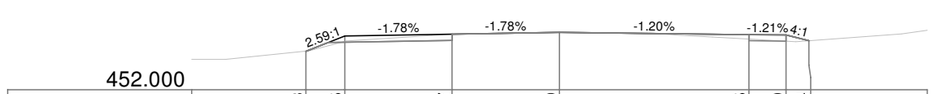
452.000								
DESIGN		453.470	453.630	453.680	453.731	453.683	453.657	453.530
NATURAL	452.914	453.470	453.491	453.680	453.731	453.637	453.549	453.530	453.877
OFFSET	12.000	7.392	7.000	3.500	0.000	4.395	6.798	7.307	12.000

110



452.000								
DESIGN		453.328	453.974	454.047	454.120	454.012	453.983	453.836
NATURAL	453.188	453.328	453.503	454.047	454.120	453.997	453.912	453.836	454.051
OFFSET	12.000	8.854	7.000	3.500	0.000	3.764	4.764	5.351	12.000

80

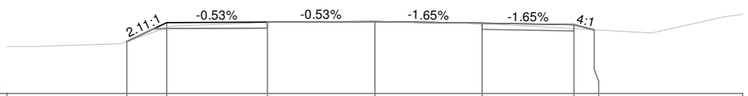


452.000								
DESIGN		453.253	453.745	453.807	453.869	453.795	453.780	453.594
NATURAL	452.984	453.253	453.570	453.807	453.869	453.649	453.580	453.594	453.937
OFFSET	12.000	8.272	7.000	3.500	0.000	6.185	7.395	8.140	12.000

100

Scale Horizontal 1:200 Vertical 1:200

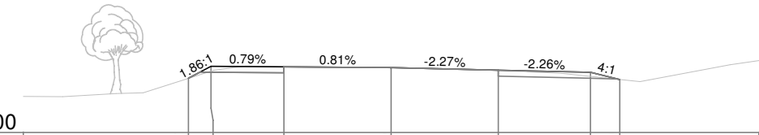
ISSUE STATUS	COORD SYSTEM	SURVEY	DESIGN	DUNCAN PRIESTLEY CIVIL ENGINEERING	DRAWING	Total Sheets: 15
	MGA Zone 55	DUNCAN PRIESTLEY CIVIL ENGINEERING	DUNCAN PRIESTLEY CIVIL ENGINEERING	McNAUGHT EARTHMOVING	CANOWINDRA RD ISECT V1 - MP	
12/10/2024	HEIGHT DATUM			CANOWINDRA RD QUARRY ACCESS INTERSECTION	PLAN NUMBER	**Sheet Number: 5**
SCALE: $SCALE	AHD	SURVEYED: D Priestley	DESIGNED: D Priestley	5083 CANOWINDRA RD		



451.000

DESIGN		452.698	453.314	453.331	453.350	453.292	453.242	453.078	
NATURAL	452.534	452.698	453.152	453.331	453.350	453.292	453.114	453.078	453.586
OFFSET	12.000	8.090	6.791	3.500	0.000	3.500	6.500	7.158	12.000

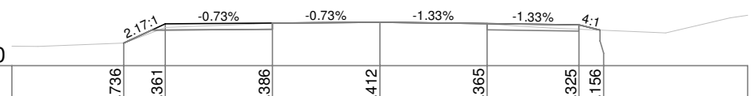
133



451.000

DESIGN		452.767	453.163	453.144	453.116	453.036	452.969	452.729	
NATURAL	452.173	452.767	453.002	453.144	453.116	453.036	452.831	452.729	453.343
OFFSET	12.000	6.612	5.875	3.500	0.000	3.500	6.500	7.459	12.000

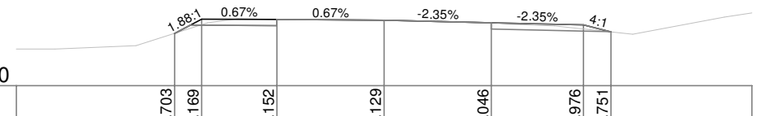
151



452.000

DESIGN		452.736	453.361	453.386	453.412	453.365	453.325	453.156	
NATURAL	452.628	452.736	453.237	453.386	453.412	453.365	453.186	453.156	453.640
OFFSET	12.000	8.352	7.000	3.500	0.000	3.500	6.500	7.179	12.000

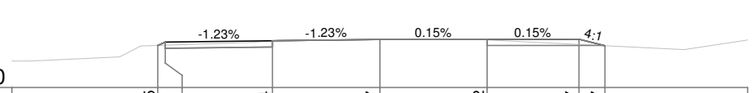
130



451.000

DESIGN		452.703	453.169	453.152	453.129	453.046	452.976	452.751	
NATURAL	452.194	452.703	452.981	453.152	453.129	453.046	452.845	452.751	453.365
OFFSET	12.000	6.830	5.953	3.500	0.000	3.500	6.500	7.401	12.000

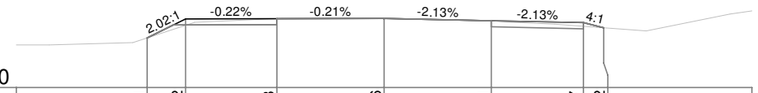
150



452.000

DESIGN		453.375	453.481	453.524	453.567	453.572	453.577	453.367	
NATURAL	452.865	453.375	453.383	453.524	453.567	453.555	453.408	453.367	453.552
OFFSET	12.000	7.245	7.000	3.500	0.000	3.500	6.500	7.341	12.000

120



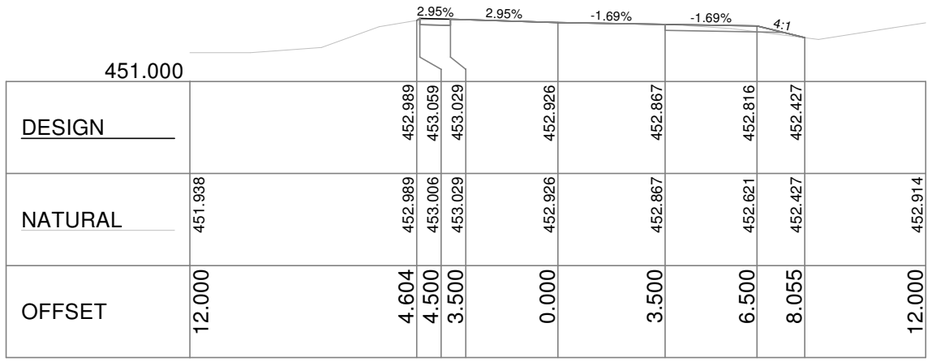
451.000

DESIGN		452.621	453.242	453.248	453.256	453.181	453.117	452.952	
NATURAL	452.392	452.621	453.030	453.248	453.256	453.181	453.001	452.952	453.504
OFFSET	12.000	7.733	6.477	3.500	0.000	3.500	6.500	7.160	12.000

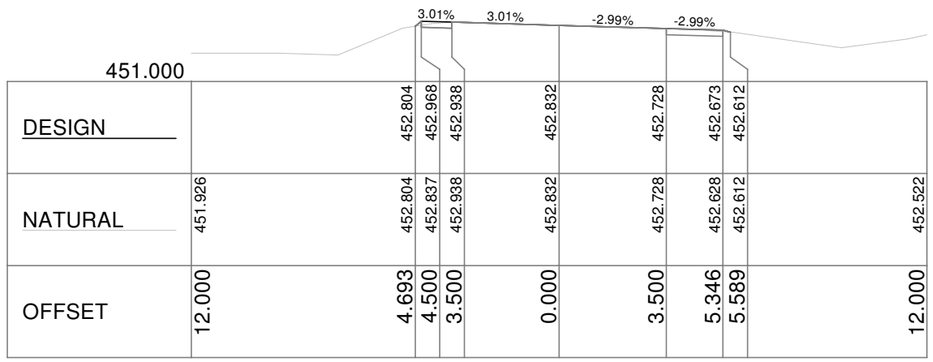
140

Scale Horizontal 1:200 Vertical 1:200

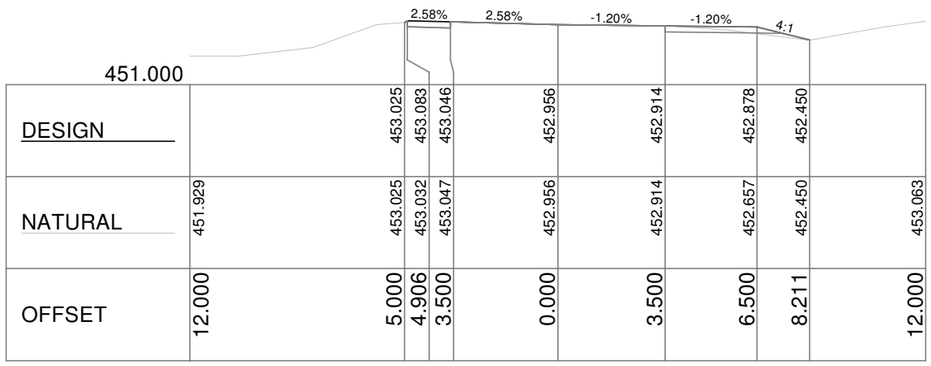
ISSUE STATUS	COORD SYSTEM	SURVEY	DESIGN	DUNCAN PRIESTLEY CIVIL ENGINEERING	DRAWING	Total Sheets: 15
	MGA Zone 55	DUNCAN PRIESTLEY CIVIL ENGINEERING	DUNCAN PRIESTLEY CIVIL ENGINEERING	McNAUGHT EARTHMOVING	CANOWINDRA RD ISECT V1 - MP	
12/10/2024	HEIGHT DATUM			**CANOWINDRA RD QUARRY ACCESS INTERSECTION**	PLAN NUMBER	**Sheet Number: 6**
SCALE: $SCALE	AHD	SURVEYED: D Priestley	DESIGNED: D Priestley	**5083 CANOWINDRA RD**		



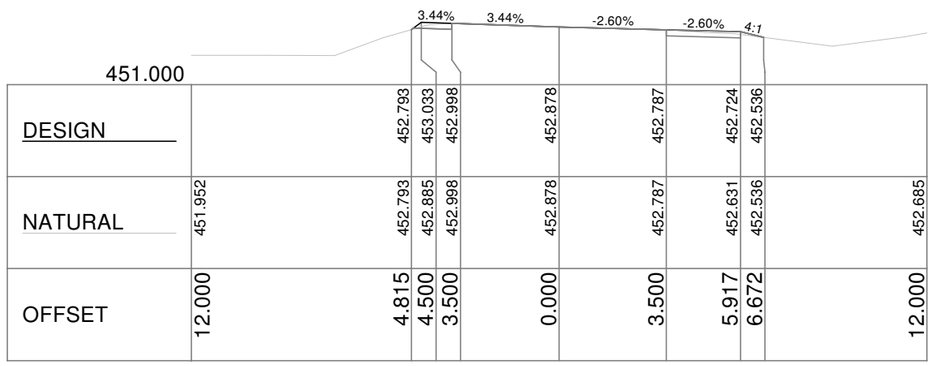
177



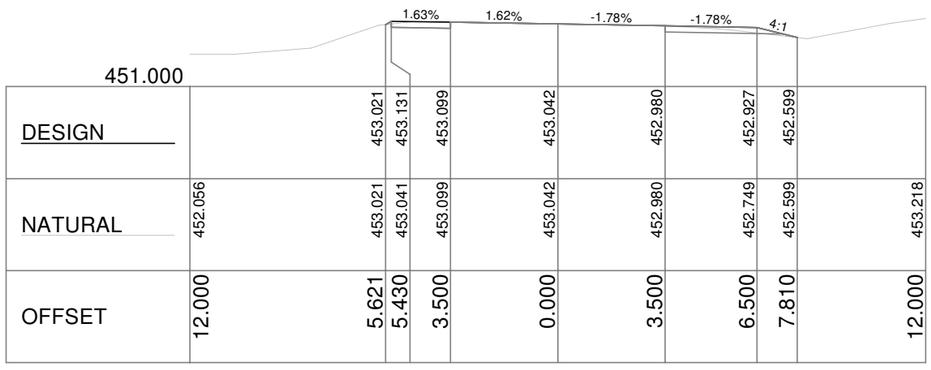
200



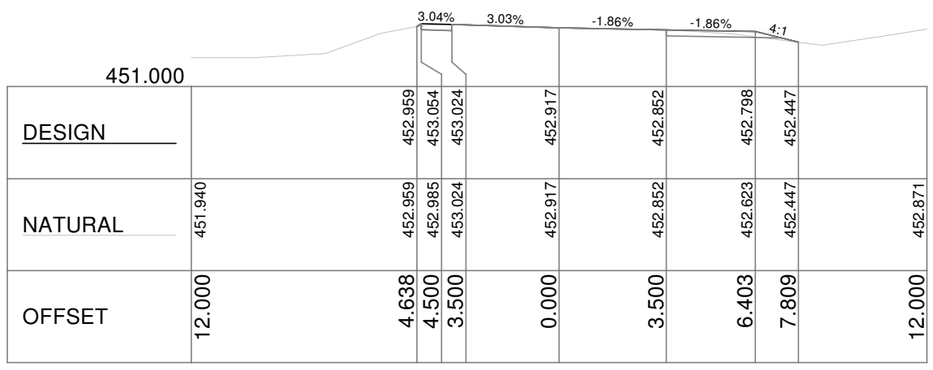
170



190



160



180

Scale Horizontal 1:200 Vertical 1:200

ISSUE STATUS	COORD SYSTEM	SURVEY	DESIGN	**DUNCAN PRIESTLEY CIVIL ENGINEERING**	DRAWING	Total Sheets: 15
	MGA Zone 55	DUNCAN PRIESTLEY CIVIL ENGINEERING	DUNCAN PRIESTLEY CIVIL ENGINEERING	**McNAUGHT EARTHMOVING**	CANOWINDRA RD ISECT V1 - MP	
12/10/2024	HEIGHT DATUM			**CANOWINDRA RD QUARRY ACCESS INTERSECTION**	PLAN NUMBER	**Sheet Number: 7**
SCALE: $SCALE	AHD	SURVEYED: D Priestley	DESIGNED: D Priestley	**5083 CANOWINDRA RD**		

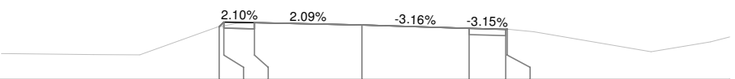
Culvert - End of work



450.000

DESIGN			452.703	452.852	452.833	452.768	452.656	452.624	452.645			
NATURAL			452.703	452.735	452.833	452.768	452.656	452.645	452.645	452.360		
OFFSET	12.000	4.649	4.500	3.500	0.000	3.500	4.500	4.584	12.000			

212



451.000

DESIGN			452.725	452.876	452.855	452.782	452.671	452.634	452.647			
NATURAL			452.725	452.756	452.855	452.782	452.671	452.649	452.647	452.390		
OFFSET	12.000	4.656	4.500	3.500	0.000	3.500	4.689	4.741	12.000			

210

SLIP LANE

Volumes Report
Apr 16, 2024 07:56PM

Job: CANOWINDRA RD ISECT.mjo

ALIGNMENT: ALIGN1
DESIGN SURFACE: DESIGN
NATURAL SURFACE: NATURAL

LEFT LIMIT STRING: LBAT2
RIGHT LIMIT STRING: LLND

Stripping Volume 0.000
Base Volume 119.464

Total Cut 63.421
Total Fill 92.961

Net Volume 29.540 Fill

RIGHT Flare and LH TURN LANE

Volumes Report

Apr 16, 2024 08:24PM

Job: CANOWINDRA RD ISECT.mjo

ALIGNMENT: ALIGN1
DESIGN SURFACE: DESIGN
NATURAL SURFACE: NATURAL

LEFT LIMIT STRING:R3500
RIGHT LIMIT STRING:RBAT1

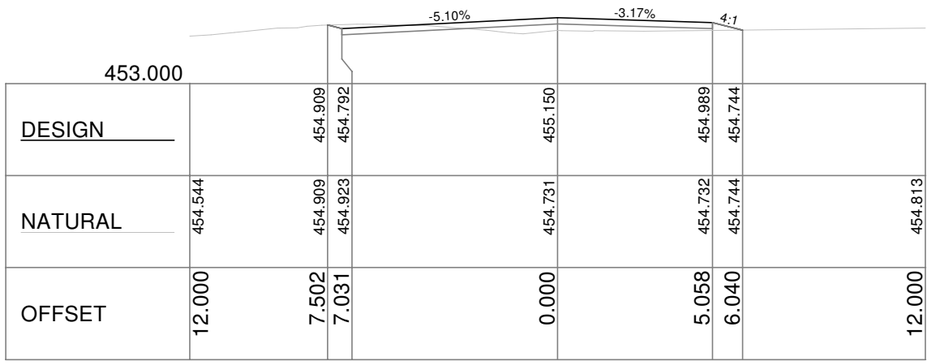
Stripping Volume 0.000
Base Volume 77.482

Total Cut 48.058
Total Fill 4.793

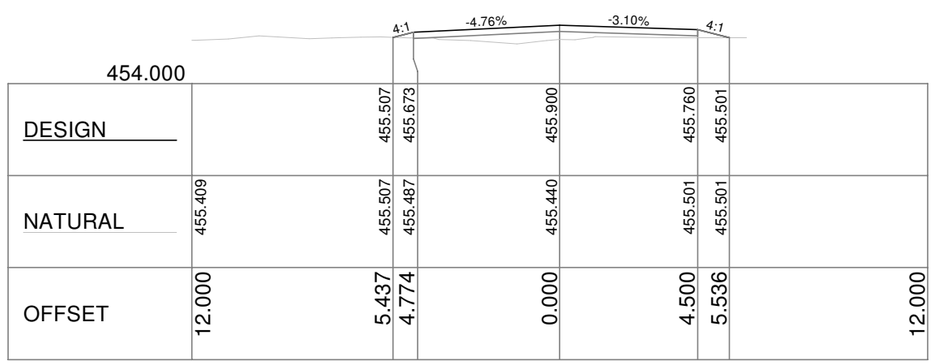
Net Volume 43.265 Cut

Scale Horizontal 1:200 Vertical 1:200

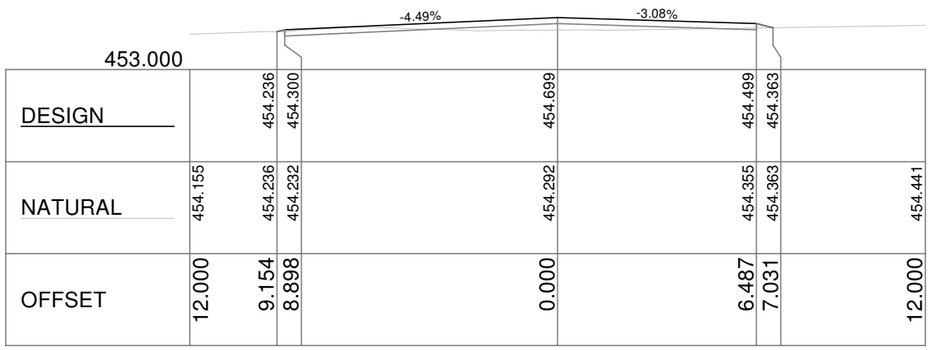
ISSUE STATUS	COORD SYSTEM	SURVEY	DESIGN	DUNCAN PRIESTLEY CIVIL ENGINEERING	DRAWING	Total Sheets: 15
	MGA Zone 55	DUNCAN PRIESTLEY CIVIL ENGINEERING	DUNCAN PRIESTLEY CIVIL ENGINEERING	McNAUGHT EARTHMOVING	CANOWINDRA RD ISECT V1 - MP	
12/10/2024	HEIGHT DATUM			CANOWINDRA RD QUARRY ACCESS INTERSECTION	PLAN NUMBER	Sheet Number: 8
SCALE: $SCALE	AHD	SURVEYED: D Priestley	DESIGNED: D Priestley	5083 CANOWINDRA RD		



20



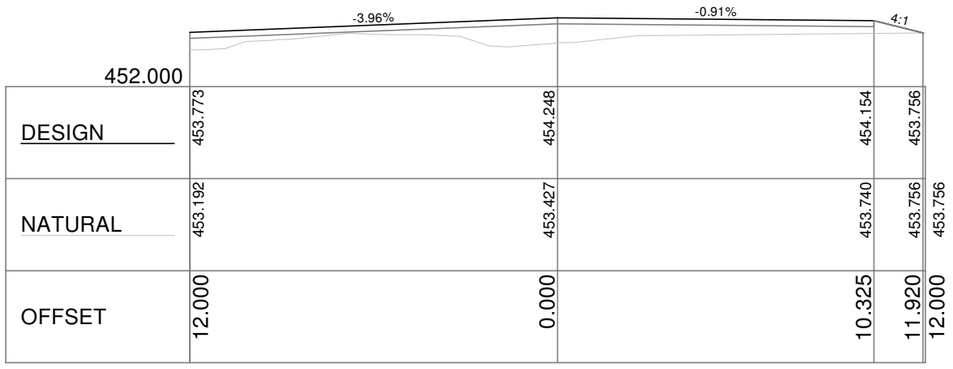
35



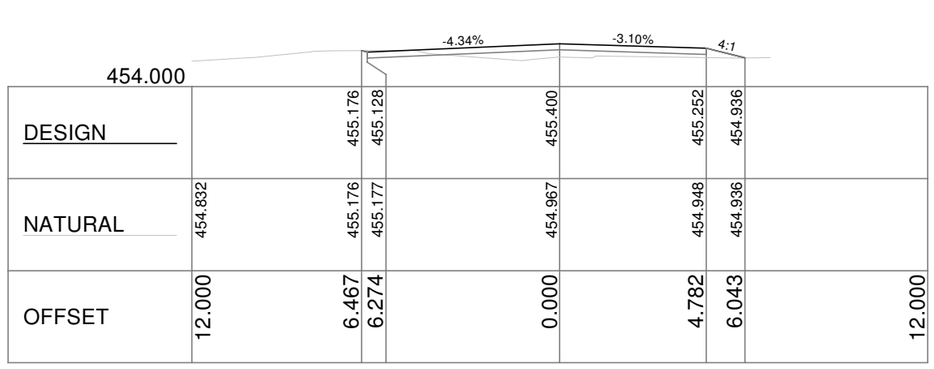
15



30



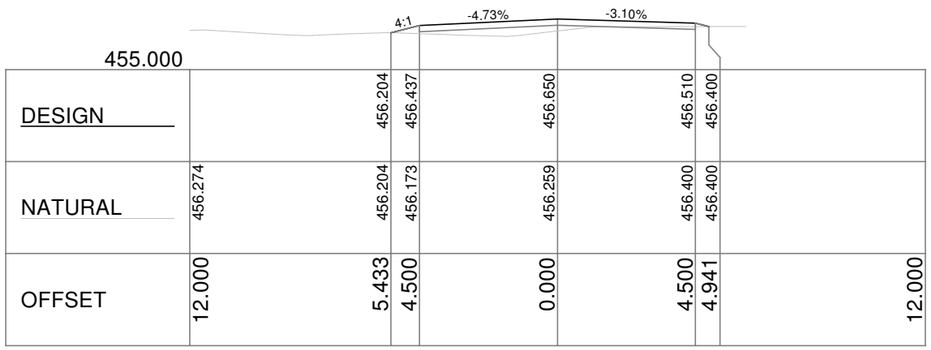
10



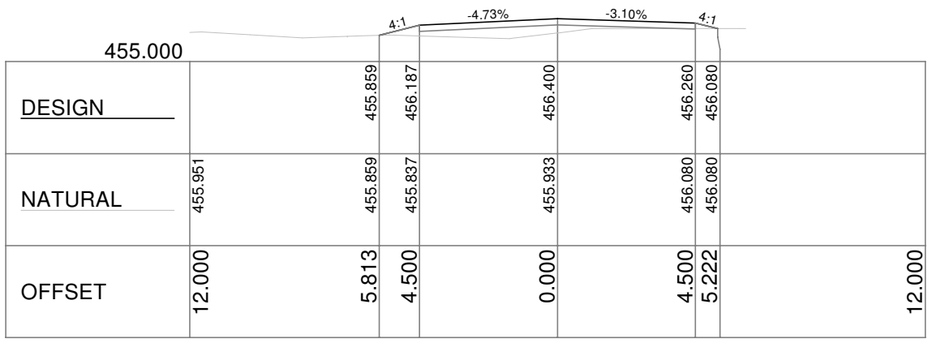
25

Scale Horizontal 1:200 Vertical 1:200

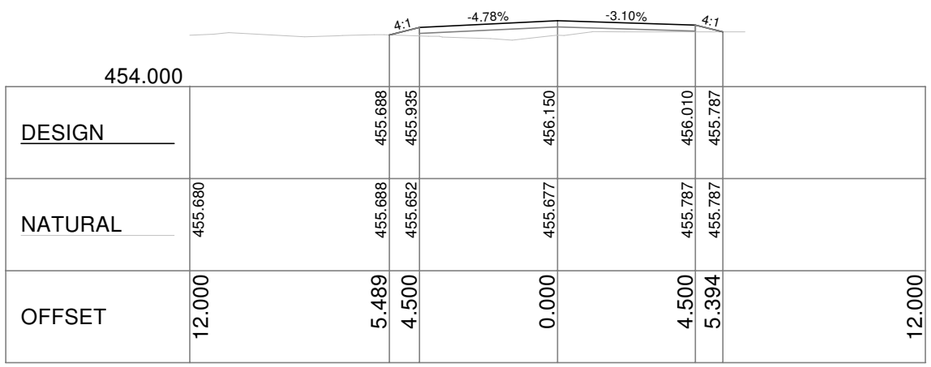
ISSUE STATUS	COORD SYSTEM	SURVEY	DESIGN		DRAWING	Total Sheets: 15
	MGA Zone 55	DUNCAN PRIESTLEY CIVIL ENGINEERING	DUNCAN PRIESTLEY CIVIL ENGINEERING	**DUNCAN PRIESTLEY CIVIL ENGINEERING**	CANOWINDRA RD ISECT V1 - MP	
12/10/2024	HEIGHT DATUM			**McNAUGHT EARTHMOVING**	PLAN NUMBER	
SCALE: $SCALE	AHD	SURVEYED: D Priestley	DESIGNED: D Priestley	**CANOWINDRA RD QUARRY ACCESS INTERSECTION**		**Sheet Number: 9**
				5083 CANOWINDRA RD		



50



45



40

Volumes Report
Apr 16, 2024 10:30PM

Job: ISECT.mjo

ALIGNMENT: ALIGN2
DESIGN SURFACE: DESIGN
NATURAL SURFACE: NATURAL

Stripping Volume 0.000
Base Volume 16.690

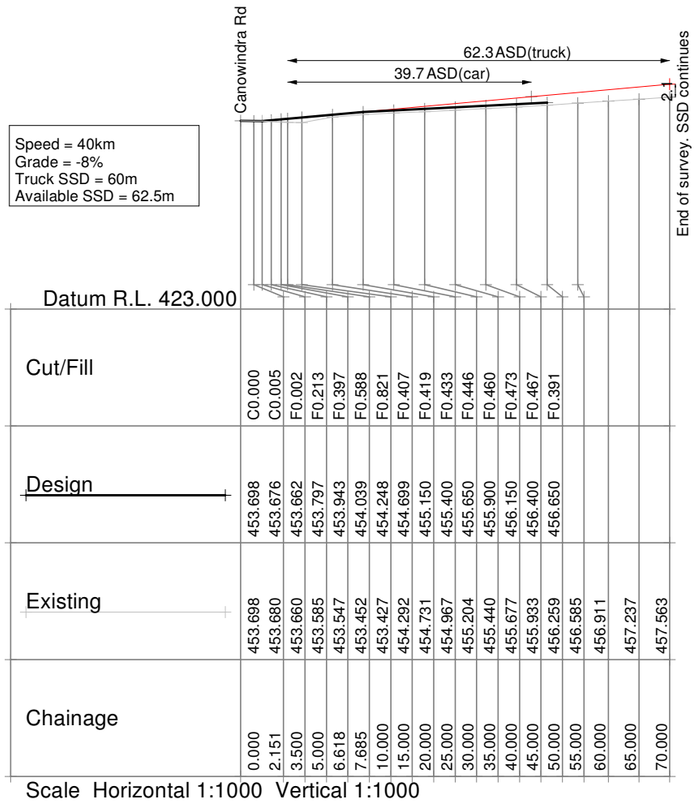
Total Cut 256.290
Total Fill 0.369

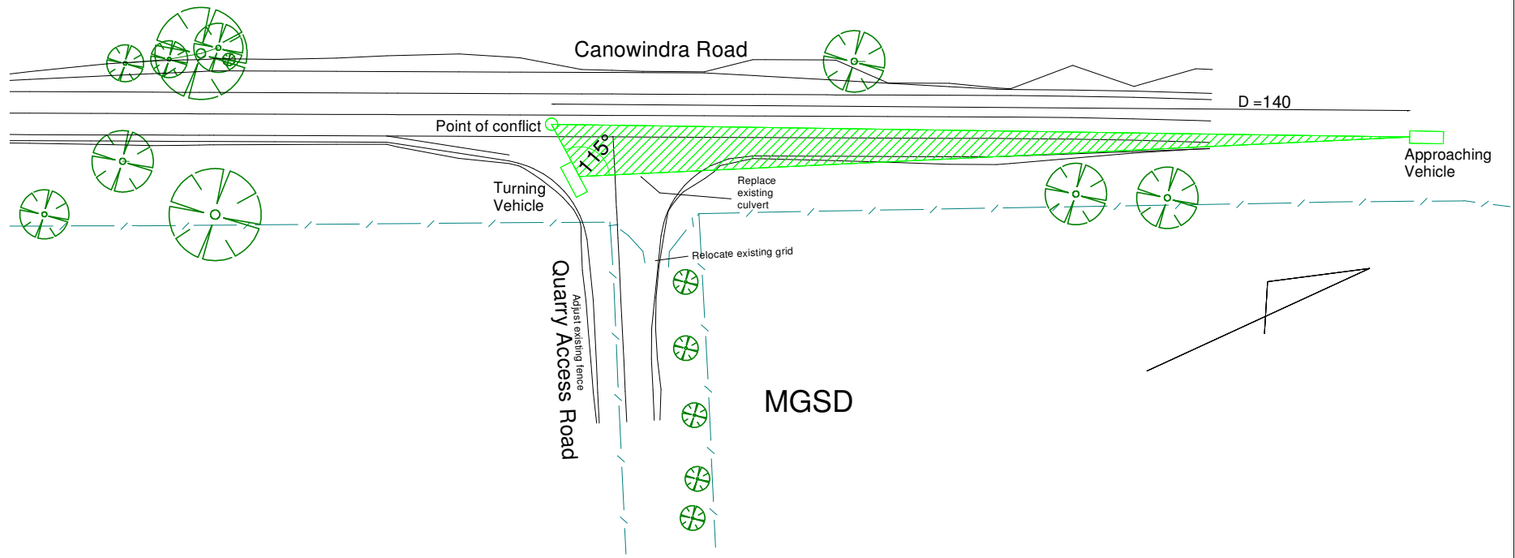
Net Volume 255.920 Cut

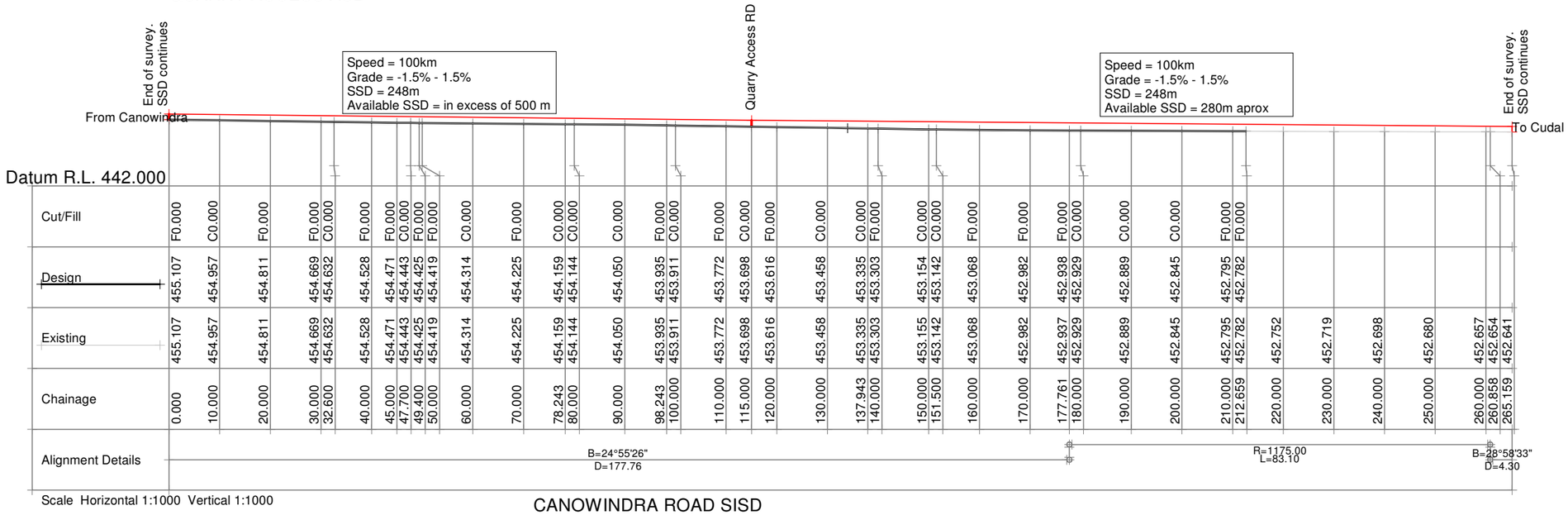
Note: This excess cut could be used on LHT Lane

Scale Horizontal 1:200 Vertical 1:200

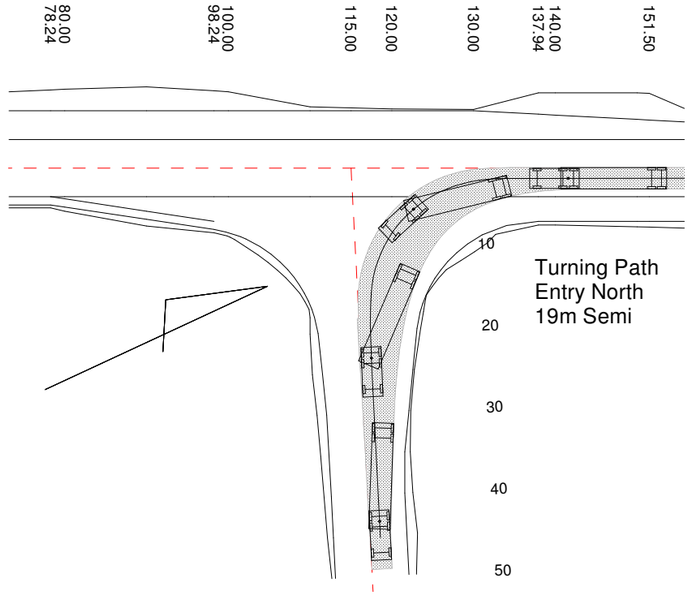
ISSUE STATUS	COORD SYSTEM	SURVEY	DESIGN		DRAWING	Total Sheets: 15
	MGA Zone 55	DUNCAN PRIESTLEY CIVIL ENGINEERING	DUNCAN PRIESTLEY CIVIL ENGINEERING	**McNAUGHT EARTHMOVING**	CANOWINDRA RD ISECT V1 - MP	
12/10/2024	HEIGHT DATUM			**CANOWINDRA RD QUARRY ACCESS INTERSECTION**	PLAN NUMBER	**Sheet Number: 10**
SCALE: $SCALE	AHD	SURVEYED: D Priestley	DESIGNED: D Priestley	**5083 CANOWINDRA RD**		

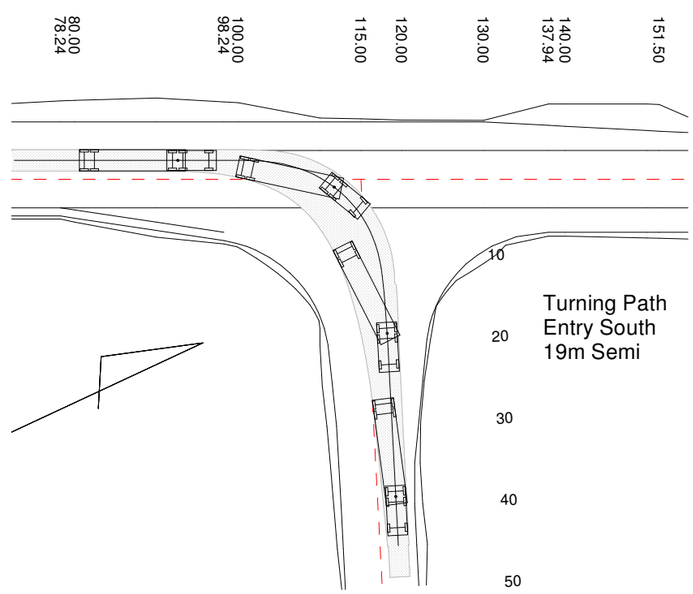


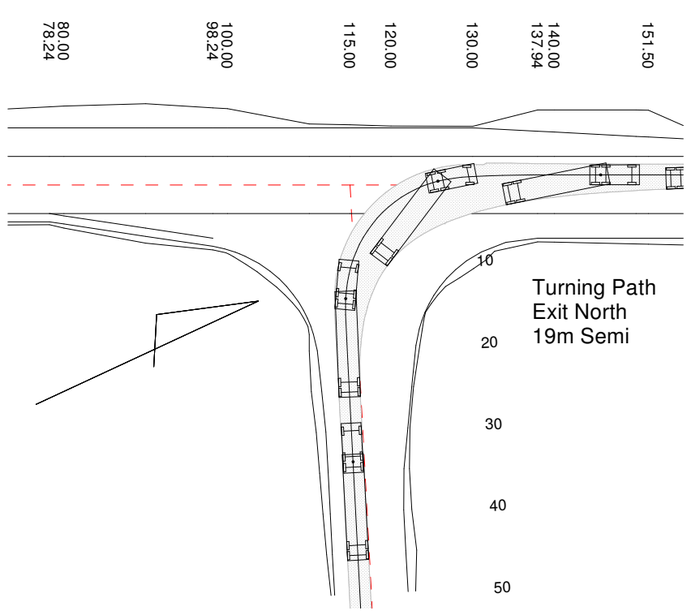


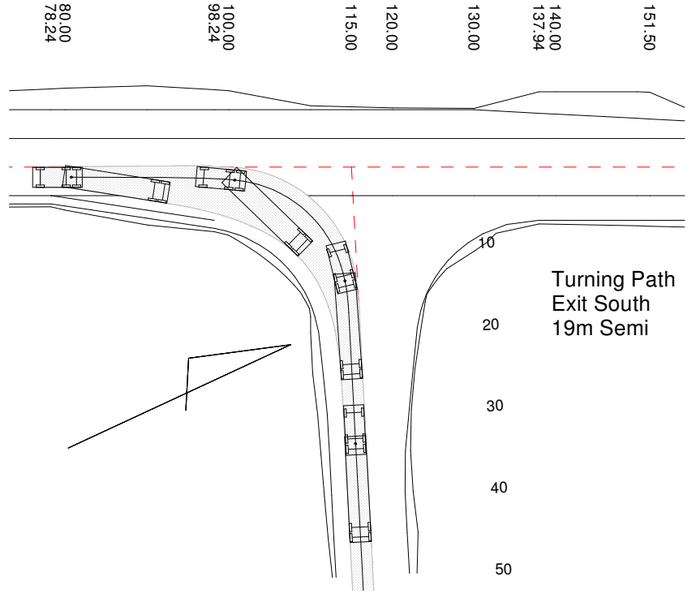


ISSUE STATUS	COORD SYSTEM	SURVEY	DESIGN	DUNCAN PRIESTLEY CIVIL ENGINEERING	DRAWING	Total Sheets: 15
	MGA Zone 55	DUNCAN PRIESTLEY CIVIL ENGINEERING	DUNCAN PRIESTLEY CIVIL ENGINEERING	McNAUGHT EARTHMOVING	CANOWINDRA RD ISECT V1 - MP	
12/10/2024	HEIGHT DATUM			**CANOWINDRA RD QUARRY ACCESS INTERSECTION**	PLAN NUMBER	**Sheet Number: 11**
SCALE: $SCALE	AHD	SURVEYED: D Priestley	DESIGNED: D Priestley	**5083 CANOWINDRA RD**		

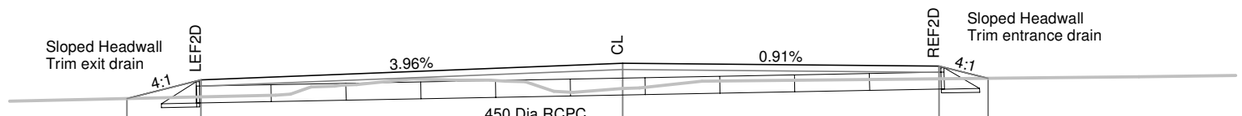








ISSUE STATUS	COORD SYSTEM	SURVEY	DESIGN	DUNCAN PRIESTLEY CIVIL ENGINEERING	DRAWING	Total Sheets: 15
	MGA Zone 55	DUNCAN PRIESTLEY CIVIL ENGINEERING	DUNCAN PRIESTLEY CIVIL ENGINEERING	McNAUGHT EARTHMOVING	CANOWINDRA RD ISECT V1 - MP	
12/10/2024	HEIGHT DATUM			CANOWINDRA RD QUARRY ACCESS INTERSECTION	PLAN NUMBER	**Sheet Number: 12**
SCALE: $SCALE	AHD	SURVEYED: D Priestley	DESIGNED: D Priestley	5083 CANOWINDRA RD		

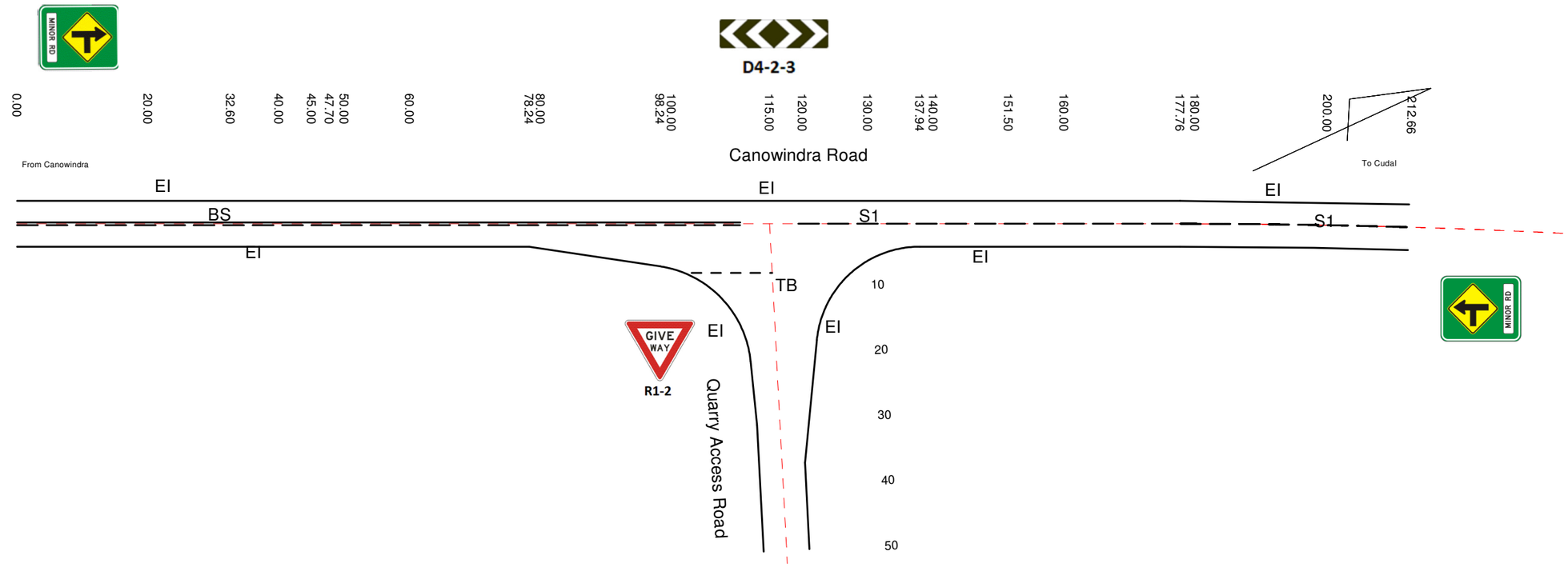


450.000

HT. DIFF	0.000	0.550	0.821	0.415	0.000		
DESIGN	453.100	453.704	454.248	454.154	453.756		
EXISTING	453.015	453.100	453.153	453.427	453.740	453.756	453.849
	20.000	16.170	13.754	0.000	10.325	11.920	20.000

10.000

ISSUE STATUS	COORD SYSTEM	SURVEY	DESIGN	DUNCAN PRIESTLEY CIVIL ENGINEERING	DRAWING	Total Sheets: 15
	MGA Zone 55	DUNCAN PRIESTLEY CIVIL ENGINEERING	DUNCAN PRIESTLEY CIVIL ENGINEERING	McNAUGHT EARTHMOVING	CANOWINDRA RD ISECT V1 - MP	
12/10/2024	HEIGHT DATUM			CANOWINDRA RD QUARRY ACCESS INTERSECTION	PLAN NUMBER	Sheet Number: 13
SCALE: $SCALE	AHD	SURVEYED: D Priestley	DESIGNED: D Priestley	5083 CANOWINDRA RD		



ISSUE STATUS	COORD SYSTEM	SURVEY	DESIGN	DUNCAN PRIESTLEY CIVIL ENGINEERING	DRAWING	Total Sheets: 15
	MGA Zone 55	DUNCAN PRIESTLEY CIVIL ENGINEERING	DUNCAN PRIESTLEY CIVIL ENGINEERING	McNAUGHT EARTHMOVING	CANOWINDRA RD ISECT V1 - MP	
12/10/2024	HEIGHT DATUM			CANOWINDRA RD QUARRY ACCESS INTERSECTION	PLAN NUMBER	**Sheet Number: 14**
SCALE: $SCALE	AHD	SURVEYED: D Priestley	DESIGNED: D Priestley	5083 CANOWINDRA RD		

ISSUE STATUS	COORD SYSTEM	SURVEY	DESIGN	**DUNCAN PRIESTLEY CIVIL ENGINEERING**	DRAWING	Total Sheets: 15
	MGA Zone 55	DUNCAN PRIESTLEY CIVIL ENGINEERING	DUNCAN PRIESTLEY CIVIL ENGINEERING	**McNAUGHT EARTHMOVING**	CANOWINDRA RD ISECT V1 - MP	
12/10/2024	HEIGHT DATUM			**CANOWINDRA RD QUARRY ACCESS INTERSECTION**	PLAN NUMBER	**Sheet Number: 15**
SCALE: $SCALE	AHD	SURVEYED: D Priestley	DESIGNED: D Priestley	**5083 CANOWINDRA RD**		

The Transport Planning Partnership
Suite 402 Level 4, 22 Atchison Street
St Leonards NSW 2065

P.O. Box 237
St Leonards NSW 1590

02 8437 7800

info@ttpp.net.au

www.ttpp.net.au

Appendix 4

TTPP Response to TfNSW (TTPP, 2024b)

(Total No. of pages including blank pages = 10)

Our Ref: 23354

23 October 2024

R.W. Corkery & Co.
PO Box 1796
CHATSWOOD NSW 2057

Attention: Indigo Devane

Dear Indigo,

RE: DA 2024/166 CANOWINDRA QUARRY – ADDITIONAL INFORMATION

Please find herein additional information relating to proposed Canowindra Quarry, in response to a request from Transport for New South Wales (TfNSW) dated 1 August 2024 (TfNSW reference WST24/00271/001 | SF2024/132962).

Background

The Development Application was accompanied by a Traffic Impact Assessment (TIA) prepared by TTPP (*McNaught Quarry Road Transport Assessment*) dated 19 February 2024, and a strategic plan prepared by Duncan Priestley Civil Engineering, dated 16 April 2024.

An updated plan has since been prepared by Duncan Priestley Civil Engineering, Drawing *CANOWINDRA RD ISECT V1 – MP, dated 12 October 2024*. The longitudinal profile indicates that the grade of Canowindra Road is 0.9 percent up-grade for southbound traffic approaching the intersection, and 1.23 percent down-grade for northbound traffic approaching the intersection. The design grade of the Quarry Access is approximately 6.4 percent down-grade for westbound traffic approaching the give way line at the intersection.

Sight Distance

Austroads *Guide to Road Design Part 4A: Unsignalised and Signalised Intersections* (2023) indicates that at property accesses, sight distances should desirably comply with the sight distance requirements for intersections, i.e., that approach sight distance (ASD), safe intersection sight distance (SISD) and minimum gap sight distance (MGSD) are achieved, however notes that where this is not possible due to constraints, Australian Standard AS2890.1

provides guidance for non-domestic accesses. Each of these requirements as relevant to conditions at the intersection of Canowindra Road and the Quarry Access are described below, adopting TfNSW's default values for design speed (posted speed limit plus 10 km/h) and reaction time (2.5 seconds for design speed 110 km/h or greater) as outlined in *TS 02642:1.0 Supplement to Austroads Guide to Road Design*.

Approach Sight Distance

ASD is the minimum sight distance that must be available on the minor road approaches to all intersections, and is also desirable on the major road approaches. ASD is measured from the driver's eye height (1.1 m for cars, 2.4 m for trucks) to the pavement level. The inputs and calculated ASD on the minor and major road approaches to the intersection are presented in Table 1.

Table 1: Approach Sight Distance

	Quarry Access Westbound	Canowindra Road Southbound	Canowindra Road Northbound
Design Speed (km/h)	40[A]	110	110
Reaction time (sec)	1.5	2.5	2.5
Coefficient of deceleration	0.29[B]	0.36	0.36
Longitudinal Grade (%)	-6.4	+0.9	-1.2
Approach Sight Distance (m)	**45**	**206**	**213**

[A] *private road, indicative approach speed,* [B] *trucks*

Stopping Sight Distance

While not specifically referred to with respect to sight distance at property accesses, Austroads (2023) indicates that Stopping Sight Distance (SSD) should be available at all locations through an intersection. SSD is the distance to enable a normally alert driver, travelling at the design speed on wet pavement to perceive, react and brake to a stop before reaching a hazard on the road ahead. It is measured from the driver's eye height to an object height of 0.2 m. The inputs and calculated SSD are presented in Table 2.

Table 2: Stopping Sight Distance on Canowindra Road

	Canowindra Road Southbound	Canowindra Road Northbound
Design Speed (km/h)	110	110
Longitudinal Grade (%)	+0.9	-1.2
Reaction time (sec)	2.5	2.5
Cars – coefficient of deceleration	0.36	0.36
Cars – Stopping Sight Distance (m)	**178**	**183**
Trucks – coefficient of deceleration	0.29	0.29
Trucks – Stopping Sight Distance (m)	**236**	**248**

Safe Intersection Sight Distance

SISD provides sufficient distance for a driver on the major road to observe a vehicle on a minor road moving into a collision situation and to decelerate to a stop before reaching the collision point. It is measured along the carriageway from an approaching vehicle (driver's eye height of 1.1 m) to an object height of 1.25 m, and assumes that the driver of the vehicle on the minor road is located a distance of 7.0 m (minimum 5.0 m) from the conflict point. The inputs and calculated SISD on the major road approaches to the intersection are presented in Table 3.

Table 3: Safe Intersection Sight Distance

	Canowindra Road Southbound	Canowindra Road Northbound
Design Speed (km/h)	110	110
Reaction time (sec)	2.5	2.5
Observation time (sec)	3.0	3.0
Coefficient of deceleration	0.36	0.36
Longitudinal Grade (%)	+0.9	-1.2
Safe Intersection Sight Distance (m)	**297**	**305**

Minimum Gap Sight Distance

MGSD corresponds to the critical acceptance gap that drivers are prepared to accept when undertaking a crossing or turning manoeuvre at intersections. It is the distance for the driver of a vehicle entering or crossing the major road to see a vehicle in the conflicting streams in order to safely commence the desired manoeuvre. MGSD is measured from driver's eye height (car driver 1.1 m, truck driver 2.4 m) to a point 0.65 m above the travelled way, typically allowing observation of an approaching passenger car's indicator light.

At the proposed intersection, truck drivers would require MGSD to turn left or right out of the Quarry Access, and to turn right into the Quarry Access. The base critical gap values presented in Austroads are for cars. Heavy vehicles will require a greater gap due to their

slower acceleration. Austroads *Road Design for Heavy Vehicles* (2015) presents the results of a study of the critical gap for heavy vehicles, as summarised in Table 4 for truck and trailer combinations such as those that would be used at the Quarry.

Table 4: Critical Gap for Truck-Trailer Combinations

Turn Type	Greenshields Method[A]	Raff Method[A]	Requiring Through Traffic to Slow
Right Turn from Minor Road to Two-Lane, Two-Way Road	9.4-9.6	9.6-10.6	6.3
Left Turn from Minor Road to Two-Lane, Two-Way Road	7.8-8.0	6.8-8.0	4.3
Right Turn from Two-Lane, Two-Way Major Road	8.2-8.4	7.8-8.4	7.0

Source: Austroads (2015)
[A] *not interfering with through traffic on major road*

Based on the findings of Austroads (2015) and assuming that following vehicles may be required to slow (which typically occurs due to the slower acceleration of heavy vehicles), the inputs and calculated MGSD for trucks entering and exiting the Quarry Access are presented in Table 5.

Table 5: Minimum Gap Sight Distance for Design Speed 110 km/h

	Truck-Trailer Critical Gap (seconds)	Minimum Gap Sight Distance (m)
Truck-trailer exiting Quarry by right turn	6.3	**193**
Truck-trailer exiting Quarry by left turn	4.3	**132**
Truck-trailer entering Quarry by right turn	7.0	**214**

Australian Standard 2890

As noted above, Austroads (2023) refers to Australian Standard AS2890.1 for guidance for sight distance requirements for non-domestic property accesses where compliance with intersection sight distance requirements is not possible due to constraints. Sight distance requirements in AS2890.1 (2004) are based on the posted speed limit unless the 85th percentile speed is more than 5 km/h above the posted speed limit, and are based on the observing driver having an eye height of 1.15 m, which is consistent with that of a car driver.

While not specially referred to in Austroads (2023), AS2890.2 (2018) presents requirements for sight distances for accesses for commercial (heavy) vehicles, and is therefore considered more relevant to trucks turning at the proposed Quarry Access. AS2890.2 requirements are based on the posted speed limit of the frontage road, unless the 85th percentile speed is significantly higher, with the observing driver having an eye height in the range of 1.15 m to 2.5 m, and observing an object with a height of 1.15 m. The sight distance requirements in AS2890.2 are based on a minimum gap sight distance of 5 seconds, with requirements based on 8 seconds also presented, noting this larger gap relates to a right turn exit into a six lane road.

As the surveyed 85th percentile speed on Canowindra Road exceeds the posted speed limit by 7 to 9 km/h, a design speed of 110 km/h has been adopted in this review, which is consistent with TfNSW's default design speed relevant to Canowindra Road. For a design speed of 110 km/h, AS2890.2 requires sight distance of **153 m** based on a 5 second gap, or **244 m** based on an 8 second gap.

Sight Distance Review

Observations made during the site visit prior to preparation of the TIA estimated that the sight distance available between a driver approaching from the north and a driver on the Quarry Access is approximately 280 m. The sight distance available between a driver approaching from the south and a driver on the Quarry Access exceeded 500 m.

The sight distance between a southbound driver on Canowindra Road and a driver on the existing property access roadway was reviewed on-site as part of the Road Safety Audit (refer to page 7). The RSA identifies that the available sight distance is approximately 250 m, assuming the driver on the minor road is located 7 m from the conflict point on Canowindra Road. The principal constraint on the sight line is the alignment of Canowindra Road to the north of the property access, with two mature trees located on the eastern side of Canowindra Road also limiting the distance from which approaching drivers can observe vehicles approaching on the minor road. Once a driver is stopped at the "give way" line prior to entering Canowindra Road, the trees do not have a significant impact on the line of sight.

The sight distance is illustrated in Figure 1, noting that Canowindra Road curves to the right and follows a down-grade departing from the property access. The highlighted signpost in Figure 1 on the western side of Canowindra Road is located approximately 250 m from the property access. Line of sight is available between drivers on the property access and southbound drivers on Canowindra Road before they pass that signpost, hence the estimate of 250 m is considered conservative. Due to their higher eye height, it is expected that a truck driver on the property access road would have a slightly improved sight distance compared with that of a car driver.

Figure 1: Line of Sight from Existing Property Access to the North



Comparison between the observed sight distances and the sight distance requirements discussed above indicates that:

- ASD required for intersection design (Table 1) is met or exceeded on all approaches;
- SSD required for intersection design (Table 2) is met or exceeded on Canowindra Road;
- SISD required for intersection design (Table 3) is met or exceeded for northbound traffic on Canowindra Road, but not met for southbound traffic on Canowindra Road;
- MGSD required for intersection design (Table 5) is met or exceeded for all movements into or out of the minor road crossing through traffic; and
- AS2890 sight distance requirements for commercial (heavy) vehicle property access are met or exceeded for trucks exiting the Quarry Access Road.

The sight distance is therefore compliant with Austroads (2023) for property accesses and applying TfNSW's default values for design speed and reaction times, with ASD, SSD and MGSD in both directions being compliant with or exceeding the requirements for intersections. Provision of compliant SISD (applying TfNSW's default values for design speed and reaction times) is not possible due to the alignment of Canowindra Road, for which Austroads (2023) refers to AS2890 requirements. The available sight distance is compliant with the AS2890 sight distance requirements for heavy vehicle accesses.

Strategic Design of Intersection

It is understood that the intersection design plan submitted with the application erroneously included auxiliary right-turn (AUR) and auxiliary left-turn (AUL) treatments in Canowindra Road. TfNSW's *Supplement to Austroads Guide to Road Design* does not permit use of AUR

treatments, and the TIA found that based on the Austroads warrants for major road treatments, the appropriate treatment would be basic right-turn (BAR) and basic left-turn (BAL) treatments. The updated plan (dated 12 October 2024) includes BAL and BAR treatments in Canowindra Road in accordance with the Austroads warrants.

Swept paths of semitrailers turning into and out of the access road are included on the updated plan. As the Quarry proposes use of truck and dog combinations, it is recommended that the strategic plan be checked with respect to the swept paths of rigid truck and dog trailer combinations. It is recommended that the intersection layout allow for a truck and trailer to enter the Quarry Access by either a left or right turn from Canowindra Road when another truck and trailer is waiting at the "give way" to exit to Canowindra Road.

The strategic plan includes G1-207 advance rural intersection signage on Canowindra Road approaching the intersection. The G1-207 assembly includes a side road intersection (W2-4) sign with a sign identifying the Quarry Access, on a green background. The signs would alert approaching drivers on Canowindra Road to the presence of the Quarry Access. It is noted that alternatively, the advance signage may appropriately be a Trucks (Crossing or Entering) sign (W5-22), and potentially supplemented with a distance plate (W8-5) to provide additional information to approaching drivers regarding the presence of trucks.

It is recommended that the upgrading of the intersection include linemarking, raised reflective pavement markers (RRPMs), and guideposts with reflective markers in accordance with current guidelines.

The strategic plan does not include lighting of the intersection, noting that TfNSW requests that consideration be given to lighting of the access as haulage operations will occur in the evening/night. TTPP cannot assess the need for lighting, however notes that when flag lighting isolated intersections, care must be taken to ensure that a glare source for motorists is not created. The proposed operational hours of 7:00 am to 6:00 pm would not permit haulage before first light at any time throughout the year, and would permit haulage after last light for up to 30 minutes per day between approximately mid-April and mid-August[1].

Road Safety Audit

A road safety audit of Canowindra Road and the strategic design plans has been undertaken by Level 3 registered road safety auditors who are independent of both the TIA and intersection design development. Key findings of that audit are summarised in Table 6.

[1] Source https://sunrisesunset.willyweather.com.au/nsw/central-west/canowindra.html

Table 6: Summary of Road Safety Audit Findings

Risk Rating	Item
Extreme	Nil
High	Nil
Medium	Item 1. Existing culvert located adjacent to the northbound carriageway at the end of the proposed widened shoulder presents a hazard for an errant vehicle.
Low	Item 2. Southbound intersection sight distance approximately 250 m, constrained by road curvature and mature trees. Item 4. Minor pavement polishing on northbound carriageway.
Negligible	Nil
Note only	Item 3. Strategic plan does not show continuity line through the intersection. Item 5. Strategic plan does not show details of replacement culvert under access road.

The audit also recognised that intersection warning signs would be installed to mitigate the potential hazard of the shortfall in SISD.

Mitigation Measures

In consideration of the findings of this review and RSA, additional mitigation measures may be implemented in addition to those specified in the TIA:

- Provide a short length of guard rail on the western side of Canowindra Road on the northbound departure side of the intersection to protect errant vehicles from the existing culvert (to address item 1 identified in the RSA);
- Treat the polished pavement on Canowindra Road near the intersection during the upgrading of the intersection or as part of regular road maintenance programs, to improve its skid resistance particularly in wet weather (to address item 4 in the RSA) noting this is an existing issue that is not directly attributable to the impacts of the Quarry, however may be exacerbated by additional heavy vehicles on Canowindra Road generated by the Quarry;
- Ensure that the intersection design allows for the swept paths of rigid truck and dog trailer combinations that would access the Quarry; and
- Undertake all road/intersection upgrade design and construction in accordance with Austroads guidelines, including design of culverts, and provision of linemarking, signage, RRPMs and guideposts compliant with current guidelines (to address items 3 and 5 in the RSA).

We trust the above is to your satisfaction. Should you have any queries regarding the above or require further information, please do not hesitate to contact the undersigned on 8437 7800.

Yours sincerely,



Penny Dalton
Associate Director

Appendix 5

Land Use Conflict Risk Analysis (RWC, 2024)

(Total No. of pages including blank pages = 18)

McNaught Earthworks Pty Ltd

ABN: 83 651 295 288

Land Use Conflict Risk Assessment

for the

McNaught's Quarry

Prepared by:

RWCorkery&co

October 2024

ACKNOWLEDGEMENT

R.W. Corkery & Co. acknowledge and pay our respects to the Traditional Custodians of the lands in NSW and Australia on which our projects are located. We value the knowledge, advice and involvement of the Elders and extended Aboriginal community that contribute to our Projects and extend our respect to all Aboriginal and Torres Strait Islander peoples.

McNaught Earthworks Pty Ltd
ABN: 83 651 295 288

Land Use Conflict Risk Assessment

for the

McNaught's Quarry

Prepared for:

McNaught Earthworks Pty Ltd
ABN: 83 651 295 288

2019 Burrendong Way
MULLION CREEK NSW 2800

Telephone: 0418 766 691
Email: makk.mcnaughtearthworks@outlook.com

Prepared by:

R.W. Corkery & Co. Pty Limited
Geological & Environmental Consultants
ABN: 31 002 033 712

Telephone: (02) 9985 8511
Email: admin@rwcorkery.com
Postal: PO Box 1796
CHATSWOOD NSW 2057

Sydney | Orange | Townsville

Sydney
Suite 12.01, 1-5 Railway Street
CHATSWOOD NSW 2067

Orange
62 Hill Street
ORANGE NSW 2800

Ref No. 1083/01a October 2024

RWCorkery&co

This Copyright is included for the protection of this document

COPYRIGHT

© R.W. Corkery & Co. Pty Limited 2024
and
© McNaught Earthworks Pty Ltd 2024

All intellectual property and copyright reserved.

Apart from any fair dealing for the purpose of private study, research, criticism or review, as permitted under the Copyright Act, 1968, no part of this report may be reproduced, transmitted, stored in a retrieval system or adapted in any form or by any means (electronic, mechanical, photocopying, recording or otherwise) without written permission. Enquiries should be addressed to R.W. Corkery & Co. Pty Limited.

Contents

Page

1. INTRODUCTION 4
1.1 SCOPE OF WORKS 4
2. PROJECT SITE 4
2.1 NATURE OF LAND USE CHANGE AND PROPOSED DEVELOPMENT 4
2.2 ENVIRONMENTAL SETTING 7
2.3 TOPOGRAPHY, CLIMATE AND NATURAL FEATURES 7
2.4 SITE HISTORY 10
2.5 SITE INSPECTION 12
2.6 CONSULTATION 12
3. LAND USE RISK ASSESSMENT 12
3.1 RISK IDENTIFICATION AND RISK RANKING 12
3.2 RISK REDUCTION CONTROLS 13
3.2.1 Traffic 13
3.2.2 Dust 13
3.2.3 Noise 14
3.3 REVISED RISK RANKING 14
4. CONCLUSION 15
5. REFERENCES 15

FIGURES

Figure 1 Locality Plan and Local Setting 5
Figure 2 Proposed Project Site Layout 6
Figure 3 Surrounding Land Uses 8
Figure 4 Project Site Topography and Drainage 9
Figure 5 Wind Roses 11

TABLES

Table 1 Meteorological Data 10
Table 2 Activity Risk Ranking 12
Table 3 Revised Risk Ratings 14

1. Introduction

1.1 Scope of Works

This *Land Use Risk Assessment* (LUCRA) has been prepared by R.W. Corkery & Co. Pty Limited (RWC) on behalf of McNaught Earthworks Pty Limited (the Applicant). This document has been prepared at the request of the Department of Primary Industries and Regional Development (DPIRD) for the development of the McNaught's Quarry (the Proposal). All activities associated with the Proposal would be undertaken within Lot 2, DP1301356 (the Project Site), located approximately 13km southwest of Cudal, NSW and approximately 18km northeast of Canowindra, NSW on the Canowindra Road (**Figure 1**).

The Proposal would comprise:

- extraction of up to 960,000m^3 or approximately 2.3 million tonnes (Mt) of material at an average rate of 80,000 tonnes per annum (tpa) and a maximum rate of 150,000tpa for a period of approximately 30 years;
- crushing, screening and stockpiling of the extracted material as required;
- transportation of the extracted material from the Project Site via an upgraded site entrance on Canowindra Road; and
- construction of site infrastructure (site ablutions, office, etc.).

2. Project Site

2.1 Nature of Land Use Change and Proposed Development

The existing land use of the Project Site includes agriculture, historic quarrying, and recent extraction of material for use on the landholder's own land.

The Proposal would comprise (**Figure 2**):

- extraction of up to 960,000m^3 or approximately 2.3 million tonnes (Mt) of material at an average rate of 80,000 tonnes per annum (tpa) and a maximum rate of 150,000tpa for a period of approximately 30 years;
- crushing, screening and stockpiling of the extracted material as required;
- transportation of the extracted material from the Project Site via an upgraded site entrance on Canowindra Road; and
- construction of site infrastructure (site ablutions, office, etc.).

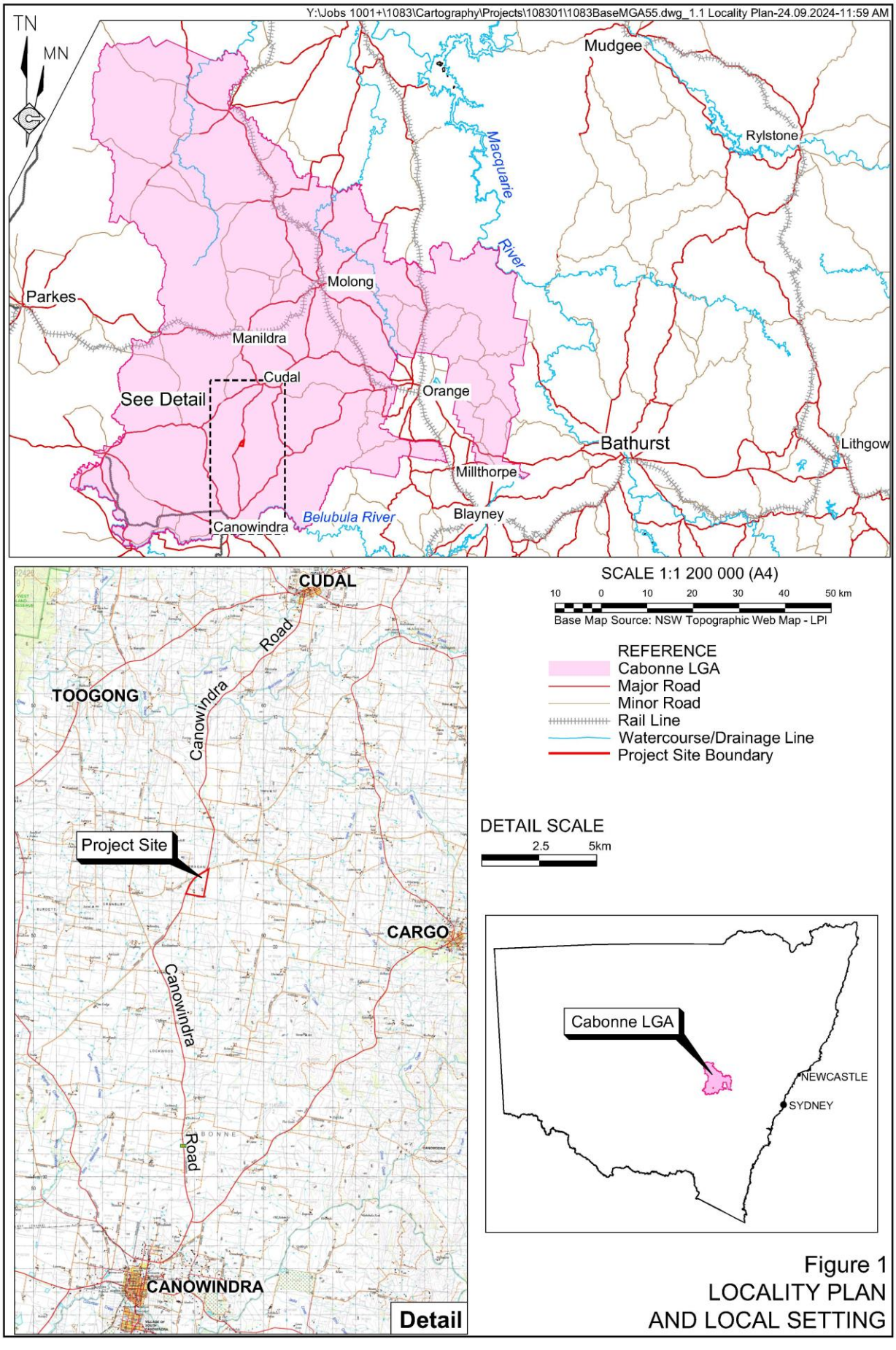


Figure 1
LOCALITY PLAN
AND LOCAL SETTING

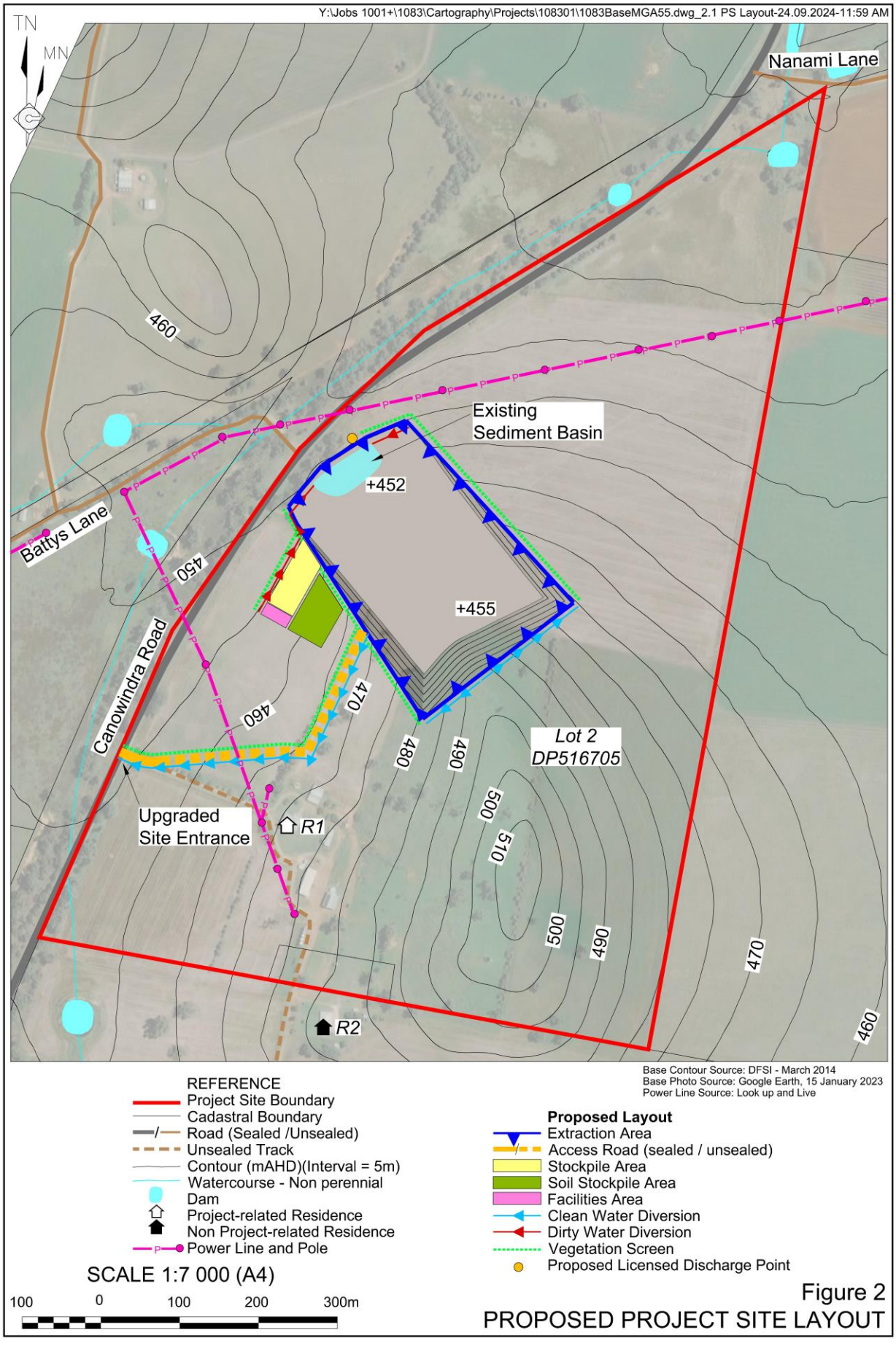


Figure 2
PROPOSED PROJECT SITE LAYOUT

2.2 Environmental Setting

The Project Site is located on the Canobolas Slopes landscape under the NSW (Mitchell) Landscapes 2002. The Project Site also occurs within the Inland Slopes subregion (North West Slopes Bioregion), as per the *Interim Biogeographic Regionalisation of Australia's categorisation* (IBRA) (Thackway & Cresswell, 1995). No Biophysical Strategic Agricultural Land (BSAL) land is mapped within the Project Site.

No Groundwater Dependent Ecosystems associated with either the Lachlan or Central Tablelands catchments are mapped within the 10km Search Area.

A Biodiversity assessment was carried out for the Project Site in October 2023. The biodiversity surveys conducted for the assessment found the Project Site to be generally devoid of native vegetation, being dominated by the recent operated quarry, internal access roads, and largely cleared farmland. Vegetation communities identified within the Project Site included PCT 277 – Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion, PCT 53 – Shallow freshwater wetland sedgeland in depressions on floodplains on inland alluvial plains and floodplains, and PCT 266 - White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion. Of these vegetation communities PCT 266 and 277 are associated with a Critically Endangered Ecological Community, however, the communities do not meet the minimum criteria for listing under the *Environment Protection and Biodiversity Conservation Act 1999*.

Land uses within and surrounding the Project Site are presented on **Figure 3** and include the following.

- Agriculture – principally grazing and cropping. Rural residences and farm buildings are also present.
- Transport – namely along Canowindra Road.

2.3 Topography, Climate and Natural Features

Topography within the Project Site is dominated by a hill located southeast of the Extraction Area, with a maximum elevation of 514m AHD (**Figure 4**). A ridgeline runs northwest from the crest of the hill to a historic extraction area and farm dam at an elevation of approximately 450m AHD.

The Project Site is located between two small unnamed drainage lines that flow to the north toward Boree Creek, approximately 5km north of the Project Site. There are no watercourses within the Project Site, with surface water flows typically occurring as sheet flows. A farm dam occurs within the existing Extraction Area. A second farm dam occurs in the northernmost section of the Project Site. An unnamed watercourse, to the west of Canowindra Road, flows to the north and all surface water within the Project Site drains to this watercourse.

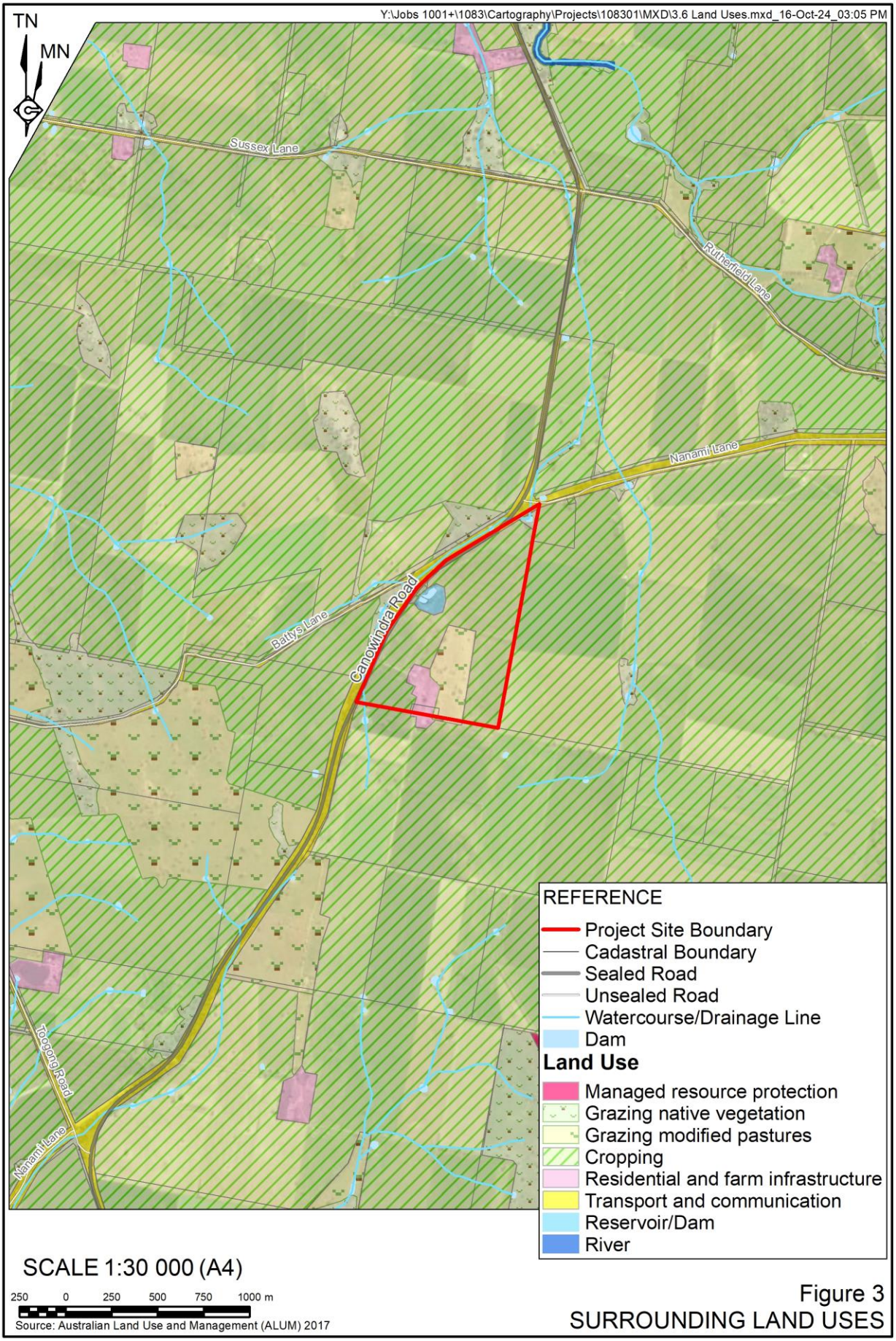


Figure 3
SURROUNDING LAND USES

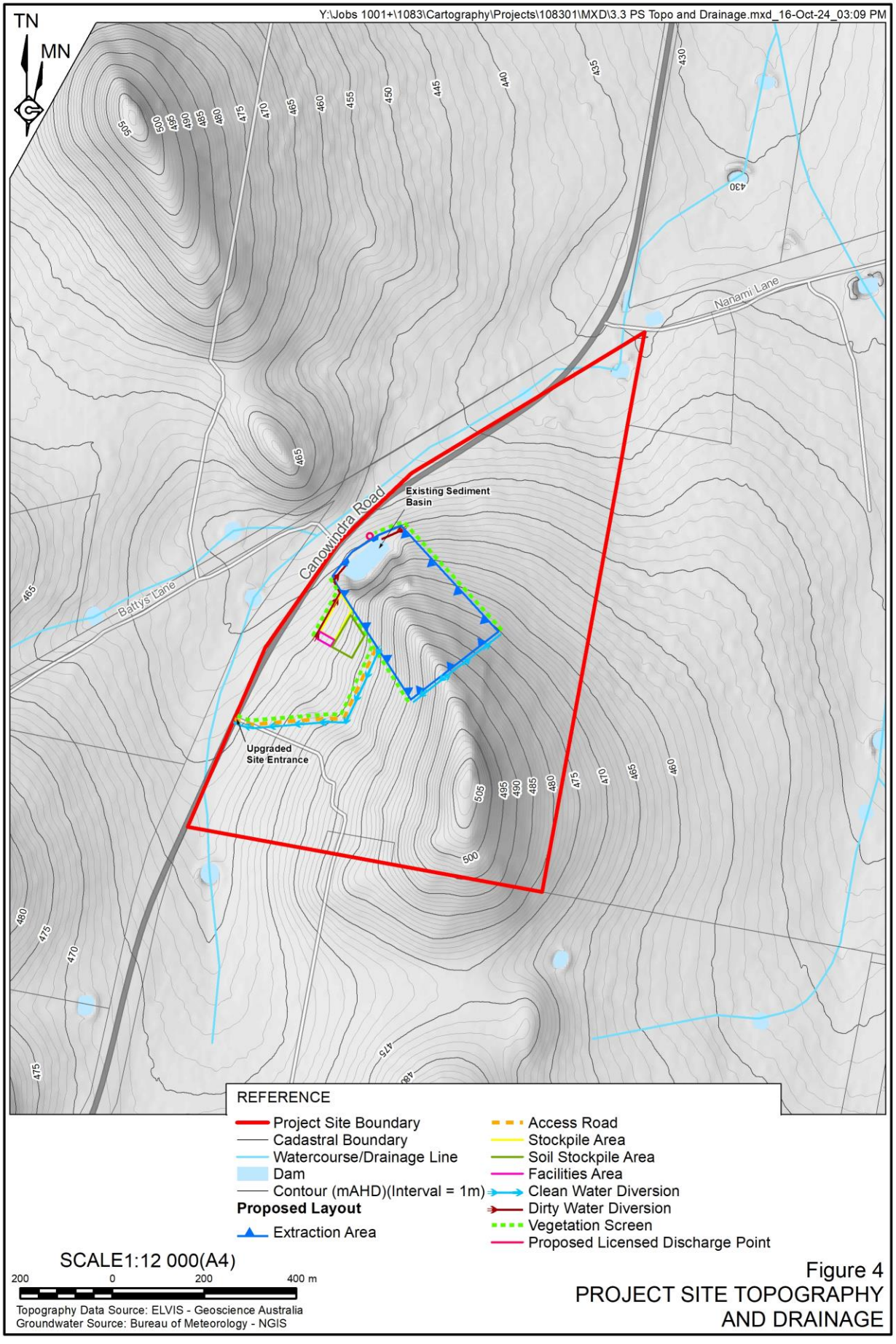


Figure 4
PROJECT SITE TOPOGRAPHY AND DRAINAGE

Meteorological data for the Project Site was sourced from the Parkes Airport AWS Bureau of Meteorology-operated station (Station No. 065068) presented in **Table 1**. January is typically the hottest month, with an average maximum temperature of 33.6ºC. July is the coldest month with an average maximum temperature of 14.4ºC and an average minimum temperature of 2.4ºC. Average annual rainfall is 635.1mm. Rainfall is relatively evenly spread throughout the year, with the warmer months (November to March) typically having marginally higher rainfall than the cooler months.

Table 1
Meteorological Data

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Temperature (°C)													
Mean maximum	33.6	32.0	28.8	24.1	18.9	15.2	14.4	16.0	20.1	24.2	28.0	31.0	23.9
Mean minimum	17.8	17.0	14.2	9.6	5.2	3.7	2.4	2.4	4.5	7.8	12.0	14.6	9.3
Rainfall (mm)													
Mean	66.3	55.9	55.1	33.3	44.8	51.6	47.1	45.1	44.6	53.1	66.0	52.7	635.1
Highest monthly	244.8	225.8	195.4	154.8	179.5	176.4	110.8	95.8	187.4	160.2	203.4	239.4	1087.8
Lowest monthly	1.5	0.2	0.2	0.0	1.8	0.4	2.0	9.6	0.0	0.0	0.4	0.4	229.8
Mean number of days rain	6.7	6.4	6.0	5.0	8.0	12.0	13.2	10.9	7.6	8.2	7.4	6.8	98.2
Highest daily	105.0	91.0	94.4	68.6	94.0	68.0	35.0	43.2	49.0	45.0	130.0	105.6	130.0
Source: Bureau of Meteorology – Parkes Airport AWS (065068) – downloaded 16/5/2024													

Wind rose data from the Parkes Airport AWS is presented in **Figure 5**. On an annual basis, winds most frequently originate from the southwest and northwest, with less frequent winds coming from the south and west.

Seasonally, wind direction does not vary substantially, winds from the southwest are, however, more dominant in Winter and winds are typically stronger in Spring.

2.4 Site History

Quarrying operations have existed within the Project Site between the 1930s and 2000s, with Cabonne Shire Council extracting gravel between 1964 and 1995 and private operators between 1985 and 2006. Consent for the previous quarrying operation has ceased to have effect.

More recently, the previous landholder engaged the Applicant to extract a limited quantity of material for use on the previous landholder's own land. This activity was undertaken as an ancillary activity related to the previous landholder's agricultural operations. Following this work, an additional gravel resource was identified by the Applicant, who has since sought development consent for the construction and operation of a quarry within the Project Site.

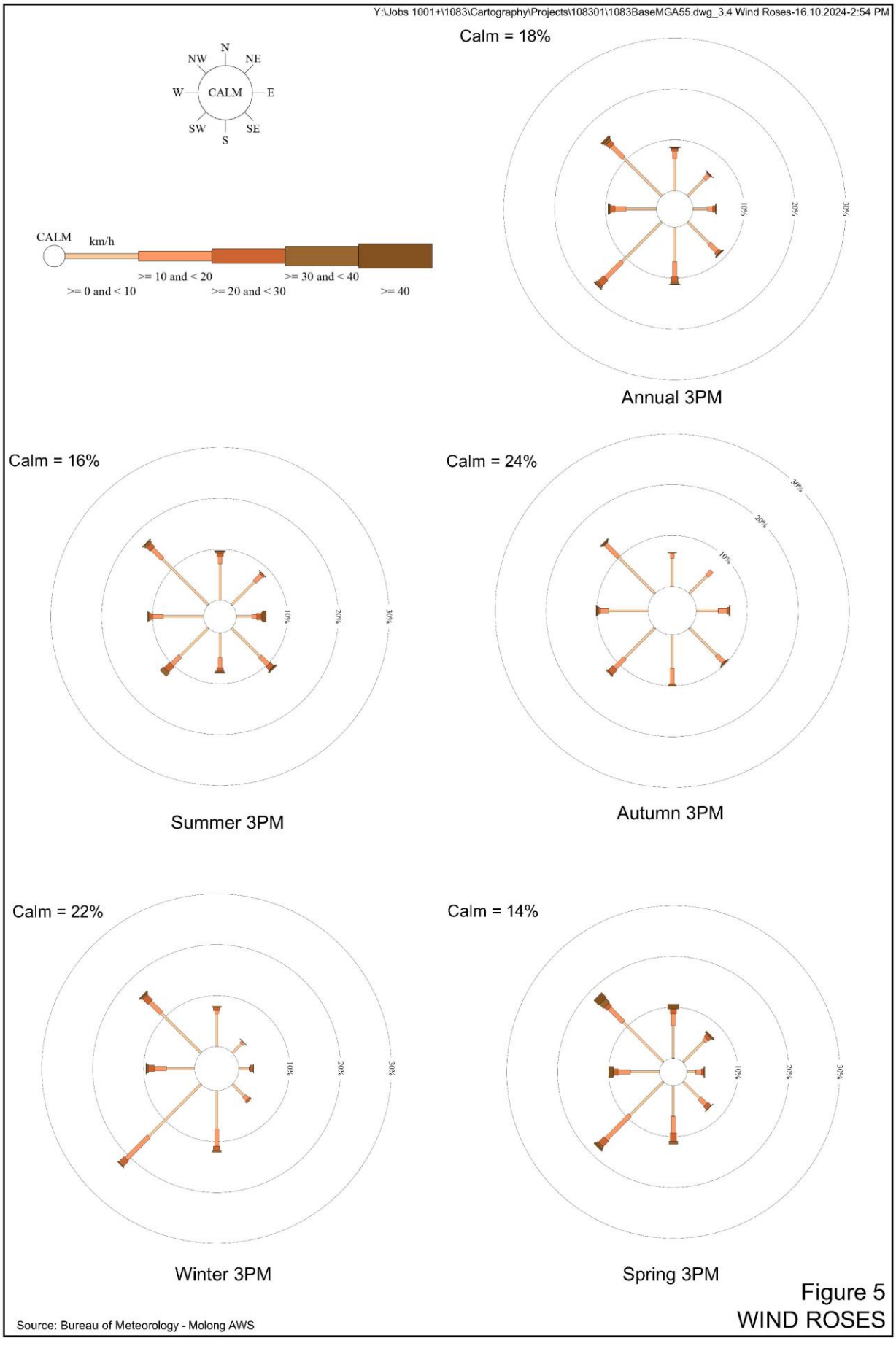


Figure 5
WIND ROSES

2.5 Site Inspection

The Project Site was inspected on 19 September 2023 and again on 22 February 2024 by RWC. At both times, the Project Site was being used for or had recently been used for quarrying operations, and agriculture, principally grazing and cropping. The land was fully fenced with a grid located at the entrance to the site. Some weeds were visually identified on site including thistles.

2.6 Consultation

The Project Site is wholly owned by the Applicant and thus direct impacts as a result of the Proposal were not required to be consulted on.

Surrounding landholders and residents were consulted on the 22 February 2024 regarding their views on the Proposal and if they had any concerns. No concerns were raised in relation to the Proposal and it was noted that the gravel pit had been there as long as the neighbours can remember.

The Applicant has an existing agreement with the adjacent residents to the south of the Project Site and as such they were not consulted at that time. However, ongoing consultation will be undertaken by the Applicant as required.

3. Land Use Risk Assessment

3.1 Risk Identification and Risk Ranking

The land use activities likely to generate conflicts with the existing rural residency and agricultural activities are Project Site construction, extraction and processing operations (i.e. rip and push, crushing, screening, blending and importation of materials), stockpiling and loading operations, transportation operations, and decommissioning and rehabilitation.

Table 2 presents the risk rankings of the Proposal using the methodology described in the Land Use Conflict Risk Assessment Guide (DPI, 2011).

Table 2
Activity Risk Ranking

Page 1 of 2

Activity	Identified Potential Conflict	Probability of Occurrence	Measure of Consequence	Risk Ranking
Project Site Construction	Dust	B	4	12
	Noise	A	3	20
Extraction Operations	Dust	B	3	17
	Noise	B	3	17
Stockpiling and Loading Operations	Dust	B	3	17
	Noise	B	3	17

Table 2 (Cont'd)
Activity Risk Ranking

Activity	Identified Potential Conflict	Probability of Occurrence	Measure of Consequence	Risk Ranking
Transportation Operations	Dust	B	4	12
	Noise	B	3	17
	Traffic	A	3	20
Decommissioning and Rehabilitation	Dust	B	4	12
	Noise	B	3	17

3.2 Risk Reduction Controls

3.2.1 Traffic

The following management and mitigation measures have been adopted by the Applicant to ensure that traffic and transport related impacts are minimised.

- Upgrade the Site Entrance intersection to comply with a BAL and BAR treatments prior to the sale of quarry products.
- Widen the Access Road to permit two-way movement of heavy vehicles.
- Develop and implement a Drivers' Code of Conduct for drivers of heavy vehicles who regularly access the Quarry, outlining behavioural expectations for those drivers. Compliance with the Code of Conduct should form part of the employment or contract conditions of those drivers, with penalties for non-compliance.
- Maintain the road reserve in the vicinity of the Site Entrance to ensure a suitable site distance is maintained through mowing of grass where required.
- Seal the Access Road for a distance of at least 50m from Canowindra Road to ensure that mud and dust is contained within the Project Site and does not track onto Canowindra Road.

3.2.2 Dust

The Applicant would implement the following management and mitigation measures throughout the life of the Proposal.

- Limit, where practicable, excavation of material during periods of high winds.
- Limit disturbance to the minimum area necessary for extraction operations.
- Apply vegetative cover to the soil stockpile as soon as practicable after establishment.
- Apply water to all roads and trafficked areas to minimise the generation of dust and ensure, to the extent practicable, that no visible dust is emitted from the Project Site.
- Clearly define all road edges to control their locations.

3.2.3 Noise

The Applicant would implement the following noise management and mitigation measures throughout the life of the Proposal.

- Strictly comply with the proposed hours of operation.
- Installation of a 3m high bund during the initial stages of extraction until appropriate buffering of noise is provided by the Extraction Area.
- Regularly service all on-site equipment to ensure sound power levels of each item remains at or below the default/or factory-set values.
- Install frequency modulated reversing alarms to all mobile equipment.
- Ensure that all truck drivers would be required to comply with the Applicant's Drivers Code of Conduct outlining procedures for reducing noise impacts during transportation within the Project Site and off site.
- Maintain an open dialogue with the surrounding community and neighbours to ensure any concerns over noise are addressed. In particular, ensure that the occupant of Residence R3 is consulted to ensure that there are no significant adverse noise-related impacts.
- Maintain unsealed roads to minimise body noise from empty trucks.

3.3 Revised Risk Ranking

Table 3 presents the risk rating for the identified risks after the described mitigation and management controls have been accounted for.

Table 3
Revised Risk Ratings

Activity	Identified Potential Conflict	Probability of Occurrence	Measure of Consequence	Risk Ranking
Project Site Construction	Dust	D	4	5
	Noise	C	4	8
Extraction Operations	Dust	D	4	5
	Noise	C	4	8
Stockpiling and Loading Operations	Dust	D	4	5
	Noise	C	4	8
Transportation Operations	Dust	D	4	5
	Noise	C	4	8
	Traffic	B	5	7
Decommissioning and Rehabilitation	Dust	D	4	5
	Noise	C	4	8

4. Conclusion

The Proposal has the potential to create sources of land use conflicts and adversely impact local landholders. **Table 3** identifies that by implementing robust management and mitigation measures and maintaining open communication with nearby landholders the probability and consequence of these risks can be reduced to acceptable levels.

5. References

Department of Primary Industries (DPI) (2011). *Land Use Conflict Risk Assessment Guide.*

The Transport Planning Partnership (TTPP) (2024). *Road Transport Assessment*. Prepared on behalf of McNaught Earthworks Pty Ltd and dated February 2024.

R.W. Corkery & Co (RWC) (2024). *Environmental Impact Statement for the McNaught's Quarry.* Prepared on behalf of McNaught Earthworks Pty Ltd and dated June 2024.

Appendix 6

Dial Before You Dig

(Total No. of pages including blank pages = 21)

Job ID 37883831
1083

Review responses online



Received 2 of 2 responses
All responses received

5192 Canowindra Road, Canowindra NSW 2804

Job dates
30/10/2024 → 31/10/2024

These plans expire on
20 Nov 2024

Lodged by
Indigo Devane

Authority	Status	Page
BYDA Confirmation		2
Essential Energy	Received	4
Telstra NSW Central	Received	13

Job No 37883831

byda.com.au

Contact Details

Contact	Contact number	Company	Enquirer ID
Indigo Devane	0456 649 308	-	3366330

Email
indigo@rwcorkery.com

Address
10 The Overflow
Clifton Grove NSW 2800

Job Site and Enquiry Details

WARNING: The map below only displays the location of the proposed job site and does not display any asset owners' pipe or cables. The area highlighted has been used only to identify the participating asset owners, who will send information to you directly.

Enquiry date	Start date	End date	On behalf of	Job purpose	Locations	Onsite activities
23/10/2024	30/10/2024	31/10/2024	Private	Design	Private	Planning & Design



Check that the location of the job site is correct. If not, you must submit a new enquiry.

If the scope of works change or plan validity dates expire, you must submit a new enquiry.

Do NOT dig without plans. Safe excavation is your responsibility. If you don't understand the plans or how to proceed safely, please contact the relevant asset owners.

User Reference
1083

Address
5192 Canowindra Road
Canowindra NSW 2804

Notes/description
Proposed Quarry on Lot 2, DP1301356

Your Responsibility and Duty of Care

- **Lodging an enquiry does not authorise project commencement.** Before starting work, you must obtain all necessary information from all affected asset owners.
- If you don't receive plans within 2 business days, contact the asset owner & quote their sequence number.
- Always follow the 5Ps of Safe Excavation (page 2), and locate assets before commencing work.
- Ensure you comply with State legislative requirements for Duty of Care and safe digging.
- If you damage an underground asset, you MUST advise the asset owner immediately.
- By using the BYDA service, you agree to the Privacy Policy and Term of Use.
- For more information on safe digging practices, visit www.byda.com.au

Asset Owner Details

Below is a list of asset owners with underground infrastructure in and around your job site. It is your responsibility to identify the presence of these assets. Plans issued by Members are indicative only unless specified otherwise. Note: not all asset owners are registered with BYDA. You must contact asset owners not listed here directly.

Referral ID (Seq. no)	Authority Name	Phone	Status
246416927	Essential Energy	13 23 91	NOTIFIED
246416928	Telstra NSW Central	1800 653 935	NOTIFIED

END OF UTILITIES LIST

The 5Ps of Safe Excavation

Plan

Plan your job. Use the BYDA service at least one day before your job is due to begin, and ensure you have the correct plans and information required to carry out a safe project.

Prepare

Prepare by communicating with asset owners if you need assistance. Look for clues onsite. Engage a skilled Locator.

Pothole

Potholing is physically sighting the asset by hand digging or hydro vacuum extraction.

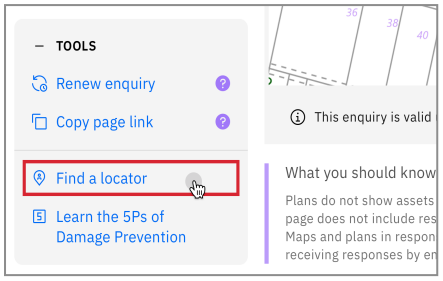
Protect

Protecting and supporting the exposed infrastructure is the responsibility of the excavator. Always erect safety barriers in areas of risk and enforce exclusion zones.

Proceed

Only proceed with your excavation work after planning, preparing, potholing (unless prohibited), and having protective measures in place.

Engage a skilled Locator



When you lodge an enquiry you will see skilled Locators to contact

Visit the Certified Locator website directly and search for a locator near you

dbydlocator.com/certified-locating-organisation

Book a FREE BYDA Session

BYDA offers two different sessions to suit you and your organisation's needs. The free sessions are offered in two different formats - online and face-to-face:

1. **Awareness Session:** Understand the role of BYDA, safe excavation practices, complying with asset-owner instructions, and the consequences of damages. Learn how to mitigate and avoid potential damage and harm and ensure a safe work environment.
2. **Plan Reading Session:** Develop the skills to interpret asset owners' plans, legends, and symbols effectively. Understand the complexities of plan interpretation to ensure smooth project execution.

To book a session, visit:
byda.com.au/contact/education-awareness-enquiry-form/

BOOK NOW

Essential Energy

Referral
246416927

Member Phone
13 23 91

Responses from this member

Response received Wed 23 Oct 2024 11.21am

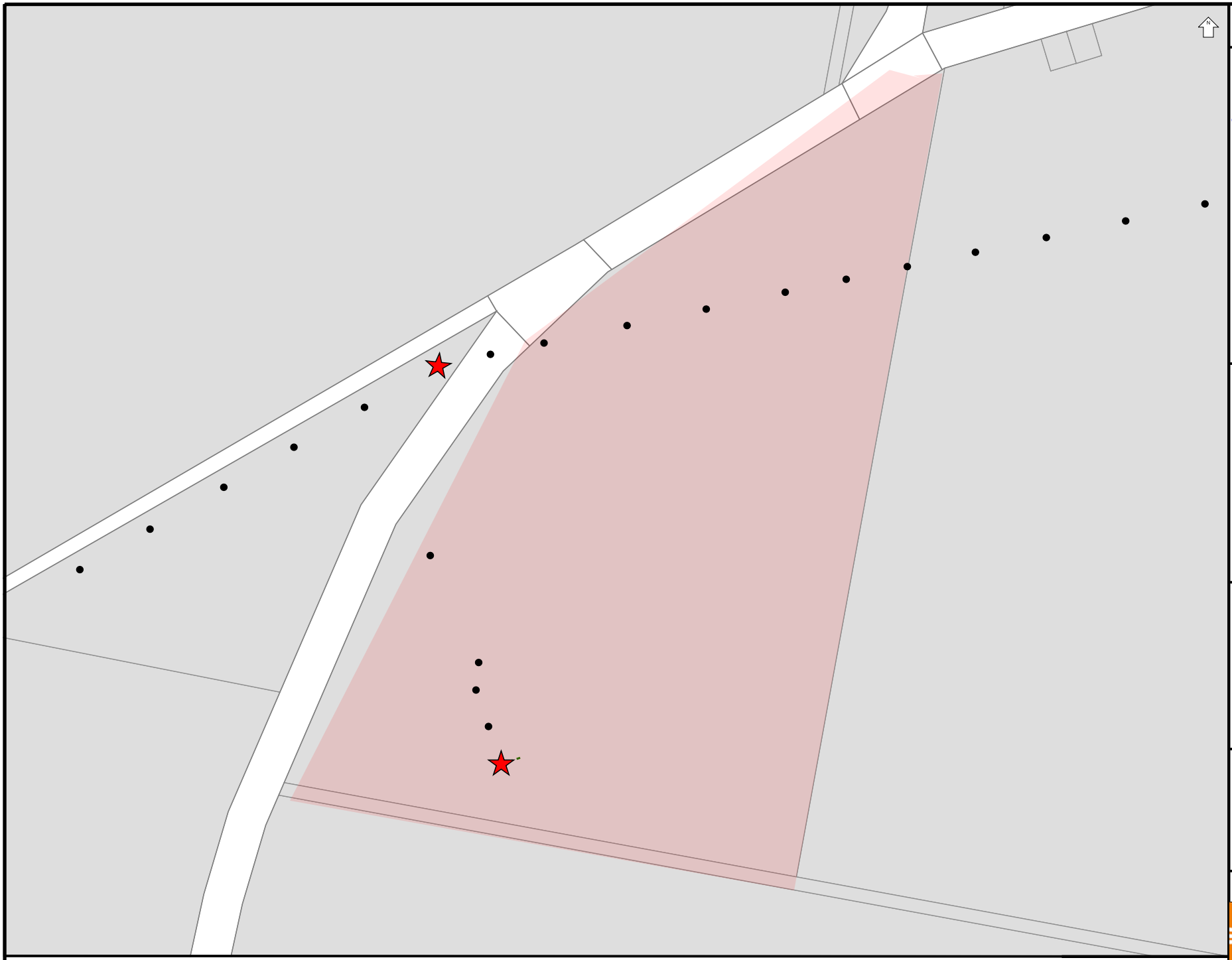
File name	Page
Response Body	5
plot16106385826416302597 7.pdf	6
EW_ASSETS_FOUNDsafetyNotice.pdf	7
Coversheet_EW_ASSETS_FOUND.pdf	11

Asset Name: 50215
Date of enquiry: 23/10/2024 11:19:00 AM
Notification No: 37883831 (Job No)
Sequence No: 246416927

Customer's Name: Indigo Devane
Customer's Phone No: +61456649308

Address supplied for dig site location
5192 Canowindra Road, Canowindra, NSW

You will require a PDF viewer such as Adobe Acrobat Reader to view the attached documents.
Adobe Acrobat Reader is freely available at http://get.adobe.com/reader/.



Overhead wires not shown
LOOK UP & LIVE!

LEGEND

- LV Underground Cable
- HV Underground Cable
- Underground Pipe
- Underground Earth or Wires
- Ground Substation
- Pole
- Cubicle
- Pit
- Area of Interest

Critical Assets

Contact Essential Energy on 13 23 91

- Zone Substation
- Underground Cable
- Underground Fibre

Proposed Works

- Area of proposed works

Proposed assets are shown as orange symbols

THE INFORMATION ON THIS MAP MAY NOT BE ACCURATE. If details are incorrect, please notify Essential Energy on 13 23 91 (or fax 1800 354 636)

ISSUE DATE: 23/10/2024

You must resubmit your request if you have not started work within 4 weeks of the 'Issue Date' above

A4 | SCALE: 1:7574

Job Number: 37883831 Sequence number: 246416927 Job location: 5192 Canowindra Road, Canowindra Map Centre: 148° 41' 23.1", -33° 24' 10.6"

essential energy

ELECTRICITY SAFETY WHILE EXCAVATING

When working near underground electrical infrastructure

NSW legislation requires people who are planning to do excavation work to obtain copies of underground electricity cable plans through Dial Before you Dig (Phone 1100) and to make sure that the plans are no more than 30 days old when excavation commences.

The aim of the legislation is to ensure that when workers dig or drive items near underground electricity cables, ducting, and pipes, they will establish the exact location of the cables and thus avoid coming into contact with them or damaging them. These items carry vital services such as electricity, water, gas and communications, and establishing their location before digging will help ensure worker safety and prevent damage to the network which may cause disruption of essential services to local communities.

Excavate safely and protect underground assets

Dial Before You Dig (DBYD) is the first step to excavating safely. You should use DBYD when you will be undertaking (but not restricted to) the following:

- Any excavation using machinery digging deeper than 150mm. This includes but is not restricted to back hoes, excavators, borers & kanger hammers (ploughing or ripping activities)
- Any excavation using hand tools deeper than 300mm which includes shovels, spades and crow bars
- Any vertical or horizontal boring.

Note: The above examples are general and may not cover all situations in the regulations where a DBYD would be required e.g. driving metal posts in the ground.

Regardless of the size of your project you should lodge an enquiry with DBYD before commencing work. This applies to small tasks like backyard landscaping, driving items into the ground as well as heavy work such as directional boring or directional drilling. DBYD strive to respond to enquiries within two business days.

Dial Before You Dig

- Phone 1100
- Web www.1100.com.au
- Download the DBYD iPhone app

DIAL BEFORE YOU DIG
www.1100.com.au
The Essential First Step

When a DBYD has been obtained, contact Essential Energy on **13 23 91** to identify any underground pipes and/or cables in the vicinity of excavation works to be carried out. Allow at least **two weeks or 10 working days advance notice** in your construction program to permit Essential Energy time to allocate the necessary field resources to carry out an onsite inspection if required. This service may incur a fee & should be stated at the time of making the appointment.

In the event the excavation does not commence within 28 days of receipt of a plan, a new plan should be obtained. The excavator **must** retain the plans on site for the duration of the excavation works.

Your responsibility

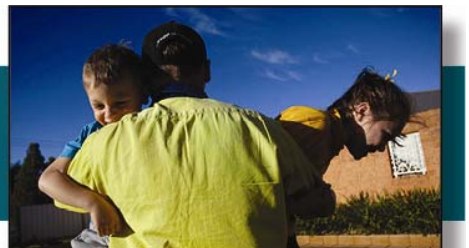
All individuals have a duty of care they must observe when working in the vicinity of underground cables, ducts and pipes. Be aware of the requirement set out in the latest WorkCover Codes of Practice 'Work near Underground Assets Guideline' and 'Work near Overhead Powerlines' which can be viewed at **www.workcover.nsw.gov.au** or you can purchase a copy of the Code of Practice by contacting WorkCover on 1300 799 003.

You should also be familiar with Essential Energy's operational procedures 'Work near Essential Energy's underground assets' CEOP8041 and 'Construction work near electricity network' CEOP1116, which can be found at essentialenergy.com.au/construction

- Employers: If you're an employer or employing someone to excavate, complete construction or drive items into the ground even at home you have a legal obligation to ensure their safety
- Excavators: It is the excavator's responsibility to visually expose the underground pipes and cables manually before any construction begins.

Note – when excavating involving high pressure water or compressed air to break up the ground, which is then removed by a powerful vacuum unit to expose critical utilities after they have been electronically located to confirm identity, size, number of services and depth, checks should be carried out to ensure the pressure is acceptable for all cables and other assets which may be found prior to commencing pot holing by this method. Warning: CONSAC cables shouldn't be potholed by this method and must be de-energised before any work carried out near them. It's recommended to only use air/vacuum equipment to pot hole that operates at or less than 13,790Kpa (2000psi).

Be safe, because they need you



No Go Zone for powered excavation

Extract from WorkCover "**Work near Underground Assets**"

TABLE 1: Types of assets and limits of underground approach

Assets	Clearances	No Go Zone for Powered Excavation	Controls	Typical Depths
Low voltage electricity cables – voltages less than or equal to 1000V (1kV)	Close proximity with the use of hand tools	300 mm	Must contact asset owner for specific conditions	450 – 750 mm
Electricity conductors from 11,000V (11kV) up to 33,000V (33 kV)	Close proximity with the use of hand tools	600 mm	Must contact asset owner for specific conditions	900 mm
Underground sub-transmission cables 33,000V up to 132,000V (132 kV)	Must contact asset owner	Must contact asset owner	Must be carried out under the supervision of the asset owner	900 mm
High Voltage Electricity cables – voltages from 1000V (1kV) up to (33 kV)	Close proximity with the use of hand tools	Must contact asset owner	Must contact asset owner for specific conditions	600 – 1000 mm
Extra High Voltage Electricity Transmission cables – voltages above (132 kV) and 330,000V (330 kV)	Must contact asset owner	Must contact asset owner	Work must be carried out under the supervision of the asset owner	800 – 1200 mm

How to expose cables or pipes

Location plans provide an indication of the presence of underground assets only; they do not pinpoint the exact location. This is why manual exposure is required, which can be done by potholing. Underground assets must first be exposed by pot-holing with non-conductive tools to identify their location. Excavation with hand tools shall be carried out carefully up to, but not closer than, the minimum distances specified in Table 1. Several potholes may need to be dug manually to determine and satisfy yourself of the exact locations of cables or pipes to avoid any mishaps. Manual pot-holing needs to be undertaken with extreme care, common sense and while employing techniques least likely to damage cables. For example, orientate shovel blades and trowels parallel to the cable rather than digging across the cable. Look out for sand, plastic strips or specially marked bricks when excavating, which signal the presence of underground cables.

Only once all underground assets have been located, marked and protected against damage can the excavation proceed with caution.

No Go Zone for powered excavation

Directional boring is powered excavation and contact with the asset owner must be made before excavation takes place. For directional boring across the line of an asset a minimum clearance of **300 mm** from the asset shall be maintained. When boring across the line of an underground asset, the location of the asset/s shall be positively proven by hand digging (pot-holing) or by another approved method and a safety observer appointed.

Note: Where the risk assessment identifies a potential risk of making contact with either underground assets, safety observer/s would be required. The safety observer's responsibility is to ensure that approach distances from underground and overhead assets are maintained.

For boring under electricity cables, the only true way of knowing where the directional drill is, is to "see" it. It is necessary to excavate a slit trench at right angles to the approaching drill and 500mm deeper than the asset being protected and beside the cables to confirm the depth of the cables and ensure the drill is not within the minimum approach distance of the cable (specified in Table 1).

For directional boring parallel to the asset and at the level of the asset, a clearance of **500 mm** shall be maintained from the edge of the nearest asset and pot holed at 10m intervals to ensure clearances are maintained with a safety observer appointed.

The four Ps of safe excavation

1. Plan – Plan your job. Use the Dial Before You Dig service before your job is due to begin to help keep your project safe. Contact Essential Energy on 13 23 91 to identify any underground pipes and/or cables in the vicinity
2. Pothole – Potholing (digging by hand) is a method to assist in establishing the exact location of all underground infrastructure. Only use air/vacuum equipment to pot hole that operates at or less than 13,790Kpa (2000psi)
3. Protect - Protecting and supporting exposed infrastructure is the excavator's responsibility. Always erect safety barriers in areas at risk to protect underground networks
4. Proceed – But ONLY when you have planned, potholed and put the protective measures in place.



Digging safely

You cannot be too careful when it comes to safe excavation. Avoiding underground ducting pipe and cable damage is as simple as having the right tools, the right skills and the right information.

- Study the plans you receive from asset owners thoroughly
- Check to see if they relate to the area you requested and make sure you understand them. If you are unclear about what the symbols mean or how to proceed, contact the relevant network owner
- Check the work area for other forms of electrical equipment, including street lights, ground substations, phone boxes or traffic lights – all good indicators that underground cables will be present
- Remember underground cables can also be present even if overhead powerlines have been identified
- Never assume the depth or alignment of pipes and cables. Installed networks assets may not have been installed in a straight line
- Always observe any instructions stated on the plans provided by the asset owner
- Remember, plans and maps identifying the location of underground cables and depths can alter after road upgrades or developments and underground assets may be as little as a few millimetres below the surface
- Other service lines (for example gas mains (pipes) and communication cables) can also be present. Shared trenches are frequently used on underground runs to premises
- New electrical cables are sometimes laid using existing old conduits
- Various methods of protecting underground cables may be utilised (for example electrical bricks, conduits, concrete or flat PVC barriers) or may be direct buried or installed by under-boring methods which may have no visual disturbance of the ground
- Ensure overhead & electrical structures aren't undermined during excavation.

Earth cables

Earth cables are an important part of all electrical installations and have two main purposes:

- To safeguard against the possibility of danger to life
- To maintain the good working order of the electrical network.

They can have potentially dangerous electrical current flowing through them. Usually they have a green and yellow covering but could be a bare cable buried directly in the ground.

Even if the map provided does not show underground cables, earth cables may be present. These earth cables are usually associated with electrical equipment located on the pole such as transformers, switching equipment, permanent earthing points or Padmount / kiosk subs.

It's recommended that if any excavation is to take place within **10m** of a power pole with a cable running down it into the ground, contact is made with Essential Energy on **13 23 91** to have the earthing system located. While an effort is made to install the earthing under the powerline and guy if installed, sometimes circumstances may require a variation to this, so done assume where they are installed. The distance and configuration that the earthing cable is installed varies due to the soil conditions and system type (e.g. Single wire earth return (SWER)).

Additional earthing electrodes stakes may be installed to ensure the required earthing reading is obtained.

WARNING:SWER installations

- Contacting SWER earthing can be deadly
- Voltage is present on SWER transformer earthing systems either at 12.7 kV or 19.1kV
- NO excavation is allowed within 10 metres of a SWER transformer pole.

Excavating around electrical poles

Anyone intending to excavate around any electrical item risks serious injury or death as a result of contact with underground cables or the earthing system.

Assets around poles

For excavation depths greater than 250mm near power poles and stays you must arrange for an Essential Energy representative to attend the worksite 2 weeks prior to work commencing. Call Essential Energy on 13 23 91. More information is available in Essential Energy's operational procedure, 'Work near Essential Energy's underground assets: CEOP8041' which can be found at essentialenergy.com.au/construction

Unless otherwise agreed, underground assets and other obstructions around poles are to be kept a minimum distance of 300mm from the periphery of the pole, to allow inspections by the asset owner employees.

No excavation within 10 metres of a SWER transformer pole is to occur without the approval of the local electricity asset owner. It should be noted that the NSW Service and Installation Rules require a sketch of the underground service/consumers mains to be marked inside the switchboard.

The risks are higher for those earthing systems of the SWER constructions as the earthing is utilised as the return path.

Be safe, because they need you



Typically any electrical item installed on a pole will have an earth wire running down the pole into the ground, which includes:

- Transformers in urban and rural situations
- Isolation, protection and regulation items.

Transformers located on the ground (padmount and kiosk), besides having underground electrical cables, will have an earthing system installed around them.

Damaged earthing

If an earth cable has been damaged, maintain a clearance of eight (8) meters and contact Essential Energy on 13 23 91. **DONT ATTEMPT** to re-join the cable - this will place you at serious risk.

Operating near underground cables and earths

- Underground cables should never be moved or relocated unless under the express authority of the organisation or person responsible for the powerlines
- The excavator shall report all damage made to Essential Energy assets immediately. Damage includes: gouges, dents, holes and gas escapes
- Never undermine poles, cables, earthing cable, pad-mount and kiosk substations.



Above: Poles with become unstable if undermined

Make sure it can't go wrong

You should ensure that people at work, their equipment (tools and plant) or materials do not come within close proximity to underground powerlines unless:

- A written risk assessment has been completed and a safe system of work implemented
- The relevant safety precautions and worker training requirements, including WorkCover Codes of Practice and Essential Energy's requirements, have been implemented and complied with.

If working in close proximity to underground cables is unavoidable and the risk assessment has been completed, the following should be considered to control the risks and ensure work safety:

- Have the power switched off by Essential Energy
- Consider all conductors as live unless it is positively known they have been de-energised
- Where appropriate, provide ground markings to identify location and warn workers of the presence of underground power and other assets.

Emergency situations

In the event that contact with an underground powerline occurs or cables are exposed or damaged, remembering the following points could help save a life:

- If the situation is at all life threatening, immediately contact the Emergency Services on 000 (triple zero)
- Call Essential Energy's 24-hour supply interruptions line – **13 20 80** to switch off the power if required or report damage or exposure cables / conduits



- If any other underground assets are damaged you should contact the affected asset owners immediately
- Treat underground cables as alive, even if they appear to be dead
- Keep everyone at least eight metres away from the incident site, the person or any machinery making contact with underground cable



- Don't panic or touch the person receiving the electric shock – this could place you at risk
- Untrained, unequipped persons should not attempt to rescue a person receiving an electric shock. All too often secondary deaths occur when others go to the aid of earlier victims
- Remain on/inside the machinery until the supply is disconnected
- If possible, break contact between the machinery and underground cable.

For more information

Essential Energy's Public Safety team is available to facilitate Electrical Awareness sessions and discuss any questions relating to electrical safety. For more information on electrical safety please call

- Essential Energy General Enquiries 13 23 91
- Essential Energy Supply Interruptions 13 20 80
- WorkCover NSW 13 10 50
- Dial Before You Dig www.1100.com.au 1100
- Follow us
- or visit essentialenergy.com.au/safety

Safety first: Before you dig or drive items into the ground

1. Contact DBYD
2. DO NOT attempt to excavate with in 10m of any power pole or electrical item
3. Contact Essential Energy on 13 23 91 for assistance to locate cables and earthing
4. Locate asset: Pot-hole
5. Proceed only if you have satisfied yourself it is safe.

Be safe, because they need you



CABLE/PIPE LOCATION

Assets were found in the search area

COMPANY NAME:	Not supplied
ATTENTION:	Indigo Devane
SEARCH LOCATION:	5192 Canowindra Road Canowindra NSW 2804
SEQUENCE NO:	246416927
DATE:	Wednesday, 23 October 2024

Provision of Plans:
Please find enclosed plans depicting approximate locations of **Essential Energy** assets in the search location***. The excavator must not assume that there may not be assets owned by other network operators in the search location.***

Underground assets searched for	Underground assets found
Essential Energy Electrical	☑
Essential Energy Water & Sewerage	☐

Plans are updated from time to time to record changes to underground assets and may be updated by Essential Energy without notice. In the event that excavation does not commence within 28 days of receipt of a plan, a new plan should be obtained.

The excavator must retain the plans on site for the duration of the works.

The excavator shall report all damage made to Essential Energy assets immediately. Note that damage includes gouges, dents, holes and gas escapes.

IN CASE OF EMERGENCY OR TO REPORT DAMAGE:
PHONE 13 20 80

DISCLAIMER

Please be aware that plans may **not** reflect alterations to surface levels or the position of roads, buildings, fences etc. **Cable and pipe locations are approximate** and the plans are **not** suitable for scaling purposes. *Essential Energy does not retain plans for privately-owned underground electrical or water & sewerage assets located on private property.* ***Privately-owned underground electrical assets located on private property are the responsibility of the owner.***

The plans have been prepared for Essential Energy's sole use and benefit. **Essential Energy cannot and does not warrant the accuracy or completeness of the plans**. Essential Energy supplies them at no cost with the object of reducing the serious risk of unintentional damage being caused to its cables and pipes. **Essential Energy does not accept any responsibility for any omissions, inaccuracies or errors in the plans, or any reliance place on the material. Any reliance placed on any plan provided in response to your request is at your own risk.**

www.essentialenergy.com.au
ABN 37 428 185 226
PO Box 5730 Port Macquarie NSW 2444
Telephone: 13 23 91 Facsimile: 1800 354 636

Essential Energy retains all intellectual and industrial property rights which exists or may exist in or with respect to the plan(s). The material provided is not to be copies or distributed beyond you.

You release Essential Energy from and against all claims, demands, actions and proceedings arising out of or in any way related to the use of the provided material.

Location of Assets on Site:
The plans indicate only that cables and pipes may exist in the general vicinity – they do not pinpoint the exact location of the cables and pipes.

If it is found that the location of cables or pipes on the plans can be improved, please notify Essential Energy on 13 23 91 (or fax 1800 354 636).

All individuals have a duty of care they must observe when working in the vicinity of underground cables and pipes. It is the **excavator's responsibility to visually expose the underground cables and pipes manually**, **ie. by using hand-held tools and non-destructive pot-holing techniques prior to any mechanical excavation.** The excavator will be held responsible for all damage caused to the Essential Energy network or cables and pipes, and for the costs associated with the repair of any such damage. The excavator will also be held responsible for all damage caused to any persons.

When digging in the vicinity of underground assets, persons should observe the requirements of the applicable Codes of Practice published by the NSW Work Cover Authority or Safe Work Australia, and any amendments from time to time by the Authorities, including although not limited to:

- Excavation Work
- Managing Electrical Risks in the workplace
- How to manage and control asbestos in the workplace

(Please refer to https://www.workcover.nsw.gov.au/law-and-policy/legislation-and-codes/codes-of-practice).

When digging in the vicinity of **electrical assets** persons should observe the requirements of the **Electricity Supply Act 1995.**
Persons excavating near live underground electrical reticulation and/or earthing cables **must exercise extreme caution at all times and adhere to the requirements of Essential Energy's Electrical Safety Rules.** (These are available on our website: http://www.essentialenergy.com.au/content/safety-community and include

- **Work near Essential Energy's Underground Assets:**
  http://www.essentialenergy.com.au/asset/cms/pdf/contestableWorks/CEOP8041.pdf , and
- **Asbestos Fact Sheet**:
  http://www.essentialenergy.com.au/asset/cms/pdf/safety/AsbestosFactSheet.pdf

In some situations these procedures call for work to be performed by authorised staff.
Should there be any doubt as to the exact location of any underground electrical assets, and the potential for conflict with live underground cables caused by excavation at your work site, you should contact **13 23 91** to arrange for an on-site visit by an Essential Energy representative**.** No construction or mechanical excavation work is to commence prior to this on-site visit and approval being obtained.

When digging in the vicinity of **water or sewer assets** persons should observe the requirements of the **Water Management Act 2000.**
Should there be any doubt as to the exact location of any underground water and sewer assets, and the potential for conflict with underground water and sewer pipes caused by excavation at your work site, you should contact **13 23 91** to arrange for an on-site visit**.** No construction or excavation work is to commence prior to this on-site visit and approval being obtained.

Prior Notification:
Please note that for excavation depths greater than 250mm near power poles and stays you should allow for **advance notice** in your construction program to permit Essential Energy time to allocate the necessary field resources to carry out the inspection at the site a **minimum of fourteen (14) working days prior to work commencing**. This service may incur a fee and this can be negotiated with the local Area Coordinator at the time of making the appointment. Failure to give reasonable notice to the local Area Coordinator may result in disruption to Essential Energy's planned works program in the district and could incur an extra charge over and above the normal rate for this service.

For further information please call 13 23 91.

www.essentialenergy.com.au
ABN 37 428 185 226
PO Box 5730 Port Macquarie NSW 2444
Telephone: 13 23 91 Facsimile: 1800 354 636

Referral
246416928

Member Phone
1800 653 935

Responses from this member

Response received Wed 23 Oct 2024 11.27am

File name	Page
Response Body	14
246416928.dwf	Excluded
AccreditedPlantLocators 2024-09-13a.pdf	15
Telstra Duty of Care v32.0b.pdf	16
Telstra Map Legend 4.0b.pdf	18

Attention: Indigo Devane

Site Location: 5192 Canowindra Road, Canowindra, NSW 2804

Your Job Reference: 1083

Please do not reply to this email, this is an automated message -

Thank you for requesting Telstra information via Before You Dig Australia (BYDA).

This response contains Telstra information relating to your recent BYDA request.

Information for opening Telstra Asset Plans as well as some other useful contact information is listed in the attached **Telstra Map Legend attached**.

Please refer to all enclosed attachments for more information.
Please Report Damage to Telstra Equipment: Report damages to Telstra equipment - Telstra

Please note:
When working in the vicinity of telecommunications plant you have a 'Duty of Care' that must be observed. Please ensure you read the 'Telstra Duty of Care' document (attached) - it contains important information including essential steps that must be undertaken prior to commencing construction activities.

WARNING: Telstra plans and location information conform to Quality Level 'D' of the Australian Standard AS 5488 - Classification of Subsurface Utility Information. As such, Telstra supplied location information is indicative only. Spatial accuracy is not applicable to Quality Level D. Refer to AS 5488 for further details. The exact position of Telstra assets can only be validated by physically exposing them. Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy. Further on site investigation is required to validate the exact location of Telstra assets prior to commencing work. A Certified Locating Organisation is an essential part of the process to validate the exact location of Telstra assets and to ensure the assets are protected during construction works. See the Steps - Working Near Telecommunications Assets (attached Telstra Duty of Care).
Please note that:
- it is a criminal offence under the *Criminal Code Act* 1995 (Cth) to tamper or interfere with telecommunications infrastructure.
- Telstra will take action to recover compensation for damage caused to property and assets, and for interference with the operation of Telstra's networks and customers' services.

Telstra's plans contain Telstra's confidential information and are provided on the basis that they are used solely for identifying the location or vicinity of Telstra's infrastructure to avoid damage to this infrastructure occurring as part of any digging or other excavation activity. You must not use Telstra's plans for any other purpose or in a way that will cause Telstra loss or damage and you must comply with any other terms of access to the data that have been provided to you by Telstra (including Conditions of Use or Access).

(See attached file: Telstra Duty of Care v32.0b.pdf)

(See attached file: Telstra Map Legend 4.0b.pdf)

(See attached file: AccreditedPlantLocators 2024-09-13a.pdf)

(See attached file: 246416928.dwf)

General Information

OPENING ELECTRONIC MAP ATTACHMENTS –

Telstra Cable Plans are generated automatically in either PDF or DWF file types.
Dependent on the site address and the size of area selected.
You may need to download and install free viewing software from the internet e.g.

DWF Map Files (all sizes over A3)
Autodesk Viewer (Internet Browser) https://viewer.autodesk.com/ or
Autodesk Design Review http://usa.autodesk.com/design-review/ for DWF files. (Windows PC)

PDF Map Files (max size A3)
Adobe Acrobat Reader http://get.adobe.com/reader/

Telstra BYDA map related enquiries email
Telstra.Plans@team.telstra.com
1800 653 935 (AEST Business Hours only)

REPORT ANY DAMAGE TO THE TELSTRA NETWORK IMMEDIATELY
Report online - https://www.telstra.com.au/forms/report-damage-to-telstra-equipment
Ph: 13 22 03
If you receive a message asking for a phone or account number say: "I don't have one" then say "Report Damage" then press 1 to speak to an operator.

Telstra New Connections / Disconnections
13 22 00

Telstra asset relocation enquiries: 1800 810 443 (AEST business hours only).
NetworkIntegrity@team.telstra.com
https://www.telstra.com.au/consumer-advice/digging-construction

Telstra Aerial Assets Group (overhead network)
1800 047 909

CERTLOC Certified Locating Organisation (CLO)
certloc.com.au/locators/



Before You Dig Australia

Think before you dig

This document has been sent to you because you requested plans of the Telstra network through Before You Dig Australia (BYDA).

If you are working or excavating near telecommunications cables, or there is a chance that cables are located near your site, you are responsible to avoid causing damage to the Telstra network.

Please read this document carefully. Taking your time now and following the steps below can help you avoid damaging our network, interrupting services, and potentially incurring civil and criminal penalties.

Our network is complex and working near it requires expert knowledge. Do not attempt these activities if you are not qualified to do so.

Disclaimer and legal details

*Telstra advises that the accuracy of the information provided by Telstra conforms to Quality Level D as defined in AS5488-2013.

It is a criminal offence under the Criminal Code Act 1995 (Cth) to tamper or interfere with telecommunications infrastructure.

Telstra will also take action to recover costs and damages from persons who damage assets or interfere with the operation of Telstra's networks.

By receiving this information including the indicative plans that are provided as part of this information package you confirm that you understand and accept the risks of working near Telstra's network and the importance of taking all the necessary steps to confirm the presence, alignments and various depths of Telstra's network. This in addition to, and not in replacement of, any duties and obligations you have under applicable law.

When working in the vicinity of a telecommunications plant you have a "Duty of Care" that must be observed. Please read and understand all the information and disclaimers provided below.

The Telstra network is complex and requires expert knowledge to interpret information, to identify and locate components, to pothole underground assets for validation and to safely work around assets without causing damage. If you are not an expert and/or qualified in these areas, then you must not attempt these activities. Telstra will seek compensation for damages caused to its property and losses caused to Telstra and its customers. Construction activities and/or any activities that potentially may impact on Telstra's assets must not commence without first undertaking these steps. Construction activities can include anything that involves breaking ground, potentially affecting Telstra assets.

If you are designing a project, it is recommended that you also undertake these steps to validate underground assets prior to committing to your design.

This Notice has been provided as a guide only and may not provide you with all the information that is required for you to determine what assets are on or near your site of interest. You will also need to collate and understand all information received from other Utilities and understand that some Utilities are not a part of the BYDA program and make your own enquiries as appropriate. It is the responsibility of the entities undertaking the works to protect Telstra's network during excavation / construction works.

Telstra owns and retains the copyright in all plans and details provided in conjunction with the applicant's request. The applicant is authorised to use the plans and details only for the purpose indicated in the applicant's request. The applicant must not use the plans or details for any other purpose.

Telstra plans or other details are provided only for the use of the applicant, its servants, agents, or CERTLOC Certified Locating Organisation (CLO). The applicant must not give the plans or details to any parties other than these and must not generate profit from commercialising the plans or details.

Telstra, its servants or agents shall not be liable for any loss or damage caused or occasioned by the use of plans and or details so supplied to the applicant, its servants and agents, and the applicant agrees to indemnify Telstra against any claim or demand for any such loss or damage.

Please ensure Telstra plans and information provided always remains on-site throughout the inspection, location, and construction phase of any works.

Telstra plans are valid for 60 days after issue and must be replaced if required after the 60 days.

Data Extraction Fees

In some instances, a data extraction fee may be applicable for the supply of Telstra information. Typically, a data extraction fee may apply to large projects, planning and design requests or requests to be supplied in non-standard formats. For further details contact Telstra Planned Services.

Telstra does not accept any liability or responsibility for the performance of or advice given by a CERTLOC Certified Locating Organisation (CLO). Certification is an initiative taken by Telstra towards the establishment and maintenance of competency standards. However, performance and the advice given will always depend on the nature of the individual engagement.

Neither the Certified Locating Organisation nor any of its employees are an employee or agent for Telstra. Telstra is not liable for any damage or loss caused by the Certified Locating Organisation or its employees.

Once all work is completed, the excavation should be reinstated with the same type of excavated material unless specified by Telstra.

The information contained within this pamphlet must be used in conjunction with other material supplied as part of this request for information to adequately control the risk of potential asset damage.

When using excavators and other machinery, also check the location of overhead power lines.

Workers and equipment must maintain safety exclusion zones around power lines

WARNING: Telstra plans and location information conform to Quality Level 'D' of the Australian Standard AS 5488 - Classification of Subsurface Utility Information. As such, Telstra supplied location information is indicative only. Spatial accuracy is not applicable to Quality Level D. Refer to AS 5488 for further details. Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy shown on the plans. FURTHER ON SITE INVESTIGATION IS REQUIRED TO VALIDATE THE EXACT LOCATION OF TELSTRA PLANT PRIOR TO COMMENCING CONSTRUCTION WORK. A plant location service is an essential part of the process to validate the exact location of Telstra assets and to ensure the assets are protected during construction works. The exact position of Telstra assets can only be validated by physically exposing them. Telstra will seek compensation for damages caused to its property and losses caused to Telstra and its customers.

Privacy Note

Your information has been provided to Telstra by BYDA to enable Telstra to respond to your BYDA request. Telstra keeps your information in accordance with its privacy statement. You can obtain a copy at www.telstra.com.au/privacy or by calling us at 1800 039 059 (business hours only).

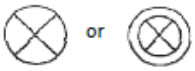
LEGEND



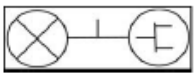
Exchange
(Major Cable Present)



Footway Access Chamber
(can vary from 1-lid to 12-lid)



Pillar / Cabinet
(above ground / free standing)



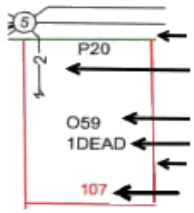
Above ground complex equipment housing (eg RIM)
Please Note: This equipment is powered by 240V Electricity

OC — Other Carrier Telecommunications Cable/Asset

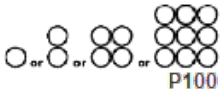
Dist — Distribution cables in Main Cable ducts

MC — Main Cable ducts on a Distribution plan

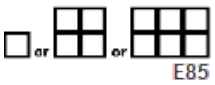
▲ — Blocked or damaged duct.



Roadside / Front Boundary
2 pair lead-in to property from pit in street 1
pair working (pair ID 059)
1 pair dead (i.e. spare, not connected)
Side / Rear Property Boundary
Property Number



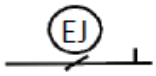
Single to multiple round conduit
Configurations 1,2,4,9 respectively
(attached text denotes conduit type and size)



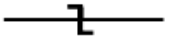
Multiple square conduit
Configurations 2, 4, 6 respectively
(attached text denotes conduit type and size)



Cable Jointing Pit
(number / Letter indicating Pit Type)



Elevated Joint
(above ground joint on buried cable)



Telstra Plant in shared Utility trench



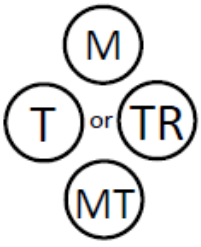
Aerial Cable



Aerial Cable
(attached to joint Use Pole eg. Power)



Direct Buried Cable



Marker Post Installed

Buried Transponder

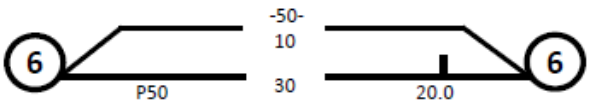
Marker Post, Transponder

Optical Fibre cable direct buried

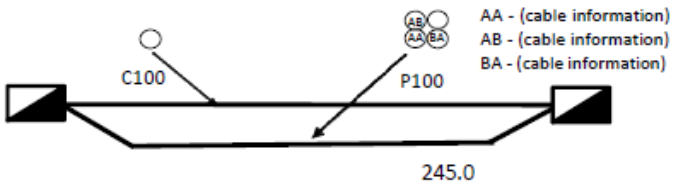
Some examples of conduit type and size:

A - Asbestos cement, P - PVC / Plastic, C - Concrete,
GI - Galanised iron, E - Earthenware
Conduit sizes *nominally* range from 20mm to 100mm
P50 50mm PVC conduit
P100 100mm PVC conduit
A100 100mm asbestos cement conduit

Some Examples of how to read Telstra Plans



One 50mm PVC conduit (P50) containing a 50-pair and a 10-pair cable between two 6-pits. approximately 20.0m apart, with a direct buried 30-pair cable along the same route



AA - (cable information)
AB - (cable information)
BA - (cable information)

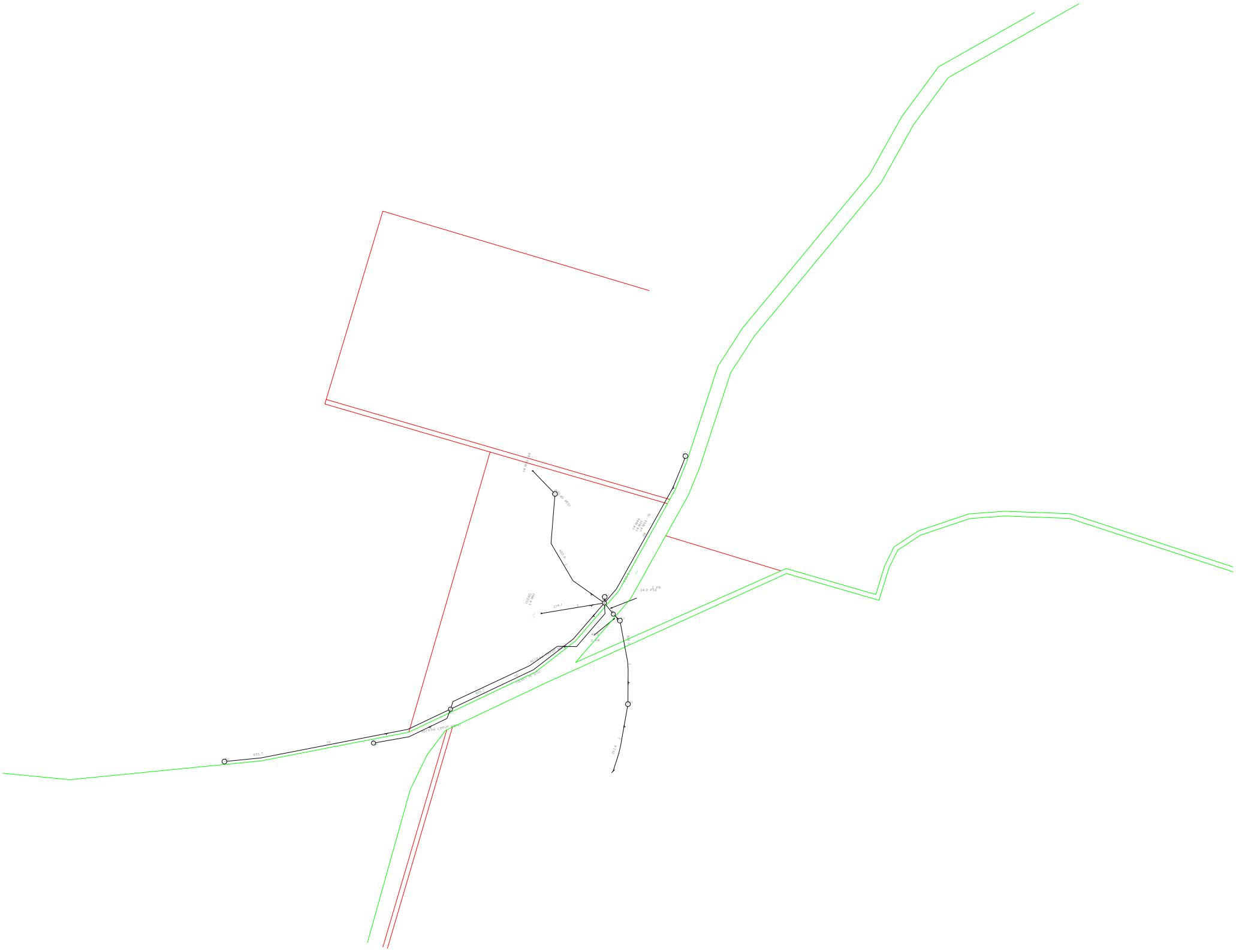
Two separate conduit runs between two footway access chambers (manholes) approximately 245m apart A nest of four 100mm PVC conduits (P100) containing assorted cables in three ducts (one being empty) and one empty 100mm concrete duct (C100) along

Protect our Network:

by maintaining the following distances from our assets:

- 1.0m Mechanical Excavators, Farm Ploughing, Tree Removal
- 500mmVibrating Plate or Wacker Packer Compactor
- 600mm Heavy Vehicle Traffic (over 3 tonnes) not to be driven across Telstra ducts or plant.
- 1.0mJackhammers/Pneumatic Breakers
- 2.0m Boring Equipment (in-line, horizontal and vertical)

For more info contact a CERTLOC Certified Locating Organisation (CLO) or Telstra Location Intelligence Team 1800 653 935



End of document

This document may exclude some files (eg. DWF or ZIP files)

This document was automatically generated at a point-in-time. Be aware that the source information from which this document was created may have changed since it was produced. This document may contain incomplete or out-of-date information. Always check your enquiry details in the BYDA Referral Service for the most recent information. For copyright information refer to individual responses.

15 January 2025

Cabonne Council
PO Box 17
MOLONG NSW 2866

Responded by:
NSW Planning Portal

Attention: Mr Andrew Crump

Dear Andrew

Re: McNaught's Quarry – PAN-442538
Response to Additional Information Request (December 2024)

R. W. Corkery & Co. Pty Limited (RWC) has reviewed the request for additional information provided in relation to the below by Kelly Walker on behalf of Cabonne Council (Council) through the NSW Planning Portal on 6 December 2024 to be responded to by 17 January 2025. Please see below RWC's response to the matters raised.

Intersection Design

Transport for NSW (TfNSW) have reviewed the additional information you provided in October 2024 (following the additional information request in September), and have requested further details. Please see letter from TfNSW dated 4 December 2024 for full details of their request (letter available in documents section).

RWC requested response from Duncan Priestly Civil Engineering Pty Limited to address the specific comments raised by TfNSW. Correspondence with TfNSW was attempted by Duncan Priestly to confirm the approach to the response on 10 December 2024. Confirmation of receipt was received from TfNSW on 13 December 2024, however, no further responses have been received. As such, the responses provided to TfNSW (TfNSW reference: WST24/00271/002 | SF2024/132962) have been included as **Attachment A**.

Bushfire Report

Furthermore, RFS requested in the SEARs that a bushfire report (by a suitably qualified person) be provided with the EIS. Please can you provide a formal response justifying why this report has not been provided, as well as an assessment of the proposal against Planning for Bushfire Protection 2019 (i.e. Chapter 3 Bushfire Protection Measures, Section 8.3.6 (mining requirements to be used as a guideline for a quarry), and requirements for the existing dwelling).

The RFS defines a bushfire prone area as land that can support a bushfire or is likely to be subject to bushfire attack, which is designated on a bushfire prone land map. Mapping of bushfire prone land (BFPL) in NSW is based on the three fire risk vegetation categories described below (RFS, 2015).

- **Category 1** – the highest risk for bushfire. This vegetation category has the highest combustibility and likelihood of forming fully developed fires including heavy ember production and is therefore mapped with a 100m buffer. Typical vegetation types include forest, woodlands, heaths and timber plantations.
- **Category 2** – lower bushfire risk than Category 1 and Category 3 but higher than excluded areas and is therefore mapped with a 30m buffer. This vegetation category has lower combustibility and/or limited potential fire size due to the vegetation area shape

and size, land geography and management practices. Vegetation types include rainforest and isolated vegetation parcels, with topography that does not support upslope fire runs.

- **Category 3** – medium bushfire risk. It is higher in bushfire risk than Category 2 and the excluded areas but lower than Category 1. It is mapped with a 30m buffer. Typical vegetation types include grasslands, semi-arid woodlands, freshwater wetlands and arid shrublands.

Land without the above vegetation categories, or land with sparse, disconnected vegetation is classified as excluded land. Agricultural land and managed grasslands and gardens are also classified as excluded land.

The Rural Fire Service (RFS) mapping tool, accessed on 9 December 2024, identifies the Quarry Site as being within a designated bush fire prone area. The Quarry Site and surrounding Project Site are mapped as Category 3 bushfire prone land under NSW RFS mapping. Section 4.14 of the EP&A Act details the requirement for developments located within bush fire prone land to conform to the specifications and requirements of the document entitled "*Planning for Bush Fire Protection*" (RFS, 2019).

As an extractive industry, the Proposal would be classified as "Other Development" in accordance with Section 8.3.6 of RFS (2019). As identified in Section 8.1 of RFS (2019), the following conditions must be met in order for the Quarry to comply with RFS (2019).

- Consider any issues listed for the specific purpose for the Quarry set out in Chapter 8 of RFS (2019).
- Propose an appropriate combination of bush fire protection measures.
- Satisfy the objective of RFS (2019)

The objectives of RFS (2019) are to:

- afford occupants of any building adequate protection from exposure to a bush fire;
- provide for a defendable space to be located around buildings;
- provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent the likely fire spread to buildings;
- ensure that appropriate operational access and egress for emergency service personnel and residents is available;
- provide for ongoing management and maintenance of bush fire protection measures; and
- ensure that utility services are adequate to meet the needs of fire fighters.

It is noted that whilst no permanent buildings would be constructed within the Quarry Site, the above objectives have been considered in relation to the areas which would be most likely to be populated during operations, that is, within the Stockpile, and Facilities Area, and the existing house (R1) on the Project Site.

The Quarry Site and the surrounding areas of the Project Site are largely devoid of vegetation due to historic clearing and agricultural activities. Therefore, it would be unlikely for bushfire to spread within the Quarry Site and surrounding Project Site. Notwithstanding, activities within the Quarry

Site including refuelling of equipment and general activities may increase the risk of bushfire. To mange the risks associated with these activities the following safeguards or controls would be implemented to manage the risk of bushfire.

- Refuelling undertaken within cleared areas of the Quarry Site.
- Engines in all vehicles to be turned off during refuelling.
- No smoking policy to be enforced in designated areas of the Quarry Site.
- Fire extinguishers equipped and maintained within all site vehicles and mobile earthmoving equipment.
- No throwing cigarette butts from product trucks along the Site Access Road.
- Focus on housekeeping to be maintained by the Applicant.
- Water cart available.

In accordance with Sections 8.3.5 and 8.3.6 of RFS (2019), a minimum Asset Protection Zone (APZ) of 10m would be maintained between any structures within the Stockpile, and Facilities Area, and the existing house (R1) and surrounding vegetation. The APZ would be maintained throughout the life of the Quarry to a standard such that those areas are considered a safe working environment in which efforts can be undertaken to defend any structures before, during and after the passage of bush fire.

Therefore, with the implementation of the proposed safeguards and controls, it is considered that the bush fire hazard associated with the Quarry would be acceptable and the Quarry would not significantly contribute to raising the risk of bush fires impacting the community, property or environmental assets.

I trust that the above provides sufficient information at this stage to address the matters raised. Please do not hesitate to contact me with any questions.

Yours sincerely

Indigo Devane
Environmental Consultant

Encls: Attachment A – Response to TfNSW

15 January 2025

Attachment A

Response to TfNSW

(Total No. of pages including blank pages = 4)

Indigo Devane

From: Duncan Priestley <duncanjp@hwy.com.au>
Sent: Friday, 13 December 2024 12:59 PM
To: Indigo Devane
Cc: Makk McNaught
Subject: FW: TfNSW reference: WST24/00271/002 | SF2024/132962

From: Lachy Jones <Lachy.Jones@transport.nsw.gov.au>
Sent: Friday, 13 December 2024 9:04 AM
To: Duncan Priestley <duncanjp@hwy.com.au>
Subject: RE: TfNSW reference: WST24/00271/002 | SF2024/132962

Hi Duncan,

Acknowledging receipt of your email.

I have provided your comments to road design for review. Given the time of year and a number of staff away on holidays, I have request confirmation from the team that a response will be received before the close down period commences on 21st December until 5th January 2025.

I'll keep you updated and try to push for a response.

Regards,

Lachy Jones
A/Team Leader Development Services (West)
Development Services (West)
Transport Planning | Planning, Integration and Passenger
Transport for NSW
transport.nsw.gov.au

| E development.west@transport.nsw.gov.au **| P** 0447 933 508

I work flexibly. Unless it suits you, I don't expect you to read or respond to my emails outside of your normal business hours.

Transport for NSW

I acknowledge the Aboriginal people of the country on which I work, their traditions, culture and a shared history and identity. I also pay my respects to Elders past and present and recognise the continued connection to country.

From: Duncan Priestley <duncanjp@hwy.com.au>
Sent: Friday, December 13, 2024 6:59 AM
To: Lachy Jones <Lachy.Jones@transport.nsw.gov.au>
Subject: FW: TfNSW reference: WST24/00271/002 | SF2024/132962

You don't often get email from duncanjp@hwy.com.au. Learn why this is important

CAUTION: This email is sent from an external source. Do not click any links or open attachments unless you recognise the sender and know the content is safe.

From: Duncan Priestley <duncanjp@hwy.com.au>
Sent: Tuesday, 10 December 2024 3:17 PM
To: 'development.west@transport.nsw.gov.au.' <development.west@transport.nsw.gov.au.>
Cc: 'Indigo Devane' <indigo@rwcorkery.com>; Makk McNaught <makkmcnaught@outlook.com>
Subject: TfNSW reference: WST24/00271/002 | SF2024/132962

Lachy Jones,
Development Services Case Officer,

Hello Lachy,

Thanks for returning my call.
The mail I sent bounced.

I will call you sometime this morning if you have time.

I have looked at your response and my replies are in red below.

Duncan

1.
Inclusion of road shoulders in accordance with Austroads Guide to Road Design Part 6 – Table 4.7,

This appears to be in part 3. The design has a min 1.0m shoulder. Part or all of it could be sealed.

Table 4.7: Shoulder width

Function of shoulder	Minimum sealed width (m)
Lateral support of pavement	0.5
Control of moisture or on outside of curves	1.0
Initial recovery area	0.5
Discretionary stopping Cars Trucks	 2.5 3.0
Bicycle demand	2.0/3.0

2. Height difference between proposed widening and the natural surface poses a risk as being a traversable and recoverable batter for cars. Batter should be designed in accordance with

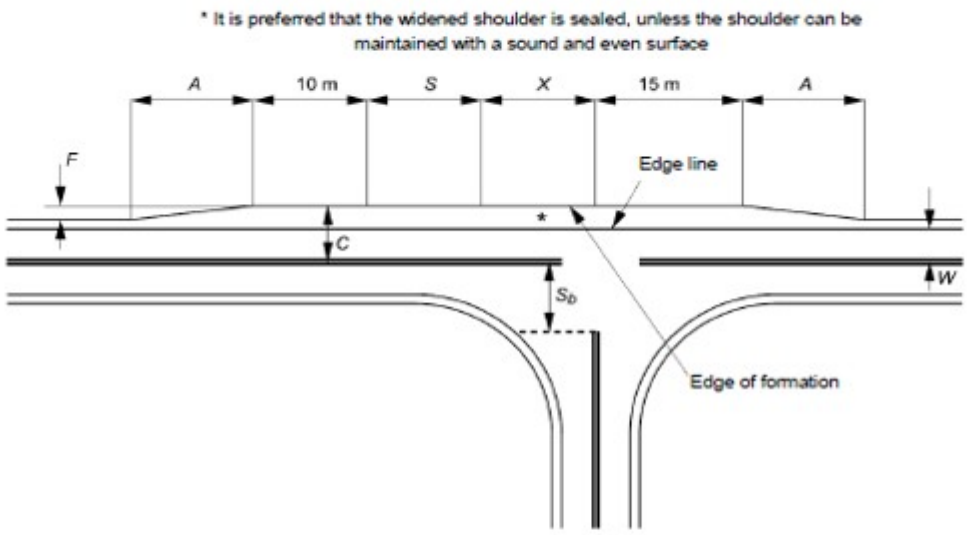
Austroads Guide to Road Design Part 3 – Table 4.11 with either a 6:1 batter slope or, alternatively, a 4:1 batter could be applied using a 1.0m wide verge with a 2.0m rounding,
True that guide says 6:1. However I was trying to save the trees.
3. Any trees located within the designated clear zone will either need to be removed (subject to REF findings) or if trees are found to be significant and cannot be removed, a barrier assessment is to be undertaken and a complying verge condition with full working width for the safety barrier should be provided. Clear zones should be in accordance with Austroads Guide to Road Design Part 6,
I cannot find any reference to clear zone in the current Austroads but there is mention in a previous version that calls for 5.0m o/s from the edge line.
I recalculated the design and 6:1 batters plus a clear zone will cause the removal of at least 6 trees. The reason I went with 4:1 was to save the trees. I think removing the trees might cause a problem with the REF.

4. Tapers and intersection dimensions in plan view should be provided to allow an accurate assessment of the proposed design works. Alternatively, provide a list of all BAR design values adopted for design calculation,

Design values shown below.

W	C	V	F	AS	S	X	XA	A	SHLDR	storage	Sb
85	7	100	3.5	10	40	15	15	50	1	80	7.5

Figure A 28: Basic right (BAR) turn treatment on a two-lane rural road



Notes:
This treatment applies to the right turn from a major road to a minor road.
The dimensions of the treatment are:

- *W* = Nominal through lane width (m) (including widening for curves). Width to be continuous through the intersection.
- *C* = On straights –6.5 m minimum
  7.0 m minimum for Type 1 & Type 2 road trains
  On curves – widths as above + curve widening (based on widening for the design turning vehicle plus widening for the design through vehicle)
- *A* = $\frac{0.5VF}{3.6}$
  Increase length *A* on tighter curves (e.g. those with a side friction demand greater than the maximum desirable). Where the design through vehicle is larger than or equal to a 19 m semi-trailer the minimum speed used to calculate A is 80 km/h
- *V* = Design speed of major road approach (km/h)
- *F* = Formation/carriageway widening (m)
- *S* = Storage length to cater for one design turning vehicle (m) (minimum length 12.5 m)
- *X* = Distance based on design vehicle turning path, typically 10–15 m

Source: Department of Main Roads (2006)[26].

5. The strategic design presents a BAR treatment with a merge taper prior to a transverse culvert. This design should consider vehicle run-out where a vehicle fails to merge. Accordingly, the road design should widen the culvert to allow sufficient width for vehicle run-out in accordance with Austroads Guide to Road Design Part 6.
I cannot find any reference to this in Austroads. The taper ends 34m before the culvert.
The applicant does not want to widen the culvert because of cost. Is there another cheaper option?
6. Confirm the setback distance between the centre line of Canowindra Road and the holding line
7.5m See above figure
at the Quarry access in accordance Austroads Guide to Road Design Part 4A, Figure 7.1.
7. SISD should be confirmed for the design speed of +10km/h above posted speed (e.g. minimum 300m (+/-grade correction) for 110km/h design speed). Alternatively, if SISD for 85th percentile speed is met, advanced gated intersection warning signage may be acceptable.
The best I could come up with given the length of survey I did and taking into account estimations by The Transport Planning Partnership was 280m so warning signs might be the easiest.

Duncan Priestley
Director
Duncan Priestley Civil Engineering
144 Townsends Lane
Gilgandra NSW 2827
M: 0419 402 693
E: duncanjp@hwy.com.au

This email is intended only for the addressee and may contain confidential information. If you receive this email in error please delete it and any attachments and notify the sender immediately by reply email. Transport for NSW takes all care to ensure that attachments are free from viruses or other defects. Transport for NSW assume no liability for any loss, damage or other consequences which may arise from opening or using an attachment.

Consider the environment. Please don't print this e-mail unless really necessary.

CAUTION: This email originated from outside our organization. Do not click links or open attachments unless you know the sender and are expecting this email. If you are unsure please contact the sender or Diamond IT to verify.



BIODIVERSITY ASSESSMENT REPORT

MCNAUGHT'S QUARRY

CANOWINDRA NSW

CABONNE SHIRE LOCAL GOVERNMENT AREA

APRIL 2025

Report prepared by

OzArk Environment & Heritage

for McNaught Earthworks Pty Ltd

OzArk
Environment & Heritage

145 Wingewarra St
(PO Box 2069)
Dubbo NSW 2830

Phone: (02) 6882 0118
Fax: (02) 6882 0630
enquiry@ozarkehm.com.au
www.ozarkehm.com.au

This page has intentionally been left blank.

DOCUMENT CONTROLS

Proponent	McNaught's Earthworks Pty Ltd		
Client	**RW Corkery**		
Document description	Biodiversity Assessment Report		
	Name	**Signed**	**Date**
Client's reviewing officer			
Client's representative managing this document		**OzArk representative managing this document**	
Indigo Devane		Jeff Lewis (JL), Dr Crystal Graham (CG), Lauriane Citerne (LC)	
Location		**OzArk job number**	
S:\OzArk EHM Data\Clients\RWCorkery\ McNaught'sQuarry\Ecology\Reporting		4160	
Document status: FINAL		**Version**	**Date**	**Action**
Internal Draft Series		V1.0	10/01/2024	JL to CG
		V1.1	12/01/2024	CG to JL
		V1.2	19/01/2024	JL to CG
		V1.3	23/01/2024	CG to JL
		V1.4	24/01/2024	JL to CG
		V1.5	25/01/2024	CG edit
First Draft for Client Review		V2.0	25/01/2024	CG to client
Final Report for Client		V3.0 V3.1 V3.2 V3.3	19/02/2024 25/05/2024 01/04/2025 10/04/2025	JL to client Footprint update Footprint update Client edits
Prepared for		**Prepared / updated by**		
Indigo Devane Environmental Consultant RW Corkery indigo@rwcorkery.com		Jeff Lewis / Lauriane Citerne Ecologist OzArk Environment & Heritage 145 Wingewarra Street (PO Box 2069) Dubbo NSW 2830 lauriane@ozarkehm.com.au		

COPYRIGHT

© OzArk Environment & Heritage Pty Ltd, 2025

and

© RW Corkery, 2025

All intellectual property and copyright reserved.

Apart from any fair dealing for the purpose of private study, research, criticism or review, as permitted under the *Copyright Act 1968*, no part of this report may be reproduced, transmitted, stored in a retrieval system or adapted in any form or by any means (electronic, mechanical, photocopying, recording or otherwise) without written permission.

Enquiries would be addressed to OzArk Environment & Heritage Pty Ltd.

Acknowledgement

OzArk acknowledge the traditional custodians of the area on which this assessment took place and pay respect to their beliefs, cultural heritage and continuing connection with the land. We also acknowledge and pay respect to the post-contact experiences of Aboriginal people with attachment to the area and to the Elders, past and present, as the next generation of role models and vessels for memories, traditions, culture and hopes of local Aboriginal people.

EXECUTIVE SUMMARY

OzArk Environment & Heritage (OzArk) has been engaged by R.W. Corkery (the client) to complete a Biodiversity Assessment Report (BAR) concerning the expansion of the McNaught's Quarry, 16 kilometres (km) north of Canowindra, New South Wales (NSW). Work will be occurring in the Cabonne Shire Local Government Area (LGA).

The proposed disturbance area is up to 9.62 hectares (ha). The extraction of the material will be via a bulldozer to rip and push the material which is then direct loaded into road trucks for transportation off site. Occasional blasting and crushing are proposed on a campaign basis.

This BAR assesses the impacts of the proposal on biodiversity.

As per the Cabonne Local Environmental Plan 2012 (LEP), areas mapped as having high terrestrial biodiversity value are present within the subject site.

An onsite field survey was conducted by OzArk Ecologist Sam Bulling on the 25th of October 2023. The subject site, 9.62 ha in size, consisted of native and non-native vegetation, along with bare earth, road surfaces, farmland and the existing McNaught's Quarry. The 0.385 ha of native vegetation was found to belong to three Plant Community Types (PCTs):

- PCT 53 - Shallow freshwater wetland sedgeland in depressions on floodplains on inland alluvial plains and floodplains.
- PCT 266 - White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion.
- PCT 277 - Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion.

PCTs 266 and 277 were judged to be an example of the *Biodiversity Conservation Act* 2016 (BC Act)-listed Critically Endangered Ecological Community (CEEC), White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions. As such, up to 0.33 ha of this Threatened Ecological Community (TEC) may be cleared for this proposal.

In total, two habitat trees (e.g., hollow bearing) were recorded within the subject site; these trees cumulatively contained three small (<20 cm in diameter) hollows. No large hollows or fallen timber deposits were encountered during the field survey. Large rocks suitable for use by fauna species were located adjacent to the extraction site dams. These should be relocated, if in the path of bulldozing, to retain reptile and amphibian habitat.

No watercourses intersect the subject site. Seventeen watercourses are present within the study area. Key Fish Habitat (KFH) occurs at the edge of the study area and Protected Riparian Land (PRL) at the edge of the search area, but neither are close to the subject site.

In total, fifty-seven threatened or migratory fauna species or populations, and 10 flora species, listed under the BC Act, *Environment Protection and Biodiversity Conservation Act* 1999 (EPBC Act), were considered to have a moderate or greater probability of occurrence at the subject site. However, no listed species or population were encountered during the field survey. Subject to implementation of the mitigation measures proposed, it has been concluded that no significant biodiversity impacts are likely, including to any threatened or migratory species, population or ecological community, or their habitats. As such, the proposal does not require referral to the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEW) in respect of these matters or trigger the need for a Species Impact Statement (SIS) or a Biodiversity Development Assessment Report (BDAR).

This assessment covers the current form of the proposal. Any change to the scope of work may require re-assessment. If entry into the Biodiversity Offset Scheme (BOS) is triggered by a changed footprint impacting additional native vegetation, then additional field work and reporting completed according to the Biodiversity Assessment Method 2020 (BAM) may be required.

Please note, that while figures, PCT mapping, and TEC areas have been updated in April 2025 to include removal of vegetation on Canowindra Road as per the client's request, BioNet records and other background data searches remain unchanged since the report's original publication in February 2024.

CONTENTS

EXECUTIVE SUMMARY vi

ABBREVIATIONS 1

GLOSSARY OF TERMS 3

1 INTRODUCTION 5

1.1 Background 5

1.2 Project Location and Context 6

1.2.1 Regional Context 6

1.2.2 Impact Footprint 9

1.3 Subject site, Study Area and Search Area 9

2 STATUTORY AND PLANNING CONTEXT 10

2.1 Commonwealth legislation 10

2.1.1 *Environment Protection & Biodiversity Conservation Act* 1999 (EPBC Act) 10

2.2 State Legislation 10

2.2.1 *Environmental Planning and Assessment Act* 1979 (EP&A Act) 10

2.2.2 *Biodiversity Conservation Act* 2016 (BC Act) 10

2.2.3 *Biosecurity Act* 2015 11

2.2.4 *Local Land Services Act* 2013 11

2.2.5 *Fisheries Management Act* 1994 11

2.2.6 *Water Management Act* 2000 (WM Act) 12

2.2.7 Cabonne Local Environmental Plan 2012 12

2.3 State Environmental Planning Policies under the EP&A Act 1979 15

2.3.1 *State Environmental Planning Policy (Biodiversity and Conservation)* 2021 15

3 METHODS 16

3.1 Personnel 16

3.2 Background Research 17

3.3 Habitat assessment 18

3.4 Field survey 19

3.4.1 Vegetation surveys 19

3.4.2 Targeted fauna surveys 20

3.5 Limitations 21
4 EXISTING ENVIRONMENT 22
4.1 Bioregion 22
4.2 NSW Landscapes 23
4.3 Climate 25
4.4 Watercourses 26
4.5 Groundwater dependent ecosystems 30
5 RESULTS 33
5.1 Plant community types 33
5.2 Threatened ecological communities 34
5.3 Threatened species and populations 40
5.4 Aquatic ecological communities 42
5.5 Habitat trees and features 42
5.6 Wildlife connectivity corridors 44
5.7 Matters of National Environmental Significance 44
6 IMPACT ASSESSMENT 45
6.1 Construction impacts 45
6.1.1 Impacts to native vegetation and threatened ecological communities 45
6.1.2 Impact to threatened fauna and associated habitat 45
6.1.3 Impact to threatened flora 45
6.1.4 Fauna injury and mortality 46
6.2 Indirect/operational impacts 46
6.2.1 Wildlife connectivity and habitat fragmentation 46
6.2.2 Edge effects on adjacent native vegetation and habitat 46
6.2.3 Invasion and spread of weeds 46
6.2.4 Invasion and spread of pests 47
6.2.5 Invasion and spread of pathogens and disease 47
6.2.6 Noise, light and vibration 47
6.3 Cumulative impacts 47
6.4 Impact Summary 48

7 AVOID, MINIMISE AND MITIGATE IMPACTS 49

7.1 Avoidance and minimisation 49

7.2 Mitigation measures 49

8 CONCLUSION 53

9 REFERENCES 54

APPENDIX A – DATABASE SEARCH RESULTS 58

APPENDIX B – FIELD SURVEY RESULTS 80

APPENDIX C – BC & EPBC ACT HABITAT ASSESSMENT FOR THREATENED SPECIES AND COMMUNITIES PREDICTED TO OCCUR 86

APPENDIX D – BC ACT TESTS OF SIGNIFICANCE 138

APPENDIX E – MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE 177

APPENDIX F – KEY THREATENING PROCESSES 211

FIGURES

Figure 1-1. Subject site specific to the proposal. 7
Figure 1-2. Regional context of the proposal showing the subject site, study area, and search area. 8
Figure 2-1. Cabonne LEP 2012 - Terrestrial Biodiversity Map. Green shaded areas indicate high terrestrial biodiversity; red polygon approximates the subject site (enlarged inset of subject site in the bottom right) 14
Figure 4-1. NSW (Mitchell) Landscapes of the search area (Mitchell, 2002). 24
Figure 4-2. Climate statistics for the Orange Agricultural Institute weather station (ID 063254).25
Figure 4-3. Representative photographs of the condition of McNaught's Quarry. Left, looking north towards Canowindra Road into the extraction area. Right, looking south from the internal access road between the extraction area site buildings (both within the subject site). 27
Figure 4-4. Key Fish Habitat, Protected Riparian Land, and watercourses within the search area. 28
Figure 4-5. Key Fish Habitat, Protected Riparian Land, and watercourses within the study area (magnified view). 29
Figure 4-6. Groundwater Dependent Ecosystems adjacent to search area. 32
Figure 5-1. Assessment of PCT 266 and 277 according to the EPBC Box-Gum Woodland guidelines. 35
Figure 5-2. Confirmed Plant Community Types and habitat trees within the subject site (1 of 2). 36
Figure 5-3. Confirmed Plant Community Types and habitat trees within the subject site. 37
Figure 5-4. Threatened Ecological Communities (BC Act-listed Critically Endangered Ecological Communities) within the subject site (1 of 2). 38
Figure 5-5. Threatened Ecological Communities (BC Act-listed Critically Endangered Ecological Communities) within the subject site (2 of 2). 39

TABLES

Table 1-1. Minimum lot size and allowable clearing threshold under the BAM 2020 6
Table 1-2. Regional context for the proposal. 6
Table 3-1 Summary of OzArk personnel qualifications. 16
Table 3-2. Presence and/or proximity of environmental considerations. 18
Table 4-1. Description of the NSW South Western Slopes Bioregion (DPE, 2003). 22
Table 5-1. PCTs within the subject site. 33
Table 5-2. Assessment of PCT 266 and 277 under the BC Act CEEC criteria. 34
Table 5-3. BC and EPBC Act-listed threatened or migratory, species or populations, with the potential to be impacted by the proposal. 40
Table 6-1. Significant weeds encountered at the subject site. 47
Table 7-1. Mitigation measures and environmental safeguards. 50

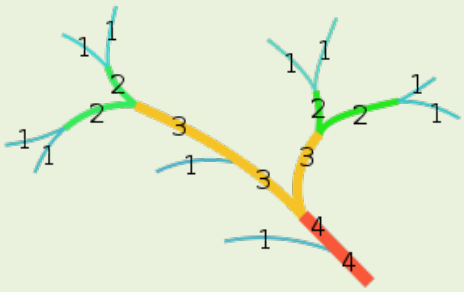
ABBREVIATIONS

Term	Description
^{0}C	Degrees Celsius
AOBV	Areas of Outstanding Biodiversity Value
ASL	Above Sea Level
BAM	Biodiversity Assessment Method 2020
BAR	Biodiversity Assessment Report
BDAR	Biodiversity Development Assessment Report
BC Act	NSW *Biodiversity Conservation Act 2016*
BOS	NSW Biodiversity Offsets Scheme
CAMBA	China-Australia Migratory Bird Agreement
CEEC	Critically Endangered Ecological Community
CEMP	Construction Environmental Management Plan
DCCEEW	Commonwealth Department of Climate Change, Energy the Environment and Water
DoE	Department of Environment
DPI	NSW Department of Primary Industries
DPIE	NSW Department of Planning, Industry and Environment
EEC	Endangered ecological community
EIS	Environmental Impact Statement
EP&A Act	NSW *Environmental Planning and Assessment Act 1979*
EPBC Act	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
ESCP	Erosion and Sediment Control Plan
FM Act	NSW *Fisheries Management Act 1994*
GDEs	Groundwater dependent ecosystems
GPS	Global Positioning System
ha	Hectare
HTE	High Threat Exotic
IBRA	Interim Biogeographic Regionalisation of Australia. Each region is a land area made up of a group of interacting ecosystems repeated in similar form across the landscape.
JAMBA	Japan-Australia Migratory Bird Agreement
KFH	Key Fish Habitat
KTP	Key Threatening Process
LEP	Local Environmental Plan
LGA	Local Government Area
mm/cm/m/m^2/km	Millimetre/centimetre/metre/square metre/kilometre
MNES	Matters of National Environmental Significance
NPW Act	NSW *National Parks and Wildlife Act 1974*
NSW	New South Wales
OEH	NSW Office of Environment and Heritage
PCT	Plant Community Type
PMST	Protected Matters Search Tool

Term	Description
PW	Priority Weed
RAMSAR	Convention on Wetlands of International Importance
REF	Review of Environmental Factors
ROKAMBA	Republic of Korea-Australia Migratory Bird Agreement
SEPP	State Environmental Planning Policy
SIS	Species Impact Statement
TECs	Threatened Ecological Communities
TSPD	Threatened Species Profile Database
VIS	Vegetation information system
WoNS	Weeds of National Significance

GLOSSARY OF TERMS

Term	Description
Areas of outstanding biodiversity	An area of outstanding biodiversity value is: • an area important at a State, national or global scale, and • an area that makes a significant contribution to the persistence of at least one of the following: ○ multiple species or at least one threatened species or ecological community ○ irreplaceable biological distinctiveness ○ ecological processes or ecological integrity ○ outstanding ecological value for education or scientific research. The declaration of an area may relate, but is not limited, to protecting threatened species or ecological communities, connectivity, climate refuges and migratory species (BC Act).
Cumulative impact	The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Refer to Clause 228(2) of the EP&A Regulation 2000 for cumulative impact assessment requirements.
Direct impacts	Are those that directly affect the habitat of species and ecological communities and of individuals using the study area. They include, but are not limited to, death through predation, trampling, poisoning of the animal/plant itself and the removal of suitable habitat (OEH 2018).
Habitat	The area occupied or used, including areas periodically or occasionally occupied or used, by any threatened species or ecological community and includes all the different aspects (both biotic and abiotic) used by species during the different stages of their life cycle (OEH 2018).
Important population	Is a population that is necessary for a species long-term survival and recovery; this may include populations identified as such in recovery plans, and/or that are: • key source populations either for breeding or dispersal • populations that are necessary for maintaining genetic diversity, and/or • populations that are near the limit of the species range (DE 2013).
Indirect impact	Occur when project-related activities affect species or ecological communities in a manner other than direct loss within the subject site. Indirect impacts may sterilise or reduce the habitability of adjacent or connected habitats. Indirect impacts can include loss of individuals through starvation, exposure, predation by domestic and/or feral animals, loss of breeding opportunities, loss of shade/shelter, reduction in viability of adjacent habitat due to edge effects, deleterious hydrological changes, increased soil salinity, erosion, inhibition of nitrogen fixation, weed invasion, noise, light spill, fertiliser drift, or increased human activity within or directly adjacent to sensitive habitat areas (OEH 2018).
Invasive species	Is an introduced species, including an introduced (translocated) native species, which out-competes native species for space and resources, or which is a predator of native species. Introducing an invasive species into an area may result in that species becoming established. An invasive species may harm listed threatened species or ecological communities by direct competition, modification of habitat or predation.
Local occurrence (EEC)	The ecological community present within the study area. However, the local occurrence may include adjacent areas if the ecological community on the study area forms part of a larger contiguous area of the ecological community and the movement of individuals and exchange of genetic material across the boundary of the study area can be clearly demonstrated.
Local population (in regard to a threatened or migratory species)	A local population of a threatened plant species comprises those individuals occurring in a defined area or a cluster of individuals extends into habitat adjoining and contiguous with the study area where the individuals could reasonably be expected to cross-pollinate.

Term	Description
	A local population of fauna species comprises those individuals known or likely to occur in a defined area, as well as any individuals occurring in adjoining areas (contiguous or otherwise) that are known or likely to utilise habitats in the study area. The local population of migratory or nomadic fauna species comprises those individuals likely to occur in the study area from time to time (DECC 2007).
Low condition (vegetation)	Either: a) woody native vegetation with native over-storey percent foliage cover less than 50% of the lower value of the over-story percent foliage cover benchmark for that vegetation type, and where either: • less than 50% of ground cover vegetation is indigenous species, or • greater than 90% of ground cover vegetation is cleared or b) native grassland, wetland or herb field where either: • less than 50% of ground cover vegetation is indigenous species, or • more than 90% of ground cover vegetation is cleared. Note: The percentages for the ground cover calculations must be made in a season when the proportion of native ground cover vegetated compared to non-native ground cover vegetation is likely to be at its maximum.
Moderate to good condition (vegetation)	If native vegetation is not in low condition (above), it is in moderate to good condition.
Mitigation	Action to reduce the severity of an impact.
Mitigation measure	Any measure that prevents, reduce or controls adverse environmental effects of a project.
NSW (Mitchell) landscape	Landscapes with relatively homogeneous geomorphology, soils and broad vegetation types, mapped at a scale of 1:250,000 (OEH 2018).
Proposal	Is considered to include 'all activities likely to be undertaken within the subject site to achieve the objective of the proposed development' (DECC 2007).
Risk of extinction	The likelihood that the local population will become extinct either in the short-term or in the long-term as a result of direct or indirect impacts on the viability of that population.
Search area	Is considered to 'include the lands that surround the subject site for a distance of 10 km' (DECC 2007). The search area has been used to search information sources to establish the landscape context of the subject site.
Significant impact	A 'significant impact' is an impact which is important, notable, or of consequence, having regard to its context or intensity.
Strahler stream order	Strahler stream orders are used to define stream size based on a hierarchy of tributaries, based on the diagram below. 
Study area	Means the subject site and any additional areas which are likely to be affected by the proposal, either directly or indirectly. The study area should extend as far as is necessary to take all potential impacts into account (OEH 2018). In this instance, the study area extends 1,500 m from the site.
Subject site	Means the area directly affected by the proposal. The subject site includes the footprint of the proposal and any ancillary works, facilities, accesses or hazard reduction zones that support the construction or operation of the development or activity (OEH 2018).
Target species	A species that is the focus of a study or intended beneficiary of a conservation action or connectivity measure.

1 INTRODUCTION

1.1 BACKGROUND

OzArk Environment & Heritage (OzArk) has been engaged by R.W. Corkery to complete a Biodiversity Assessment Report (BAR) concerning expanding the McNaught's Quarry, 16 kilometres (km) north of Canowindra, New South Wales (NSW). Work will be occurring in the Cabonne Shire Local Government Area (LGA).

The site access route will lead south from the Extraction Area, with a site entrance on Canowindra Road, a Regional Road, south of the Quarry. This option has reasonable sight distance at the proposed intersection and is located entirely within the Company's land. A deceleration lane on Canowindra Lane is required.

The access road site uses formed or semi-formed existing tracks with various impacts to native vegetation. There are upgrades to Canowindra Road in the form of deceleration lanes required within the current footprint at the chosen site access (Option 1 variation).

As entry into the NSW Biodiversity Offsets Scheme (BOS) will not be triggered for this proposal, a Biodiversity Assessment Report (BAR) is appropriate rather than a Biodiversity Development Assessment Report (BDAR). Entry into the BOS is triggered when one, or more, of the following conditions are met:

- The proposal exceeds the clearing threshold for the relevant property,
- The proposal will impact a mapped area of biodiversity value on the state-wide Biodiversity Values Map, and
- The proposal will result in a significant impact to one or more listed threatened entities.

The subject site does not occur on land mapped on the Biodiversity Values Map (**Appendix A**), and the proposal will not have a significant impact on a *Biodiversity Conservation Act* 2016-listed threatened species or population (**Appendices D-E**). The Cabonne Shire Local Environment Plan 2012 (LEP) gives the minimum lot size associated with the property as 100 hectares (ha). Under the Biodiversity Assessment Method 2020 (BAM), the clearing threshold for entry into the BOS for a property with a minimum lot size is 1 ha (see **Table 1-1**). As this proposal will entail the removal of up to 0.385 ha of vegetation (**Section 5.1**) it will not exceed the clearing threshold and thus will not trigger the requirement to offset and to prepare a BDAR.

Table 1-1. Minimum lot size and allowable clearing threshold under the BAM 2020

Minimum Lot Size	Clearing Threshold
Less than 1 ha	0.25 ha or more
1 ha to less than 40 ha	0.50 ha or more
40 ha to less than 1000 ha	**1 ha or more**
1000 ha or more	2 ha or more

This biodiversity assessment has been undertaken in accordance with Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). For this proposal, McNaught Earthworks Pty Ltd is the proponent, and the Cabonne Shire Council is the determining authority (EP&A Act s.4.3). The biodiversity assessment has been prepared in accordance with Clause 171 of the EP&A Regulation (2021).

1.2 PROJECT LOCATION AND CONTEXT

1.2.1 Regional Context

The regional context of the proposal is explored in **Table 1-2** and depicted in **Figure 1-1** and **Figure 1-2**.

Table 1-2. Regional context for the proposal.

Criteria	Value
Interim Biogeographic Regionalisation for Australia (IBRA Region)	NSW Southwestern Slopes Bioregion
Interim Biogeographic Regionalisation for Australia Sub-region (IBRA Sub-Region)	Inland Slopes subregion
State	New South Wales
Local Government Area	Cabonne Shire Council
Nearest town	Canowindra
Nearest park, state forest or reserve	Nangar National Park (~9.1 km)
Mitchell Landscapes	Canobolas Slopes
Nearest waterway (Name, Type)	• Unnamed Strahler 1st order, minor non-perennial (within the subject site) • Unnamed Strahler 2nd order, minor non-perennial (within the subject site)
Surrounding land use	• Cropping • Grazing modified pastures • Grazing native vegetation • Residential and farm infrastructure • Transport and communication
Surrounding land zone	• RU1 – Primary Production • SP2 – Infrastructure

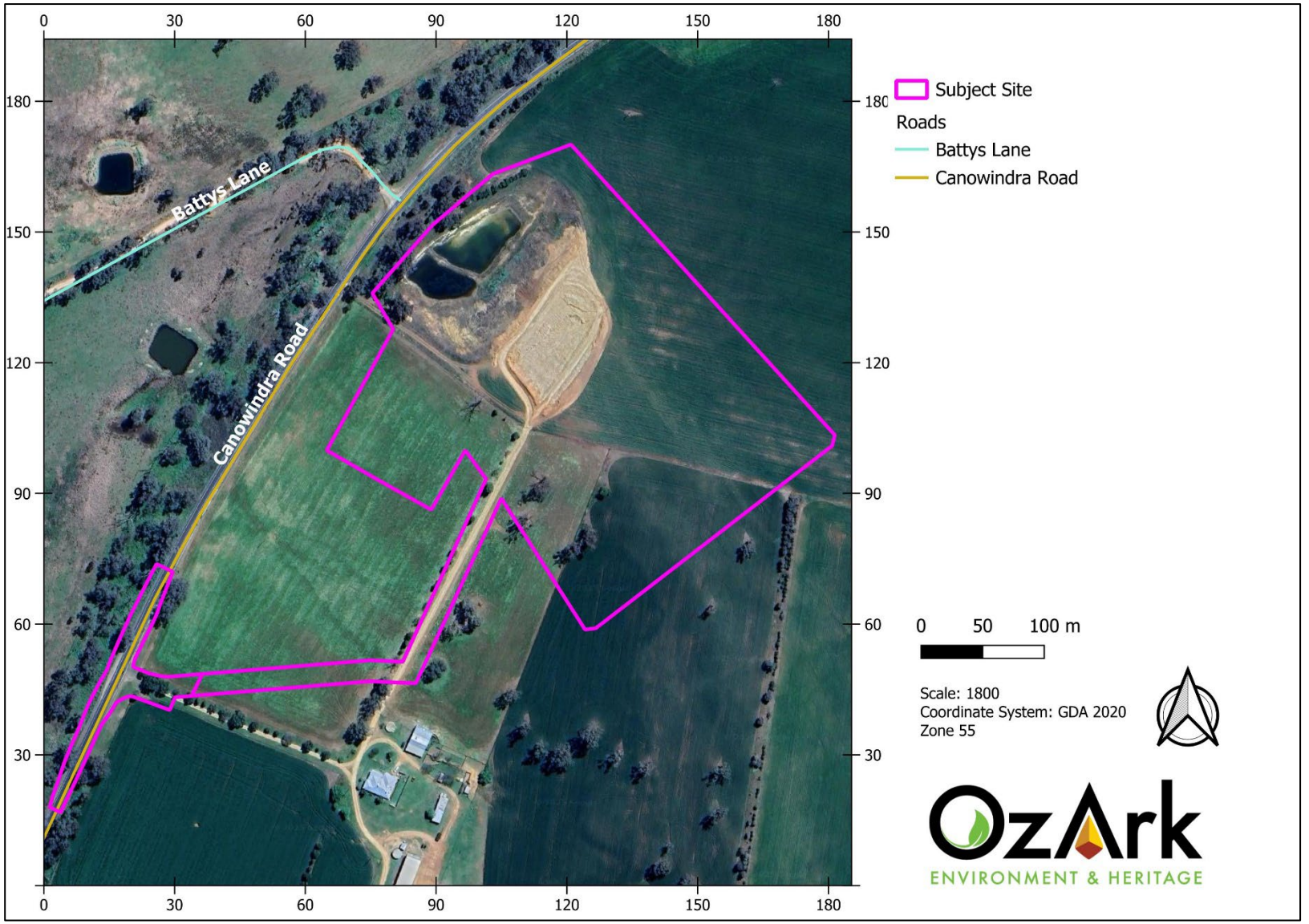


Figure 1-1. Subject site specific to the proposal.

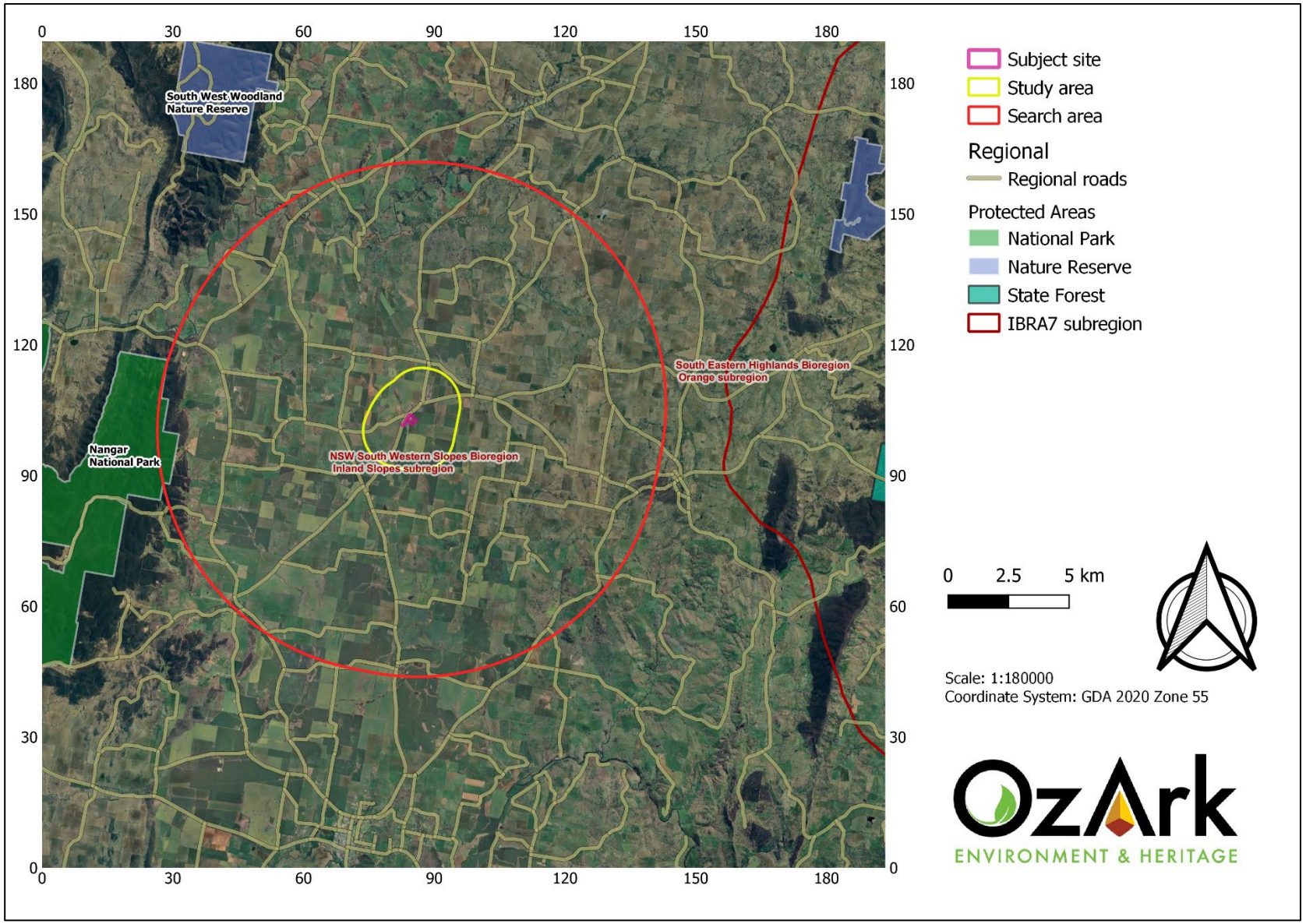


Figure 1-2. Regional context of the proposal showing the subject site, study area, and search area.

1.2.2 Impact Footprint

The total disturbance footprint for the proposal, depicted in **Figure 1-1** amounts to 9.62 ha. Although vegetation clearance will be restricted to the minimum for the operating quarry expansion, this BAR will conservatively assess impacts necessary to the full 9.62 ha. The scope of works involves the construction of the quarry footprint expansion as well as upgrades to internal access roads from Canowindra Road.

1.3 SUBJECT SITE, STUDY AREA AND SEARCH AREA

This report uses the following terms to describe and contextualise the development location:

10 km search area — the area within a 10 km radius of the subject site (**Figure 1-2**). This 10 km buffer has been used to search information sources to establish the landscape context of the subject site.

Study area — the area within a 1,500 m radius of the subject site. Native vegetation has been mapped within this 1,500 m buffer to provide some context regarding the connectivity and cover of native vegetation in the area affected by the proposal, and to inform the impact assessment of the proposal (**Figure 1-2**).

Subject site — the footprint of the proposal and the area directly affected by the development activities (**Figure 1-2**).

2 STATUTORY AND PLANNING CONTEXT

2.1 COMMONWEALTH LEGISLATION

2.1.1 *Environment Protection & Biodiversity Conservation Act* 1999 (EPBC Act)

To assist with nationally listed matters assessments, the Matters of National Environmental Significance: Significant impact guidelines 1.1. Environment Protection and Biodiversity Conservation Act 1999 (DoE 2013) are followed.

Birds which are listed in the following international agreements are listed as migratory birds under the EPBC Act.

- Japan-Australia Migratory Bird Agreement (JAMBA).
- China-Australia Migratory Bird Agreement (CAMBA).
- Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA).

Matters which fall under this legislation are addressed in **Section 5.7** and **Appendix E**.

2.2 STATE LEGISLATION

2.2.1 *Environmental Planning and Assessment Act* 1979 (EP&A Act)

The EP&A Act is the principal planning legislation for NSW by providing the framework for environmental planning and the assessment of proposals.

Part 4 of this Act requires that a determination be made as to whether a proposed action is likely to significantly affect threatened species or ecological communities, or their habitats listed on Schedule 1 and 2 of the BC Act. Where found, the assessment criteria under Section 7.3 of the BC Act (the 'Assessment of Significance') will be drawn upon to determine whether there would be a significant effect on these species.

2.2.2 *Biodiversity Conservation Act* 2016 (BC Act)

The BC Act relates to the terrestrial environment and includes threatened species, ecological communities, key threatening processes and other protected animals and plants.

Section 7.3 of the BC Act contains a five-part test of significance for determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats.

Where a significant impact is likely to occur, the proponent must either opt into the BOS and prepare a BDAR or prepare a SIS for each significantly impacted BC listed entity.

BC Act-listed species and communities are addressed in **Sections 5.2** and **5.3** and **Appendices C** and **D**.

2.2.3 *Biosecurity Act* 2015

The Biosecurity Act aims to manage biosecurity risks from animal and plant pests and diseases, weeds, and contaminants in NSW. The Biosecurity Act imposes a general biosecurity duty to ensure that, so far as is reasonably practicable, any biosecurity risk is prevented, eliminated, or minimised. The proponent is required to manage the presence of weeds in the study area.

2.2.4 *Local Land Services Act* 2013

The objects of the Act include 'to ensure the proper management of natural resources in the social, economic, and environmental interests of the State, consistently with the principles of ecologically sustainable development. The Act regulates the clearing of native vegetation on rural land.

2.2.5 *Fisheries Management Act* 1994

Part 7A of the FM Act along with schedules within the act, list threatened aquatic and marine species, populations and ecological communities and key threatening processes which must be considered as part of obligations under Section 5.5 of the EP&A Act.

Section 201 of the FM Act states that a person (other than a public or local government authority) must not carry out dredging work or reclamation work except under the authority of a permit issued by the Minister. Dredging work means any work that involves excavating water land. Reclamation work means any work that involves depositing any material on water land.

Under section 198A of the FM Act:

"water land" means land submerged by water:

> *(a) whether permanently or intermittently, or*
>
> *(b) whether forming an artificial or natural body of water,*

and includes wetlands and any other land prescribed by the regulations as water land to which this Division applies.

A permit for dredging and/or reclamation is therefore required under Part 7, Section 201 of the FM Act.

Section 219 of the FM Act establishes that a permit is also required for works that involve constructing or altering a causeway or otherwise creating an obstruction across or within a

creek so that 'the free passage of fish will or could be obstructed'. A permit to obstruct fish passage will not be required under Part 7, Section 219 of the FM Act, as no such works are planned for the subject site. No perennial, significant watercourses are present.

Refer to **Section 4.4** for consideration of issues relating to watercourses and the FM Act.

2.2.6 *Water Management Act* 2000 (WM Act)

The WM Act aims to provide for the 'sustainable and integrated management of the water sources of the state for the benefit of both present and future generations.'

The WM Act provides for the granting of various licenses and approvals, including for the use of water and water supply work. Additionally, the WM Act identifies provisions relating to 'controlled activities' carried out on 'waterfront land' (within 40 m of a river-bank, lake shore, or estuary's high-water mark). Controlled activities include:

- erecting a building,
- carrying out works,
- removing material (e.g., plants and rocks),
- depositing material (e.g., gravel and fill),
- any activity which affects the quantity or flow of water in a water source.

Examples of controlled activities include:

- construction of watercourse crossings (e.g., bridges, bed level crossings),
- laying pipes and cables,
- sand and gravel extraction.

As the activities will not be occurring within designated "waterfront land", obtaining approval in the form of a "controlled activity" approval from the Department of Planning and Environment (DPE) under the WM Act is not necessary.

2.2.7 Cabonne Local Environmental Plan 2012

A Local Environmental Plan (LEP) is a legal document prepared by Council and approved by the State Government to regulate land use and development. LEPs guide planning decisions for local governments. The plan allows Council to regulate the ways in which all land both private and public may be used and protected through zoning and development controls.

The aims of this Plan, relevant to the proposal, are as follows:

(aa) to protect and promote the use and development of land for arts and cultural activity, including music and other performance arts,

(a) to encourage development that complements and enhances the unique character and amenity of Cabonne, including its settlements, localities, and rural areas,

(b) to provide for a range of development opportunities that contribute to the social, economic and environmental resources of Cabonne in a manner that allows present and future generations to meet their needs by implementing the principles of ecologically sustainable development,

(c) to facilitate and encourage sustainable growth and development that achieves the following—

(i) contributes to continued economic productivity, including agriculture, business, tourism, industry and other employment opportunities,

(ii) allows for the orderly growth of land uses while minimising conflict between land uses within the relevant zone and land uses within adjoining zones,

(iii) encourages a range of housing choices and densities in planned urban and rural locations that is compatible with the residential and rural environment and meets the diverse needs of the community,

(iv) promotes the integration of land uses and transport to improve access and reduce dependence on private vehicles and travel demand,

(v) protects, enhances and conserves agricultural land and the contributions that agriculture makes to the regional economy,

(vi) avoids or minimises adverse impacts on drinking water catchments to protect and enhance water availability and safety for human consumption,

(vii) protects and enhances places and buildings of environmental, archaeological, cultural or heritage significance, including Aboriginal relics and places,

(viii) protects and enhances environmentally sensitive areas, ecological systems, and areas that have the potential to contribute to improved environmental, scenic or landscape outcomes.

As per the Cabonne LEP (see **Figure 2-1**), areas mapped as having high terrestrial biodiversity value are present within the subject site.

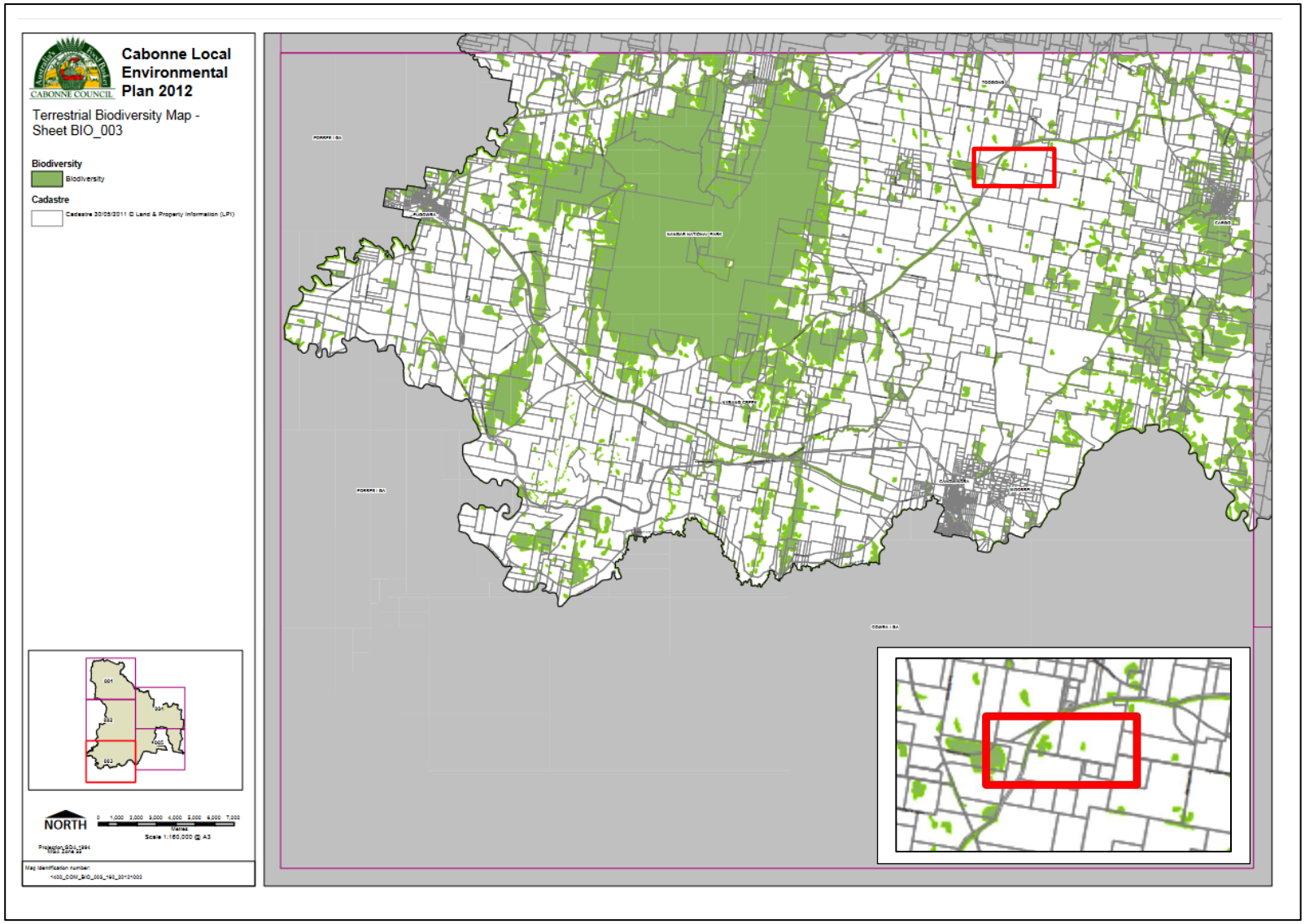


Figure 2-1. Cabonne LEP 2012 - Terrestrial Biodiversity Map. Green shaded areas indicate high terrestrial biodiversity; red polygon approximates the subject site (enlarged inset of subject site in the bottom right)

2.3 STATE ENVIRONMENTAL PLANNING POLICIES UNDER THE EP&A ACT 1979

2.3.1 *State Environmental Planning Policy (Biodiversity and Conservation)* 2021

The *SEPP (Biodiversity and Conservation)* 2021 is the collation of biodiversity and conservation related SEPP. Chapters 3 and 4 of this SEPP aim to encourage the 'proper conservation and management of areas of natural vegetation that provide habitat for Koalas to ensure a permanent free-living population over their present range and reverse the current trend of Koala population decline'. It includes provisions for councils to ensure potential impacts on Koalas and Koala habitat are properly considered when assessing developments. It also provides a process for councils to strategically manage habitat through development of Koala plans of management.

As a Part 4 development (under the EP&A Act) on land zoned RU1, Chapter 3 of the SEPP (*Biodiversity and Conservation*) 2021 applies. Cabonne LGA is specified under Schedule 1 of Chapter 3 of the 2021 SEPP.

Under Chapter 3 of the SEPP (*Biodiversity and Conservation*) 2021, this BAR must assess whether the subject site is potential koala habitat, and if so, whether it is core koala habitat.

potential koala habitat *means areas of native vegetation where trees of the types listed in Schedule 2 constitute at least 15% of the total number of trees in the upper or lower strata of the tree component.*

core koala habitat *means an area of land with a resident population of koalas, evidenced by attributes such as breeding females, being females with young, and recent sightings of and historical records of a population.*

Of those feed tree species listed in the relevant schedule of the SEPP, White Box did occur on the subject site, however the canopy was restricted to scattered paddock trees, along with trees within the road corridor (see **Figure 5-2**, PCTs 266 and 277). Nonetheless, it could be considered potential koala habitat.

Historical Koala occupation of the 10 km search area was assessed by considering BioNet records; this desktop analysis yielded no records; therefore, the subject site could not be considered core koala habitat.

As such, this proposal does not require a Koala Assessment Report, or further consideration under Chapter 3 of the SEPP (*Biodiversity and Conservation*) 2021.

3 METHODS

The ecological assessment was carried out in three stages:

1. Desktop searches and review of ecological databases and information to identify threatened species, populations or ecological communities listed in the BC, FM, and/or EPBC Acts that have the potential to occur in the study area.

2. Field survey of the subject site for the purposes of:

    - Determining the extent of the proposed impact.
    - Collating lists of those plants present these being used to assist with the identification of the site's vegetation communities.
    - Determining habitat availability for fauna species recorded or expected to occur.
    - Documenting the nature and extent of any protected matter, such as a threatened species or community or a significant habitat feature.

3. Preparation of a written BAR that describes the impacts of the proposed activity on native vegetation and threatened species, populations, and ecological communities, and provides recommendations to avoid, minimise and mitigate these impacts.

3.1 PERSONNEL

OzArk operates under NSW Scientific Research License 101908, and NSW Department of Primary Industries (DPI) Accreditation of a corporation as an animal research establishment Ref No. AW2022/012.

The field survey was completed by Ecologist Sam Bulling on the 25th of October 2023. Reporting components were completed by Jeff Lewis in 2024, with footprint updates performed by Lauriane Citerne in 2025, and quality control provided by Senior Ecologist Dr Crystal Graham. Key details of personnel involved are available below.

Table 3-1 Summary of OzArk personnel qualifications.

Name	Position	CV Details
Dr Crystal Graham	Senior Ecologist – Quality Control	• BAM-accredited Assessor #BAAS22024 • Postdoctoral Fellow – Smithsonian Tropical Research Institute • Doctor of Philosophy (Biology) – University of Sydney • Honours in Biology – University of Sydney • Bachelor of Advanced Science – University of Sydney • 4WD Training • First Aid Training • WH&S Induction Training for Construction Work

Name	Position	CV Details
		• Worker at Heights Training
Sam Bulling	Ecologist – Field Survey	• Bachelor of Science (Wildlife Conservation Biology) – University of Adelaide • First Aid Training • WH&S Induction Training for Construction Work • Rail Industry Worker Card • Worker at Heights Training
Jeff Lewis	Ecologist – Primary Reporting	• Bachelor of Science in Ecology and Biodiversity – Victoria University of Wellington, New Zealand • Certificates in GIS – UC Davis • Certificate in Wild Animal Management – Unitec, New Zealand • WH&S Induction Training for Construction Work • First Aid Training
Lauriane Citerne	Ecologist – Footprint Update	• Masters of Conservation Biology – Macquarie University • Bachelor of Science (Biological Science) – Macquarie University • First Aid Training • WH&S Induction Training for Construction Work • Working at Heights and in Confined Spaces • 4x4 Training

3.2 BACKGROUND RESEARCH

Preliminary assessments drew on local experience, previous reporting and information held on government databases and archives. Results of database searches were used to assist in identifying distributions, suitable habitats and known records of threatened species to increase the effectiveness of field investigations. Information sources reviewed included the following:

- NSW Government online aerial imagery (www.maps.six.nsw.gov.au).
- Critical habitat register, available on the DPIE website at: https://www.environment.gov.au/cgi-bin/sprat/public/publicregisterofcriticalhabitat.pl
- NSW Government Biodiversity Values Map which identifies land with high biodiversity value, as defined by the Biodiversity Conservation Regulation 2017 https://www.lmbc.nsw.gov.au/Maps/index.html?viewer=BOSETMap
- Flora and fauna records and profiles contained in the NSW Threatened Species Database, EPBC Protected Matters Search Tool and DPI threatened fish distribution maps.
- BioNet (www.bionet.nsw.gov.au) Wildlife Atlas and Plant Community Type databases.
- Flora of NSW (Harden 1991-2002) and Flora NSW Online https://plantnet.rbgsyd.nsw.gov.au/floraonline.htm, and
- Regional Scale State Vegetation Map: C1.1.M1.1(DPE, 2022)

Database searches were undertaken before the field assessment to determine the predicted species and those previously recorded within 10 km of the subject site. The results of these searches led to the identification of key species for field survey effort and targeted searches.

Results of the database searches are provided in **Appendix A.** A series of other background searches were performed to comply with legislative requirements (please refer to **Table 3-2**).

Table 3-2. Presence and/or proximity of environmental considerations.

Environmental Considerations	In the study area?
Land identified on the Biodiversity Values Map under the NSW *BC Act 2016*	No
Area of Outstanding Biodiversity Value (AOBV) under the NSW *BC Act 2016*	No
Critical habitat nationally?	No
An area reserved or dedicated under the *National Parks and Wildlife Act 1974*?	No
Is the proposal located within land reserved or dedicated within the meaning of the *Crown Lands Act 1989* for preservation of other environmental protection purposes?	No
A World Heritage Area?	No
Environmental Protection Zones in environmental planning instruments?	No
Lands protected under *SEPP (Biodiversity and Conservation) 2021*?	**Yes** (see **Section 2.3.1**).
Land identified as wilderness under the *Wilderness Act 1987* or declared as wilderness under the *National Parks and Wildlife Act 1974?*	No
Aquatic reserves dedicated under the *Fisheries Management Act 1994*?	No
Aquatic Threatened Ecological Community?	No
Wetland areas dedicated under the Ramsar Wetlands Convention?	No
Land subject to a conservation agreement under the *National Parks and Wildlife Act 1974*?	No
Land identified as State Forest under the *Forestry Act 1916*?	No
Acid sulphate area?	No
Protected riparian habitat?	No
Mapped Key Fish Habitat?	No

3.3 HABITAT ASSESSMENT

The results of the desktop review and the field assessment were collated and reviewed in the context of local ecological knowledge to determine the likelihood of occurrence of threatened species and ecological communities, and potential impacts of the proposal (**Appendix C**). For instance, some threatened species may be predicted to occur locally but, on assessment of the site, key habitat elements or conditions are not present, in which case the species is assessed as not being present or impacted.

The likelihood of occurrence of threatened species, populations or ecological communities was categorised as follows:

- 'Present' – the species was observed or has been previously recorded on the site.
- 'High' – a medium to high probability that a species uses the site, based on nearby records and suitable habitat being present.

- 'Moderate' – suitable habitat for a species occurs on the site, but the species has not been observed or previously recorded at the site, or habitat not ideal but the species has been recorded nearby.

- 'Low' – a very low likelihood that the species uses the site, based on lack of the preferred type and size of habitat.

- 'Absent' – habitat on-site and in the vicinity is unsuitable for the species.

The species known or considered to have a moderate-high likelihood of occurring at the site were then considered as to whether the extent and type of development would be likely to impact on them.

Tests of significance were then completed for these species and ecological communities in accordance with the BC Act (**Appendix D**) and/or the assessment of significance under the EPBC Act (**Appendix E**), and the relevant guidelines for these assessments.

3.4 FIELD SURVEY

The objectives of the field survey were to:

- Identify native species and vegetation communities present.

- Describe the quality and value of the vegetation and the flora and fauna habitat at the development site.

- Determine if species, populations or ecological communities listed as threatened under the BC Act or EPBC Act are/may be present.

- Determine the significance of impact to any threatened entities present or likely to be present.

3.4.1 Vegetation surveys

Vegetation communities were identified in accordance with the online NSW Master Plant Community Type Classification (DPE, 2022), which is the current state-wide vegetation classification system for Plant Community Types (PCT). This classification system is used for vegetation mapping, development assessment and site planning purposes. It describes over 1,500 PCTs across the state, and groups the vegetation communities into vegetation Class and Formation / Sub-formation as per Keith (2004).

In this study PCTs were identified based on the following inputs:

- Regional Scale State Vegetation Map: C1.1.M1(DPE, 2022), which provides predictive mapping of PCTs in and around the subject site. This mapping is indicative only. It is not necessarily accurate at a fine scale for the purposes of the current study.

- Professional ecological knowledge about locally occurring vegetation types and landscape, soil, and topographic patterns, including transitions from one community to another and potential for intergrades between plant communities.

- Field survey results confirming the flora species present, vegetation structure, landscape position and soil type at the subject site and the extent and condition of native vegetation.

- The BioNet Vegetation Classification database was used to identify the candidate vegetation communities likely to be present based on the site conditions (flora species present, vegetation structure, bioregion, and landscape position and soil type) and the relevant published PCT descriptions.

If any of the PCTs were identified as having potential to be part of a Threatened Ecological Community (TEC), the relevant identification guidelines (NSW Scientific Committee listing criteria and Commonwealth identification guides) were consulted to determine the status of the vegetation community present on the subject site. These guidelines provide the identification criteria used to positively identify the community as being part of the TEC. The criteria include location, species present, overstorey species, weed cover, number and type of native species including whether certain 'important' native species are present. Plant identification followed nomenclature in the Royal Botanic Gardens PlantNet online database (Royal Botanic Gardens and Domain Trust, 2023).

3.4.2 Targeted fauna surveys

The subject site was incidentally searched for fauna using a meander method while undertaking floristic and habitat surveys. All habitat trees (i.e., hollow-bearing trees or trees containing nests) were GPS tagged. The size, number of hollows and/or type of nest were also recorded for each tree. Potential habitat such as rocks, logs, loose bark, and coarse woody debris was examined for cryptic species. Areas of suitable substrate were searched for animal tracks. Other evidence of fauna presence on the subject site, such as scats, feathers and sloughed skins were also recorded. Herpetological searches were conducted by overturning logs and rocks while traversing the site.

Considering the scope of works proposed, combined with the condition of the fauna habitats observed during the site inspection, no targeted surveys such as live trapping, nocturnal searches, deployment of bat echolocation detectors and so forth, were carried out.

3.5 LIMITATIONS

This study is based upon the species data available at the time of the study, and the environmental conditions, season, and time constraints imposed by the project for the field survey. Specific limitations on this study include the following:

- The field survey was in a single day in spring, when certain species may not have been present, visible, or identifiable. Therefore, the species list provided in **Appendix B** should not be considered wholly comprehensive, as a greater diversity of species is likely to make use of the site,
- Fauna trapping, frog surveys and nocturnal spotlighting were not undertaken for the current assessment, and
- Microbat ultrasonic call capture and analysis was not undertaken.
- This report was updated in April 2025 to reflect additional impacts to the road corridor. Background searches have not been repeated for this update.

To compensate for these limitations, a 'precautionary approach' for species presence has been adopted. If suitable habitat for a particular threatened species is present at the subject site or is known to occur within the wider study area, then the species is assumed to be present, and the impact assessment is completed on that basis.

The above-mentioned constraints were also considered when preparing the recommendations of avoiding, minimising, and mitigating potential impacts.

4 EXISTING ENVIRONMENT

4.1 BIOREGION

The study area falls entirely within the Inland Slopes subregion (North West Slopes Bioregion), as per the Interim Biogeographic Regionalisation of Australia's categorisation (IBRA) (Thackway & Cresswell, 1995). As this subregion's geology, landforms, soil types and vegetational composition have not been described, see below for a broader categorisation of the NSW South Western Slopes Bioregion (see **Table 4-1**).

Table 4-1. Description of the NSW South Western Slopes Bioregion (DPE, 2003).

Bioregion	NSW South Western Slopes Bioregion
Geology	This bioregion lies wholly in the eastern part of the Lachlan Fold Belt, which consists of a complex series of north to north-westerly trending folded bodies of Cambrian to Early Carboniferous sedimentary and volcanic rocks. Granites are common and mostly located in large scale upfolded bodies of rock. Granite landscapes occur either as central basins surrounded by steep hills formed on contact metamorphic rocks, or as high blocky plateau features with rock outcrops and tors.
Landforms	The South Western Slopes Bioregion is a large area of foothills and ranges comprising the western fall of the Great Dividing Range to the edge of the Riverina Bioregion. A very wide range of rock types is found across the bioregion, which is also affected by topographic and rainfall gradients that decrease towards the west. These physical differences have an impact on the nature of the soils and vegetation found across the bioregion. Inland streams pass across the slopes in confined valleys with terraces and local areas of sedimentation. Geology, soils and vegetation are complex and diverse but typified by granites and meta-sediments, texture contrast soils and a variety of eucalypt woodlands, making this bioregion the southern equivalent of the Nandewar Bioregion.
Soils	The overall pattern of soils in these landscapes is one where shallow, stony soil are found on the tops of ridges and hills. Moving downslope, texture contrast soils are the norm with subsoils derived from the underlying weather rock and the topsoils being a homogenised surface mantle of coarser material derived from all parts of the slope. On valley floors subsoils have drabber colours indicative of poor drainage and they may accumulate soluble salts. Dryland salinity is widespread. Alluvial sands and loams are more common than clays in most parts of the landscape, but alluvial clays become more important nearer to the Riverine Plain. Over the Quaternary, soils in these landscapes have accumulated a considerable quantity of wind-blow silt and clay from western NSW.
Vegetation	In the higher rainfall eastern hill country, woodlands and open woodlands of white box are dominant. To the west and north these give way to vegetation communities dominated by grey box and white cypress pine. Other tree species characteristic of the bioregion include red stringybark on higher slopes, with black cypress pine, red ironbark, white gum, yellow box and Blakely's red gum occupying the lower slopes. Valley flats are dominated by rough-barked apple, with river oak found along eastern streams and river red gum lining the larger central and western streams. In the western half of the bioregion, where altitude and rainfall are lower, Dwyer's mallee gum dominates areas of granite-derived soils and red ironbark communities occupy areas of sandy soils derived from sedimentary rock. Other common trees include hill red gum, white cypress pine, and red stringybark in the ranges and grey box woodlands, with yellow box, white cypress pine and belah occupying lower areas. Vegetation communities in the northwest are dominated by poplar box, kurrajong, wilga and red box, and limited areas of bull mallee, blue mallee, green mallee and congoo mallee also occur in the central west.

4.2 NSW LANDSCAPES

NSW (Mitchell) landscapes were mapped in 2002 to provide a framework for reporting reserve establishment and for determining over-cleared landscapes (Mitchell, 2002). These landscapes broadly describe areas of similar topography, geology, soils, and vegetation. The subject site and the study area are wholly represented by the **Canobolas Slopes** (see **Figure 4-1**).

Canobolas Slopes

Strike ridges, rounded hills, peaks and ranges on variable Ordovician-Silurian felspathic sandstone, tuffaceous sandstone and thin limestone units, Silurian lithic sandstone, quartz sandstone, tuff and quartz-felspar porphyry, Silurian-Devonian granite. General elevation 500 to 900 m, local relief to 100 m. Marked altitudinal shift in vegetation communities as rainfall declines to the west.

Red and yellow earth and yellow texture-contrast soils in the east. Grassy woodlands of yellow box, grey box, Blakely's red gum, apple box, and broad-leaved peppermint. Brown and gradational sandy loams and harsh yellow texture-contrast soils in the west with woodlands and grassy open forest of white box, grey box, red ironbark, red stringybark, with yellow box and rough-barked apple on the flats and river oak along the streams.

Clearing Status – 96% of this landscape has been cleared.

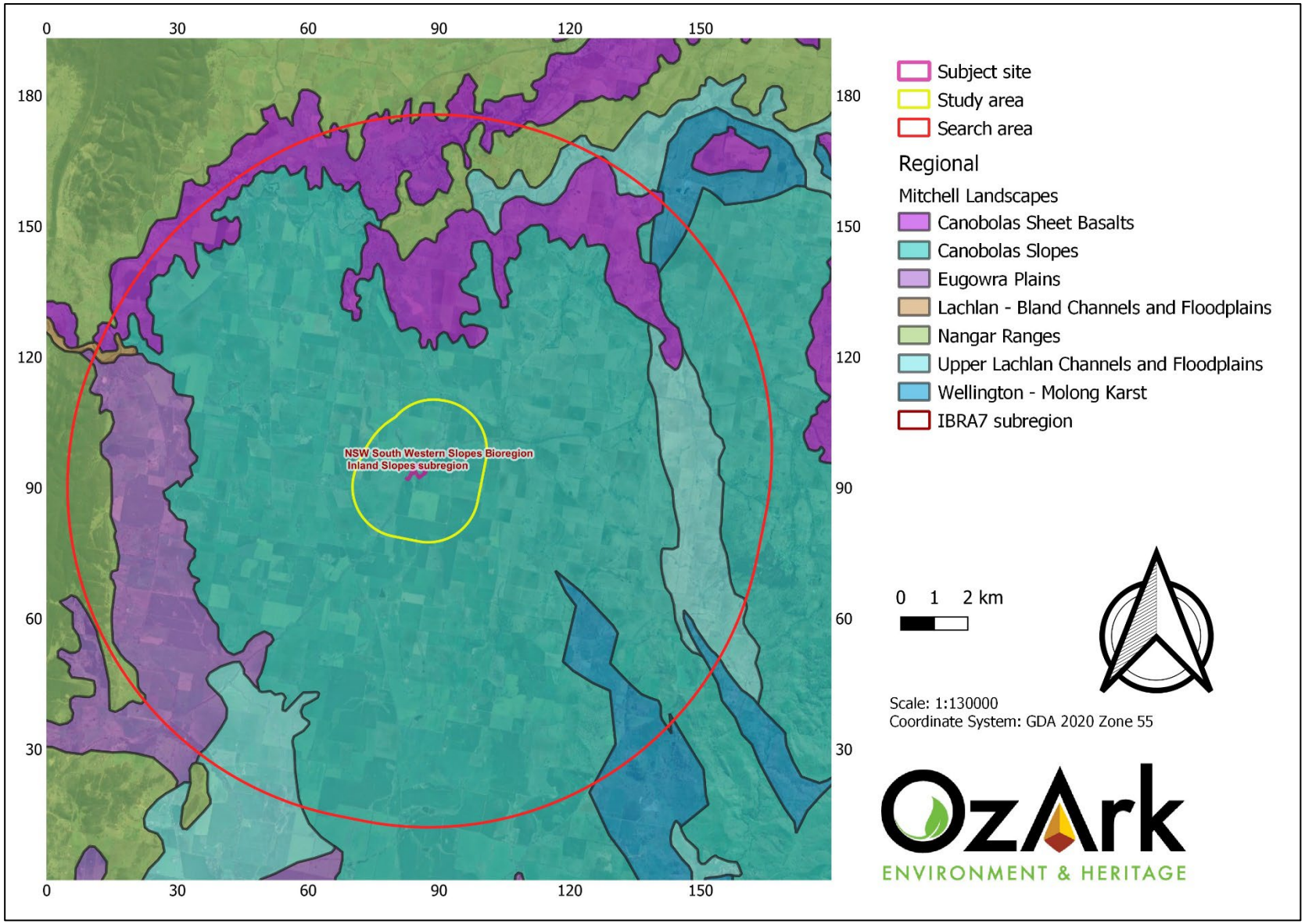


Figure 4-1. NSW (Mitchell) Landscapes of the search area (Mitchell, 2002).

4.3 CLIMATE

The closest operating weather monitoring facility is located at the Orange Agricultural Institute (ID 063254), approximately 40 km to the northeast of the subject site. Records at this station began in 1996.

The Orange area experiences warm summers, with the highest average maximum in January (26.6 °C), and cold winters, with the lowest average maximum in July (9.5°C).

The average annual rainfall at this station is 927.2 mm. Rainfall is high year-round, with August receiving the greatest amount (94.9 mm) and April the lowest (54.4 mm).

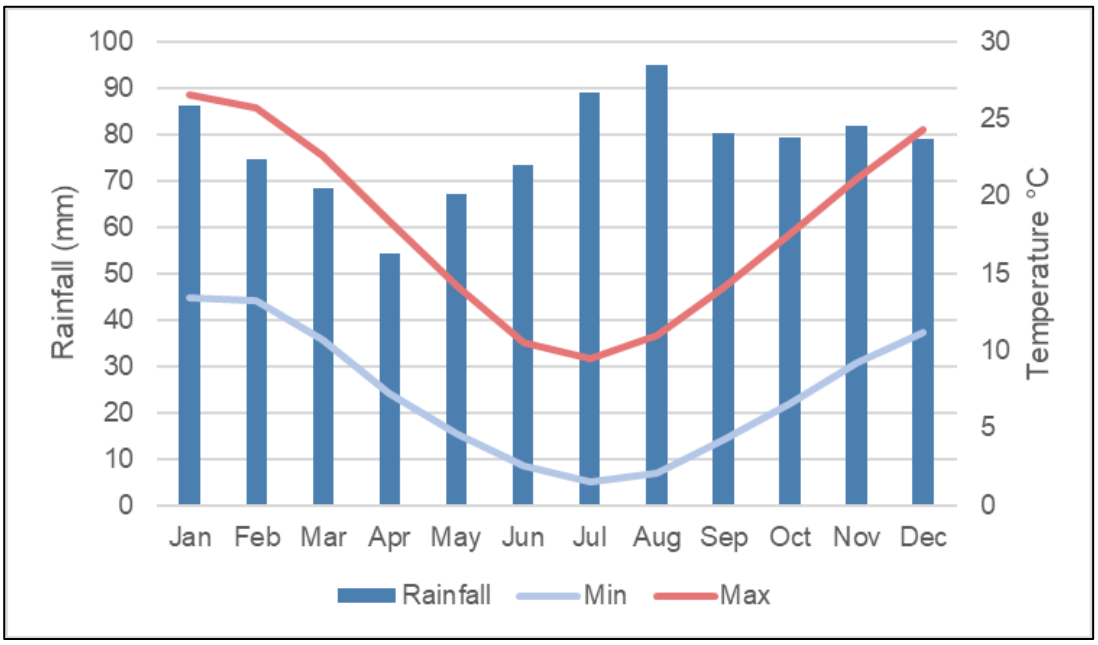


Figure 4-2. Climate statistics for the Orange Agricultural Institute weather station (ID 063254).

4.4 WATERCOURSES

Representative photographs of habitat, including dams, are shown in **Figure 4-3**. No watercourses intersect the subject site. Seventeen minor watercourses are present within the study area (**Figure 4-4**; **Figure 4-5**). One minor unnamed non-perennial watercourse to the north-east of the subject site, within the study area, is mapped by the Department of Primary Industries – Fisheries (DPI) as Key Fish Habitat (KFH) (see **Figure 4-4**). Mandagery and Boree Creeks are two major perennial watercourses found near the search area perimeter, containing KFH and Protected Riparian Land (PRL). PRL is mapped as being at its closest point 4.45 km from the subject site in the search area, and KFH is mapped as being in the study area at 1.34 km from the subject site.

Purple-spotted Gudgeon and Eel-tailed Catfish, threatened fish species, have distribution mapped near the perimeter of the study area and search area respectively. Two watercourses flowing into the study area are mapped for Purple-spotted Gudgeon, the closer of the two being 1.2 km from the subject site. Eel-tailed Catfish habitat is mapped at approximately 7.1 km from the subject site at it closest.

As KFH threatened fish species distribution occurs on the margin of the study area but not the subject site (see **Figure 4-4**) and the scope of works does not require dredging and reclamation, permits for dredging and reclamation or to obstruct the free passage of fish, will not need to be obtained from the Minister under Part 7 of the FM Act. The scope works of the subject site will not have a significant impact on the KFH of the study area.



Figure 4-3. Representative photographs of the condition of McNaught's Quarry. Left, looking north towards Canowindra Road into the extraction area. Right, looking south from the internal access road between the extraction area site buildings (both within the subject site).

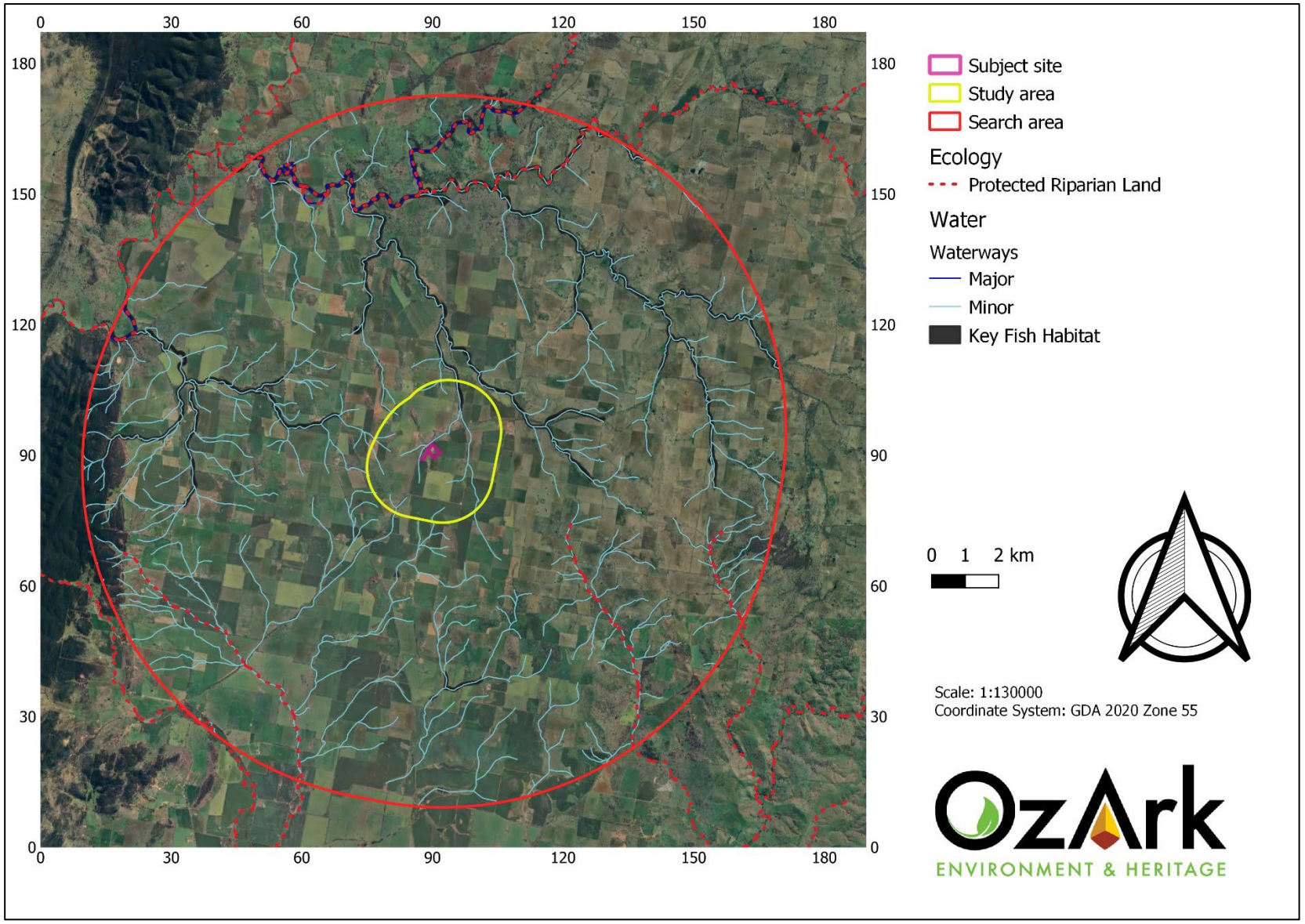


Figure 4-4. Key Fish Habitat, Protected Riparian Land, and watercourses within the search area.

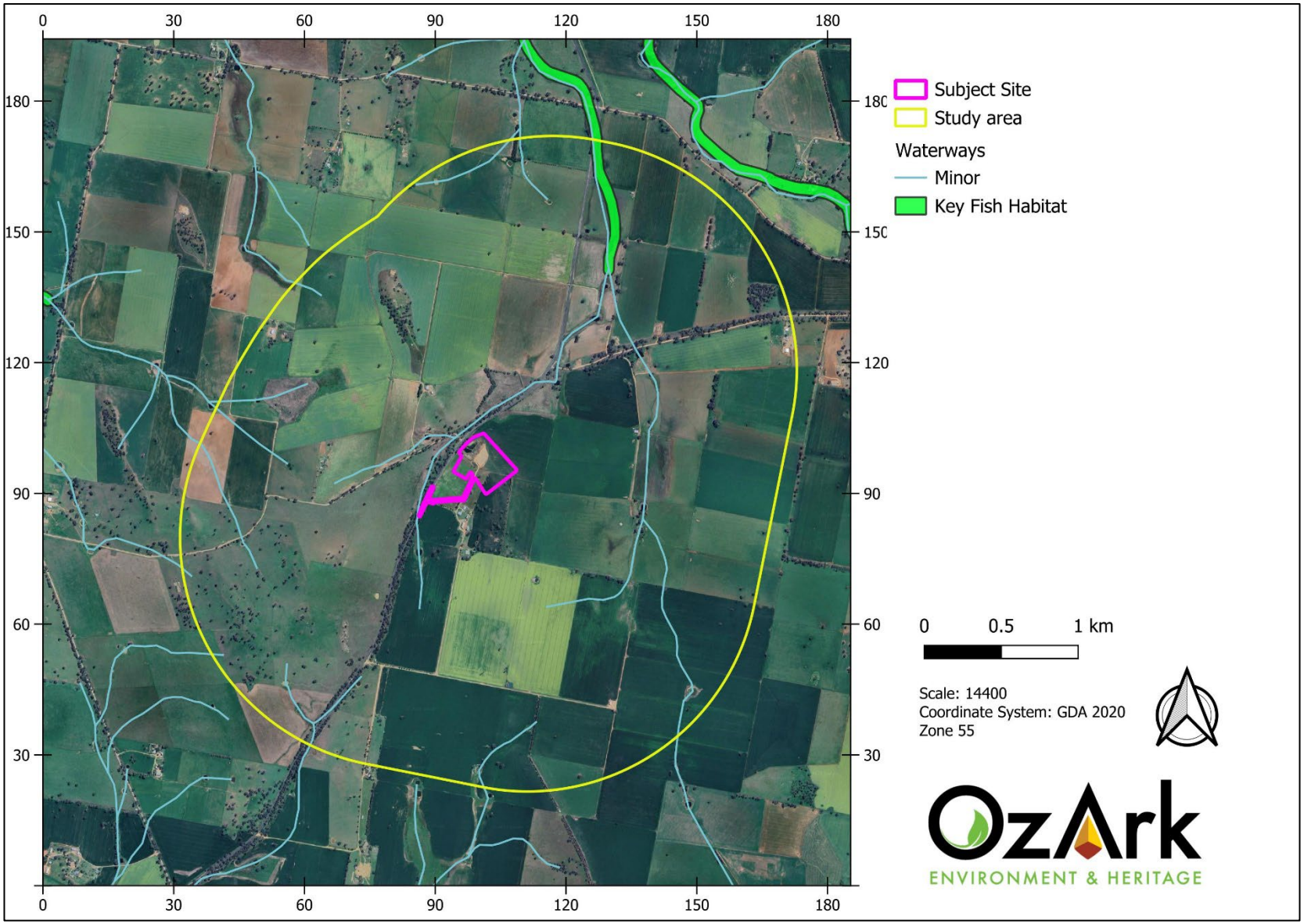


Figure 4-5. Key Fish Habitat, Protected Riparian Land, and watercourses within the study area (magnified view).

4.5 GROUNDWATER DEPENDENT ECOSYSTEMS

Groundwater plays an important ecological role in directly and indirectly supporting terrestrial and aquatic ecosystems. Groundwater sustains terrestrial and aquatic ecosystems by supporting vegetation and providing discharge to channels, lacustrine and palustrine wetlands, and both the estuarine and marine environment. Aquifer ecosystems are inherently groundwater dependent (QLD Department of Environment and Heritage Protection, 2017).

The degree of groundwater dependence of ecosystems can be categorised into three broad categories:

- Non-dependent ecosystems that occur mostly in recharge areas and have no connection with groundwater.

- Facultative GDEs that require groundwater in some locations but not in others, particularly where an alternative source of water can be accessed to maintain ecological function. Minor changes to the groundwater regime in facultative GDEs with proportional or opportunistic groundwater dependence may not have any adverse impacts but these ecosystems can be damaged or destroyed if a lack of access to groundwater is prolonged.

- Obligate GDEs that are restricted to locations of groundwater discharge and ecosystems located within aquifers (e.g., subterranean cave and stygofauna communities (Kuginis et al. 2012).

Groundwater dependent ecosystems have been classified into seven types under two broad categories as follows (Kuginis et al. 2012):

- Subsurface ecosystems – Underground ecosystems
  - Karst systems and caves (limestone geology)
  - Subsurface aquifer (phreatic) ecosystems
  - Baseflow streams (hyporheic or subsurface component)

- Surface ecosystems – Above ground ecosystems
  - Groundwater dependent wetlands
  - Baseflow surface streams (surface/free-water component)
  - Estuarine and near shore marine ecosystems
  - Groundwater dependent terrestrial ecosystems; dependent on subsurface groundwater (phreatophytic).

No GDEs associated with either the Lachlan or Central Tablelands catchments are mapped, based on the available data within the 10 km Search Area (see **Figure 4-6**). No significant impacts to GDEs via bulldozer and truck use for extending the operating quarry are anticipated.

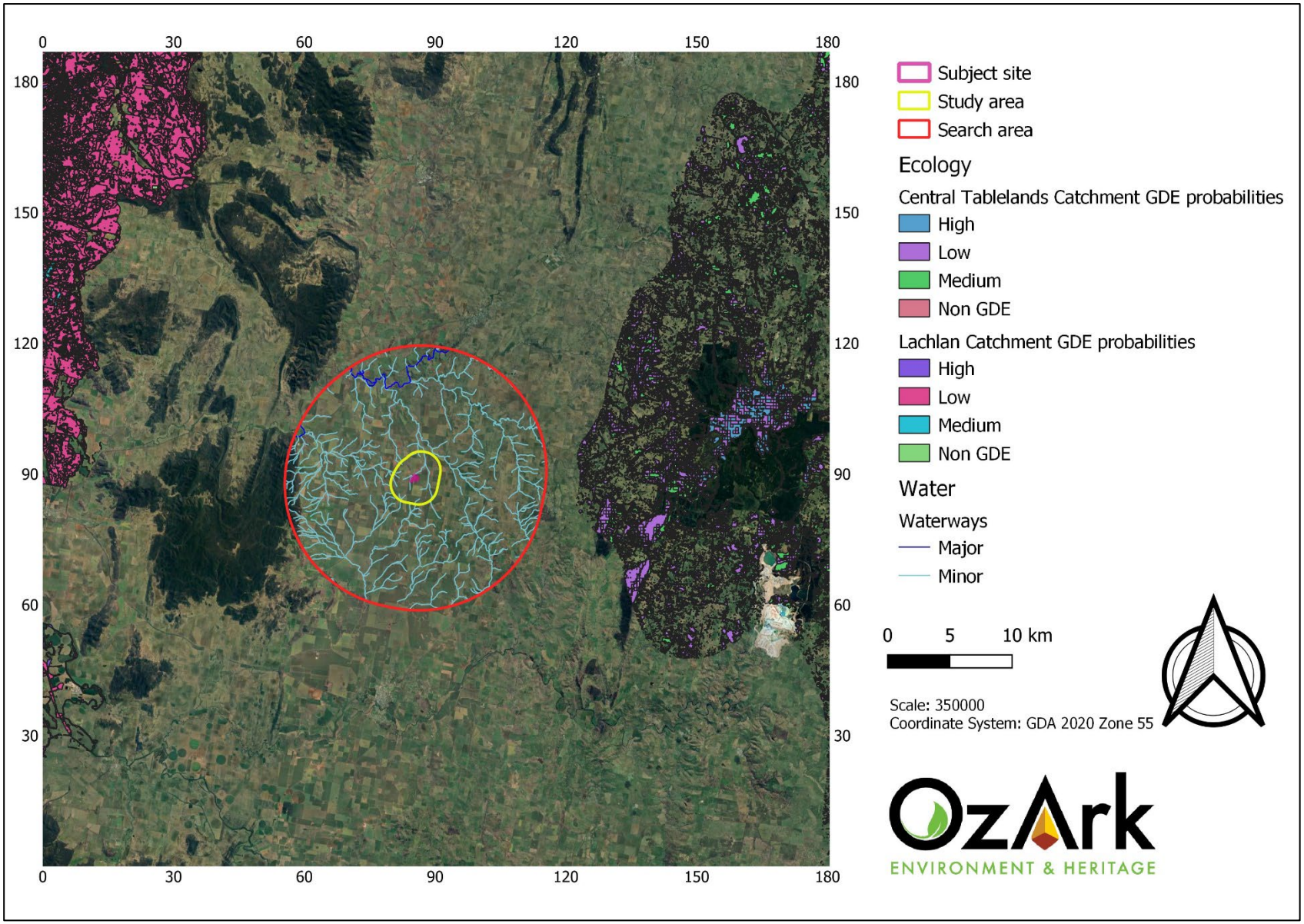


Figure 4-6. Groundwater Dependent Ecosystems adjacent to search area.

5 RESULTS

5.1 PLANT COMMUNITY TYPES

Computer modelling, through the application of the NSW State Vegetation Type Map: C1.1.M1.1, anticipated one Plant Community Type (PCT) to be present within the study area:

- PCT 277 – Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion.

The field survey encountered this aforementioned PCT, as well as two other PCTs:

- PCT 53 – Shallow freshwater wetland sedgeland in depressions on floodplains on inland alluvial plains and floodplains.
- PCT 266 – White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion.

Much of the subject site (9.235 ha) was devoid of native vegetation. Rather, it consisted of an operating quarry, internal access roads and largely cleared farmland.

All native vegetation was concentrated in fragmented pockets, south of the quarry footprint. The examples of PCT 266 and 277 represent relics of what was once (presumably) a more extensive White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland. Mapped PCT distributions are provided in **Figure 5-2**, their areas are available in **Table 5-1**, and representative photographs are accessible in **Appendix B**. In total, 0.385 ha of native vegetation belonging to three defined PCTs was present at the subject site.

Table 5-1. PCTs within the subject site.

PCT ID	PCT Name	Threatened Ecological Community?	Area (ha) in Subject Site
53	Shallow freshwater wetland sedgeland in depressions on floodplains on inland alluvial plains and floodplains	No	0.054
266	White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion	Yes	0.219
277	Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion	Yes	0.112
Non-native vegetation, bare ground, road surface, and McNaught's Quarry			9.235
Total			**9.62**

5.2 THREATENED ECOLOGICAL COMMUNITIES

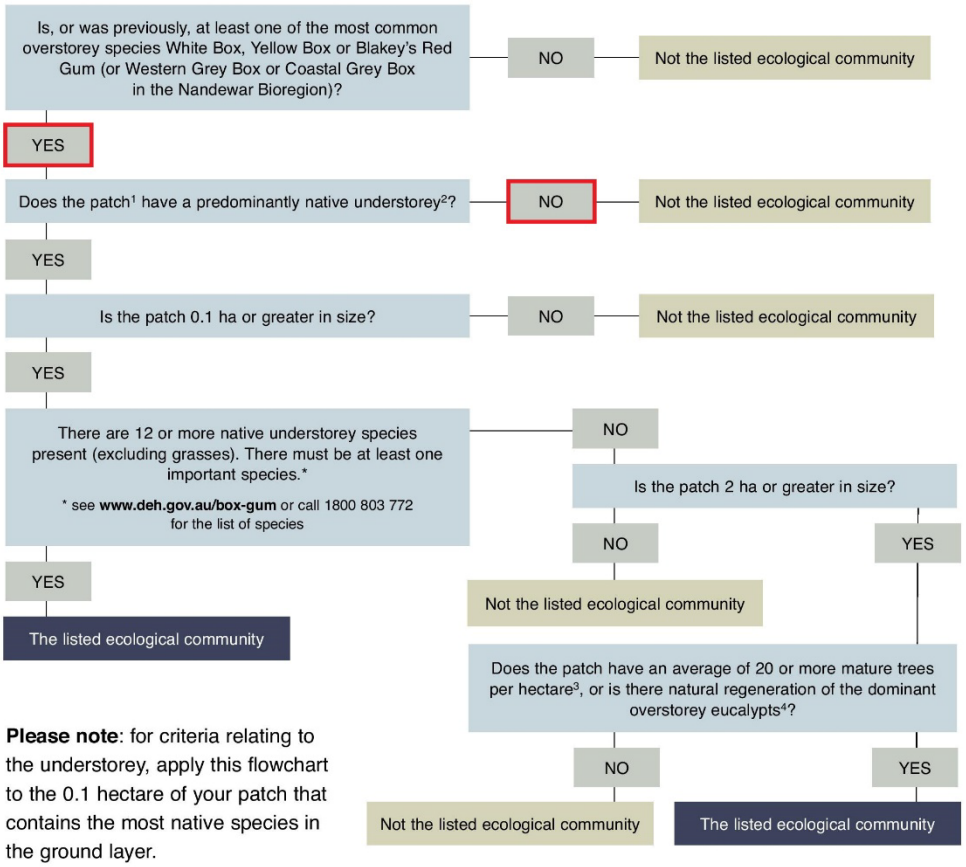
PCT 266 and 277 are recognised as examples of the BC Act-listed Critically Endangered Ecological Community (CEEC), *White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland*, *in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions*. The former being White Box, and latter Blakely's Red Gum-Yellow Box as White Box and Yellow Box were the dominant tree species (**Table 5-2**). It, however, failed to satisfy its EPBC Act EEC equivalent, as it failed to attain the necessary patch size (of 0.5 ha) and quality native understorey was not present (**Figure 5-1**). As such, only the BC Act form of this TEC was present at site. The distribution of this CEEC is mapped in **Figure 5-2** and **Figure 5-3.**

Table 5-2. Assessment of PCT 266 and 277 under the BC Act CEEC criteria.

Condition	Condition met?
Is the site on the tablelands or western slopes of NSW?	**Yes**. South Western Slopes
Does the site contain, or would the site have recently been likely to contain, White Box, Yellow Box or Blakely's Red Gum?	Yes. White box and Yellow Box were the dominant tree species.
Is the ground layer mainly grassy?	**Yes**. A mixture of native and exotic species was present. The main cover consisted of Common Wheat, African Lovegrass, Perennial Ryegrass, Purple Top and Soft Brome.
If the site has been degraded, is there potential for assisted natural regeneration of the tree layer or the understorey (e.g. by removing grazing, weeds, etc)?	**Yes**. It is cleared agricultural land and an operating quarry that is dominated by exotic grass species, however if managed there is potential for assisted natural regeneration. White Box and Yellow Box provide a seed bank.
Meets criteria under the BC Act?	**Yes**. The entirety of PCT 266 and 277 within the subject site meets the criteria under the BC Act.

The flowchart below represents the lowest condition at which patches are included in the listed ecological community. This is not the ideal state of the ecological community. Large patches, those that link remnants in the landscape, those that occur in highly cleared areas, those that contain rare, declining or threatened species, and those that represent the entire range of the ecological community, are important for the long-term future of the ecological community.

Determining if your land has an area of the listed ecological community



Please note: for criteria relating to the understorey, apply this flowchart to the 0.1 hectare of your patch that contains the most native species in the ground layer.

1 Patch – a patch is a continuous area containing the ecological community (areas of other ecological communities such as woodlands dominated by other species are not included in a patch). In determining patch size it is important to know what is, and is not, included within any individual patch. The patch is the larger of:
- an area that contains five or more trees in which no tree is greater than 75 m from another tree, or
- the area over which the understorey is predominantly native.

Patches must be assessed at a scale of 0.1 ha (1000m²) or greater.

2 A predominantly native ground layer is one where at least 50 per cent of the perennial vegetation cover in the ground layer is made up of native species. The best time of the year to determine this is late autumn when the annual species have died back and have not yet started to regrow. (At other times of the year, you can determine whether something is perennial or not is if it is difficult to pull out of the soil. Annual species pull out very easily.)

3 Mature trees are trees with a circumference of at least 125 cm at 130 cm above the ground.

4 Natural regeneration of the dominant overstorey eucalypts when there are mature trees plus regenerating trees of at least 15 cm circumference at 130 cm above the ground.

5

Figure 5-1. Assessment of PCT 266 and 277 according to the EPBC Box-Gum Woodland guidelines.



Figure 5-2. Confirmed Plant Community Types and habitat trees within the subject site (1 of 2).



Figure 5-3. Confirmed Plant Community Types and habitat trees within the subject site.



Figure 5-4. Threatened Ecological Communities (BC Act-listed Critically Endangered Ecological Communities) within the subject site (1 of 2).



Figure 5-5. Threatened Ecological Communities (BC Act-listed Critically Endangered Ecological Communities) within the subject site (2 of 2).

5.3 THREATENED SPECIES AND POPULATIONS

A review of the Threatened Species Profiles database found 134 threatened or migratory fauna and flora species, or populations, listed under the BC and/or EPBC Acts that are known, or predicted, to occur within the Orange, Lower Slopes, and Northern Inland/Upper Slopes subregions of the NSW South Western Slopes and South Eastern Highlands Bioregions, respectively. Based on the proximity of past records, habitat requirements, and the results of the field survey, 67 listed species or populations were assessed as having a moderate-to-high likelihood of occurrence (**Appendix C**). These species and populations are listed below in **Table 5-3**.

Forty-two flora species were detected during the field survey (**Appendix B**), of twelve native species, three were associated with Threatened Ecological Communities – *Eucalyptus albens, Eucalyptus blakelyi and Eucalyptus melliodora* (White Box, Blakely's Red Gum and Yellow Box). Due to the short duration of the survey and the lack of targeted surveys, non-detection will not be treated as confirmation of absence.

Seven fauna species were observed during the field survey (**Appendix B**), although none are acknowledged as threatened or migratory under either the BC or EBPC Acts. As above, given the short duration of the field survey and the lack of targeted surveys, detection failures will not be considered as confirmation of their absence.

Table 5-3. BC and EPBC Act-listed threatened or migratory, species or populations, with the potential to be impacted by the proposal.

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km
Litoria booroolongensis	Booroolong Frog	E1,P	E	No
Litoria raniformis	Southern Bell Frog	E1,P	V	No
Aprasia parapulchella	Pink-tailed Legless Lizard	V,P	V	No
Delma impar	Striped Legless Lizard	V,P	V	No
Hoplocephalus bitorquatus	Pale-headed Snake	V,P		No
Anseranas semipalmata	Magpie Goose	V,P		No
Oxyura australis	Blue-billed Duck	V,P		No
Stictonetta naevosa	Freckled Duck	V,P		No
Hirundapus caudacutus	White-throated Needletail	P	V,C,J,K	No
Ephippiorhynchus asiaticus	Black-necked Stork	E1,P		No
Botaurus poiciloptilus	Australasian Bittern	E1,P	E	No
Circus assimilis	Spotted Harrier	V,P		Yes
Haliaeetus leucogaster	White-bellied Sea-Eagle	V,P		No
Hieraaetus morphnoides	Little Eagle	V,P		No
^^*Lophoictinia isura*	Square-tailed Kite	V,P,3		No
Falco subniger	Black Falcon	V,P		No

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km
Grus rubicunda	Brolga	V,P		No
Burhinus grallarius	Bush Stone-curlew	E1,P		No
Rostratula australis	Australian Painted Snipe	E1,P	E	No
Calidirs ferruginea	Curlew Sandpiper	E1,P	CE,C,J,K	No
Limosa limosa	Black-tailed Godwit	V,P	C,J,K	No
Callocephalon fimbriatum	Gang-gang Cockatoo	V,P,3	E	No
Calyptorhynchus lathami lathami	South-eastern Glossy Black-Cockatoo	V,P,2	V	No
Glossopsitta pusilla	Little Lorikeet	V,P		No
Lathamus discolor	Swift Parrot	E1,P	CE	No
Neophema pulchella	Turquoise Parrot	V,P,3		No
^^*Polytelis swainsonii*	Superb Parrot	V,P,3	V	Yes
^^*Ninox connivens*	Barking Owl	V,P,3		No
^^*Tyto novaehollandiae*	Masked Owl	V,P,3		No
Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	V,P	V	Yes
Chthonicola sagittata	Speckled Warbler	V,P		No
Anthochaera phrygia	Regent Honeyeater	E4A,P,2	CE	Yes
Epthianura albifrons	White-fronted Chat	V,P		No
Grantiella picta	Painted Honeyeater	V,P	V	No
Melithreptus gularis gularis	Black-chinned Honeyeater (eastern subspecies)	V,P		No
Pomatostomus temporalis temporalis	Grey-crowned Babbler (eastern subspecies)	V,P		Yes
Daphoenositta chrysoptera	Varied Sittella	V,P		No
Artamus cyanopterus cyanopterus	Dusky Woodswallow	V,P		No
Melanodryas cucullata cucullata	Hooded Robin (south-eastern form)	V,P	E	No
Petroica boodang	Scarlet Robin	V,P		No
Petroica phoenicea	Flame Robin	V,P		Yes
Stagonopleura guttata	Diamond Firetail	V,P	V	No
Dasyurus maculatus	Spotted-tailed Quoll	V,P	E	No
Phascogale tapoatafa	Brush-tailed Phascogale	V,P		No
Phascolarctos cinereus	Koala	E1,P	E	No
Cercartetus nanus	Eastern Pygmy-possum	V,P		No
Petaurus norfolcensis	Squirrel Glider	V,P		No
Petrogale penicillata	Brush-tailed Rock-wallaby	E1,P	V	No
Pteropus poliocephalus	Grey-headed Flying-fox	V,P	V	No
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	V,P		No
Chalinolobus dwyeri	Large-eared Pied Bat	V,P	V	No
Chalinolobus picatus	Little Pied Bat	V,P		No
Falsistrellus tasmaniensis	Eastern False Pipistrelle	V,P		No
Nyctophilus corbeni	Corben's Long-eared Bat	V,P	V	No
Miniopterus orianae oceanensis	Large Bent-winged Bat	V,P		No
Synemon plana	Golden Sun Moth	V	V	No

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km
Keyacris scurra	Key's Matchstick Grasshopper	E1		No
Ammobium craspedioides	Yass Daisy	V	V	No
Cullen parvum	Small Scurf-pea	E1		No
Swainsona recta	Small Purple-pea	E1	E	No
Swainsona sericea	Silky Swainson-pea	V		No
Acacia ausfeldii	Ausfeld's Wattle	V		No
^^*Pilularia novae-hollandiae*	Austral Pillwort	E1,3		No
Prasophyllum petilum	Tarengo Leek Orchid	E1,P,2	E	No
Prasophyllum sp. Wybong		P	CE	No
Euphrasia arguta		E4A	CE	No
Grevillea wilkinsonii	Tumut Grevillea	E4A	E	No

***NSW Status:** P=Protected, V=Vulnerable, E1=Endangered, E4A=Critically Endangered, 2=Category 2 sensitive species, 3=Category 3 sensitive species.
+ Comm. Status: C=CAMBA, J=JAMBA, K=ROKAMBA, CE=Critically endangered, E=Endangered, V=Vulnerable

5.4 AQUATIC ECOLOGICAL COMMUNITIES

Endangered aquatic ecological communities are determined by the NSW Fisheries Scientific Committee and are listed under the FM Act as aquatic systems that have undergone a very large reduction in ecological function, geographic distribution, or genetic diversity, and continue to be affected by a threatening process (NSW Department of Primary Industries, 2016). As there are no threatened aquatic communities mapped to the subject site, it is highly unlikely that Aquatic Endangered Ecological Communities would be impacted by this proposal.

5.5 HABITAT TREES AND FEATURES

In total, two habitat trees (e.g., hollow bearing) were recorded within the subject site (see **Figure 5-3**). These were two mature White Box (*Eucalyptus albens* – PCT 266, BC Act-listed CEEC; **Figure 5-3**) which cumulatively contained three small (< 20 cm in diameter) hollows. No large hollows or fallen timber deposits were encountered during the field survey. Large rocks were located immediately adjacent to the dam in the extraction area and the related PCT 53 and may be of value to herpetofauna (**Figure 5-6**)



Figure 5-4. Large rocks adjacent to the dam within the extraction area.

5.6 WILDLIFE CONNECTIVITY CORRIDORS

The subject site borders the fringing vegetation of Canowindra Road and is the main potential area of connectivity for wildlife due to the fragmented and degraded habitat the subject site and study area largely consists of. This area is not of ideal use, due to the proximity to the road and risk of vehicle strike.

5.7 MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE

Under the environmental assessment provisions of the EPBC Act, Matters of National Environmental Significance (MNES) and impacts on Commonwealth land are required to be considered to assist in determining whether the proposal should be referred to the Australian Government DoEE. The EPBC Act protected matters search has identified four TECs, 33 threatened species and 10 migratory species that could possibly occur in the study area (**Appendix A**). Although four Wetlands of International Importance (Ramsar) are connected to the development area by way of watercourses, these are all several hundred kilometres from the subject site and will not be impacted by the proposal.

A summary of these matters and whether the proposal is likely to impact them is provided in **Table 5-4**.

Table 5-4. Impacts to Matters of National Environmental Significance and Commonwealth land.

Consideration	Potential impact?
Any impact on a listed threatened species or communities?	**Yes** (non-significant, **Appendix E**)
Any impacts on listed migratory species?	**Yes** (non-significant, **Appendix E**)
Any impacts on a Ramsar wetland of international importance?	No
Any impacts on a Commonwealth marine environment?	No
Any impacts on a World Heritage property?	No
Any impacts on a National Heritage place?	No
Any impacts on the Great Barrier Reef Marine Park?	No
Does the proposal involve a nuclear action (including uranium mining)?	No
Any impact on a water resource, in relation to coal seam gas development and large coal mining development?	No
Additionally, any impact (direct or indirect) on Commonwealth land?	No

6 IMPACT ASSESSMENT

6.1 CONSTRUCTION IMPACTS

6.1.1 Impacts to native vegetation and threatened ecological communities

The subject site, which is 9.62 ha in size, was largely comprised of exotic weeds and agricultural crops, bare earth, the surface of the existing McNaught's Quarry and two minor non-perennial watercourses. In total, 0.385 ha consisted of native vegetation.

All of PCT 266 and PCT 277 were considered an example of the BC Act-listed CEEC *White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions.* As such, this proposal will remove up to 0.33 ha of this TEC.

The clearing of any native vegetation is recognised as a Key Threatening Process (KTP) under the BC Act. However, due to the relatively low magnitude of clearing required for this proposal, these impacts are not considered significant under either the BC or EPBC Act (see **Appendices D-E**), although efforts should still be made to reduce the amount of clearing required.

6.1.2 Impact to threatened fauna and associated habitat

Fifty-seven threatened or migratory fauna species, or populations, listed under the BC and EPBC Acts are considered to have a moderate, or greater, probability of occurring at the subject site. Although no threatened fauna species or population was encountered during the deployment, targeted surveys (e.g., trapping, spotlighting) were not performed. In total, ten habitat trees that contained three small hollows were recorded within the subject site. The field survey failed to detect any nests or timber deposits. Bushrock was present in piles within the current extraction area, adjacent to PCT 53. If required to be disturbed, these should be relocated rather than disposed of, to retain habitat from reptiles and amphibians associated with that PCT.

Given the amount of native vegetation (0.385 ha) that the proposal intends to remove/modify, relative to the study area, it is highly unlikely that such works would have a significant impact on any fauna species or population (**Appendices D-E**).

6.1.3 Impact to threatened flora

Ten threatened flora species, listed under the BC and/or the EPBC Acts, were considered to have a moderate, or greater, probability of occurrence at the subject site. Although no threatened flora species were detected during the field survey, targeted surveys were not

performed, and the time of year (spring) may not have been conducive to detecting certain species. However, October is an ideal time to survey for most threatened flora species. Given the amount of vegetation (0.385 ha) that the proposal intends to remove/modify, relative to the study area, it is highly unlikely that such works would have a significant impact on any flora species (**Appendices D-E**).

6.1.4 Fauna injury and mortality

During the construction phase of the proposal, the removal of bushrock, habitat trees and other vegetation could potentially disturb or injure fauna. Further, fauna may become trapped in or choose to shelter within machinery stored at the subject site overnight (resulting in fatalities). Mitigation measures designed to reduce injury and mortality of fauna are provided in **Section 7.**

6.2 INDIRECT/OPERATIONAL IMPACTS

6.2.1 Wildlife connectivity and habitat fragmentation

The subject site borders the fringing vegetation of Canowindra Road and is the main potential area of connectivity for wildlife due to the fragmented and degraded habitat the subject site and study area largely consists of.

Although the proposal will be detrimental to overall connectivity and fauna movement patterns, removing areas of the fringing vegetation along the road, it will not sever any existing corridor in already degraded land. Fauna will still be able to traverse the site, albeit at greater secondary risks (e.g., vehicular collisions). This corridor is not of significant importance to wildlife connectivity.

6.2.2 Edge effects on adjacent native vegetation and habitat

By generating additional habitat edges, the proposal will encourage the spread of weeds into the remnant vegetation outside the direct impact footprint of the proposal.

6.2.3 Invasion and spread of weeds

The survey identified 30 exotic weed species within the subject site, of which two are classified as high-threat exotics (HTEs), as per the Biodiversity Assessment Method 2020 (BAM) (see **Table 6-1**).

The proliferation of weed and pest species is an indirect impact of proposal activities. The most likely causes of weed dispersal and importation associated with the proposal include earthworks, movement of soil, and attachment of seed (and other propagules) to vehicles and machinery. Mitigation measures designed to limit the spread of weeds are provided in **Section 7**.

Table 6-1. Significant weeds encountered at the subject site.

Growth Form	Scientific Name	Common Name	HTE	WoNS	PW
FG	*Carthamus lanatus*	Saffron Thistle	Y	N	N
GG	*Eragrostis curvula*	African Lovegrass	Y	N	N

6.2.4 Invasion and spread of pests

The study area is likely already habitat for a range of pest species, such as European rabbits (*Oryctolagus cuniculus*), foxes (*Vulpes vulpes*), cats (*Felis catus)*, feral pigs (*Sus scrofa*) and wild dogs (*Canis lupus*). Mitigation measures designed to limit the spread of pests are provided in **Section 7.**

6.2.5 Invasion and spread of pathogens and disease

Several pathogens known from NSW have the potential to impact on biodiversity due to their movement and infection during construction. Of these, three are listed as a key threatening process under either the EPBC Act and/or BC Act including:

- Dieback caused by *Phytophthora* (Root Rot; EPBC Act and BC Act)
- Infection of frogs by amphibian chytrid fungus causing the disease chytridiomycosis (EPBC Act and BC Act)
- Introduction and establishment of exotic Rust Fungi of the order *Pucciniales* on plants of the family *Myrtaceae* (BC Act).

These pathogens were not observed or tested for in the study area. The most likely causes of pathogen dispersal and importation associated with the proposal include earthworks, movement of soil, and attachment of plant matter to vehicles and machinery. Mitigation measures designed to limit the invasion and spread of pathogens and disease are provided in **Section 7**.

6.2.6 Noise, light and vibration

Given the current levels of noise, light and vibration caused by vehicular activity on Canowindra Road and the current operating McNaught's Quarry site, along with that produced by agricultural activities, it is unlikely that there would be a significant increase associated with the operational phase of the proposal.

6.3 CUMULATIVE IMPACTS

It is imperative to acknowledge the ecological consequences stemming from this project are not isolated occurrences; instead, they will constitute a component of the broader trend of declining biodiversity value in NSW. This BAR serves as a valuable platform for us to comprehend the

cumulative impacts resulting from a combination of historical disturbances and the ongoing repercussions of contemporary activities. Cumulative impacts underscore the idea that these losses and disturbances accumulate over time, compounding the challenges faced by ecosystems.

Disturbance to native vegetation within the NSW South Western Slopes Bioregion has been extreme, with contiguous areas of coverage largely confined to road corridors and creek/drainage lines. Paddock trees, although widely distributed across agricultural properties, will eventually expire – and the lack of recruitment will further compound biodiversity losses into the future. As in the past, today the pressure of agricultural practises and the conversion of land into crops and orchards and for natural resource extraction is driving biodiversity declines.

Although we accept that the proposal will contribute further to this loss, we have judged that it will not significantly exacerbate the issue. Whilst the loss of 0.385 ha of native vegetation is undesirable, a much greater quantity of higher quality vegetation will continue to exist within the wider study and search areas. Of greater concern is the alteration of the example of the BC Act-listed CEECs, *White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion, and Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion*.

We consider the loss of 0.33 ha of these TECs regrettable, though not significant. Larger examples of this CEEC have been documented in the road corridors surrounding the currently operating quarry site and subject site for extension.

6.4 IMPACT SUMMARY

An Assessment of Significance has been conducted for each BC and EPBC Act-listed threatened species or communities that are considered to have a moderate-high likelihood of occurring within the subject site due to the presence of suitable habitat (**Appendices C- E**).

Based on the assessments above, the proposal is unlikely to have a significant impact on biodiversity, including on predicted populations of threatened species and threatened ecological communities (**Appendices D-E**).

7 AVOID, MINIMISE AND MITIGATE IMPACTS

A key part of the proponent's management of biodiversity for this proposal is the application of the 'avoid, minimise, mitigate and offset' hierarchy as follows:

1. Avoid and minimise impacts as the highest priority,

2. Mitigate impacts where avoidance is not feasible or practicable in the circumstance, and

3. Offset where residual, significant unavoidable impacts would occur

7.1 AVOIDANCE AND MINIMISATION

The following impact avoidance methods are recommended to be implemented:

- To avoid impacts associated with weed introduction and spread, inspect all machinery before entering and exiting the subject site. Machinery must be clean of all mud, soil and vegetation material.

In addition, the following minimisation measures are proposed:

- The construction works and vehicle access to the construction site is to be constrained to the minimum area practical. The proposed access will provide the sole access to the construction site.

- Material stockpiles, equipment and machinery storage and laydown areas will be consolidated within a defined impact area to minimise the overall impact footprint.

- The impact footprint will be minimised by restricting access across the site to the defined development footprint, including avoiding unnecessary vehicle and personnel movements across unused land.

7.2 MITIGATION MEASURES

Mitigation measures are to be undertaken during the construction and operational phases, including managing the vegetation clearing process, weed management, and installation of erosion and sediment controls as appropriate.

The following mitigation measures are recommended for implementation (see **Table 7-1**).

Table 7-1. Mitigation measures and environmental safeguards.

Aspect	Environmental safeguards	Responsibility	Timing
General	1. Any change in design outside the assessed impact footprint (subject site) will require further ecological survey and assessment. 2. All personnel working on site will be made aware of the environmental sensitivities of the site and safeguards/mitigations to be implemented, e.g., site induction and 'toolbox' style briefings. In particular, this must include the White Box and Blakely's Red Gum-Yellow Box TEC (**Section 5.2** and photographs in **Appendix B**), all native vegetation, and the potential threatened flora and fauna species listed in **Table 5-3**.	Proponent	Pre-construction, construction, operation
Clearing of native vegetation (including habitat trees)	3. All construction personnel should be inducted to be aware that any deliberate or accidental damage of a stand of native vegetation outside the subject site has legislative consequences under Part 4 or 5 of the EP&A Act. Evidence of all personnel receiving this induction would be kept on file (signed induction sheets etc.). 4. Before starting work, a physical vegetation clearing boundary at the approved clearing limit is to be demarcated and implemented. The delineation of such a boundary may include the use of temporary fencing, parawebbing, etc. 5. Where possible, hollow-bearing trees should be avoided. If any hollow-bearing trees need to be removed, the following measures should be implemented: a. A pre-clearance survey should be conducted by a suitably qualified ecologist prior to any vegetation disturbance. All potential habitat trees must be clearly marked during the pre-clearance survey. b. Non-habitat trees should be cleared prior to the removal of habitat trees. c. All habitat tree removal must occur under the supervision of an ecologist or fauna spotter catcher, to ensure that no animals are injured. d. Prior to felling, the tree should be struck with an excavator (or similar equipment) to scare resident fauna away. e. Once fallen, the habitat tree should remain in place for 24 hours to enable time for any fauna to disperse. 6. Vegetation would be removed in such a way as to avoid damage to surrounding vegetation. 7. Groundcover disturbance would be kept to a minimum. 8. Any stockpile and compound sites should be located using the following criteria: a. At least 40 m away from the nearest waterway b. In areas of low ecological conservation significance (i.e., previously disturbed land) c. On relatively level ground d. Outside the one in 10-year Average Recurrence Interval (ARI) floodplain	Proponent / contractor	Pre-construction, construction, operation

Aspect	Environmental safeguards	Responsibility	Timing
	9. Stockpiling materials and equipment and parking vehicles would be avoided within the dripline (extent of foliage cover) of any tree. 10. Where possible, vegetation to be removed would be mulched on-site and re-used to stabilise disturbed areas.		
Accidental death of fauna	11. If habitat trees are to be removed, a fauna spotter catcher should be present during their removal to ensure that no animals are injured. The fauna spotter catcher should conduct a preclearance check of all surface debris and habitat trees to be removed. 12. Where fauna is encountered, the fauna spotter catcher will remove the animal(s) and relocate them nearby, or if necessary, deliver them to a veterinarian or wildlife carer for rehabilitation.	Contractor	Construction
Light	13. Any artificial lighting to be used during construction or operation should follow the Best Practice Lighting Design within the National Light Pollution Guidelines (DoEE 2020).	Proponent, contractor	Construction
Soil Management	14. Install erosion and sediment controls in line with Landcom's Managing Urban Stormwater, Soils & Construction Guidelines (The Blue Book. Landcom 2004). 15. Where practicable, spread mulch made from vegetation cleared on site on areas of bare soil to stabilise, preventing dust and erosion. 16. Erosion and sedimentation controls are to be checked and maintained on a regular basis. This includes clearing of sediment from behind barriers and after heavy rainfall events. 17. Erosion and sediment control measures are not to be removed until the works are complete, and areas are stabilised. 18. Stockpile topsoil removed to be redistributed across site at completion of construction. 19. Implement dust suppression activities.	Contractor	Pre-construction and construction
Introduction and spread of priority weeds and pathogens	20. Construction crew should be briefed on the identification of significant weeds that occur on site during inductions (**Table 6-1**). 21. If declared priority weeds are identified during construction, they will be managed according to the requirements of the *Biosecurity Act 2015*. 22. Construction machinery (bulldozers, excavators, trucks, loaders, and graders) will be cleaned using a high-pressure washer or other suitable device before entering and exiting work sites. 23. Machinery will be inspected by designated personnel following washdown to ensure no soil, mud, or vegetative material remains. Records of inspections to be maintained. 24. All pesticides will be used in accordance with the requirements on the label. Any person carrying out pesticide (including herbicide) application will be trained to do so and have the proper certificate of completion/competency or statement of attainment issued by a registered training organisation. 25. Keep records of any weed control activities that take place.	Contractor	Construction

Aspect	Environmental safeguards	Responsibility	Timing
Disturbance to dead wood and bush rock	26. Any dead wood and bush rock encountered on site would be left *in situ* (where possible) or relocated to a suitable place nearby. 27. Rock would be removed with suitable machinery so as not to damage the underlying rock or result in excessive soil disturbance.	Contractor	Construction
Rehabilitating cleared areas	28. Revegetation of any bare soil or cleared areas with locally occurring native flora species typical of the original habitat types is usually recommended. 29. Stockpiled topsoil to be re-spread over cleared areas.	Proponent, contractor	Construction and post-construction
Exacerbating invasive fauna	30. All food scraps and rubbish are to be appropriately disposed of in sealed receptacles to prevent providing forage habitats for foxes, rats, dogs, and cats.	Contractor	Construction
Increased risk of fire	31. If any “hot works” are to be undertaken, these activities will not take place on days of extreme fire danger (where possible).	Contractor	Construction

8 CONCLUSION

OzArk have been engaged by R.W. Corkery to complete the above BAR for McNaught's Quarry.

An onsite field survey, conducted on the 25th of October 2023, identified 0.385 ha of native vegetation belonging to three PCTs within the impact footprint:

- PCT 53 – Shallow freshwater wetland sedgeland in depressions on floodplains on inland alluvial plains and floodplains,
- PCT 266 – White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion, and
- PCT 277 – Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion

PCT 266 and PCT 277 were judged to be examples of the BC Act-listed CEEC: White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions. As such, up to 0.33 ha of this CEEC will be cleared for this proposal.

In total, two habitat trees were recorded within the subject site, which cumulatively contained three small hollows. No large hollows or fallen timber deposits were encountered during the field survey.

No permits are required in accordance with the WM or FM Act as no watercourse, KFH or PRL occur within the subject site.

Fifty-seven threatened or migratory fauna species or populations and 10 threatened flora species were considered to have a moderate or greater probability of occurrence at the subject site. However, no listed species or population were encountered during the field survey. Subject to implementation of the mitigation measures proposed, it has been concluded that no significant biodiversity impacts are likely, including to any threatened or migratory species, population or ecological community, or their habitats. As such, the proposal does not require referral to the DCCEEW in respect of these matters or trigger the need for a SIS or a BDAR.

This assessment covers the current form of the proposal. Any change to the scope of work may require re-assessment. If entry into the BOS is triggered by a changed footprint impacting additional native vegetation, then additional field work and reporting completed according to the BAM may be required.

9 REFERENCES

Briggs, J and Leigh, J 1996, *Rare or Threatened Australian Plants*, CSIRO Publishing, Collingwood, Victoria

Bureau of Meteorology 2023a, *Bureau of Meteorology Climate Averages*, viewed November 2023, <http://www.bom.gov.au/climate/averages>

– 2023b, *Atlas of Groundwater Dependent Ecosystems*, viewed November 2023 http://www.bom.gov.au/water/groundwater/gde/map.shtml

Churchill, S 2008, *Australian bats - 2nd Edition*, Allen and Unwin, Crows Nest, NSW

Cogger, H 2014, *Reptiles and Amphibians of Australia,* CSIRO Publishing, Collingwood, Victoria

Cropper, S 1993, *Management of Endangered Plants*, CSIRO Publishing, Collingwood, Victoria

Cunningham, GM., Mulham, WE., Milthorpe, Pl. and Leigh, JH 1992, *Plants of Western New South Wales.* CSIRO Publishing, Collingwood, Victoria

Department of the Environment 2013, *Matters of National Environmental Significance: Significant Impact Guidelines 1.1 Environment Protection and Biodiversity Conservation Act 1999*, viewed November 2023, <http://www.environment.gov.au/system/files/resources/42f84df4-720b-4dcf-b262-48679a3aba58/files/nes-guidelines_1.pdf>

Department of the Environment 2018, *Consultation Document on Listing Eligibility and Conservation Actions Hirundapus caudacutus (White-throated Needletail)*, viewed December 2023, <https://www.dcceew.gov.au/sites/default/files/env/consultations/a171b06e-3690-4ca9-a560-170ee5d806b3/files/consultation-document-hirundapus-caudacutus.pdf>

Department of the Environment and Energy 2023a, *Protected Matters Search Tool*, viewed November 2023, <http://www.environment.gov.au/epbc/db/index.html>

– 2023b, *Species profile and threats database*, viewed November 2023, <http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl>

– 2023c, *Register of Critical Habitat*, viewed November 2023, <http://www.environment.gov.au/cgi-bin/sprat/public/publicregisterofcriticalhabitat.pl>

– 2023d, *Weeds of National Significance*, viewed November 2023, <http://www.environment.gov.au/biodiversity/invasive/weeds/weeds/lists/wons.html>

Department of Environment and Climate Change 2007, *Threatened species assessment guidelines: The assessment of significance*, Department of Environment and Climate Change, Hurstville, NSW

Department of Environment and Conservation 2004 [Working draft], *Threatened Species Survey and Assessment: Guidelines for developments and activities*, New South Wales Department of Environment and Conservation, Hurstville, NSW

– 2010a, *Survey guidelines for Australia's threatened bats: Guidelines for detecting bats listed as threatened under the Environment Protection and Biodiversity Conservation Act 1999*. Commonwealth of Australia Barton, ACT

– 2010b, *Survey guidelines for Australia's threatened birds: Guidelines for detecting birds listed as threatened under the Environment Protection and Biodiversity Conservation Act 1999*. Commonwealth of Australia Barton, ACT

– 2010c, *Survey guidelines for Australia's threatened frogs: Guidelines for detecting frogs listed as threatened under the Environment Protection and Biodiversity Conservation Act 1999*. Commonwealth of Australia Barton, ACT

Department of Land and Water Conservation 2002, *The NSW State Groundwater Dependent Ecosystems Policy,* <http://www.water.nsw.gov.au/__data/assets/pdf_file/0005/547844/groundwater_dependent_ecosystem_policy_300402.pdf>

Department of Planning and Environment 2003, Retrieved from South Western Slopes bioregion chapter (10) of 'Bioregions of New South Wales', viewed April 2023 <https://www.environment.nsw.gov.au/bioregions/NSWSouthWesternSlopesBioregion.htm>

Department of Planning and Environment 2022a, Koala (*Phascolarctos cinereus*). Biodiversity Assessment Method Survey Guide.

– 2022b, NSW State Vegetation Type Map: C1.1.M1.1, <https://datasets.seed.nsw.gov.au/dataset/nsw-state-vegetation-type-map>

– 2022c, Threatened Reptiles. Biodiversity Assessment Method Survey Guide. <https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Biodiversity/threatened-reptiles-biodiversity-assessment-method-survey-guide-20220563.pdf>

Department of Primary Industries 2016, *Grasses of the New South Wales slopes and adjacent plains*. Department of Primary Industries

– 2023a, *NSW WeedWise: Priority weeds for the Central West,* viewed November 2023 <https://weeds.dpi.nsw.gov.au/WeedBiosecurities?AreaId=63

– 2023b, *Key Fish Habitat Maps*, viewed November 2023

– 2023c, *Freshwater threatened species distribution maps*, viewed November 2023 <https://www.dpi.nsw.gov.au/fishing/threatened-species/threatened-species-distributions-in-nsw/freshwater-threatened-species-distribution-maps>

Department of Planning, Industry and Environment 2020a, *Surveying Threatened Plants and Their Habitats. NSW Survey Guide for the Biodiversity Assessment Method.* <https://www.environment.nsw.gov.au/research-and-publications/publications-search/surveying-threatened-plants-and-their-habitats-survey-guide-for-the-biodiversity-assessment-method>

– 2020b, *NSW Survey Guide for Threatened Frogs. A guide for the survey of threatened frogs and their habitats for the Biodiversity Assessment Method.* <https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Threatened-species/nsw-survey-guide-for-threatened-frogs-200440.pdf>

Fairfull, S and Witheridge, G 2003, *Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings*, NSW Fisheries, Cronulla, NSW, viewed November 2023, <https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0004/633505/Why-do-fish-need-to-cross-the-road_booklet.pdf>

Fairfull, S. (2013). *Policy and Guidelines for Fish Habitat Conservation and Management.* Sydney: NSW Department of Primary Industries.

Frith, HJ (Ed) 2007, *Complete book of Australian birds*, Readers Digest, Surry Hills, NSW

Harden, G (Ed) 1992-2002, *Flora of New South Wales Vols 1, 2, 3 and 4*, NSW University Press, Kensington, NSW

Keith, D. 2004, *Ocean Shores to Desert Dunes: The Vegetation of New South Wales and the ACT.* Department of Environment and Conservation NSW.

Lintermans, M 2007, *Fishes of the Murray-Darling Basin: An introductory guide.*

Mitchell. 2002, *Descriptions for NSW (Mitchell) Landscapes.* NSW: Department of Environment and Climate Change.

NSW Roadside Environment Committee, Managing Roadsides Implementation. < https://roads-waterways.transport.nsw.gov.au/documents/about/environment/rec-fact3-managing-roadsides-implementation.pdf>

Office of Environment and Heritage 2016, *NSW Guide to Surveying Threatened Plants*, Office of Environment and Heritage, Sydney South, NSW, viewed November 2023, <http://www.environment.nsw.gov.au/resources/threatenedspecies/160129-threatened-plants-survey-guide.pdf>

– 2018, *Threatened Species Test of Significance Guidelines*, viewed November 2023, <https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Threatened-species/threatened-species-test-significance-guidelines-170634.pdf>

– 2023a, *BioNet Vegetation Classification database*, viewed November 2023, <https://www.environment.nsw.gov.au/NSWVCA20PRapp/>

– 2023b, *BioNet (Atlas of NSW Wildlife) Database*, data downloaded June 2023, <http://www.environment.nsw.gov.au/atlaspublicapp/UI_Modules/ATLAS_/AtlasSearch.aspx>

– 2023c, *Threatened Biodiversity Data Collection* database, viewed November 2023, <https://data.nsw.gov.au/data/dataset/nsw-bionet-threatened-entity-profile-data-collection8f027>

– 2023d, *Threatened biodiversity profile search*, viewed November 2023, <http://www.environment.nsw.gov.au/threatenedSpeciesApp/>

– 2023e, *Critical Habitat Register*, viewed November 2023, <http://www.environment.nsw.gov.au/criticalhabitat/CriticalHabitatProtectionByDoctype.htm>

Richardson, F.J., Richardson, R.G. and Shepherd, R.C.H. 2011, *Weeds of the south-east: An identification guide for Australia*. R.G and F.J. Richardson, Meredith, Victoria.

The Royal Botanic Gardens and Domain Trust 2022, *PlantNET*. viewed November 2023, <www.plantnet.rbgsyd.nsw.gov.au>

Simpson, K and Day, N 2010, *Field guide to the birds of Australia*, 8th Edition, Penguin Books Australia, Victoria

Thackway, R and Cresswell I.D 1995, *An Interim Biogeographic Regionalisation for Australia: A Framework for Setting Priorities in the National Reserves System Cooperative Program*, Australian Nature Conservation Agency, Canberra, viewed November 2023,

<https://www.environment.gov.au/system/files/resources/4263c26f-f2a7-4a07-9a29-b1a81ac85acc/files/ibra-framework-setting-priorities-nrs-cooperative-program.pdf>

Triggs, B 1996, *Tracks, scats and other traces: a field guide to Australian mammals*, Oxford University Press, Melbourne, Victoria

Van Dyck, S and Strahan, R (Eds) 2008, *The mammals of Australia (3rd edition)*. Reed New Holland, Sydney, NSW

APPENDIX A – DATABASE SEARCH RESULTS

EPBC Act Protected Matters Report



Australian Government

Department of Climate Change, Energy, the Environment and Water

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 07-Nov-2023

Summary
Details
- Matters of NES
- Other Matters Protected by the EPBC Act
- Extra Information

Caveat
Acknowledgements

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	4
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	4
Listed Threatened Species:	31
Listed Migratory Species:	10

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	17
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	None
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	1
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar Wetlands) [Resource Information]

Ramsar Site Name	Proximity
Banrock station wetland complex	700 - 800km upstream from Ramsar site
Hattah-kulkyne lakes	500 - 600km upstream from Ramsar site
Riverland	700 - 800km upstream from Ramsar site
The coorong, and lakes alexandrina and albert wetland	800 - 900km upstream from Ramsar site

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text
Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	Endangered	Community may occur within area
Natural Temperate Grassland of the South Eastern Highlands	Critically Endangered	Community may occur within area
Poplar Box Grassy Woodland on Alluvial Plains	Endangered	Community may occur within area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community likely to occur within area

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
BIRD		

Scientific Name	Threatened Category	Presence Text
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Species or species habitat likely to occur within area
Aphelocephala leucopsis Southern Whiteface [529]	Vulnerable	Species or species habitat likely to occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Callocephalon fimbriatum Gang-gang Cockatoo [768]	Endangered	Species or species habitat may occur within area
Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat likely to occur within area
Climacteris picumnus victoriae Brown Treecreeper (south-eastern) [67062]	Vulnerable	Species or species habitat likely to occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat likely to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat may occur within area
Lophochroa leadbeateri leadbeateri Major Mitchell's Cockatoo (eastern), Eastern Major Mitchell's Cockatoo [82926]	Endangered	Species or species habitat may occur within area
Melanodryas cucullata cucullata South-eastern Hooded Robin, Hooded Robin (south-eastern) [67093]	Endangered	Species or species habitat likely to occur within area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat may occur within area
Polytelis swainsonii Superb Parrot [738]	Vulnerable	Species or species habitat known to occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area
Stagonopleura guttata Diamond Firetail [59398]	Vulnerable	Species or species habitat likely to occur within area
FISH		
Macquaria australasica Macquarie Perch [66632]	Endangered	Species or species habitat may occur within area
MAMMAL		
Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat may occur within area
Dasyurus maculatus maculatus (SE mainland population) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat may occur within area
Nyctophilus corbeni Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)		
Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat likely to occur within area
Pteropus poliocephalus		
Grey-headed Flying-fox [186]	Vulnerable	Species or species habitat may occur within area
PLANT		
Austrostipa wakoolica		
[66623]	Endangered	Species or species habitat may occur within area
Lepidium aschersonii		
Spiny Peppercress [10976]	Vulnerable	Species or species habitat may occur within area
Prasophyllum petilum		
Tarengo Leek Orchid [55144]	Endangered	Species or species habitat may occur within area
Prasophyllum sp. Wybong (C.Phelps ORG 5269)		
a leek-orchid [81964]	Critically Endangered	Species or species habitat may occur within area
Thesium australe		
Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat may occur within area
Vincetoxicum forsteri listed as Tylophora linearis		
[92384]	Endangered	Species or species habitat may occur within area
REPTILE		
Aprasia parapulchella		
Pink-tailed Worm-lizard, Pink-tailed Legless Lizard [1665]	Vulnerable	Species or species habitat likely to occur within area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		

Scientific Name	Threatened Category	Presence Text
Hirundapus caudacutus		
White-throated Needletail [682]	Vulnerable	Species or species habitat likely to occur within area
Motacilla flava		
Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca		
Satin Flycatcher [612]		Species or species habitat may occur within area
Rhipidura rufifrons		
Rufous Fantail [592]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat may occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat may occur within area
Gallinago hardwickii		
Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Bird		

Scientific Name	Threatened Category	Presence Text
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area overfly marine area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat may occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat likely to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat may occur within area overfly marine area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat may occur within area overfly marine area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat may occur within area overfly marine area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat may occur within area overfly marine area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area overfly marine area

Extra Information

EPBC Act Referrals			[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

© Commonwealth of Australia
Department of Climate Change, Energy, the Environment and Water
GPO Box 3090
Canberra ACT 2601 Australia
+61 2 6274 1111

BioNET Atlas search – threatened species predicted to occur within the Inland Slopes subregion of the NSW South Western Slopes Bioregion.

Class	Scientific Name	Common Name	NSW status*	Comm. status+	Records
Amphibia	*Crinia sloanei*	Sloane's Froglet	E1,P	E	267
Amphibia	*Litoria booroolongensis*	Booroolong Frog	E1,P	E	37
Amphibia	*Litoria raniformis*	Southern Bell Frog	E1,P	V	12
Reptilia	*Aprasia parapulchella*	Pink-tailed Legless Lizard	V,P	V	192
Reptilia	*Delma impar*	Striped Legless Lizard	V,P	V	4
Reptilia	*Varanus rosenbergi*	Rosenberg's Goanna	V,P		6
Reptilia	*Hoplocephalus bitorquatus*	Pale-headed Snake	V,P		P
Aves	*Leipoa ocellata*	Malleefowl	E1,P	V	4
Aves	*Anseranas semipalmata*	Magpie Goose	V,P		5
Aves	*Oxyura australis*	Blue-billed Duck	V,P		13
Aves	*Stictonetta naevosa*	Freckled Duck	V,P		7
Aves	*Apus pacificus*	Fork-tailed Swift	P	C,J,K	17
Aves	*Hirundapus caudacutus*	White-throated Needletail	P	V,C,J,K	31
Aves	*Ephippiorhynchus asiaticus*	Black-necked Stork	E1,P		K
Aves	*Botaurus poiciloptilus*	Australasian Bittern	E1,P	E	3
Aves	*Ixobrychus flavicollis*	Black Bittern	V,P		1
Aves	*Circus assimilis*	Spotted Harrier	V,P		35
Aves	*Haliaeetus leucogaster*	White-bellied Sea-Eagle	V,P		40
Aves	^^*Hamirostra melanosternon*	Black-breasted Buzzard	V,P,3		2
Aves	*Hieraaetus morphnoides*	Little Eagle	V,P		164
Aves	^^*Lophoictinia isura*	Square-tailed Kite	V,P,3		9
Aves	^^*Pandion cristatus*	Eastern Osprey	V,P,3		1
Aves	^*Falco hypoleucos*	Grey Falcon	V,P,2	V	3
Aves	*Falco subniger*	Black Falcon	V,P		55
Aves	*Grus rubicunda*	Brolga	V,P		7
Aves	*Ardeotis australis*	Australian Bustard	E1,P		1
Aves	*Burhinus grallarius*	Bush Stone-curlew	E1,P		15
Aves	*Rostratula australis*	Australian Painted Snipe	E1,P	E	1
Aves	*Actitis hypoleucos*	Common Sandpiper	P	C,J,K	3
Aves	*Calidris acuminata*	Sharp-tailed Sandpiper	P	C,J,K	22
Aves	*Calidris ferruginea*	Curlew Sandpiper	E1,P	CE,C,J,K	3
Aves	*Calidris ruficollis*	Red-necked Stint	P	C,J,K	6
Aves	*Gallinago hardwickii*	Latham's Snipe	P	J,K	28
Aves	*Limosa limosa*	Black-tailed Godwit	V,P	C,J,K	P
Aves	*Tringa nebularia*	Common Greenshank	P	C,J,K	4
Aves	*Tringa stagnatilis*	Marsh Sandpiper	P	C,J,K	5

Class	Scientific Name	Common Name	NSW status*	Comm. status+	Records
Aves	*Gelochelidon nilotica*	Gull-billed Tern	P	C	1
Aves	*Hydroprogne caspia*	Caspian Tern	P	J	1
Aves	*Thalasseus bergii*	Crested Tern	P	J	1
Aves	^^*Callocephalon fimbriatum*	Gang-gang Cockatoo	V,P,3	E	291
Aves	^*Calyptorhynchus lathami lathami*	South-eastern Glossy Black-Cockatoo	V,P,2	V	96
Aves	^*Lophochroa leadbeateri*	Major Mitchell's Cockatoo	V,P,2		8
Aves	^^*Glossopsitta porphyrocephala*	Purple-crowned Lorikeet	V,P,3		5
Aves	*Glossopsitta pusilla*	Little Lorikeet	V,P		196
Aves	*Lathamus discolor*	Swift Parrot	E1,P	CE	184
Aves	*Neophema chrysostoma*	Blue-winged Parrot	V,P	V	5
Aves	^^*Neophema pulchella*	Turquoise Parrot	V,P,3		268
Aves	^^*Polytelis swainsonii*	Superb Parrot	V,P,3	V	2692
Aves	*Cuculus optatus*	Oriental Cuckoo	P	C,J,K	1
Aves	^^*Ninox connivens*	Barking Owl	V,P,3		57
Aves	^^*Ninox strenua*	Powerful Owl	V,P,3		15
Aves	^^*Tyto novaehollandiae*	Masked Owl	V,P,3		9
Aves	*Climacteris picumnus victoriae*	Brown Treecreeper (eastern subspecies)	V,P	V	3044
Aves	*Pycnoptilus floccosus*	Pilotbird	P	V	1
Aves	*Chthonicola sagittata*	Speckled Warbler	V,P		665
Aves	^*Anthochaera phrygia*	Regent Honeyeater	E4A,P,2	CE	133
Aves	*Certhionyx variegatus*	Pied Honeyeater	V,P		1
Aves	*Epthianura albifrons*	White-fronted Chat	V,P		69
Aves	*Grantiella picta*	Painted Honeyeater	V,P	V	21
Aves	*Melithreptus gularis gularis*	Black-chinned Honeyeater (eastern subspecies)	V,P		345
Aves	*Pomatostomus temporalis temporalis*	Grey-crowned Babbler (eastern subspecies)	V,P		592
Aves	*Daphoenositta chrysoptera*	Varied Sittella	V,P		263
Aves	*Pachycephala inornata*	Gilbert's Whistler	V,P		39
Aves	*Artamus cyanopterus cyanopterus*	Dusky Woodswallow	V,P		944
Aves	*Melanodryas cucullata cucullata*	Hooded Robin (south-eastern form)	V,P		293
Aves	*Petroica boodang*	Scarlet Robin	V,P		413
Aves	*Petroica phoenicea*	Flame Robin	V,P		438
Aves	*Petroica rodinogaster*	Pink Robin	V,P		2
Aves	*Stagonopleura guttata*	Diamond Firetail	V,P	V	896
Mammalia	*Dasyurus maculatus*	Spotted-tailed Quoll	V,P	E	47
Mammalia	*Phascogale tapoatafa*	Brush-tailed Phascogale	V,P		P

Class	Scientific Name	Common Name	NSW status*	Comm. status+	Records
Mammalia	*Macrotis lagotis*	Bilby	E4,P	V	3
Mammalia	*Phascolarctos cinereus*	Koala	E1,P	E	115
Mammalia	*Cercartetus nanus*	Eastern Pygmy-possum	V,P		6
Mammalia	*Petaurus australis*	Yellow-bellied Glider	V,P	V	2
Mammalia	*Petaurus norfolcensis*	Squirrel Glider in the Wagga Wagga Local Government Area	E2,V,P		544
Mammalia	*Petaurus norfolcensis*	Squirrel Glider	V,P		1271
Mammalia	*Petauroides volans*	Southern Greater Glider	E1,P	E	124
Mammalia	*Bettongia lesueur graii*	Boodie, Burrowing Bettong (mainland)	E4,P	X	1
Mammalia	*Petrogale penicillata*	Brush-tailed Rock-wallaby	E1,P	V	3
Mammalia	*Pteropus poliocephalus*	Grey-headed Flying-fox	V,P	V	394
Mammalia	*Saccolaimus flaviventris*	Yellow-bellied Sheathtail-bat	V,P		25
Mammalia	*Chalinolobus dwyeri*	Large-eared Pied Bat	V,P	V	19
Mammalia	*Chalinolobus picatus*	Little Pied Bat	V,P		15
Mammalia	*Falsistrellus tasmaniensis*	Eastern False Pipistrelle	V,P		20
Mammalia	*Myotis macropus*	Southern Myotis	V,P		20
Mammalia	*Nyctophilus corbeni*	Corben's Long-eared Bat	V,P	V	9
Mammalia	*Scoteanax rueppellii*	Greater Broad-nosed Bat	V,P		4
Mammalia	*Miniopterus orianae oceanensis*	Large Bent-winged Bat	V,P		106
Mammalia	*Pseudomys novaehollandiae*	New Holland Mouse	P	V	8
Insecta	*Synemon plana*	Golden Sun Moth	V	V	134
Insecta	*Keyacris scurra*	Key's Matchstick Grasshopper	E1		5
Flora	*Caesia parviflora var. minor*	Small Pale Grass-lily	E1		3
Flora	*Tylophora linearis*		V	E	25
Flora	*Ammobium craspedioides*	Yass Daisy	V	V	1276
Flora	*Brachyscome muelleroides*	Claypan Daisy	V	V	1
Flora	*Leucochrysum albicans subsp. tricolor*	Hoary Sunray	E1	E	33
Flora	*Senecio garlandii*	Woolly Ragwort	V		72
Flora	*Carex raleighii*	Raleigh Sedge	E1		1
Flora	*Bossiaea fragrans*		E4A	CE	55
Flora	*Cullen parvum*	Small Scurf-pea	E1		7
Flora	^^*Indigofera efoliata*	Leafless Indigo	E1,3	E	5
Flora	*Pultenaea humilis*	Dwarf Bush-pea	V		8
Flora	*Swainsona recta*	Small Purple-pea	E1	E	736
Flora	*Swainsona sericea*	Silky Swainson-pea	V		232
Flora	*Acacia ausfeldii*	Ausfeld's Wattle	V		4005

Class	Scientific Name	Common Name	NSW status*	Comm. status+	Records
Flora	*Acacia meiantha*		E1	E	P
Flora	*Acacia phasmoides*	Phantom Wattle	V	V	95
Flora	*^^Pilularia novae-hollandiae*	Austral Pillwort	E1,3		5
Flora	*Eucalyptus aggregata*	Black Gum	V	V	1
Flora	*Eucalyptus alligatrix subsp. alligatrix*		V	V	2
Flora	*Eucalyptus cannonii*	Capertee Stringybark	V		5
Flora	*Eucalyptus robertsonii subsp. hemisphaerica*	Robertson's Peppermint	V	V	P
Flora	*Homoranthus darwinioides*	Fairy Bells	V	V	P
Flora	*^Caladenia arenaria*	Sand-hill Spider Orchid	E1,P,2	E	6
Flora	*^Caladenia concolor*	Crimson Spider Orchid	E1,P,2	V	504
Flora	*^Caladenia rosella*	Rosella Spider Orchid	E4,P,2	E	1
Flora	*^Caladenia tessellata*	Thick Lip Spider Orchid	E1,P,2	V	1
Flora	*^Diuris tricolor*	Pine Donkey Orchid	V,P,2		21
Flora	*^Prasophyllum petilum*	Tarengo Leek Orchid	E1,P,2	E	25
Flora	*Prasophyllum sp. Wybong*		P	CE	P
Flora	*Euphrasia arguta*		E4A	CE	1
Flora	*Euphrasia collina subsp. muelleri*	Mueller's Eyebright	E1	E	P
Flora	*Amphibromus fluitans*	Floating Swamp Wallaby-grass	V	V	30
Flora	*Austrostipa wakoolica*	A spear-grass	E1	E	P
Flora	*Dichanthium setosum*	Bluegrass	V	V	3
Flora	*Grevillea wilkinsonii*	Tumut Grevillea	E4A	E	17
Flora	*Persoonia marginata*	Clandulla Geebung	V,P	V	P
Flora	*Pomaderris cotoneaster*	Cotoneaster Pomaderris	E1	E	P
Flora	*Pomaderris queenslandica*	Scant Pomaderris	E1		4
Flora	*Zieria ingramii*	Keith's Zieria	E1	E	2
Flora	*Zieria obcordata*	Granite Zieria	E1	E	28
Flora	*Thesium australe*	Austral Toadflax	V	V	66
Flora	*Pimelea bracteata*		E4A		1

***NSW Status**: P=Protected, P13=Protected native plant, V=Vulnerable, E1=Endangered, E2=Endangered population, E4=Extinct, E4A=Critically endangered, 2=Category 2 sensitive species, 3=Category 3 sensitive species.
+ Comm. Status: C=CAMBA, J=JAMBA, K=ROKAMBA, CE=Critically endangered, E=Endangered, V=Vulnerable.
- Number of Records: P = predicted to occur.

BioNET Atlas search – threatened ecological communities predicted to occur within the Inland Slopes subregion of the NSW South Western Slopes Bioregion.

Community Name	*NSW status	+Comm. Status	Records
Alpine Sphagnum Bogs and Associated Fens		E	K
Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions		E	K
Central Hunter Valley eucalypt forest and woodland		CE	K
Coolac-Tumut Serpentinite Shrubby Woodland in the NSW South Western Slopes and South Eastern Highlands Bioregions	E3		K
Coolibah - Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions		E	K
Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions	E3		K
Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia		E	K
Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions	E3		K
Natural grasslands on basalt and fine-textured alluvial plains of northern New South Wales and southern Queensland		CE	K
Poplar Box Grassy Woodland on Alluvial Plains		E	K
Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	E3		P
Upland Basalt Eucalypt Forests of the Sydney Basin Bioregion		E	K
Weeping Myall Woodlands		E	K
White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and	E4B		K
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland		CE	K

***NSW Status**: P=Protected, P13=Protected native plant, V=Vulnerable, E1=Endangered, E2=Endangered population, E4=Extinct, E4A=Critically endangered, 2=Category 2 sensitive species, 3=Category 3 sensitive species.
+Comm. Status: CE=Critically endangered, E=Endangered, V=Vulnerable.
- Number of Records: P = predicted to occur.

BioNET Atlas search – Key Threatening Processes predicted to occur within the Inland Slopes subregion of the NSW South Western Slopes Bioregion.

Threats	NSW status	Comm. status	Records
Aggressive exclusion of birds from woodland and forest habitat by abundant Noisy Miners, *Manorina melanocephal*	KTP	KTP	P
Alteration of habitat following subsidence due to longwall mining	KTP		P
Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands	KTP		P
Anthropogenic Climate Change	KTP	KTP	P
Bushrock removal	KTP		P
Clearing of native vegetation	KTP	KTP	P
Competition and grazing by the feral European Rabbit, *Oryctolagus cuniculus*	KTP	KTP	P
Competition and habitat degradation by Feral Goats, *Capra hircus*	KTP	KTP	P
Competition from feral honey bees, *Apis mellifera* L.	KTP		P
Forest eucalypt dieback associated with over-abundant psyllids and Bell Miners	KTP		P
Habitat degradation and loss by Feral Horses (brumbies, wild horses), *Equus caballus*	KTP		P
Herbivory and environmental degradation caused by feral deer	KTP		P
High frequency fire resulting in the disruption of life cycle processes in plants and animals and loss of vegetation structure and composition	KTP		P
Importation of Red Imported Fire Ants *Solenopsis invicta*	KTP	KTP	P
Infection by Psittacine Circoviral (beak and feather) Disease affecting endangered psittacine species and populations	KTP	KTP	P
Infection of frogs by amphibian chytrid causing the disease chytridiomycosis	KTP	KTP	P
Infection of native plants by *Phytophthora cinnamomi*	KTP	KTP	P
Introduction of the Large Earth Bumblebee *Bombus terrestris*	KTP		P
Invasion and establishment of exotic vines and scramblers	KTP		P
Invasion and establishment of Scotch Broom (*Cytisus scoparius*)	KTP		P
Invasion and establishment of the Cane Toad (*Bufo marinus*)	KTP	KTP	P
Invasion of native plant communities by African Olive *Olea europaea* subsp. *cuspidata*	KTP		P
Invasion of native plant communities by *Chrysanthemoides monilifera*	KTP		P
Invasion of native plant communities by exotic perennial grasses	KTP		P
Invasion of the Yellow Crazy Ant, *Anoplolepis gracilipes* into NSW	KTP		P
Invasion, establishment and spread of Lantana (*Lantana camara*)	KTP		P
Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants	KTP	KTP	P
Loss of Hollow-bearing Trees	KTP		P
Loss or degradation (or both) of sites used for hill-topping by butterflies	KTP		P
Predation and hybridisation by Feral Dogs, *Canis lupus familiaris*	KTP		P
Predation by *Gambusia holbrooki* (Plague Minnow or Mosquito Fish)	KTP		P
Predation by the European Red Fox *Vulpes vulpes*	KTP	KTP	P
Predation by the Feral Cat *Felis catus*	KTP	KTP	P
Predation, habitat degradation, competition and disease transmission by Feral Pigs, *Sus scrofa*	KTP	KTP	P
Removal of dead wood and dead trees	KTP		P

Biodiversity Values Map

NSW GOVERNMENT Department of Planning and Environment

Biodiversity Values Map and Threshold Report

This report is generated using the Biodiversity Values Map and Threshold (BMAT) tool. The BMAT tool is used by proponents to supply evidence to your local council to determine whether or not a Biodiversity Development Assessment Report (BDAR) is required under the Biodiversity Conservation Regulation 2017 (Cl. 7.2 & 7.3).

The report provides results for the proposed development footprint area identified by the user and displayed within the blue boundary on the map.

There are two pathways for determining whether a BDAR is required for the proposed development:

1. Is there Biodiversity Values Mapping?
2. Is the 'clearing of native vegetation area threshold' exceeded?

Biodiversity Values Map and Threshold Report

Date of Report Generation		01/04/2025 10:35 PM
1. Biodiversity Values (BV) Map - Results Summary (Biodiversity Conservation Regulation Section 7.3)		
1.1	**Does the development Footprint intersect with BV mapping?**	no
1.2	**Was ALL BV Mapping within the development footprinted added in the last 90 days?** (dark purple mapping only, no light purple mapping present)	no
1.3	**Date of expiry of dark purple 90 day mapping**	N/A
1.4	**Is the Biodiversity Values Map threshold exceeded?**	no
2. Area Clearing Threshold - Results Summary (Biodiversity Conservation Regulation Section 7.2)		
2.1	**Size of the development or clearing footprint**	96,264.1 sqm
2.2	**Native Vegetation Area Clearing Estimate (NVACE)** (within development/clearing footprint)	3,897.3 sqm
2.3	**Method for determining Minimum Lot Size**	LEP
2.4	**Minimum Lot Size** (10,000sqm = 1ha)	1,000,000 sqm
2.5	**Area Clearing Threshold** (10,000sqm = 1ha)	10,000 sqm
2.6	**Does the estimate exceed the Area Clearing Threshold?** (NVACE results are an estimate and can be reviewed using the Guidance)	no
REPORT RESULT: Is the Biodiversity Offset Scheme (BOS) Threshold exceeded for the proposed development footprint area? (Your local council will determine if a BDAR is required)		**no**

Page 1 of 4

Department of Planning and Environment

What do I do with this report?

• If the result above indicates the BOS Threshold has been exceeded, your local council **may require** a Biodiversity Development Assessment Report with your development application. Seek further advice from Council. An accredited assessor can apply the Biodiversity Assessment Method and prepare a BDAR for you. For a list of accredited assessors go to: https://customer.lmbc.nsw.gov.au/assessment/AccreditedAssessor.

• If the result above indicates the BOS Threshold has not been exceeded, you may not require a Biodiversity Development Assessment Report. This BMAT report can be provided to Council to support your development application. Council can advise how the area clearing threshold results should be considered. Council will review these results and make a determination if a BDAR is required. Council may ask you to review the area clearing threshold results. You may also be required to assess whether the development is "'likely to significantly affect threatened species" as determined under the test in Section 7.3 of the *Biodiversity Conservation Act 2016*.

• If a BDAR is not required by Council, you may still require a permit to clear vegetation from your local council.

• If **all** Biodiversity Values mapping within your development footprint was less than 90 days old, i.e. areas are displayed as dark purple on the BV map, a BDAR may not be required if your Development Application is submitted within that 90 day period. Any BV mapping less than 90 days old on this report will expire on the date provided in Line item 1.3 above.

For more detailed advice about actions required, refer to the **Interpreting the evaluation report** section of the Biodiversity Values Map Threshold Tool User Guide .

Review Options:

• If you believe the Biodiversity Values mapping is incorrect please refer to our BV Map Review webpage for further information.

• If you or Council disagree with the area clearing threshold estimate results from the NVACE in Line Item 2.6 above (i.e. area of Native Vegetation within the Development footprint proposed to be cleared), review the results using the Guide for reviewing area clearing threshold results from the BMAT Tool.

Acknowledgement

I, as the applicant for this development, submit that I have correctly depicted the area that will be impacted or likely to be impacted as a result of the proposed development.

Signature: _____ Date: _____

(Typing your name in the signature field will be considered as your signature for the purposes of this form)

01/04/2025 10:35 PM

Page 2 of 4

Department of Planning and Environment

Biodiversity Values Map and Threshold Tool

The Biodiversity Values (BV) Map and Threshold Tool identifies land with high biodiversity value, particularly sensitive to impacts from development and clearing.

The BV map forms part of the Biodiversity Offsets Scheme threshold, which is one of the factors for determining whether the Scheme applies to a clearing or development proposal. You have used the Threshold Tool in the map viewer to generate this BV Threshold Report for your nominated area. This report calculates results for your proposed development footprint and indicates whether Council may require you to engage an accredited assessor to prepare a Biodiversity Development Assessment Report (BDAR) for your development.

This report may be used as evidence for development applications submitted to councils. You may also use this report when considering native vegetation clearing under the State Environmental Planning Policy (Biodiversity and Conservation) 2021 - Chapter 2 vegetation in non-rural areas.

What's new? For more information about the latest updates to the Biodiversity Values Map and Threshold Tool go to the updates section on the Biodiversity Values Map webpage.

Map Review: Landholders can request a review of the BV Map where they consider there is an error in the mapping on their property. For more information about the map review process and an application form for a review go to the Biodiversity Values Map Review webpage.

If you need help using this map tool see our Biodiversity Values Map and Threshold Tool User Guide or contact the Map Review Team at map.review@environment.nsw.gov.au or on 1800 001 490.

Biodiversity Values Map



418.4 0 209.18 418.4 Metres

WGS_1984_Web_Mercator_Auxiliary_Sphere

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

Legend

- Biodiversity Values that have been mapped for more than 90 days
- Biodiversity Values added within last 90 days
- Native Vegetation Area Clearing Estimate (NVACE)
- Development area selected by proponent

01/04/2025 10:35 PM

Imagery © Airbus DS/Spot Image 2016

© NSW Department of Customer Service, Basemaps 2019

© NSW Department of Planning and Environment

The results provided in this tool are generated using the best available mapping and knowledge of species habitat requirements.

This map is valid as at the date the report was generated. Checking the Biodiversity Values Map viewer for mapping updates is recommended.

Page 4 of 4

APPENDIX B – FIELD SURVEY RESULTS

Flora species list

In total, 42 plant species were detected during the October field survey. Of these, twelve were native (28.57%) and 30 were introduced (71.43%). Of the introduced species, three are listed as High-threat Exotic species (HTE) under the Biodiversity Assessment Method (2020).

[1]Growth Form	Scientific Name	Common Name	[2]Status	[3]HTE	[4]WoNS	[5]PW
FG	*Wahlenbergia* sp.	Bluebell	N	-	-	-
GG	*Austrostipa scabra*	Rough speargrass	N	-	-	-
GG	*Chloris truncata*	Windmill Grass	N	-	-	-
GG	*Juncus* sp.		N	-	-	-
GG	*Enteropogon ramosus*	Curly Windmill Grass	N	-	-	-
GG	*Paspalum distichum*	Water Couch	N	-	-	-
GG	*Rytidosperma bipartitum*	Wallaby Grass	N	-	-	-
TG	*Brachychiton poulneus*	Kurrajong	N	-	-	-
TG	*Eucalyptus albens*	White Box	N	-	-	-
TG	*Eucalyptus blakelyi*	Blakely's Red Gum	N	-	-	-
TG	*Eucalyptus malacoxylon*	Apple Box	N	-	-	-
TG	*Eucalyptus melliodora*	Yellow Box	N	-	-	-
FG	*Conyza bonariensis*	Flaxleaf Fleabane	I	N	N	N
FG	*Arctotheca calendula*	Capeweed	I	N	N	N
FG	*Capsella bursa-pastoris*	Shepherd's Purse	I	N	N	N
FG	*Carthamus lanatus*	Saffron Thistle	I	Y	N	N
FG	*Cirsium vulgare*	Spear Thistle	I	N	N	N
FG	*Foeniculum vulgare*	Fennel	I	N	N	N
FG	*Galium aparine*	Cleavers	I	N	N	N
FG	*Glandularia aristagera*	Mayne's Pest	I	N	N	N
FG	*Hypochaeris radicata*	Catsear	I	N	N	N
FG	*Latuca serriola*	Prickly Lettuce	I	N	N	N
FG	*Lepidium africanum*	African Peppercress	I	N	N	N
FG	*Marrubium vulgare*	White Horehound	I	N	N	N
FG	*Plantago lanceolata*	Plantain	I	N	N	N
FG	*Onopordum acanthium*	Scotch Thistle	I	N	N	N
FG	*Rumex crispus*	Curled Dock	I	N	N	N
FG	*Rumex acetosella*	Sorrel	I	N	N	N
FG	*Sonchus oleraceus*	Common Sowthistle	I	N	N	N
FG	*Silybum marianum*	Variegated Thistle	I	N	N	N
FG	*Verbena bonariensis*	Purple Top	I	N	N	N
GG	*Avena barbata*	Bearded Oats	I	N	N	N
GG	*Bromus hordeaceous*	Soft Brome	I	N	N	N
GG	*Horedum leporidum*	Barley Grass	I	N	N	N
GG	*Triticum aestivum*	Common Wheat	I	N	N	N
GG	*Eragrostis curvula*	African Lovegrass	I	Y	N	N

[1]Growth Form	Scientific Name	Common Name	[2]Status	[3]HTE	[4]WoNS	[5]PW
GG	*Lolium perenne*	Perennial Ryegrass	I	N	N	N
SG	*Citrus x taitensis*	Lemon Tree	I	N	N	N
SG	*Rosa sp.*	Rose	I	N	N	N
TG	*Callistemon sp.*		I	N	N	N
TG	*Melia azedarach*	White Cedar	I	N	N	N
TG	*Schinus molle*	Peppercorn	I	N	N	N

1: FG = Forb, GG = Grass and Grass-like, SG = Shrub, TG = Tree, EG = Fern, OG = Other
2: N = Native I = Introduced;
3: HTE = High Threat Exotic under the BAM (2020);
4: Weed of National Significance;
5: Priority Weed for the Central Tablelands (Cabonne LGA).

Fauna species list

In total, seven fauna species were identified at site during the October 2023 field survey. All were native to the local area.

Class	Scientific Name	Common Name	*Status
Aves	*Anas superciliosa*	Pacific Black Duck	N
Aves	*Gymnorhina tibicen*	Australian Magpie	N
Aves	*Corvus coronoides*	Australian Raven	N
Aves	*Dacelo novaeguineae*	Laughing Kookaburra	N
Aves	*Ocyphaps lophotes*	Crested Pigeon	N
Aves	*Rhipidura leucophrys*	Willie Wagtail	N
Mammalia	*Macropus giganteus*	Eastern Grey Kangaroo	N

*Status: N = native

PCT	Site Photographs
PCT 53 - Shallow freshwater wetland sedgeland in depressions on floodplains on inland alluvial plains and floodplains.	

PCT 266 - White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion.



PCT 277 – Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion.	

APPENDIX C – BC & EPBC ACT HABITAT ASSESSMENT FOR THREATENED SPECIES AND COMMUNITIES PREDICTED TO OCCUR

List generated by conducting a vegetation associations report for the Inland Slopes subregion of the NSW South Western Slopes Bioregion. To determine whether any threatened species were known to occur near the subject site, BioNet Atlas records of threatened species within these subregions were downloaded and the records clipped to within 10 km of the subject site in QGIS.

Likelihood of occurrence description is sourced from https://www.environment.nsw.gov.au/threatenedSpeciesApp

The likelihood of occurrence of threatened species, populations or ecological communities was categorised as follows:

- 'Present' – the species was observed or has been previously recorded on the site.
- 'High' – a medium to high probability that a species uses the site, based on nearby records and suitable habitat being present.
- 'Moderate' – suitable habitat for a species occurs on the site, but the species has not been observed or previously recorded at the site or habitat not ideal, but there are nearby records of the species.
- 'Low' – a very low likelihood that the species uses the site, based on lack of the preferred type and size of habitat.
- 'Absent' – the species does not occur at the site, due to local/global extinction, locality outside of its geographic distribution, and/or a lack of suitable habitat.

Likelihood of occurrence table for BC and EPBC Act listed species and populations

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
Crinia sloanei	Sloane's Froglet	E1,P	E	No	Sloane's Froglet has been recorded from widely scattered sites in the floodplains of the Murray-Darling Basin, with the majority of records in the Darling Riverine Plains, NSW South Western Slopes and Riverina bioregions in New South Wales. It has not been recorded recently in the northern part of its range and has only been recorded infrequently in the southern part of its range in NSW. It is typically associated with periodically inundated areas in grassland, woodland and disturbed habitats. **Low – Subject site is within the species known geographic distribution, however, there are no associated vegetation communities present and no records within 10 km.**	**No**
Litoria booroolongensis	Booroolong Frog	E1,P	E	No	The Booroolong Frog is restricted to NSW and north-eastern Victoria, predominantly along the western-flowing streams of the Great Dividing Range. It has disappeared from much of the Northern Tablelands; however, several populations have recently been recorded in the Namoi catchment. The species is rare throughout most of the remainder of its range. Live along permanent streams with some fringing vegetation cover such as ferns, sedges, or grasses. **Moderate – Subject site is within the species known geographic distribution and there is an associated vegetation community present, however, there are no records within 10 km.**	**Yes**
Litoria raniformis	Southern Bell Frog	E1,P	V	No	In NSW the species was once distributed along the Murray and Murrumbidgee Rivers and their tributaries, the southern slopes of the Monaro district and the central southern tablelands as far north as Tarana, near Bathurst. Currently, the species is known to exist only in isolated populations in the Coleambally Irrigation Area, the Lowbidgee floodplain and around Lake Victoria. A few yet unconfirmed records have also been made in the Murray Irrigation Area in recent years. The species is also found in Victoria, Tasmania and South Australia, where it has also become endangered. Usually found in or around permanent or ephemeral Black Box/Lignum/Nitre Goosefoot swamps, Lignum/Typha swamps and River Red Gum swamps or billabongs along floodplains and river valleys. They are also found in irrigated rice crops, particularly where there is no available natural habitat.	**Yes**

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
					Moderate – Subject site is within the species known geographic distribution and there is an associated vegetation community present, however, there are no records within 10 km.	
Aprasia parapulchella	Pink-tailed Legless Lizard	V,P	V	No	The Pink-tailed Legless Lizard is only known from the Central and Southern Tablelands, and the South Western Slopes. There is a concentration of populations in the Canberra/Queanbeyan Region. Other populations have been recorded near Cooma, Yass, Bathurst, Albury and West Wyalong. This species is also found in the Australian Capital Territory. Inhabits sloping, open woodland areas with predominantly native grassy groundlayers, particularly those dominated by Kangaroo Grass (*Themeda australis*). **Moderate – Subject site is within the species known geographic distribution and there are two associated vegetation communities present, however, there are no records within 10 km.**	**Yes**
Delma impar	Striped Legless Lizard	V,P	V	No	The Striped Legless Lizard occurs in the Southern Tablelands, the South West Slopes, the Upper Hunter and possibly on the Riverina. Populations are known in the Goulburn, Yass, Queanbeyan, Cooma, Muswellbrook and Tumut areas. Also occurs in the ACT, Victoria and south-eastern South Australia. Found mainly in Natural Temperate Grassland but has also been captured in grasslands that have a high exotic component. Also found in secondary grassland near Natural Temperate Grassland and occasionally in open Box-Gum Woodland. **Moderate – Subject site is within the species known geographic distribution and there is an associated vegetation community present, however, there are no records within 10 km.**	**Yes**
Varanus rosenbergi	Rosenberg's Goanna	V,P		No	Rosenberg's Goanna occurs on the Sydney Sandstone in Wollemi National Park to the north-west of Sydney, in the Goulburn and ACT regions and near Cooma in the south. There are records from the South West Slopes near Khancoban and Tooma River. Also occurs in South Australia and Western Australia. Found in heath, open forest and woodland. **Low – Subject site is within the species known geographic distribution, however, there are no associated vegetation communities present and no records within 10 km.**	**No**

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
Hoplocephalus bitorquatus	Pale-headed Snake	V,P		No	A patchy distribution from north-east Queensland to the north-eastern quarter of NSW. In NSW it has historically been recorded from as far west as Mungindi and Quambone on the Darling Riverine Plains, across the north west slopes, and from the north coast from Queensland to Sydney. A small number of historical records are known for the New England Tablelands from Glenn Innes and Tenterfield; however, the majority of records appear to be from sites of relatively lower elevation. Although the Pale-headed snake distribution is very cryptic, it now appears to have contracted to a patchy and fragmented distribution. The Pale-headed Snake is a highly cryptic species that can spend weeks at a time hidden in tree hollows. Found mainly in dry eucalypt forests and woodlands, cypress forest and occasionally in rainforest or moist eucalypt forest. In drier environments, it appears to favour habitats close to riparian areas. **Moderate – Subject site is within the species predicted geographic distribution and there is an associated vegetation community present, however, there are no records within 10 km.**	**Yes**
Leipoa ocellata	Malleefowl	E1,P	V	No	The stronghold for this species in NSW is the mallee in the south west centred on Mallee Cliffs NP and extending east to near Balranald and scattered records as far north as Mungo NP. West of the Darling River a population also occurs in the Scotia mallee including Tarawi NR and Scotia Sanctuary and is part of a larger population north of the Murray River in South Australia. The population in central NSW has been significantly reduced through land clearance and fox predation and now occurs chiefly in Yathong, Nombinnie and Round Hill NRs and surrounding areas, though birds continue to survive in Loughnan NR. To the south of this area the species is probably locally extinct in such reserves as Pulletop NR (last recorded 1989), Ingalba NR (1982) and Buddigower NR (1990) and the intensely studied population at Yalgogrin was still known to have at least one active mound in 2017. Further east, a population continues to persist in the Goonoo Forest near Dubbo, though the size of this population is unknown. Outside these areas, occasional records have been made in the Pilliga forests (most recently 1999), around Cobar (1991) and Goulburn River NP (1989) though the extent and status of populations in these areas are unknown. Predominantly inhabit mallee communities, preferring the tall, dense and floristically rich mallee found in higher rainfall (300 - 450 mm mean annual rainfall) areas. Utilises mallee with a spinifex understorey, but usually at lower densities than in areas with a shrub understorey. Less frequently found in other eucalypt woodlands, such as Inland Grey Box, Ironbark or Bimble Box Woodlands with thick	**No**

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
					understorey, or in other woodlands such dominated by Mulga or native Cypress Pine species. **Low – Subject site is within the species known geographic distribution, however, there are no associated vegetation communities present and no records within 10 km.**	
Anseranas semipalmata	Magpie Goose	V,P		No	The Magpie Goose is still relatively common in the Australian northern tropics but had disappeared from south-east Australia by 1920 due to drainage and overgrazing of reed swamps used for breeding. Since the 1980s there have been an increasing number of records in central and northern NSW. Vagrants can follow food sources to south-eastern NSW. Mainly found in shallow wetlands (less than 1 m deep) with dense growth of rushes or sedges. **Moderate – Subject site is within the species known geographic distribution and there is an associated vegetation community present, however there are no records within 10 km.**	**Yes**
Oxyura australis	Blue-billed Duck	V,P		No	The Blue-billed Duck is endemic to south-eastern and south-western Australia. It is widespread in NSW, but most common in the southern Murray-Darling Basin area. Birds disperse during the breeding season to deep swamps up to 300 km away. It is generally only during summer or in drier years that they are seen in coastal areas. The Blue-billed Duck prefers deep water in large permanent wetlands and swamps with dense aquatic vegetation. The species is completely aquatic, swimming low in the water along the edge of dense cover. **Moderate – Subject site is within the species known geographic distribution and there is an associated vegetation community present, however there are no records within 10 km.**	**Yes**
Stictonetta naevosa	Freckled Duck	V,P		No	The Freckled Duck is found primarily in south-eastern and south-western Australia, occurring as a vagrant elsewhere. It breeds in large temporary swamps created by floods in the Bulloo and Lake Eyre basins and the Murray-Darling system, particularly along the Paroo and Lachlan Rivers, and other rivers within the Riverina. The duck is forced to disperse during extensive inland droughts when wetlands in the Murray River basin provide important habitat. The species may also occur as far as coastal NSW and Victoria during such times. Prefer permanent freshwater swamps and creeks with heavy	**Yes**

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
					growth of Cumbungi, Lignum or Tea-tree. During drier times they move from ephemeral breeding swamps to more permanent waters such as lakes, reservoirs, farm dams and sewage ponds. Generally, rest in dense cover during the day, usually in deep water. Feed at dawn and dusk and at night on algae, seeds and vegetative parts of aquatic grasses and sedges and small invertebrates. Nesting usually occurs between October and December but can take place at other times when conditions are favourable. Nests are usually located in dense vegetation at or near water level. **Moderate – Subject site is within the species known geographic distribution and there is an associated vegetation community present, however there are no records within 10 km.**	
Apus pacificus	Fork-tailed Swift	P	C,J,K	No	In NSW, the Fork-tailed Swift is recorded in all regions. Many records occur east of the Great Divide; however, a few populations have been found west of the Great Divide. These are widespread but scattered further west of the line joining Bourke and Dareton. Sightings have been recorded at Milparinka, the Bulloo River and Thurloo Downs (Higgins 1999). The Fork-tailed Swift is almost exclusively aerial, flying from less than 1 m to at least 300 m above ground and probably much higher. **Absent – No suitable habitat occurs within the subject site.**	**No**
Hirundapus caudacutus	White-throated Needletail	P	V,C,J,K	No	The White-throated Needletail is widespread in eastern and south-eastern. In eastern Australia, it is recorded in all coastal regions of Queensland and NSW, extending inland to the western slopes of the Great Divide and occasionally onto the adjacent inland plains. In Australia, the White-throated Needletail is almost exclusively aerial, from heights of less than 1 m up to more than 1000 m above the ground. Because they are aerial, it has been stated that conventional habitat descriptions are inapplicable, but there are, nevertheless, certain preferences exhibited by the species. Although they occur over most types of habitats, they are probably recorded most often above wooded areas, including open forest and rainforest, and may also fly between trees or in clearings, below the canopy, but they are less commonly recorded flying above woodland. **Moderate – Subject site is within the species known geographic distribution and there are three associated vegetation communities present, however there are no records within 10 km.**	**Yes**

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
Ephippiorhynchus asiaticus	Black-necked Stork	E1,P		No	In Australia, Black-necked Storks are widespread in coastal and subcoastal northern and eastern Australia, as far south as central NSW (although vagrants may occur further south or inland, well away from breeding areas). In NSW, the species becomes increasingly uncommon south of the Clarence Valley, and rarely occurs south of Sydney. Since 1995, breeding has been recorded as far south as Buladelah. Floodplain wetlands (swamps, billabongs, watercourses and dams) of the major coastal rivers are the key habitat in NSW for the Black-necked Stork. Secondary habitat includes minor floodplains, coastal sandplain wetlands and estuaries. Black-necked Storks build large nests high in tall trees close to water. Trees usually provide clear observation of the surroundings and are at low elevation (reflecting the floodplain habitat). **Moderate – Subject site is within the species known geographic distribution and there is an associated vegetation community present, however there are no records within 10 km.**	**Yes**
Botaurus poiciloptilus	Australasian Bittern	E1,P	E	No	Australasian Bitterns are widespread but uncommon over south-eastern Australia. In NSW they may be found over most of the state except for the far north-west. Favours permanent freshwater wetlands with tall, dense vegetation, particularly bullrushes (*Typha* spp.) and spikerushes (*Eleocharis* spp.). Hides during the day amongst dense reeds or rushes and feed mainly at night on frogs, fish, yabbies, spiders, insects and snails. Feeding platforms may be constructed over deeper water from reeds trampled by the bird; platforms are often littered with prey remains. Breeding occurs in summer from October to January; nests are built in secluded places in densely vegetated wetlands on a platform of reeds; there are usually six olive-brown eggs to a clutch. **Moderate – Subject site is within the species known geographic distribution and there is an associated vegetation community present, however there are no records within 10 km.**	**Yes**
Ixobrychus flavicollis	Black Bittern	V,P		No	The Black Bittern has a wide distribution, from southern NSW north to Cape York and along the north coast to the Kimberley region. The species also occurs in the south-west of Western Australia. In NSW, records of the species are scattered along the east coast, with individuals rarely being recorded south of Sydney or inland. Inhabits both terrestrial and estuarine wetlands, generally in areas of permanent water and dense vegetation. Where permanent water is present, the species may occur in flooded grassland, forest, woodland, rainforest and mangroves.	**No**

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
					Absent – No suitable habitat occurs within the subject site, no records within 10 km and outside of geographic distribution.	
Circus assimilis	Spotted Harrier	V,P		No	The Spotted Harrier occurs throughout the Australian mainland, except in densely forested or wooded habitats of the coast, escarpment and ranges, and rarely in Tasmania. Individuals disperse widely in NSW and comprise a single population. Occurs in grassy open woodland including Acacia and mallee remnants, inland riparian woodland, grassland and shrub steppe. It is found most in native grassland, but also occurs in agricultural land, foraging over open habitats including edges of inland wetlands. **High – Subject site is within the species known geographic distribution, there are three associated vegetation communities present, and there are three records within 10 km, the closest being 4.7 km.**	**Yes**
Haliaeetus leucogaster	White-bellied Sea-Eagle	V,P		No	The White-bellied Sea-eagle is distributed around the Australian coastline, including Tasmania, and well inland along rivers and wetlands of the Murray Darling Basin. In New South Wales it is widespread along the east coast, and along all major inland rivers and waterways. Habitats are characterised by the presence of large areas of open water including larger rivers, swamps, lakes, and the sea. Occurs at sites near the sea or sea-shore, such as around bays and inlets, beaches, reefs, lagoons, estuaries and mangroves; and at, or in the vicinity of freshwater swamps, lakes, reservoirs, billabongs and saltmarsh. Terrestrial habitats include coastal dunes, tidal flats, grassland, heathland, woodland, and forest (including rainforest). Breeding habitat consists of mature tall open forest, open forest, tall woodland, and swamp sclerophyll forest close to foraging habitat. Nest trees are typically large emergent eucalypts and often have emergent dead branches or large dead trees nearby which are used as 'guard roosts'. Nests are large structures built from sticks and lined with leaves or grass. Feed mainly on fish and freshwater turtles, but also waterbirds, reptiles, mammals and carrion. Hunts its prey from a perch or whilst in flight (by circling slowly, or by sailing along 10–20 m above the shore). Prey is usually carried to a feeding platform or (if small) consumed in flight, but some items are eaten on the ground. May be solitary, or live in pairs or small family groups consisting of a pair of adults and dependent young. Typically lays two eggs between June and September with young birds remaining in the nest for 65-70 days.	**Yes**

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
					Moderate – Subject site is within the species known geographic distribution and there are three associated vegetation communities present, however there are no records within 10 km.	
^^*Hamirostra melanosternon*	Black-breasted Buzzard	V,P,3		No	The Black-breasted Buzzard is found sparsely in areas of less than 500mm rainfall, from north-western NSW and north-eastern South Australia to the east coast at about Rockhampton, then across northern Australia south almost to Perth, avoiding only the Western Australian deserts. Lives in a range of inland habitats, especially along timbered watercourses which is the preferred breeding habitat. Also hunts over grasslands and sparsely timbered woodlands. **Low – Subject site is within the species known geographic distribution, however, there are no associated vegetation communities present and no records within 10 km.**	**No**
Hieraaetus morphnoides	Little Eagle	V,P		No	The Little Eagle is found throughout the Australian mainland excepting the most densely forested parts of the Dividing Range escarpment. It occurs as a single population throughout NSW. Occupies open eucalypt forest, woodland or open woodland. Sheoak or Acacia woodlands and riparian woodlands of interior NSW are also used. **Moderate – Subject site is within the species known geographic distribution and there are three associated vegetation communities present, however there are no records within 10 km.**	**Yes**
^^*Lophoictinia isura*	Square-tailed Kite	V,P,3		No	The Square-tailed Kite ranges along coastal and subcoastal areas from south-western to northern Australia, Queensland, NSW and Victoria. In NSW, scattered records of the species throughout the state indicate that the species is a regular resident in the north, north-east and along the major west-flowing river systems. It is a summer breeding migrant to the south-east, including the NSW south coast, arriving in September and leaving by March. Found in a variety of timbered habitats including dry woodlands and open forests. Shows a particular preference for timbered watercourses. **Moderate – Subject site is within the species known geographic distribution and there are two associated vegetation communities present, however there are no records within 10 km.**	**Yes**

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
^^*Pandion cristatus*	Eastern Osprey	V,P,3		No	The Osprey has a global distribution with four subspecies previously recognised throughout its range. Eastern Ospreys are found right around the Australian coastline, except for Victoria and Tasmania. They are common around the northern coast, especially on rocky shorelines, islands and reefs. The species is uncommon to rare or absent from closely settled parts of south-eastern Australia. There are a handful of records from inland areas. Favour coastal areas, especially the mouths of large rivers, lagoons and lakes. Nests are made high up in dead trees or in dead crowns of live trees, usually within one kilometre of the sea. **Absent – No suitable habitat occurs within the subject site, no records within 10 km and outside of geographic distribution.**	**No**
^*Falco hypoleucos*	Grey Falcon	V,P,2	V	No	The Grey Falcon is sparsely distributed in NSW, chiefly throughout the Murray-Darling Basin, with the occasional vagrant east of the Great Dividing Range. The breeding range has contracted since the 1950s with most breeding now confined to arid parts of the range. There are possibly less than 5000 individuals left. Population trends are unclear, though it is believed to be extinct in areas with more than 500mm rainfall in NSW. Usually restricted to shrubland, grassland and wooded watercourses of arid and semi-arid regions, although it is occasionally found in open woodlands near the coast. **Low – Subject site is relatively adjacent to the species known geographic distribution, however, there are no associated vegetation communities present and no records within 10 km.**	**No**
Falco subniger	Black Falcon	V,P		No	The Black Falcon is widely, but sparsely, distributed in New South Wales, mostly occurring in inland regions. Some reports of 'Black Falcons' on the tablelands and coast of New South Wales are likely to be referable to the Brown Falcon. In New South Wales there is assumed to be a single population that is continuous with a broader continental population, given that falcons are highly mobile, commonly travelling hundreds of kilometres. The Black Falcon occurs as solitary individuals, in pairs, or in family groups of parents and offspring. **Moderate – Subject site is within the species known geographic distribution and there are three associated vegetation communities present, however there are no records within 10 km.**	**Yes**

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
Grus rubicunda	Brolga	V,P		No	The Brolga was formerly found across Australia, except for the south-east corner, Tasmania and the south-western third of the country. It is still abundant in the northern tropics, but very sparse across the southern part of its range. Though Brolgas often feed in dry grassland or ploughed paddocks or even desert claypans, they are dependent on wetlands too, especially shallow swamps, where they will forage with their head entirely submerged. They feed using their heavy straight bill as a 'crowbar' to probe the ground or turn it over, primarily on sedge roots and tubers. They will also take large insects, crustaceans, molluscs and frogs. **Moderate – Subject site is within the species known geographic distribution and there is an associated vegetation community present, however there are no records within 10 km.**	**Yes**
Ardeotis australis	Australian Bustard	E1,P		No	The Australian Bustard mainly occurs in inland Australia and is now scarce or absent from southern and south-eastern Australia. In NSW, they are mainly found in the north-west corner and less often recorded in the lower western and central west plains regions. Occasional vagrants are still seen as far east as the western slopes and Riverine plain. Breeding now only occurs in the north-west region of NSW. Mainly inhabits tussock and hummock grasslands, though prefers tussock grasses to hummock grasses; also occurs in low shrublands and low open grassy woodlands; occasionally seen in pastoral and cropping country, golf courses and near dams. Breeds on bare ground on low sandy ridges or stony rises in ecotones between grassland and protective shrubland cover; roosts on ground among shrubs and long grasses or under trees. **Low – Subject site is within the species known geographic distribution, however, there are no associated vegetation communities present and there are no records within 10 km.**	**No**
Burhinus grallarius	Bush Stone-curlew	E1,P		No	The Bush Stone-curlew is found throughout Australia except for the central southern coast and inland, the far south-east corner, and Tasmania. Only in northern Australia is it still common however and in the south-east, it is either rare or extinct throughout its former range. Inhabits open forests and woodlands with a sparse grassy ground layer and fallen timber. Largely nocturnal, being especially active on moonlit nights. Feed on insects and small vertebrates, such as frogs, lizards and snakes. Nest on the ground in a scrape or small bare patch. Two eggs are laid in spring and early summer.	**Yes**

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
					Moderate – Subject site is within the species known geographic distribution and there are two associated vegetation communities present, however, there are no records within 10 km.	
Rostratula australis	Australian Painted Snipe	E1,P	E	No	The Australian Painted Snipe is restricted to Australia. Most records are from the southeast, particularly the Murray Darling Basin, with scattered records across northern Australia and historical records from around the Perth region in Western Australia. In NSW many records are from the Murray-Darling Basin including the Paroo wetlands, Lake Cowal, Macquarie Marshes, Fivebough Swamp and more recently, swamps near Balldale and Wanganella. Other important locations with recent records include wetlands on the Hawkesbury River and the Clarence and lower Hunter Valleys. Prefers fringes of swamps, dams and nearby marshy areas where there is a cover of grasses, lignum, low scrub or open timber. Nests on the ground amongst tall vegetation, such as grasses, tussocks or reeds. Forages nocturnally on mud-flats and in shallow water. Feeds on worms, molluscs, insects and some plant-matter. **Moderate – Subject site is within the species known geographic distribution and there is an associated vegetation community present, however, there are no records within 10 km.**	**Yes**
Actitis hypoleucos	Common Sandpiper	P	C,J,K	No	Found along all coastlines of Australia and in many areas inland, the Common Sandpiper is widespread in small numbers. The population when in Australia is concentrated in northern and western Australia. The species utilises a wide range of coastal wetlands and some inland wetlands, with varying levels of salinity, and is mostly found around muddy margins or rocky shores and rarely on mudflats. The Common Sandpiper has been recorded in estuaries and deltas of streams, as well as on banks farther upstream; around lakes, pools, billabongs, reservoirs, dams and claypans, and occasionally piers and jetties. The muddy margins utilised by the species are often narrow and may be steep. The species is often associated with mangroves, and sometimes found in areas of mud littered with rocks or snags. **Absent – No suitable habitat occurs within the subject site, no records within 10 km and outside of geographic distribution.**	**No**
Calidris acuminata	Sharp-tailed Sandpiper	P	C,J,K	No	The Sharp-tailed Sandpiper spends the non-breeding season in Australia with small numbers occurring regularly in New Zealand. Most of the population migrates to	**No**

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
					Australia, mostly to the south-east and are widespread in both inland and coastal locations and in both freshwater and saline habitats. Many inland records are of birds on passage. In Australasia, the Sharp-tailed Sandpiper prefers muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation. This includes lagoons, swamps, lakes and pools near the coast, and dams, waterholes, soaks, bore drains and bore swamps, saltpans and hypersaline saltlakes inland. They also occur in saltworks and sewage farms. They use flooded paddocks, sedgelands and other ephemeral wetlands, but leave when they dry. They use intertidal mudflats in sheltered bays, inlets, estuaries or seashores, and swamps and creeks lined with mangroves. They tend to occupy coastal mudflats mainly after ephemeral terrestrial wetlands have dried out, moving back during the wet season. They may be attracted to mats of algae and water weed either floating or washed up around terrestrial wetlands. **Absent – No suitable habitat occurs within the subject site, no records within 10 km and outside of geographic distribution.**	
Calidris ferruginea	Curlew Sandpiper	E1,P	CE,C,J,K	No	In Australia, Curlew Sandpipers occur around the coasts and are also quite widespread inland, though in smaller numbers. Records occur in all states during the non-breeding period, and during the breeding season when many non-breeding one-year old birds remain in Australia rather than migrating north. In NSW, they are widespread east of the Great Divide, especially in coastal regions. They are occasionally recorded in the Tablelands and are widespread in the Riverina and south-west NSW, with scattered records elsewhere. Curlew Sandpipers mainly occur on intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons, and also around non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms. They are also recorded inland, though less often, including around ephemeral and permanent lakes, dams, waterholes and bore drains, usually with bare edges of mud or sand. They occur in both fresh and brackish waters. Occasionally they are recorded around floodwaters. **Moderate – Subject site is within the species known geographic distribution and there is an associated vegetation community present, however, there are no records within 10 km.**	**Yes**

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
Calidris ruficollis	Red-necked Stint	P	C,J,K	No	In Australasia, the Red-necked Stint is mostly found in coastal areas, including in sheltered inlets, bays, lagoons and estuaries with intertidal mudflats, often near spits, islets and banks and, sometimes, on protected sandy or coralline shores. They also occur in saltworks and sewage farms; saltmarsh; ephemeral or permanent shallow wetlands near the coast or inland, including lagoons, lakes, swamps, riverbanks, waterholes, bore drains, dams, soaks and pools in salt flats. They sometimes use flooded paddocks or damp grasslands. They have occasionally been recorded on dry gibber plains, with little or no perennial vegetation. **Low – Subject site is within the species known geographic distribution, however, there are no associated vegetation communities present and there are no records within 10 km.**	**No**
Gallinago hardwickii	Latham's Snipe	P	J,K	No	Latham's Snipe is a non-breeding visitor to south-eastern Australia and is a passage migrant through northern Australia (i.e., it travels through northern Australia to reach non-breeding areas located further south). The species has been recorded along the east coast of Australia from Cape York Peninsula through to south-eastern South Australia (including the Adelaide plains and Mount Lofty Ranges, and the Eyre Peninsula). The range extends inland over the eastern tablelands in south-eastern Queensland (and occasionally from Rockhampton in the north), and to west of the Great Dividing Range in New South. The species is widespread in Tasmania and is found in all regions of Victoria except for the north-west. Most birds spend the non-breeding period at sites located south of the Richmond River in New South Wales. In Australia, Latham's Snipe occurs in permanent and ephemeral wetlands up to 2000 m above sea-level. They usually inhabit open, freshwater wetlands with low, dense vegetation (e.g., swamps, flooded grasslands or heathlands, around bogs and other water bodies. However, they can also occur in habitats with saline or brackish water, in modified or artificial habitats, and in habitats located close to humans or human activity. **Low – Subject site is within the species known geographic distribution, however, there are no associated vegetation communities present and there are no records within 10 km.**	**No**
Limosa limosa	Black-tailed Godwit	V,P	C,J,K	No	The Black-tailed Godwit is a migratory wading bird that breeds in Mongolia and Eastern Siberia and flies to Australia for the southern summer, arriving in August and leaving in March. In NSW, it is most frequently recorded at Kooragang Island (Hunter River	**Yes**

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
					estuary), with occasional records elsewhere along the coast, and inland. Records in western NSW indicate that a regular inland passage is used by the species, as it may occur around any of the large lakes in the western areas during summer, when the muddy shores are exposed. The species has been recorded within the Murray-Darling Basin, on the western slopes of the Northern Tablelands and in the far north-western corner of the state. Primarily a coastal species. **Moderate – Subject site is within the species predicted geographic distribution and there is an associated vegetation community present, however, there are no records within 10 km.**	
Tringa nebularia	Common Greenshank	P	C,J,K	No	The Common Greenshank does not breed in Australia, however, the species occurs in all types of wetlands and has the widest distribution of any shorebird in Australia. The Common Greenshank is found in a wide variety of inland wetlands and sheltered coastal habitats of varying salinity. It occurs in sheltered coastal habitats, typically with large mudflats and saltmarsh, mangroves or seagrass. Habitats include embayment's, harbours, river estuaries, deltas and lagoons and are recorded less often in round tidal pools, rock-flats and rock platforms. The species uses both permanent and ephemeral terrestrial wetlands, including swamps, lakes, dams, rivers, creeks, billabongs, waterholes and inundated floodplains, claypans and salt flats. It will also use artificial wetlands, including sewage farms and saltworks dams, inundated rice crops and bores. The edges of the wetlands used are generally of mud or clay, occasionally of sand, and may be bare or with emergent or fringing vegetation, including short sedges and saltmarsh, mangroves, thickets of rushes, and dead or live trees. **Low – Subject site is within the species known geographic distribution, however, there are no associated vegetation communities present and there are no records within 10 km.**	**No**
Tringa stagnatilis	Marsh Sandpiper	P	C,J,K	No	The Marsh Sandpiper is found on coastal and inland wetlands throughout Australia. The species is widespread in coastal Queensland, but few records exist north of Cooktown. It is recorded in all regions of NSW but especially the central and south coasts and (inland) on the western slopes of Great Divide and western plains. The Marsh Sandpiper lives in permanent or ephemeral wetlands of varying salinity, including swamps, lagoons, billabongs, saltpans, saltmarshes, estuaries, pools on inundated floodplains, and intertidal mudflats and also regularly at sewage farms and saltworks. They are	**No**

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
					recorded less often at reservoirs, waterholes, soaks, bore-drain swamps and flooded inland lakes. In north Australia they prefer intertidal mudflats (Higgins & Davies 1996), although surveys in Kakadu National Park recorded more birds around shallow freshwater lakes than in areas influenced by tide (Bamford 1988). At the Top End they often use ephemeral pools on inundated freshwater and tidal floodplains (Higgins & Davies 1996). Three of the five sites with highest recorded numbers are saltwater habitats (Hunter Estuary, NSW; Port Hedland Saltworks, Western Australia; Tullakool Evaporation Ponds, NSW) (Watkins 1993). In the south-east Gulf of Carpentaria they have been recorded round both saline and fresh waters (Garnett 1989). Elsewhere they said to avoid, or rarely occur in, tidal habitats, and rarely occur on beaches. In Western Australia they prefer freshwater to marine environments. In south-east Australia they prefer inland saline lakes and coastal saltworks. They are found infrequently around mangroves (Higgins & Davies 1996). **Low – Subject site is within the species known geographic distribution, however, there are no associated vegetation communities present and there are no records within 10 km.**	
Gelochelidon nilotica	Gull-billed Tern	P	C	No	The Gull-billed Tern occurs on all continents except Antarctica. Gull-billed Terns are found in freshwater swamps, brackish and salt lakes, beaches and estuarine mudflats, floodwaters, sewage farms, irrigated croplands and grasslands. They are only rarely found over the ocean. **Low – Subject site is within the species predicted geographic distribution, however, there are no associated vegetation communities present and there are no records within 10 km.**	**No**
Hydroprogne caspia	Caspian Tern	P	J	No	Within Australia, the Caspian Tern has a widespread occurrence and can be found in both coastal and inland habitat (Higgins & Davies 1996). The following table presents the distribution and breeding sites of the Caspian Tern in Australia. Widespread east of the Great Divide, mainly in coastal regions, and also in the Riverina and Lower and Upper Western Regions, with occasional records elsewhere (Higgins & Davis 1996). The Caspian Tern is mostly found in sheltered coastal embayments (harbours, lagoons, inlets, bays, estuaries and river deltas) and those with sandy or muddy margins are preferred. They also occur on near-coastal or inland terrestrial wetlands that are either fresh or saline, especially lakes (including ephemeral lakes), waterholes, reservoirs,	**No**

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
					rivers and creeks. They also use artificial wetlands, including reservoirs, sewage ponds and saltworks. In offshore areas the species prefers sheltered situations, particularly near islands, and is rarely seen beyond reefs. **Low – Subject site is within the species predicted geographic distribution, however, there are no associated vegetation communities present and there are no records within 10 km.**	
Thalasseus bergii	Crested Tern	P	J	No	Crested Terns are seen along coastal areas throughout Australia and Tasmania. Prefer Islands beaches, lakes and inlets. **Absent – No suitable habitat occurs within the subject site, no records within 10 km and outside of geographic distribution.**	**No**
^^*Callocephalon fimbriatum*	Gang-gang Cockatoo	V,P,3	E	No	The Gang-gang Cockatoo is distributed from southern Victoria through south- and central-eastern New South Wales. In New South Wales, the Gang-gang Cockatoo is distributed from the south-east coast to the Hunter region, and inland to the Central Tablelands and south-west slopes. It occurs regularly in the Australian Capital Territory. It is rare at the extremities of its range, with isolated records known from as far north as Coffs Harbour and as far west as Mudgee. In spring and summer, generally found in tall mountain forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. **Moderate – Subject site is within the species known geographic distribution and there are two associated vegetation communities present, however, there are no records within 10 km.**	**Yes**
^*Calyptorhynchus lathami lathami*	South-eastern Glossy Black-Cockatoo	V,P,2	V	No	The species is uncommon although widespread throughout suitable forest and woodland habitats, from the central Queensland coast to East Gippsland in Victoria, and inland to the southern tablelands and central western plains of NSW, with a small population in the Riverina. An isolated population exists on Kangaroo Island, South Australia. **Moderate – Subject site is within the species known geographic distribution and there is one associated vegetation community present, however, there are no records within 10 km.**	**Yes**

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
^*Lophochroa leadbeateri*	Major Mitchell's Cockatoo	V,P,2		No	Found across the arid and semi-arid inland, from south-western Queensland south to north-west Victoria, through most of South Australia, north into the south-west Northern Territory and across to the west coast between Shark Bay and about Jurien. In NSW it is found regularly as far east as about Bourke and Griffith, and sporadically further east than that. **Low – Subject site is within the species known geographic distribution, however, there are no associated vegetation communities present and there are no records within 10 km.**	**No**
^^*Glossopsitta porphyrocephala*	Purple-crowned Lorikeet	V,P,3		No	The Purple-crowned Lorikeet occurs across the southern parts of the continent from Victoria to south-west Western Australia. It is uncommon in NSW, with records scattered across the box-ironbark woodlands of the Riverina and south west slopes, the River Red Gum forests and mallee of the Murray Valley as far west as the South Australian border, and, more rarely, the forests of the South Coast. The species is nomadic and most, if not all, records from NSW are associated with flowering events. Found in open forests and woodlands, particularly where there are large flowering eucalypts. Also recorded from mallee habitats. Feed primarily on nectar and pollen of flowering Eucalypts, including planted trees in urban areas. Breeds away from feeding areas, utilising hollow branches or holes in trees. Also roosts in dense vegetation up to several kilometres away from feeding areas. **Low – Subject site is within the species known geographic distribution, however, there are no associated vegetation communities present and there are no records within 10 km.**	**No**
Glossopsitta pusilla	Little Lorikeet	V,P		No	The Little Lorikeet is distributed widely across the coastal and Great Divide regions of eastern Australia from Cape York to South Australia. NSW provides a large portion of the species' core habitat, with lorikeets found westward as far as Dubbo and Albury. Nomadic movements are common, influenced by season and food availability, although some areas retain residents for much of the year and 'locally nomadic' movements are suspected of breeding pairs. Forages primarily in the canopy of open Eucalyptus Forest and woodland, yet also finds food in Angophora, Melaleuca and other tree species. Riparian habitats are particularly used, due to higher soil fertility and hence greater productivity.	**Yes**

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
					Moderate – Subject site is within the species known geographic distribution and there are two associated vegetation communities present, however, there are no records within 10 km.	
Lathamus discolor	Swift Parrot	E1,P	CE	No	Breeds in Tasmania during spring and summer, migrating in the autumn and winter months to south-eastern Australia from Victoria and the eastern parts of South Australia to south-east Queensland. In NSW mostly occurs on the coast and southwest slopes. On the mainland they occur in areas where eucalypts are flowering profusely or where there are abundant lerp (from sap-sucking bugs) infestations. **Moderate – Subject site is within the species known geographic distribution and there are two associated vegetation communities present, however, there are no records within 10 km.**	**Yes**
Neophema chrysostoma	Blue-winged Parrot	V,P	V	No	The main populations of Blue-winged Parrots are in Tasmania and Victoria, particularly in southern Victoria and the midlands and eastern areas of Tasmania. Sparser populations are found in western New South Wales and eastern South Australia, extending to south-west Queensland and occasionally into the Northern Territory. **Absent – No suitable habitat occurs within the subject site.**	**No**
^^*Neophema pulchella*	Turquoise Parrot	V,P,3		No	The Turquoise Parrot's range extends from southern Queensland through to northern Victoria, from the coastal plains to the western slopes of the Great Dividing Range. Lives on the edges of eucalypt woodland adjoining clearings, timbered ridges and creeks in farmland. **Moderate – Subject site is within the species known geographic distribution and there are two associated vegetation communities present, however, there are no records within 10 km.**	**Yes**
^^*Polytelis swainsonii*	Superb Parrot	V,P,3	V	No	The Superb Parrot is found throughout eastern inland NSW. On the South-western Slopes their core breeding area is roughly bounded by Cowra and Yass in the east, and Grenfell, Cootamundra and Coolac in the west. Birds breeding in this region are mainly absent during winter, when they migrate north to the region of the upper Namoi and Gwydir Rivers. The other main breeding sites are in the Riverina along the corridors of the Murray, Edward and Murrumbidgee Rivers where birds are present all year round. This species inhabits Box-Gum, Box-Cypress-pine and Boree Woodlands and River Red Gum Forest. In the Riverina the birds' nest in the hollows of large trees (dead or	**Yes**

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
					alive) mainly in tall riparian River Red Gum Forest or Woodland. On the South West Slopes nest trees can be in open Box-Gum Woodland or isolated paddock trees. Species known to be used are Blakely's Red Gum, Yellow Box, Apple Box and Red Box. May forage up to 10 km from nesting sites, and feed in trees and understorey shrubs and on the ground and their diet consists mainly of grass seeds and herbaceous plants. **Moderate – Subject site is within the species known geographic distribution and there are two associated vegetation communities present, however, there are no records within 10 km.**	
Cuculus optatus	Oriental Cuckoo	P	C,J,K	No	The Oriental Cuckoo is not believed to breed in Australia. Mostly found in top end of Australia and coastal Queensland. **Absent – No suitable habitat occurs within the subject site, no records within 10 km and outside of geographic distribution.**	**No**
^^*Ninox connivens*	Barking Owl	V,P,3		No	The Barking Owl is found throughout continental Australia except for the central arid regions. Although common in parts of northern Australia, the species has declined greatly in southern Australia and now occurs in a wide but sparse distribution in NSW. Core populations exist on the western slopes and plains and in some northeast coastal and escarpment forests. Many populations crashed as woodland on fertile soils was cleared over the past century, leaving linear riparian strips of remnant trees as the last inhabitable areas. Surveys in 2001 demonstrated that the Pilliga Forest supported the largest population in southern Australia. The owls sometimes extend their home range into urban areas, hunting birds in garden trees and insects attracted to streetlights. Inhabits woodland and open forest, including fragmented remnants and partly cleared farmland. It is flexible in its habitat use, and hunting can extend in to closed forest and more open areas. Sometimes able to successfully breed along timbered watercourses in heavily cleared habitats (e.g., western NSW) due to the higher density of prey on these fertile riparian soils. **Moderate – Subject site is within the species known geographic distribution and there are three associated vegetation communities present, however, there are no records within 10 km.**	**Yes**

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
^^*Ninox strenua*	Powerful Owl	V,P,3		No	The Powerful Owl is endemic to eastern and south-eastern Australia, mainly on the coastal side of the Great Dividing Range from Mackay to south-western Victoria. In NSW, it is widely distributed throughout the eastern forests from the coast inland to tablelands, with scattered records on the western slopes and plains suggesting occupancy prior to land clearing. Now at low densities throughout most of its eastern range, rare along the Murray River and former inland populations may never recover. The Powerful Owl inhabits a range of vegetation types, from woodland and open sclerophyll forest to tall open wet forest and rainforest. The Powerful Owl requires large tracts of forest or woodland habitat but can occur in fragmented landscapes as well. The species breeds and hunts in open or closed sclerophyll forest or woodlands and occasionally hunts in open habitats. **Low – Subject site is within the species known geographic distribution, however, there are no associated vegetation communities present and there are no records within 10 km.**	**No**
^^*Tyto novaehollandiae*	Masked Owl	V,P,3		No	Extends from the coast where it is most abundant to the western plains. Overall records for this species fall within approximately 90% of NSW, excluding the most arid north-western corner. There is no seasonal variation in its distribution. Lives in dry eucalypt forests and woodlands from sea level to 1100 m. A forest owl, but often hunts along the edges of forests, including roadsides. **Moderate – Subject site is within the species known geographic distribution and there are three associated vegetation communities present, however, there are no records within 10 km.**	**Yes**
Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	V,P	V	No	The Brown Treecreeper is endemic to eastern Australia and occurs in eucalypt forests and woodlands of inland plains and slopes of the Great Dividing Range. It is less commonly found on coastal plains and ranges. The western boundary of the range of *Climacteris picumnus victoriae* runs approximately through Corowa, Wagga Wagga, Temora, Forbes, Dubbo and Inverell and along this line the subspecies intergrades with the arid zone subspecies of Brown Treecreeper *Climacteris picumnus picumnus* which then occupies the remaining parts of the state. The eastern subspecies lives in eastern NSW in eucalypt woodlands through central NSW and in coastal areas with drier open woodlands such as the Snowy River Valley, Cumberland Plains, Hunter Valley and parts of the Richmond and Clarence Valleys. The population density of this subspecies has	**Yes**

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
					been greatly reduced over much of its range, with major declines recorded in central NSW and the northern and southern tablelands. Declines have occurred in remnant vegetation fragments smaller than 300 hectares, that have been isolated or fragmented for more than 50 years. **High – Subject site is within the species known geographic distribution, there are two associated vegetation communities present, and there is one record within 10 km at 4.6 km.**	
Pycnoptilus floccosus	Pilotbird	P	V	No	Pilotbirds are a common resident of mountain gullies, on the coast and inland to the Great Divide, from the Blue Mountains to eastern Victoria including Gippsland. **Absent – No suitable habitat occurs within the subject site, no records within 10 km and outside of geographic distribution.**	**No**
Chthonicola sagittata	Speckled Warbler	V,P		No	The Speckled Warbler has a patchy distribution throughout south-eastern Queensland, the eastern half of NSW and into Victoria, as far west as the Grampians. The species is most frequently reported from the hills and tablelands of the Great Dividing Range, and rarely from the coast. There has been a decline in population density throughout its range, with the decline exceeding 40% where no vegetation remnants larger than 100ha survive. The Speckled Warbler lives in a wide range of Eucalyptus dominated communities that have a grassy understorey, often on rocky ridges or in gullies. Typical habitat would include scattered native tussock grasses, a sparse shrub layer, some eucalypt regrowth and an open canopy. Large, relatively undisturbed remnants are required for the species to persist in an area. The diet consists of seeds and insects, with most foraging taking place on the ground around tussocks and under bushes and trees. Pairs are sedentary and occupy a breeding territory of about ten hectares, with a slightly larger home-range when not breeding. The rounded, domed, roughly built nest of dry grass and strips of bark is in a slight hollow in the ground or the base of a low dense plant, often among fallen branches and other litter. A side entrance allows the bird to walk directly inside. A clutch of 3-4 eggs is laid, between August and January, and both parents feed the nestlings. The eggs are a glossy red brown, giving rise to the unusual folk names ‘Blood Tit’ and ‘Chocolatebird’. Some cooperative breeding occurs. The species may act as host to the Black-eared Cuckoo. Speckled Warblers often join mixed species feeding flocks in winter, with other species such as Yellow-rumped, Buff-rumped, Brown and Striated Thornbills.	**Yes**

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
					Moderate – Subject site is within the species known geographic distribution and there are two associated vegetation communities present, however, there are no records within 10 km.	
^*Anthochaera phrygia*	Regent Honeyeater	E4A,P,2	CE	No	The Regent Honeyeater mainly inhabits temperate woodlands and open forests of the inland slopes of south-east Australia. Birds are also found in drier coastal woodlands and forests in some years. Once recorded between Adelaide and the central coast of Queensland, its range has contracted dramatically in the last 30 years to between north-eastern Victoria and south-eastern Queensland. There are only three known key breeding regions remaining: north-east Victoria (Chiltern-Albury), and in NSW at Capertee Valley and the Bundarra-Barraba region. In NSW the distribution is very patchy and mainly confined to the two main breeding areas and surrounding fragmented woodlands. In some years flocks converge on flowering coastal woodlands and forests. The Regent Honeyeater is a flagship threatened woodland bird whose conservation will benefit a large suite of other threatened and declining woodland fauna. The species inhabits dry open forest and woodland, particularly Box-Ironbark woodland, and riparian forests of River Sheoak. Regent Honeyeaters inhabit woodlands that support a significantly high abundance and species richness of bird species. These woodlands have significantly large numbers of mature trees, high canopy cover and abundance of mistletoes. **High – Subject site is within the species known geographic distribution, there are two associated vegetation communities present, and there is one record within 10 km. However, that record is near the edge of the search area buffer at 9.7 km.**	**Yes**
Certhionyx variegatus	Pied Honeyeater	V,P		No	Pied Honeyeater is widespread throughout acacia, mallee and spinifex scrubs of arid and semi-arid Australia. Occasionally occurs further east, on the slopes and plains and the Hunter Valley, typically during periods of drought. Inhabits wattle shrub, primarily Mulga (*Acacia aneura*), mallee, spinifex and eucalypt woodlands, usually when shrubs are flowering; feeds on nectar, predominantly from various species of emu-bushes (*Eremophila* spp.); also, from mistletoes and various other shrubs (e.g., *Grevillea* spp.); also eats saltbush fruit, berries, seed, flowers and insects. Highly nomadic, following the erratic flowering of shrubs; can be locally common at times.	**No**

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
					Low – Subject site is within the species known geographic distribution, however, there are no associated vegetation communities present and there are no records within 10 km.	
Epthianura albifrons	White-fronted Chat	V,P		No	The White-fronted Chat is found across the southern half of Australia, from southernmost Queensland to southern Tasmania, and across to Western Australia as far north as Carnarvon. Found mostly in temperate to arid climates and very rarely sub-tropical areas, it occupies foothills and lowlands up to 1000 m above sea level. In NSW, it occurs mostly in the southern half of the state, in damp open habitats along the coast, and near waterways in the western part of the state. Along the coastline, it is found predominantly in saltmarsh vegetation but also in open grasslands and sometimes in low shrubs bordering wetland areas. **Moderate – Subject site is within the species known geographic distribution and there is an associated vegetation community present, however, there are no records within 10 km.**	**Yes**
Grantiella picta	Painted Honeyeater	V,P	V	No	The Painted Honeyeater is nomadic and occurs at low densities throughout its range. The greatest concentrations of the bird and almost all breeding occurs on the inland slopes of the Great Dividing Range in NSW, Victoria and southern Queensland. During the winter it is more likely to be found in the north of its distribution. Inhabits Boree/ Weeping Myall (*Acacia pendula*), Brigalow (*A. harpophylla*) and Box-Gum Woodlands and Box-Ironbark Forests. **Moderate – Subject site is within the species known geographic distribution and there are two associated vegetation communities present, however, there are no records within 10 km.**	**Yes**
Melithreptus gularis gularis	Black-chinned Honeyeater (eastern subspecies)	V,P		No	The Black-chinned Honeyeater has two subspecies, with only the nominate (*gularis*) occurring in NSW. The eastern subspecies extends south from central Queensland, through NSW, Victoria into southeastern South Australia, though it is very rare in the last state. In NSW it is widespread, with records from the tablelands and western slopes of the Great Dividing Range to the north-west and central-west plains and the Riverina. The nest is placed high in the crown of a tree, in the uppermost lateral branches, hidden by foliage. It is a compact, suspended, cup-shaped nest.	**Yes**

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
					Moderate – Subject site is within the species known geographic distribution and there are two associated vegetation communities present, however, there are no records within 10 km.	
Pomatostomus temporalis temporalis	Grey-crowned Babbler (eastern subspecies)	V,P		No	The eastern subspecies (*temporalis*) occurs from Cape York south through Queensland, NSW and Victoria and formerly to the southeast of South Australia. This subspecies also occurs in the Trans-Fly Region in southern New Guinea. In NSW, the eastern sub-species occurs on the western slopes of the Great Dividing Range, and on the western plains reaching as far as Louth and Balranald. It also occurs in woodlands in the Hunter Valley and in several locations on the north coast of NSW. It may be extinct in the southern, central and New England tablelands. Inhabits open Box-Gum Woodlands on the slopes, and Box-Cypress-pine and open Box Woodlands on alluvial plains. Woodlands on fertile soils in coastal regions. Lives in family groups that consist of a breeding pair and young from previous breeding seasons. A group may consist of up to fifteen individuals. Feed on invertebrates and nests in several conspicuous, dome-shaped stick structures that are about the size of a football. A nest is used as a dormitory for roosting each night. Nests are maintained year-round, and old nests are often dismantled to build new ones. **High – Subject site is within the species known geographic distribution, there are two associated vegetation communities present, and there is one record within 10 km. However, that record is near the edge of the search area buffer at 8.06 km.**	**Yes**
Daphoenositta chrysoptera	Varied Sittella	V,P		No	The Varied Sittella is sedentary and inhabits most of mainland Australia except the treeless deserts and open grasslands. Distribution in NSW is nearly continuous from the coast to the far west. The Varied Sittella's population size in NSW is uncertain but is believed to have undergone a moderate reduction over the past several decades. Inhabits eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland. **Moderate – Subject site is within the species known geographic distribution and there are two associated vegetation communities present, however, there are no records within 10 km.**	**Yes**
Pachycephala inornata	Gilbert's Whistler	V,P		No	The Gilbert's Whistler is sparsely distributed over much of the arid and semi-arid zone of inland southern Australia, from the western slopes of NSW to the Western Australian	**No**

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
					wheatbelt. The species was probably once distributed almost continuously across the woodlands and mallee of southern NSW, but this range has been greatly reduced. The Gilbert's Whistler occurs in a range of habitats within NSW, though the shared feature appears to be a dense shrub layer. It is widely recorded in mallee shrublands, but also occurs in box-ironbark woodlands, Cypress Pine and Belah woodlands and River Red Gum forests, though at this stage it is only known to use this habitat along the Murray, Edwards and Wakool Rivers. Within the mallee the species is often found in association with an understorey of spinifex and low shrubs including wattles, hakeas, sennas and hopbushes. In woodland habitats, the understorey comprises dense patches of shrubs, particularly thickets of regrowth Callitris pine. Parasitic 'cherries' (*Exocarpus* species) appear to be an important habitat component in Belah and Red Gum communities, though in the latter case other dense shrubs, such as Lignum and wattles, are also utilised. **Low – Subject site is within the species known geographic distribution, however, there are no associated vegetation communities present and there are no records within 10 km.**	
Artamus cyanopterus cyanopterus	Dusky Woodswallow	V,P		No	Dusky woodswallows are widespread in eastern, southern and southwestern Australia. The species occurs throughout most of New South Wales, but is sparsely scattered in, or largely absent from, much of the upper western region. Most breeding activity occurs on the western slopes of the Great Dividing Range. Primarily inhabit dry, open eucalypt forests and woodlands, including mallee associations, with an open or sparse understorey of eucalypt saplings, acacias and other shrubs, and groundcover of grasses or sedges and fallen woody debris. It has also been recorded in shrublands, heathlands and very occasionally in moist forest or rainforest. Also found in farmland, usually at the edges of forest or woodland. **Moderate – Subject site is within the species known geographic distribution and there are three associated vegetation communities present, however, there are no records within 10 km.**	**Yes**
Melanodryas cucullata cucullata	Hooded Robin (south-eastern form)	V,P	E	No	The Hooded Robin is widespread, found across Australia, except for the driest deserts and the wetter coastal areas - northern and eastern coastal Queensland and Tasmania. However, it is common in few places, and rarely found on the coast. It is considered a sedentary species, but local seasonal movements are possible. The south-eastern form	**Yes**

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
					(subspecies *cucullata*) is found from Brisbane to Adelaide and throughout much of inland NSW, except for the extreme north-west, where it is replaced by subspecies *picata*. Two other subspecies occur outside NSW. Prefers lightly wooded country, usually open eucalypt woodland, acacia scrub and mallee, often in or near clearings or open areas. Requires structurally diverse habitats featuring mature eucalypts, saplings, some small shrubs and a ground layer of moderately tall native grasses. **Moderate – Subject site is within the species known geographic distribution and there are two associated vegetation communities present, however, there are no records within 10 km.**	
Petroica boodang	Scarlet Robin	V,P		No	The Scarlet Robin is found from southeast Queensland to southeast South Australia and also in Tasmania and south west Western Australia. In NSW, it occurs from the coast to the inland slopes. After breeding, some Scarlet Robins disperse to the lower valleys and plains of the tablelands and slopes. Some birds may appear as far west as the eastern edges of the inland plains in autumn and winter. The Scarlet Robin lives in dry eucalypt forests and woodlands. The understorey is usually open and grassy with few scattered shrubs. This species lives in both mature and regrowth vegetation. It occasionally occurs in mallee or wet forest communities, or in wetlands and tea-tree swamps. Scarlet Robin habitat usually contains abundant logs and fallen timber: these are important components of its habitat. Scarlet Robin habitat usually contains abundant logs and fallen timber: these are important components of its habitat. The Scarlet Robin breeds on ridges, hills and foothills of the western slopes, the Great Dividing Range and eastern coastal regions; this species is occasionally found up to 1000 metres in altitude. The Scarlet Robin is primarily a resident in forests and woodlands, but some adults and young birds disperse to more open habitats after breeding. In autumn and winter many Scarlet Robins live in open grassy woodlands, and grasslands or grazed paddocks with scattered trees. The Scarlet Robin is a quiet and unobtrusive species which is often quite tame and easily approached. Birds forage from low perches, fenceposts or on the ground, from where they pounce on small insects and other invertebrates which are taken from the ground, or off tree trunks and logs; they sometimes forage in the shrub or canopy layer.	**Yes**

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
					Moderate – Subject site is within the species known geographic distribution and there are two associated vegetation communities present, however, there are no records within 10 km.	
Petroica phoenicea	Flame Robin	V,P		No	The Flame Robin is endemic to southeastern Australia, and ranges from near the Queensland border to southeast South Australia and in Tasmania. In NSW, it breeds in upland areas and in winter, many birds move to the inland slopes and plains. It is likely that there are two separate populations in NSW, one in the Northern Tablelands, and another ranging from the Central to Southern Tablelands. Breeds in upland tall moist eucalypt forests and woodlands, often on ridges and slopes. Prefers clearings or areas with open understoreys. Prefers clearings or areas with open understoreys. In winter, birds migrate to drier more open habitats in the lowlands (i.e., valleys below the ranges, and to the western slopes and plains), in dry forests, open woodlands and in pastures and native grasslands, with or without scattered trees. **High – Subject site is within the species known geographic distribution, there are two associated vegetation communities present, and there are three records within 10 km, the closest being 4.7 km.**	**Yes**
Petroica rodinogaster	Pink Robin	V,P		No	Pink Robins are endemic to (only found in) south-eastern Australia. In the breeding season (September to March) Pink Robins are seen singly or in pairs in deep gullies in dense shrub layers of damp and wet forests or rainforests. In winter, they are found in more open and drier habitats. **Low – Subject site is within the species known geographic distribution, however, there are no associated vegetation communities present and there are no records within 10 km.**	**No**
Stagonopleura guttata	Diamond Firetail	V,P	V	No	The Diamond Firetail is endemic to south-eastern Australia, extending from central Queensland to the Eyre Peninsula in South Australia. It is widely distributed in NSW, with a concentration of records from the Northern, Central and Southern Tablelands, the Northern, Central and South Western Slopes and the North West Plains and Riverina. Not commonly found in coastal districts, though there are records from near Sydney, the Hunter Valley and the Bega Valley. This species has a scattered distribution over the rest of NSW, though is very rare west of the Darling River. Found in grassy eucalypt woodlands, including Box-Gum Woodlands and Snow Gum Eucalyptus	**Yes**

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
					pauciflora Woodlands. Also occurs in open forest, mallee, Natural Temperate Grassland, and in secondary grassland derived from other communities. **Moderate – Subject site is within the species known geographic distribution and there are two associated vegetation communities present, however, there are no records within 10 km.**	
Dasyurus maculatus	Spotted-tailed Quoll	V,P	E	No	The range of the Spotted-tailed Quoll has contracted considerably since European settlement. It is now found in eastern NSW, eastern Victoria, south-east and north-eastern Queensland, and Tasmania. Only in Tasmania is it still considered relatively common. Recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline. Individual animals use hollow-bearing trees, fallen logs, small caves, rock outcrops and rocky-cliff faces as den sites. **Moderate – Subject site is within the species known geographic distribution and there are two associated vegetation communities present, however, there are no records within 10 km.**	**Yes**
Phascogale tapoatafa	Brush-tailed Phascogale	V,P		No	The Brush-tailed Phascogale has a patchy distribution around the coast of Australia. In NSW it is mainly found east of the Great Dividing Range although there are occasional records west of the divide. Prefer dry sclerophyll open forest with sparse groundcover of herbs, grasses, shrubs or leaf litter. Also inhabit heath, swamps, rainforest and wet sclerophyll forest. **Moderate – Subject site is within the species predicted geographic distribution and there are two associated vegetation communities present, however, there are no records within 10 km.**	**Yes**
Macrotis lagotis	Bilby	E4,P	V	No	Bilbies were common in many habitats throughout Australia, from the dry interior to temperate coastal regions. Changes to the Bilby's habitat have seen their numbers greatly reduced and today the species is nationally listed as vulnerable and is presumed extinct in NSW. They now occur in fragmented populations in mulga shrublands and spinifex grasslands in the Tanami Desert of the Northern Territory; in the Gibson and Great Sandy Deserts and the Pilbara and Kimberley regions of Western Australia; and the Mitchell Grasslands of southwest Queensland. Once widespread in arid, semi-arid and relatively fertile areas, the Bilby is now restricted to arid regions and remains a	**No**

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
					threatened species. The Bilby prefers arid habitats because of the spinifex grass and acacia shrub. **Absent – No suitable habitat occurs within the subject site, no records within 10 km and outside of geographic distribution.**	
Phascolarctos cinereus	Koala	E1,P	E	No	The Koala has a fragmented distribution throughout eastern Australia from north-east Queensland to the Eyre Peninsula in South Australia. In New South Wales, koala populations are found on the central and north coasts, southern highlands, southern and northern tablelands, Blue Mountains, southern coastal forests, with some smaller populations on the plains west of the Great Dividing Range. Inhabit eucalypt woodlands and forests. **Moderate – Subject site is within the species known geographic distribution and there are three associated vegetation communities present, however, there are no records within 10 km.**	**Yes**
Cercartetus nanus	Eastern Pygmy-possum	V,P		No	The Eastern Pygmy-possum is found in south-eastern Australia, from southern Queensland to eastern South Australia and in Tasmania. In NSW it extends from the coast inland as far as the Pilliga, Dubbo, Parkes and Wagga Wagga on the western slopes. Found in a broad range of habitats from rainforest through sclerophyll (including Box-Ironbark) forest and woodland to heath, but in most areas woodlands and heath appear to be preferred, except in north-eastern NSW where they are most frequently encountered in rainforest. **Moderate – Subject site is within the species known geographic distribution and there is an associated vegetation community present, however, there are no records within 10 km.**	**Yes**
Petaurus australis	Yellow-bellied Glider	V,P	V	No	The Yellow-bellied Glider is found along the eastern coast to the western slopes of the Great Dividing Range, from southern Queensland to Victoria. Occur in tall mature eucalypt forest generally in areas with high rainfall and nutrient rich soils. **Low – Subject site is within the species known geographic distribution, however, there are no associated vegetation communities present and there are no records within 10 km.**	**No**

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
Petaurus norfolcensis	Squirrel Glider in the Wagga Wagga Local Government Area	E2,V,P		No	The extent of the endangered population is legally defined by the boundaries of the Wagga Wagga LGA. The distribution of the Squirrel Glider and its known or potential habitats within, or linked across, this boundary is not well defined. However, potential habitat occurs at low densities and is patchily distributed on public lands (TSRs, NPWS reserves, Bush Heritage Trust reserves), private lands and roadside corridors with remnant vegetation. Inhabits a wide range of open forest, woodland and riverine forest habitats. Utilise remnants of various sizes, including small remnants and even small stands of trees within Travelling Stock Reserves, roadside reserves or private land. Often utilise linear remnant vegetation along roadsides or rivers and streams. **Absent – There are two associated vegetation communities present, however, the subject site is not within the local population geographic distribution (Wagga Wagga LGA).**	**No**
Petaurus norfolcensis	Squirrel Glider	V,P		No	Inhabits woodlands and dry sclerophyll forests, usually in diverse stands of shrubs and trees. Shelters and breeds in tree hollows, and is primarily an insectivorous animal but, has also been known to ingest plant exudates. **High – Subject site is within the species known geographic distribution, there are two associated vegetation communities present, and there are two records within 10 km, the closest being 6 km.**	**Yes**
Petauroides volans	Southern Greater Glider	E1,P	E	No	The greater glider is found in southern Queensland, eastern Australia, southeastern New South Wales, and the montane forests of the Victorian central highlands. The greater glider chooses habitat based on several factors, the dominant factor being the presence of specific species of eucalypt. Distribution levels are higher in regions of montane forest containing manna gum (*E. viminalis*) and mountain gum (*E. dalrympleana, E. obliqua*). **Low – Subject site is within the species known geographic distribution, however, there are no associated vegetation communities present and there are no records within 10 km.**	**No**
Bettongia lesueur graii	Boodie, Burrowing Bettong (mainland)	E4,P	X	No	The mainland subspecies (*graii*) is now extinct; however, two subspecies occur on islands off the coast of Western Australia; one undescribed subspecies on Boodie and Barrow Islands off the Pilbara coast; the other (*lesueur*) on Bernier and Dorre Islands off Shark Bay. Both these subspecies are listed nationally as vulnerable. It is the latter	**No**

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
					subspecies that has been used to establish a population in feral-free enclosures at the Australian Wildlife Conservancy run Scotia Sanctuary in southwestern New South Wales. The Boodie once lived in a range of dry subtropical and tropical habitats, from open Eucalyptus and Acacia woodlands to arid spinifex grasslands. In its current range on the islands, it seems to prefer open *Triodia* (spinifex) and dune habitats but will burrow anywhere except places with rocky substrate. **Absent – No suitable habitat occurs within the subject site, no records within 10 km – extinct in NSW.**	
Petrogale penicillata	Brush-tailed Rock-wallaby	E1,P	V	No	The range of the Brush-tailed Rock-wallaby extends from south-east Queensland to the Grampians in western Victoria, roughly following the line of the Great Dividing Range. However, the distribution of the species across its original range has declined significantly in the west and south and has become more fragmented. In NSW they occur from the Queensland border in the north to the Shoalhaven in the south, with the population in the Warrumbungle Ranges being the western limit. Occupy rocky escarpments, outcrops and cliffs with a preference for complex structures with fissures, caves and ledges, often facing north. Shelter or bask during the day in rock crevices, caves and overhangs and are most active at night when foraging. Browse on vegetation in and adjacent to rocky areas eating grasses and forbs as well as the foliage and fruits of shrubs and trees. Highly territorial and have strong site fidelity with an average home range size of about 15 ha. Males tend to have larger home ranges than females. The home range consists of a refuge area and a foraging range linked by habitually used commuting routes. Females settle in or near their mother's range, while males mainly disperse between female groups within colonies, and less commonly between colonies. **Moderate – Subject site is within the species known geographic distribution and there are two associated vegetation communities present, however, there are no records within 10 km.**	**Yes**
Pteropus poliocephalus	Grey-headed Flying-fox	V,P	V	No	Grey-headed Flying-foxes are generally found within 200 km of the eastern coast of Australia, from Rockhampton in Queensland to Adelaide in South Australia. In times of natural resource shortages, they may be found in unusual locations. Occur in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops. Roosting camps are generally located within 20 km of a regular food source and are commonly found in	**Yes**

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
					gullies, close to water, in vegetation with a dense canopy. Individual camps may have tens of thousands of animals and are used for mating, and for giving birth and rearing young. Annual mating commences in January and conception occurs in April or May; single young is born in October or November. Site fidelity to camps is high; some camps have been used for over a century. Can travel up to 50 km from the camp to forage; commuting distances are more often <20 km. Feed on the nectar and pollen of native trees, in particular Eucalyptus, Melaleuca and Banksia, and fruits of rainforest trees and vines. Also forage in cultivated gardens and fruit crops. **Moderate – Subject site is within the species known geographic distribution and there are two associated vegetation communities present, however, there are no records within 10 km.**	
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	V,P		No	The Yellow-bellied Sheathtail-bat is a wide-ranging species found across northern and eastern Australia. In the most southerly part of its range - most of Victoria, south-western NSW and adjacent South Australia - it is a rare visitor in late summer and autumn. There are scattered records of this species across the New England Tablelands and North West Slopes. Roosts singly or in groups of up to six, in tree hollows and buildings; in treeless areas they are known to utilise mammal burrows. When foraging for insects, flies high and fast over the forest canopy, but lower in more open country. Forages in most habitats across its very wide range, with and without trees; appears to defend an aerial territory. Breeding has been recorded from December to mid-March, when single young is born. Seasonal movements are unknown; there is speculation about a migration to southern Australia in late summer and autumn. **Moderate – Subject site is within the species known geographic distribution and there are three associated vegetation communities present, however, there are no records within 10 km.**	**Yes**
Chalinolobus dwyeri	Large-eared Pied Bat	V,P	V	No	Found mainly in areas with extensive cliffs and caves, from Rockhampton in Queensland south to Bungonia in the NSW Southern Highlands. It is generally rare with a very patchy distribution in NSW. There are scattered records from the New England Tablelands and North West Slopes. Roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin (*Petrochelidon ariel*), frequenting low to mid-elevation dry open forest and woodland close to these features. Females have been recorded raising young in maternity roosts	**Yes**

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
					(c. 20-40 females) from November through to January in roof domes in sandstone caves and overhangs. They remain loyal to the same cave over many years. Found in well-timbered areas containing gullies. **Moderate – Subject site is within the species known geographic distribution and there is an associated vegetation community present, however, there are no records within 10 km.**	
Chalinolobus picatus	Little Pied Bat	V,P		No	The Little-Pied Bat is found in inland Queensland and NSW (including Western Plains and slopes) extending slightly into South Australia and Victoria. Occurs in dry open forest, open woodland, mulga woodlands, chenopod shrublands, cypress pine forest and mallee and Bimbil box woodlands. Roosts in caves, rock outcrops, mine shafts, tunnels, tree hollows and buildings. **Moderate – Subject site is within the species known geographic distribution and there is an associated vegetation community present, however, there are no records within 10 km.**	**Yes**
Falsistrellus tasmaniensis	Eastern False Pipistrelle	V,P		No	The Eastern False Pipistrelle is found on the south-east coast and ranges of Australia, from southern Queensland to Victoria and Tasmania. Prefers moist habitats, with trees taller than 20 m. Generally, roosts in eucalypt hollows, but has also been found under loose bark on trees or in buildings. **Moderate – Subject site is within the species known geographic distribution and there are two associated vegetation communities present, however, there are no records within 10 km.**	**Yes**
Myotis macropus	Southern Myotis	V,P		No	The Southern Myotis is found in the coastal band from the north-west of Australia, across the top-end and south to western Victoria. It is rarely found more than 100 km inland, except along major rivers. Generally, roost in groups of 10 - 15 close to water in caves, mine shafts, hollow-bearing trees, storm water channels, buildings, under bridges and in dense foliage. Forage over streams and pools catching insects and small fish by raking their feet across the water surface. **Low – Subject site is within the species known geographic distribution, however, there are no associated vegetation communities present and there are no records within 10 km.**	**No**

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
Nyctophilus corbeni	Corben's Long-eared Bat	V,P	V	No	Overall, the distribution of the southeastern form coincides approximately with the Murray Darling Basin with the Pilliga Scrub region being the distinct stronghold for this species. Inhabits a variety of vegetation types, including mallee, bulloke *Allocasuarina leuhmanni* and box eucalypt dominated communities, but it is distinctly more common in box/ironbark/cypress-pine vegetation that occurs in a north-south belt along the western slopes and plains of NSW and southern Queensland. Roosts in tree hollows, crevices, and under loose bark. **Moderate – Subject site is within the species known geographic distribution and there is an associated vegetation community present, however, there are no records within 10 km.**	**Yes**
Scoteanax rueppellii	Greater Broad-nosed Bat	V,P		No	The Greater Broad-nosed Bat is found mainly in the gullies and river systems that drain the Great Dividing Range, from north-eastern Victoria to the Atherton Tableland. It extends to the coast over much of its range. In NSW it is widespread on the New England Tablelands, however, does not occur at altitudes above 500 m. Utilises a variety of habitats from woodland through to moist and dry eucalypt forest and rainforest, though it is most found in tall wet forest. Although this species usually roosts in tree hollows, it has also been found in buildings. Forages after sunset, flying slowly and directly along creek and river corridors at an altitude of 3 - 6 m. Open woodland habitat and dry open forest suits the direct flight of this species as it searches for beetles and other large, slow-flying insects; this species has been known to eat other bat species. **Absent – No suitable habitat occurs within the subject site, no records within 10 km and outside of geographic distribution.**	**No**
Miniopterus orianae oceanensis	Large Bent-winged Bat	V,P		No	Eastern Bentwing-bats occur along the east and north-west coasts of Australia. Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings and other man-made structures. **Moderate – Subject site is within the species known geographic distribution and there are two associated vegetation communities present, however, there are no records within 10 km.**	**Yes**
Pseudomys novaehollandiae	New Holland Mouse	P	V	No	The New Holland Mouse has a fragmented distribution across Tasmania, Victoria, New South Wales and Queensland. Genetic evidence indicates that the New Holland Mouse	**No**

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
					once formed a single continuous population on mainland Australia and the distribution of recent subfossils further suggest that the species has undergone a large range contraction since European settlement. Total population size of mature individuals is now estimated to be less than 10,000 individuals although, given the number of sites from which the species is known to have disappeared between 1999 and 2009, it is likely that the species' distribution is smaller than current estimates. Known to inhabit open heathlands, woodlands and forests with a heathland understorey and vegetated sand dunes. **Low – Subject site is within the species known geographic distribution, however, there are no associated vegetation communities present and there are no records within 10 km.**	
Synemon plana	Golden Sun Moth	V	V	No	The Golden Sun Moth's NSW populations are found in the area between Queanbeyan, Gunning, Young and Tumut. The species' historical distribution extended from Bathurst (central NSW) through the NSW Southern Tablelands, through to central and western Victoria, to Bordertown in eastern South Australia. Occurs in Natural Temperate Grasslands and grassy Box-Gum Woodlands in which groundlayer is dominated by wallaby grasses *Austrodanthonia* spp. **Moderate – Subject site is within the species known geographic distribution and there are two associated vegetation communities present, however, there are no records within 10 km.**	**Yes**
Keyacris scurra	Key's Matchstick Grasshopper	E1		No	Key's Matchstick grasshopper was originally distributed from Victoria to Orange (NSW) across the wheat/sheep belt, typically recorded in native grasslands and grassy woodland. Its northern boundaries are poorly defined, with its Victorian distribution most notable in the Omeo district, and it has been found in the following land-uses: cemeteries, along railway easements, travelling stock routes and more recently conservation reserves in the ACT. Disturbance appears to be an important determinant of site occupancy and it appears to be absent from sites that are disturbed during inappropriate times of the year (and interrupt the short non-overlapping lifecycle) or have been subjected to erratic management (e.g., periods of over and under grazing).	**Yes**

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
					Moderate – Subject site is within the species known geographic distribution and there are two associated vegetation communities present, however, there are no records within 10 km.	
Caesia parviflora var. minor	Small Pale Grass-lily	E1		No	This variety occurs uncommonly in Tasmania, southern Victoria and south-east South Australia with an outlying population in NSW, in Barcoongere State Forest, between Grafton and Coffs Harbour. This variety may be more common than currently known, as Pale Grass-lilies are often not identified to variety level. Found in damp places in open forest on sandstone. **Low – Subject site is within the species known geographic distribution, however, there are no associated vegetation communities present and there are no records within 10 km.**	**No**
Tylophora linearis		V	E	No	Occurs from southern Queensland into central NSW, as far south near Temora with the majority of records occurring in the central western region. Records from Goonoo, Pillaga West, Pillaga East, Bibblewindi, Cumbil and Eura State Forests, Coolbaggie NR, Goobang NP and Beni SCA. Also has been recorded Hiawatha State Forest near West Wyalong in the south and there are old records as far north as Crow Mountain near Barraba and near Glenmorgan in the western Darling Downs. Grows in dry scrub and open forest. **Low – Subject site is within the species known geographic distribution, however, there are no associated vegetation communities present and there are no records within 10 km.**	**No**
Ammobium craspedioides	Yass Daisy	V	V	No	Found from near Crookwell on the Southern Tablelands to near Wagga Wagga on the South Western Slopes. Most populations are in the Yass region. Found in moist or dry forest communities, Box-Gum Woodland and secondary grassland derived from clearing of these communities. Grows in association with a large range of eucalypts (*Eucalyptus blakelyi, E. bridgesiana, E. dives, E. goniocalyx, E. macrorhyncha, E. mannifera, E. melliodora, E. polyanthemos, E. rubida*). **Moderate – Subject site is within the species known geographic distribution and there are two associated vegetation communities present, however, there are no records within 10 km.**	**Yes**

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
Brachyscome muelleroides	Claypan Daisy	V	V	No	The Claypan Daisy occurs in the Wagga Wagga, Narranderra, Tocumwal and Walbundrie areas. Also occurs in north-central Victoria (only along the Murray from Tocumwal to the Ovens River). Grows in damp areas on the margins of claypans in moist grassland with *Pycnosorus globosus, Agrostis avenacea* and *Austrodanthonia duttoniana*. Also recorded from the margins of lagoons in mud or water, and in association with *Calotis anthemoides*. **Absent – No suitable habitat occurs within the subject site, no records within 10 km and outside of geographic distribution.**	**No**
Leucochrysum albicans subsp. tricolor	Hoary Sunray	E1	E	No	Endemic to south-eastern Australia, where it is currently known from three geographically separate areas in Tasmania, Victoria and south-eastern NSW and ACT. In NSW it currently occurs on the Southern Tablelands adjacent areas in an area roughly bounded by Albury, Bega and Goulburn, with a few scattered localities know from beyond this region. Occurs in a wide variety of grassland, woodland and forest habitats, generally on relatively heavy soils. **Low – Subject site is within the species known geographic distribution, however, there are no associated vegetation communities present and there are no records within 10 km.**	**No**
Senecio garlandii	Woolly Ragwort	V		No	This daisy is found between Temora, Bethungra and Albury and possibly Burrinjuck near Yass. The largest populations are at The Rock and Mt Tabletop (and surrounds). There is a single population in Victoria at Chiltern. Woolly Ragwort occurs on sheltered slopes of rocky outcrops. **Low – Subject site is within the species known geographic distribution, however, there are no associated vegetation communities present and there are no records within 10 km.**	**No**
Carex raleighii	Raleigh Sedge	E1		No	In NSW Raleigh Sedge is found only in areas above about 1000 metres on the Southern Tablelands. Most populations are in Kosciuzsko National Park (e.g., Charlottes Pass area, Muellers Pass, Tantangara area and the upper Tooma and Tumut valleys). Also occurs in vicinity of Snowy Plain (private land and travelling stock reserve) and on the coastal escarpment at the headwaters of Tantawangalo Creek within South East Forests National Park. Grows in sphagnum bogs and high mountain wetlands, as well as damp grasslands and stream-edges of sub-alpine plains.	**No**

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
					Absent – No suitable habitat occurs within the subject site, no records within 10 km and outside of geographic distribution.	
Bossiaea fragrans		E4A	CE	No	Currently only known from the Abercrombie Karst Conservation Reserve, south of Bathurst on the NSW central tablelands. It is highly restricted, with only a small number of known populations. Occurs on spilite, rhyolite or slate and volcanic substrates and is often associated with Red Stringybark (*Eucalyptus macrorhyncha*) - Red Box (*Eucalyptus polyanthemos*) woodland +/- White Box (*Eucalyptus albens*). **Low – Subject site is within the species known geographic distribution, however, there are no associated vegetation communities present and there are no records within 10 km.**	**No**
Cullen parvum	Small Scurf-pea	E1		No	The Small Scurf-pea is known in NSW from only two herbarium collections: one from Wagga Wagga in 1884 and the other from Jindera (near Albury) in 1967. A small population was recently reported from near Jerilderie (although it has not been relocated). In recent years, two populations have been recorded in travelling stock reserves south-west of Wagga Wagga, and a population reputedly exists on a roadside near Galong. Another population has recently been discovered on private land near Young. Large populations have been recorded in grassy gaps in the Red Gum Woodlands of Barmah State Park, just across the border in Victoria. Extensive suitable habitat probably occurs across the border in NSW. In known populations in Victoria and NSW, plants are found in grassland, River Red Gum (Eucalyptus camaldulensis) Woodland or Box-Gum Woodland, sometimes on grazed land and usually on table drains or adjacent to drainage lines or watercourses, in areas with rainfall of between 450 and 700 mm. **Moderate – Subject site is within the species known geographic distribution and there is one associated vegetation community present, however, there are no records within 10 km.**	**Yes**
^^*Indigofera efoliata*	Leafless Indigo	E1,3	E	No	Very rare and was presumed extinct with the last known collection made in 1955 with three unvouchered reports from Goonoo State Forest in 1963. In spring 2021 the species was rediscovered near Geurie. Indigofera efoliata was only known only from a few collections in the Dubbo area. Known sites were located along the Dubbo to Minore railway line and road, on Wallaringa and Geurie properties and in Goonoo State Forest.	**No**

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
					Low – Subject site is within the species known geographic distribution, however, there are no associated vegetation communities present and there are no records within 10 km.	
Pultenaea humilis	Dwarf Bush-pea	V		No	*Pultenaea humilis* is rare in New South Wales and Tasmania, but relatively common in Victoria. In NSW it is currently known from three confirmed localities in the NSW South Western Slopes bioregion. The extent of occurrence in NSW is estimated to be approximately 6000 km2. **Low – Subject site is within the species known geographic distribution, however, there are no associated vegetation communities present and there are no records within 10 km.**	**No**
Swainsona recta	Small Purple-pea	E1	E	No	Small Purple-pea was recorded historically from places such as Carcoar, Culcairn and Wagga Wagga where it is probably now extinct. Populations still exist in the Queanbeyan and Wellington-Mudgee areas. Over 80% of the southern population grows on a railway easement. It is also known from the ACT and a single population of four plants near Chiltern in Victoria. Grows in association with understorey dominants that include Kangaroo Grass *Themeda australis*, poa tussocks *Poa* spp. and spear-grasses *Austrostipa* spp. **Moderate – Subject site is within the species known geographic distribution and there are two associated vegetation communities present, however, there are no records within 10 km.**	**Yes**
Swainsona sericea	Silky Swainson-pea	V		No	Silky Swainson-pea has been recorded from the Northern Tablelands to the Southern Tablelands and further inland on the slopes and plains. There is one isolated record from the far north-west of NSW. Its stronghold is on the Monaro. Also found in South Australia, Victoria and Queensland. Found in Natural Temperate Grassland and Snow Gum Eucalyptus pauciflora Woodland on the Monaro. **Moderate – Subject site is within the species known geographic distribution and there are two associated vegetation communities present, however, there are no records within 10 km.**	**Yes**
Acacia ausfeldii	Ausfeld's Wattle	V		No	Found to the east of Dubbo in the Mudgee-Ulan-Gulgong area of the NSW South Western Slopes bioregion, with some records in the adjoining Brigalow Belt South,	**Yes**

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
					South Eastern Highlands and the Sydney Basin bioregions. Populations are recorded from Yarrobil National Park, Goodiman State Conservation Area and there is a 1963 record from Munghorn Gap Nature Reserve. A large population is also known from Tuckland State Forest to the northwest of Gulgong. Associated species include *Eucalyptus albens, E. blakelyi* and *Callitris* spp., with an understorey dominated by *Cassinia* spp. and grasses. **Moderate – Subject site is within the species known geographic distribution and there are two associated vegetation communities present, however, there are no records within 10 km.**	
Acacia meiantha		E1	E	No	The species is found in three disjunct populations, all within the Central Tablelands and within 100kms of each other. These populations include Clarence, which covers an area of approximately 1 hectare; Mullions Range, covering approximately 5 hectares; and Aarons Pass, which is confined to 2.5km of road easements. **Low – Subject site is within the species predicted geographic distribution, however, there are no associated vegetation communities present and there are no records within 10 km.**	**No**
Acacia phasmoides	Phantom Wattle	V	V	No	The species is only known from one location in NSW: Woomargama National Park in Greater Hume Shire. It is also found at Burrowa-Pine Mountain National Park in Victoria. Grows in shrubby woodland on sandy, granitic soil near creeks or in rocky crevices. **Low – Subject site is within the species known geographic distribution, however, there are no associated vegetation communities present and there are no records within 10 km.**	**No**
^^*Pilularia novae-hollandiae*	Austral Pillwort	E1,3		No	In NSW, Austral Pillwort has been recorded from suburban Sydney, Khancoban, the Riverina between Albury and Urana (including Henty, Walbundrie, Balldale and Howlong), Oolambeyan National Park near Carathool and at Lake Cowal near West Wyalong. The populations at Lake Cowal and Oolambeyan NP are the only known extant populations in NSW, although the species is obscure and has possibly been overlooked elsewhere. The species has also been recorded in the Australian Capital Territory, Victoria, Tasmania, South Australia and Western Australia. Austral Pillwort grows in shallow swamps and waterways, often among grasses and sedges. It is most often recorded in drying mud as this is when it is most conspicuous.	**Yes**

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
					Moderate – Subject site is within the species predicted geographic distribution and there is one associated vegetation community present, however, there are no records within 10 km.	
Eucalyptus aggregata	Black Gum	V	V	No	Black Gum is found in the NSW Central and Southern Tablelands, with small, isolated populations in Victoria and the ACT. In NSW it occurs in the South Eastern Highlands Bioregion and on the western fringe of the Sydney Basin Bioregion. Black Gum has a moderately narrow distribution, occurring mainly in the wetter, cooler and higher parts of the tablelands, for example in the Blayney, Crookwell, Goulburn, Braidwood and Bungendore districts. Grows on alluvial soils, on cold, poorly drained flats and hollows adjacent to creeks and small rivers. Often grows with other cold-adapted eucalypts, such as Snow Gum or White Sallee (*Eucalyptus pauciflora*), Manna or Ribbon Gum (*E. viminalis*), Candlebark (*E. rubida*), Black Sallee (*E. stellulata*) and Swamp Gum (*E. ovata*). **Low – Subject site is within the species predicted geographic distribution, however, there are no associated vegetation communities present and there are no records within 10 km.**	**No**
Eucalyptus alligatrix subsp. alligatrix		V	V	No	Only known from a single location south-west of Rylstone; however, the species has reportedly been widely propagated and planted in the Rylstone area. The population is confined to an area of a few hectares where an estimated 3,000 to 4,500 trees survive. Most of the population consists of moderately dense regenerating stands following previous clearing, but there are also larger scattered paddock trees, probably pre-dating European settlement. Grows in dry sclerophyll woodland on shallow relatively infertile soils (grey brown loam with ironstone). It may have been part of a more-extensive open woodland community prior to the commencement of clearing and grazing. **Low – Subject site is within the species known geographic distribution, however, there are no associated vegetation communities present and there are no records within 10 km.**	
Eucalyptus cannonii	Capertee Stringybark	V		No	The Capertee Stringybark is predominantly restricted to the central tablelands and slopes of NSW between the Golden Highway in the north, and the Mitchell Highway in the south. The species' distribution is bounded from east of Bathurst to Wallerwang near Lithgow, north along the western edge of Wollemi National Park and north-west to	**No**

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
					Mudgee; isolated occurrences are known from a short way north of Goulburn River National Park between Dunedoo and Merriwa. Within this area the species is often locally frequent. **Low – Subject site is within the species known geographic distribution, however, there are no associated vegetation communities present and there are no records within 10 km.**	
Eucalyptus robertsonii subsp. hemisphaerica	Robertson's Peppermint	V	V	No	Known only from the central tablelands of NSW, at small disjunct localities from north of Orange to Burraga. Locally frequent in grassy or dry sclerophyll woodland or forest, on lighter soils and often on granite. Usually found in closed grassy woodlands in locally sheltered sites. Habitats include quartzite ridges, upper slopes and a slight rise of shallow clay over volcanics. **Low – Subject site is within the species predicted geographic distribution, however, there are no associated vegetation communities present and there are no records within 10 km.**	**No**
Homoranthus darwinioides	Fairy Bells	V	V	No	Rare in the central tablelands and western slopes of NSW, occurring from Putty to the Dubbo district. It is found west of Muswellbrook between Merriwa and Bylong, and north of Muswellbrook to Goonoo SCA. The species has been collected from Lee's Pinch, but not relocated at its original locality north of Mt Coricudgy above the headwaters of Widden Brook. Grows in in various woodland habitats with shrubby understoreys, usually in gravely sandy soils. Landforms the species has been recorded growing on include flat sunny ridge tops with scrubby woodland, sloping ridges, gentle south-facing slopes, and a slight depression on a roadside with loamy sand. **Low – Subject site is within the species predicted geographic distribution, however, there are no associated vegetation communities present and there are no records within 10 km.**	**No**
^*Caladenia arenaria*	Sand-hill Spider Orchid	E1,P,2	E	No	*Caladenia arenaria* is found mostly on the southwest plains and western south west slopes. The original description is of a plant from Nangus, west of Gundagai (1865) and there is a report of the species from Adelong near Tumut. A record near Cootamundra needs verifying. The Sand-hill Spider Orchid is currently only known to occur in the Riverina between Urana and Narranderra. Occurs in woodland with sandy soil, especially that dominated by White Cypress Pine (*Callitris glaucophylla*).	**No**

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
					Low – Subject site is within the species known geographic distribution, however, there are no associated vegetation communities present and there are no records within 10 km.	
^*Caladenia concolor*	Crimson Spider Orchid	E1,P,2	V	No	The current NSW Scientific Committee listing incorporates two populations which have each been described as separate species by D.L. Jones. One of these populations comprises a few hundred plants on private property near Bethungra and the other of about 100 plants occurs in Burrinjuck Nature reserve. The other occurrences of the Crimson Spider Orchid in NSW are from the Nail Can Hill Crown Reserve near Albury. The species also occurs at two localities in Victoria near Beechworth and Chiltern. Habitat is regrowth woodland on granite ridge country that has retained a high diversity of plant species, including other orchids. **Low – Subject site is within the species known geographic distribution, however, there are no associated vegetation communities present and there are no records within 10 km.**	**No**
^*Caladenia rosella*	Rosella Spider Orchid	E4,P,2	E	No	The single NSW collection of the Rosella Spider Orchid (located in Albury) is undated but is estimated to have been collected before 1896. Today the species is found near Melbourne in Victoria but is listed as endangered because less than 200 plants are known to exist. In Victoria, the species is found in woodlands and low forests of Red Box (*Eucalyptus polyanthemos*), Long-leafed Box (*E. goniocalyx*) and Red Stringybark (*E. macrorhyncha*) in well-drained, skeletal soils. **Low – Subject site is within the species predicted geographic distribution, however, there are no associated vegetation communities present and there are no records within 10 km.**	**No**
^*Caladenia tessellata*	Thick Lip Spider Orchid	E1,P,2	V	No	The Thick Lip Spider Orchid is known from the Sydney area (old records), Wyong, Ulladulla and Braidwood in NSW. Populations in Kiama and Queanbeyan are presumed extinct. It was also recorded in the Huskisson area in the 1930s. The species occurs on the coast in Victoria from east of Melbourne to almost the NSW border. Generally found in grassy sclerophyll woodland on clay loam or sandy soils, though the population near Braidwood is in low woodland with stony soil.	**No**

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
					Absent – No suitable habitat occurs within the subject site, no records within 10 km and outside of geographic distribution.	
^*Diuris tricolor*	Pine Donkey Orchid	V,P,2		No	Sporadically distributed on the western slopes of NSW, extending from south of Narrandera all the way to the north of NSW. Localities in the south include Red Hill north of Narrandera, Coolamon, and several sites west of Wagga Wagga. Condobolin-Nymagee road, Wattamondara towards Cowra, Eugowra, Girilambone, Dubbo and Cooyal, in the Central West. Pilliga SCA, Pilliga National Park and Bibblewindi State Forest in the north (and extending into Queensland) and Muswellbrook in the east. Disturbance regimes are not known, although the species is usually recorded from disturbed habitats. **Low – Subject site is within the species known geographic distribution, however, there are no associated vegetation communities present and there are no records within 10 km.**	**No**
^*Prasophyllum petilum*	Tarengo Leek Orchid	E1,P,2	E	No	Natural populations are known from a total of five sites in NSW. These are near Boorowa, Queanbeyan area, Ilford, Delegate and a newly recognised population c.10 km west of Muswellbrook. It also occurs at Hall in the Australian Capital Territory. This species has also been recorded at Bowning Cemetery where it was experimentally introduced, though it is not known whether this population has persisted. Grows in open sites within Natural Temperate Grassland at the Boorowa and Delegate sites. Also grows in grassy woodland in association with River Tussock, Black Gum and tea-trees near Queanbeyan and within the grassy groundlayer dominated by Kangaroo Grass under Box-Gum Woodland at Ilford (and Hall, ACT). **Moderate – Subject site is within the species known geographic distribution and there is one associated vegetation community present, however, there are no records within 10 km.**	**Yes**
Prasophyllum sp. Wybong		P	CE	No	Endemic to NSW, it is known from near Ilford, Premer, Muswellbrook, Wybong, Yeoval, Inverell, Tenterfield, Currabubula and the Pilliga area. Most populations are small, although the Wybong population contains by far the largest number of individuals. **Moderate – Subject site is within the species predicted geographic distribution and there are two associated vegetation communities present, however, there are no records within 10 km.**	**Yes**

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
Euphrasia arguta		E4A	CE	No	Euphrasia arguta was rediscovered in the Nundle area of the NSW northwestern slopes and tablelands in 2008. Prior to this, it had not been collected for 100 years. Historically, Euphrasia arguta has only been recorded from relatively few places within an area extending from Sydney to Bathurst and north to Walcha. The Royal Botanic Gardens Specimen Register records an additional location reported and vouchered in 2002 from near the Hastings River; and Euphrasia arguta was also recorded from the Barrington Tops in 2012. Historic records of the species noted the following habitats: 'in the open forest country around Bathurst in sub humid places', 'on the grassy country near Bathurst', and 'in meadows near rivers'. **Moderate – Subject site is within the species predicted geographic distribution and there are two associated vegetation communities present, however, there are no records within 10 km.**	**Yes**
Euphrasia collina subsp. muelleri	Mueller's Eyebright	E1	E	No	Once widespread in south-eastern Australia, Mueller's Eyebright is now known only from the Mornington Peninsula near Melbourne. In NSW it was recorded more than 100 years ago in the upper Murray and McIntyre Rivers and near Dorrigo and Cootamundra. The only NSW collections in the past 50 years were made in the vicinity of the Tinderry Range between Canberra and Cooma (1970) and between Uralla and Tamorth (1987). Little is known about the habitat this species preferred, although there is a reference to "damp places" in an early von Mueller collection. Extant populations in Victoria occur in heathy woodland. **Low – Subject site is within the species predicted geographic distribution, however, there are no associated vegetation communities present and there are no records within 10 km.**	**No**
Amphibromus fluitans	Floating Swamp Wallaby-grass	V	V	No	There are many historic collections in the City of Greater Albury. It has been recorded recently in lagoons beside the Murray River near Cooks Lagoon (Shire of Greater Hume), Mungabarina Reserve, East Albury, at Ettamogah, Thurgoona (Charles Sturt University Campus), near Narranderra, and further west along the Murray River (near Mathoura) and in Victoria. There is a recent record of this species near Laggan in Upper Lachlan Shire. It is also found in Victoria and in Tasmania. *Amphibromus fluitans* grows mostly in permanent swamps. The species needs wetlands which are at least moderately fertile, and which have some bare ground, conditions which are produced by seasonally fluctuating water levels. Habitats in south-western NSW include swamp	**No**

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
					margins in mud, dam and tank beds in hard clay and in semi-dry mud of lagoons with *Potamogeton* and *Chamaeraphis* species. **Low – Subject site is within the species known geographic distribution, however, there are no associated vegetation communities present and there are no records within 10 km.**	
Austrostipa wakoolica	A spear-grass	E1	E	No	Confined to the floodplains of the Murray River tributaries of central-western and south-western NSW, with localities including Manna State Forest, Matong, Lake Tooim, Merran Creek, Tulla, Cunninyeuk and Mairjimmy State Forest (now part of South West Woodland Nature Reserve). Grows on floodplains of the Murray River tributaries, in open woodland on grey, silty clay or sandy loam soils; habitats include the edges of a lignum swamp with box and mallee; creek banks in grey, silty clay; mallee and lignum sandy-loam flat; open Cypress Pine Forest on low sandy range; and a low, rocky rise. **Low – Subject site is within the species predicted geographic distribution, however, there are no associated vegetation communities present and there are no records within 10 km.**	**No**
Dichanthium setosum	Bluegrass	V	V	No	Bluegrass occurs on the New England Tablelands, North West Slopes and Plains and the Central Western Slopes of NSW, extending to northern Queensland. It occurs widely on private property, including in the Inverell, Guyra, Armidale and Glen Innes areas. Associated species include *Eucalyptus albens, Eucalyptus melanophloia, Eucalyptus melliodora, Eucalyptus viminalis, Myoporum debile, Aristida ramosa, Themeda triandra, Poa sieberiana, Bothriochloa ambigua, Medicago minima, Leptorhynchos squamatus, Lomandra aff. longifolia, Ajuga australis, Calotis hispidula* and *Austrodanthonia, Dichopogon, Brachyscome, Vittadinia, Wahlenbergia* and *Psoralea species*. **Low – Subject site is within the species known geographic distribution, however, there are no associated vegetation communities present and there are no records within 10 km.**	**No**
Grevillea wilkinsonii	Tumut Grevillea	E4A	E	No	The Tumut Grevillea has a highly restricted distribution in the NSW South-west Slopes region. Its main occurrence is along a 6 km stretch of the Goobarragandra River approximately 20 km east of Tumut where about 1,000 plants are known. The other occurrence is a small population that straddles the boundary of two private properties	**Yes**

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
					at Gundagai where only eight mature plants survive. At the Goobarragandra River sites the species generally grows near the water, at altitudes between 310 and 340 m. Most healthy adult plants occur in open sunny areas, and those plants found under the canopy of dense vegetation tend to be spindly and are sometimes subject to sooty mould infestations. **Moderate – Subject site is within the species known geographic distribution and there is one associated vegetation community present, however, there are no records within 10 km.**	
Persoonia marginata	Clandulla Geebung	V,P	V	No	The Clandulla Geebung occurs between Kandos and Clarence in the western Blue Mountains. Populations are largely disjunct and include Clandulla, Ben Bullen and Sunny Corner State Forests; isolated populations have also been recorded from Turon and Gardens of Stone National Parks. Grows in dry sclerophyll forest and woodland communities on sandstone. **Low – Subject site is within the species predicted geographic distribution, however, there are no associated vegetation communities present and there are no records within 10 km.**	**No**
Pomaderris cotoneaster	Cotoneaster Pomaderris	E1	E	No	Cotoneaster Pomaderris has a very disjunct distribution, being known from the Nungatta area, northern Kosciuszko National Park (near Tumut), the Tantawangalo area in South-East Forests National Park and adjoining freehold land, Badgery's Lookout near Tallong, Bungonia State Conservation Area, the Yerranderie area, Kanangra-Boyd National Park, the Canyonleigh area and Ettrema Gorge in Morton National Park. The species has also been recorded along the Genoa River in Victoria. Cotoneaster Pomaderris has been recorded in a range of habitats in predominantly forested country. The habitats include forest with deep, friable soil, amongst rock beside a creek, on rocky forested slopes and in steep gullies between sandstone cliffs. **Low – Subject site is within the species predicted geographic distribution, however, there are no associated vegetation communities present and there are no records within 10 km.**	**No**
Pomaderris queenslandica	Scant Pomaderris	E1		No	Widely scattered but not common in north-east NSW and in Queensland. It is known from several locations on the NSW north coast and a few locations on the New England Tablelands and North West Slopes, including near Torrington and Coolata. Found in	**No**

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
					moist eucalypt forest or sheltered woodlands with a shrubby understorey, and occasionally along creeks. **Low – Subject site is within the species known geographic distribution, however, there are no associated vegetation communities present and there are no records within 10 km.**	
Zieria ingramii	Keith's Zieria	E1	E	No	Known predominately from Goonoo SCA, about 40 km north-east of Dubbo. An old record exists from a locality east of Mogriguy on the Mendooran Road, however searches of the area have not relocated the species. Grows in dry sclerophyll forest on light sandy soils. All known populations have been recorded in Eucalyptus-Callitris woodland or open forest with a shrubby to heathy understorey. **Absent – No suitable habitat occurs within the subject site, no records within 10 km and outside of geographic distribution.**	**No**
Zieria obcordata	Granite Zieria	E1	E	No	Occurs at two sites with a geographic range of 105 km. These are in the Wuuluman area near Wellington, comprising of a single subpopulation over 3 sites comprising up to 200 plants and Crackerjack Rock/Rock Forests area NW of Bathurst, with a subpopulation comprising of 14 sites, totalling to approximately 700 adults plants after good seasons. **Low – Subject site is within the species known geographic distribution, however, there are no associated vegetation communities present and there are no records within 10 km.**	**No**
Thesium australe	Austral Toadflax	V	V	No	Austral Toad-flax is found in very small populations scattered across eastern NSW, along the coast, and from the Northern to Southern Tablelands. It is also found in Tasmania and Queensland and in eastern Asia. Although originally described from material collected in the SW Sydney area, populations have not been seen in a long time. It may persist in some areas in the broader region. Occurs in grassland on coastal headlands or grassland and grassy woodland away from the coast. **Low – Subject site is within the species known geographic distribution, however, there are no associated vegetation communities present and there are no records within 10 km.**	**No**

Scientific Name	Common Name	*NSW status	+Comm. Status	Records within 10 km?	Likelihood of Occurrence	Test of significance required (Yes/No)
Pimelea bracteata		E4A		No	*Pimelea bracteata* is endemic to New South Wales where it is currently known from the Southern Tablelands. The main areas of occurrence of *P. bracteata* are in the northern area of Kosciuszko National Park, Scabby Range Nature Reserve, neighbouring State Forests and freehold land. **Absent – No suitable habitat occurs within the subject site, no records within 10 km and outside of geographic distribution.**	**No**

***NSW Status**: P=Protected, P13=Protected native plant, V=Vulnerable, E1=Endangered, E2=Endangered population, E4=Extinct, E4A=Critically endangered, 2=Category 2 sensitive species, 3=Category 3 sensitive species.
+Commonwealth Status: C=CAMBA, J=JAMBA, K=ROKAMBA, CE=Critically endangered, E=Endangered, V=Vulnerable

Likelihood of occurrence table for BC Act Threatened Ecological Community

Community	+NSW Status	Likelihood of Occurrence	5-part test required (Yes / No)
Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions	E	*Acacia melvillei* Shrubland is currently recorded from south-western portion of NSW in the Riverina and Murray-Darling Depression bioregions in the local government areas of Balranald, Carrathool, Central Darling, Conargo, Wakool, and Wentworth and may occur in other local government areas within these bioregions. **Absent – Community was not present on site.**	No
Allocasuarina luehmannii Woodland in the Riverina and Murray-Darling Depression Bioregions	E	*Allocasuarina luehmannii* Woodland has been recorded in the southern part of the Riverina bioregion from near Urana and Mulwala in the east to the Barham district and may extend as far west as Euston in the southern part of the Murray-Darling Depression bioregion. The community occurs in small patches within this range and is currently estimated to cover less than 500-1500ha. Approximately 6 ha of *Allocasuarina luehmannii* Woodland are estimated to occur within Lake Urana and Wiesners Swamp Nature Reserves. The remainder of the community occurs on private land or on public easements. **Absent – Community was not present on site.**	No
Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar, and Brigalow Belt South Bioregions	E	Inland Grey Box Woodland occurs predominately within the Riverina and South West Slopes regions of NSW down to the Victorian border. It includes Albury to the east and may extend out west towards Hay. This community also extends across the slopes and plains in Central and Northern NSW up to the Queensland Border. This includes Yetman and Inverell in the North, Molong to the east of the Central Slopes and plains and out towards Nymagee to the west. **Absent – Community was not present on site.**	No
Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina, and NSW South Western Slopes bioregions	E	This EEC is known from parts of the Local Government Areas of Berrigan, Bland, Bogan, Carrathool, Conargo, Coolamon, Coonamble, Corowa, Forbes, Gilgandra, Griffith, Gwydir, Inverell, Jerilderee, Lachlan, Leeton, Lockhart, Moree Plains, Murray, Murrumbidgee, Narrabri, Narranderra, Narromine, Parkes, Urana, Wagga Wagga and Warren, and but may occur elsewhere in these bioregions. **Absent – Community was not present on site.**	No
Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	E	Sandhill Pine Woodland has been recorded in the far south-western portion of the NSW South Western Slopes bioregion near Urana, extending through the Riverina bioregion,	No

Community	+NSW Status	Likelihood of Occurrence	5-part test required (Yes / No)
		from the Urana – Narrandera district in the east, into the southern part of the Murray-Darling Depression bioregion, as far west as the South Australian border. **Absent – Community was not present on site.**	
White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and	CE	Box-Gum Woodland is found from the Queensland border in the north, to the Victorian border in the south. It occurs in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions **Present – Community was found in the field survey.**	Yes

+ NSW Status: E=Endangered, CE=Critically Endangered

APPENDIX D – BC ACT TESTS OF SIGNIFICANCE

Biodiversity Conservation Act 2016 Test of significance

The threatened species 'test of significance' (or '5-part test') is used to determine if a development or activity is likely to significantly affect threatened species or ecological communities, or their habitats. The test of significance is set out in s.7.3 of the Biodiversity Conservation Act 2016, and is completed in accordance with the questions set out below:

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

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

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

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

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

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

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

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

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

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

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

Below information has been sourced from

https://www.environment.nsw.gov.au/threatenedSpeciesApp

BC Act Tests of Significance for Threatened Species

Species Name	Common Name	a.	b.	c.	d.	e.	Impact Significance
Litoria booroolongensis	Booroolong Frog	Live along permanent streams with some fringing vegetation cover such as ferns, sedges or grasses. Adults occur on or near cobble banks and other rock structures within stream margins. Shelter under rocks or amongst vegetation near the ground on the stream edge. As such, this site is lacking in the requirements for inhabitation, with only two minor non-perennial watercourses. The species is associated with PCT 277 within the subject site, however, there are no records of this species from within the 10 km search area. It is unlikely to place a local population at risk of extinction.	N/A	i. This species is associated with PCT 277. As such, up to 0.112 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering the absence of records and lack of habitat, it is unlikely that the proposal will jeopardise the long-term survival of the species.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.
Litoria raniformis	Southern Bell Frog	Typically, inhabiting swamps, floodplains, and river valleys, Southern Bell Frogs congregate around permanent waterbodies for reproduction and then disperse away to take shelter amongst terrestrial debris (e.g., fallen timber, bark, rocks, grass, and cracking soil). As such, this site is lacking in the requirements for inhabitation, with only two minor non-perennial watercourses and limited sedge wetland. There are no records of this species from within the 10 km search area. Given that the proposal will be affecting a relatively insignificant amount of already modified associated habitat (0.054 ha), it is unlikely to place a local population at risk of extinction.	N/A	i. This species is associated with PCT 53. As such, up to 0.054 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering the absence of records and lack of habitat, it is unlikely that the proposal will jeopardise the long-term survival of the species.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.

Species Name	Common Name	a.	b.	c.	d.	e.	Impact Significance
Aprasia parapulchella	Pink-tailed Legless Lizard	Inhabits sloping, open woodland areas with predominantly native grassy groundlayers, particularly those dominated by Kangaroo Grass (*Themeda australis*). Sites are typically well-drained, with rocky outcrops or scattered, partially-buried rocks. Commonly found beneath small, partially-embedded rocks and appear to spend considerable time in burrows below these rocks; the burrows have been constructed by and are often still inhabited by small black ants and termites. This site is lacking in quality habitat. However, this species is associated with two of the vegetation communities present, and it could inhabit the soil beneath rocks in farmland. There are no records of this species from within the 10 km search area. Given that the proposal will be affecting a relatively insignificant amount of already modified associated habitat (0.33 ha), it is unlikely to place a local population at risk of extinction.	N/A	i. This species is associated with PCT 266 and 277. As such, up to 0.33 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering the absence of records and lack of quality habitat, it is unlikely that the proposal will jeopardise the long-term survival of the species.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.
Delma impar	Striped Legless Lizard	Found mainly in Natural Temperate Grassland but has also been captured in grasslands that have a high exotic component. Also found in secondary grassland near Natural Temperate Grassland and occasionally in open Box-Gum Woodland. Habitat is where grassland is dominated by perennial, tussock-forming grasses such as Kangaroo Grass *Themeda australis*, spear-grasses *Austrostipa* spp. and poa tussocks *Poa* spp., and occasionally wallaby grasses *Austrodanthonia* spp. Sometimes present in modified grasslands with a significant content of exotic grasses and significant amounts of surface rocks, which are	N/A	i. This species is associated with PCT 277. As such, up to 0.112 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering the absence of records and lack of quality habitat, it is unlikely	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.

Species Name	Common Name	a.	b.	c.	d.	e.	Impact Significance
		used for shelter. Sometimes utilises dried cowpats for shelter. This site is lacking in quality habitat. However, this species is associated a present vegetation community, and it could inhabit the soil beneath rocks in farmland. There are no records of this species from within the 10 km search area. Given that the proposal will be affecting a relatively insignificant amount of already modified associated habitat (0.112 ha), it is unlikely to place a local population at risk of extinction.		that the proposal will jeopardise the long-term survival of the species.			
Hoplocephalus bitorquatus	Pale-headed Snake	Highly cryptic species that can spend weeks at a time hidden in tree hollows. Found mainly in dry eucalypt forests and woodlands, cypress forest and occasionally in rainforest or moist eucalypt forest. In drier environments, it appears to favour habitats close to riparian areas. Shelter during the day between loose bark and tree-trunks, or in hollow trunks and limbs of dead trees. As such, this site is limited in the requirements for inhabitation, with few habitat trees within the subject site. There are no records of this species from within the 10 km search area. Given that the proposal will be affecting a relatively insignificant amount of already modified associated habitat (0.054 ha), it is unlikely to place a local population at risk of extinction.	N/A	i. This species is associated with PCT 53. As such, up to 0.054 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering the absence of records and lack of habitat, it is unlikely that the proposal will jeopardise the long-term survival of the species.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.
Anseranas semipalmata	Magpie Goose	Magpie Geese breed in tall trees over deep permanent bodies of water. The 10 km search	N/A	i. This species is associated with PCT 53. As such, up to 0.054 ha of associated	No, AOBV not present	Yes. See **Appendix F**	No significant impact will arise to the local viability of this

Species Name	Common Name	a.	b.	c.	d.	e.	Impact Significance
		area contained a single record which dates to 2003. There is low habitat suitability within the subject site. There are two minor non-perennial water courses present. As such, it is unlikely to be critical habitat for the species.		habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering the absence of nest structures from the subject site and the absence of records from the search area, it is unlikely that the proposal will jeopardise the long-term survival of the species.	within or close to the subject site.		species or its habitat due to the undertaking of the proposal.
Oxyura australis	Blue-billed Duck	Blue-billed Ducks require large permanent wetlands and swamps with dense aquatic vegetation to complete their reproductive cycle. The 10 km search area contained no records. There are two minor non-perennial water courses present. It is unlikely that the subject site is critical to the species.	N/A	i. This species is associated with PCT 53. As such, up to 0.054 ha of associated habitat will be removed/modified by this proposal. ii. The proposal will not generate new fragments or significantly exacerbate issues relating to existing fragmentation. iii. Considering the absence of records, it is unlikely that the proposal will jeopardise the long-term survival of the species.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.
Stictonetta naevosa	Freckled Duck	The Freckled Duck makes use of dense fringing vegetation along lakes, reservoirs, farm dams and sewage ponds for reproduction. The 10 km search area contained a no records. There is low habitat suitability within	N/A	i. This species is associated with PCT 53. As such, up to 0.054 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very	No, AOBV not present within or close to the	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to

Species Name	Common Name	a.	b.	c.	d.	e.	Impact Significance
		the subject site. There are two minor non-perennial water courses present. It is unlikely for the subject site to be critical to the species.		fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering the absence of records, it is unlikely that the proposal will jeopardise the long-term survival of the species.	subject site.		the undertaking of the proposal.
Hirundapus caudacutus	White-throated Needletail	Although they occur over most types of habitat, they are recorded most often above wooded areas, including open forest and rainforest, and may also fly below the canopy between trees or in clearings. When flying above farmland, they are more often recorded above partly cleared pasture, plantations or remnant vegetation at the edge of paddocks. In coastal areas, they have been observed flying over sandy beaches or mudflats, and often around coastal cliffs and other areas with prominent updraughts, such as ridges and sand-dunes. The 10 km search area contained no records. It is unlikely for the subject site to be critical to the species.	N/A	i. This species is associated with PCT 53, 266 and 277. As such, up to 0.385 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering the absence of records, it is unlikely that the proposal will jeopardise the long-term survival of the species.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.
Ephippiorhynchus asiaticus	Black-necked Stork	Floodplain wetlands (swamps, billabongs, watercourses and dams) of the major coastal rivers are the key habitat in NSW for the Black-necked Stork. Secondary habitat includes minor floodplains, coastal sandplain wetlands and estuaries. Storks usually forage in water 5-30cm deep for vertebrate and invertebrate prey. Black-necked Storks build large nests high in tall trees close to water. Trees usually provide clear observation of the surroundings	N/A	i. This species is associated with PCT 53. As such, up to 0.054 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.

Species Name	Common Name	a.	b.	c.	d.	e.	Impact Significance
		and are at low elevation (reflecting the floodplain habitat). There is low habitat suitability within the subject site. There are two minor non-perennial water courses present. There are no records within 10 km. As such, it is unlikely to be critical habitat for the species.		iii. Considering the absence of records, it is unlikely that the proposal will jeopardise the long-term survival of the species.			
Botaurus poiciloptilus	Australasian Bittern	The Australasian Bittern requires permanent freshwater sources, flanked by tall dense vegetation (particularly by *Typha* sp. and *Eleocharis* sp.) for reproduction. The subject site lacked these specific species and the search area lacked records. As such, it is unlikely for the subject site to be critical to the species.	N/A	i. This species is associated with PCTs 53. As such, up to 0.054 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering the absence of records from the search area, it is unlikely that the proposal will jeopardise the long-term survival of the species.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.
Circus assimilis	Spotted Harrier	Occurs in grassy open woodland including Acacia and mallee remnants, inland riparian woodland, grassland and shrub steppe. It is found most commonly in native grassland, but also occurs in agricultural land, foraging over open habitats including edges of inland wetlands. Builds a stick nest in a tree and lays eggs in spring (or sometimes autumn), with young remaining in the nest for several months.	N/A	i. This species is associated with PCTs 53, 266 and 277. As such, up to 0.385 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering the absence of nests and	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.

Species Name	Common Name	a.	b.	c.	d.	e.	Impact Significance
		There are three records within 10 km of the subject site, the closest being 4.7 km. Given that the proposal will be removing a relatively insignificant amount of associated habitat of already fragmented land (0.385 ha), compared to that which will continue to exist in the study area, it is unlikely to place a local population at risk of extinction.		that a greater quantity of habitat will continue to exist in the study area, it is unlikely that the proposal will jeopardise the long-term survival of the species.			
Haliaeetus leucogaster	White-bellied Sea-Eagle	The White-bellied Sea-Eagle constructs their large nests at the crowns of large, mature eucalypts – often adjacent to a watercourse. The subject site may therefore represent suitable habitat. There are no records within 10 km of the subject site. Given that the proposal will be removing a relatively insignificant amount of associated habitat (0.385 ha) compared to that which will continue to exist in the study area, it is unlikely to place a local population at risk of extinction.	N/A	i. This species is associated with PCTs 53, 266 and 277. As such, up to 0.385 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering the absence of nests and that a greater quantity of habitat will continue to exist in the study area, it is unlikely that the proposal will jeopardise the long-term survival of the species.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.
Hieraaetus morphnoides	Little Eagle	The Little Eagle constructs its twig nests in the forks of large old trees in open woodland and riparian vegetation. The subject site may therefore represent suitable habitat for the species. However, there are no records from within the search area and the field survey failed to encounter any nests. As such, it is unlikely for the subject site to be critical to the species.	N/A	i. This species is associated with PCTs 53, 266 and 277. As such, up to 0.385 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.

Species Name	Common Name	a.	b.	c.	d.	e.	Impact Significance
				iii. Considering the absence of nests from the subject site and of records from the search area, it is unlikely that the proposal will jeopardise the long-term survival of the species.			
^^*Lophoictinia isura*	Square-tailed Kite	Square-tailed Kites construct their nests in the forks of large eucalypts, typically adjacent to water. There are no records from within the search area and the field survey failed to encounter any nests. As such, it is unlikely for the subject site to be critical to the species.	N/A	i. This species is associated with PCTs 266 and 277. As such, up to 0.385 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering the absence of nests from the subject site and of records from the search area, it is unlikely that the proposal will jeopardise the long-term survival of the species.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.
Falco subniger	Black Falcon	The Black Falcon utilises preestablished nests, created by other birds of prey and ravens, close to waterways for reproduction. While the subject site may represent suitable habitat, the field survey did not encounter any nests and there are no records within 10 km. As such, it is unlikely for the subject site to be critical to the species lifecycle.	N/A	i. This species is associated with PCTs 53, 266 and 277. As such, up to 0.385 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering the absence of nests from the subject site and of records from the	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.

Species Name	Common Name	a.	b.	c.	d.	e.	Impact Significance
				search area, it is unlikely that the proposal will jeopardise the long-term survival of the species.			
Grus rubicunda	Brolga	Although the Brolga may feed in dry grassland or ploughed paddocks, they are dependent on wetlands for reproduction. A Brolgas nest consists of a platform of grasses and sticks, augmented with mud, that is constructed in the water. The field survey failed to detect any such nesting structure. There are no records within the 10 km search area and only one particularly small area of associated vegetation community present. As such, it is unlikely for the subject site to be critical to the species lifecycle.	N/A	i. This species is associated with PCT 53. As such, up to 0.054 ha of associated habitat will be removed/modified by this proposal. ii. The proposal will not generate new fragments or significantly exacerbate issues relating to existing fragmentation. iii. Considering the absence of records, the subject site is unlikely to be of importance to the long-term survival of this species.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.
Burhinus grallarius	Bush Stone-curlew	The Bush Stone-curlew is associated with open forests and woodlands that contain a grassy ground layer, which the site contained. Despite the potential suitability of the subject site, there are no records from the 10 km search area. As such, the subject site is unlikely to be critical to the lifecycle of the species.	N/A	i. This species is associated with PCTs 266 and 277. As such, up to 0.33 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering absence of records from the 10 km search area, it is unlikely that the proposal will jeopardise the long-term survival of the species.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.

Species Name	Common Name	a.	b.	c.	d.	e.	Impact Significance
Rostratula australis	Australian Painted Snipe	The Australian Painted Snipe breeds at the margins of swamps, dams, and marshlands, underneath the substantial cover provided by tall grasses, tussocks, and reeds. Although such vegetation was present, it was relatively insignificant and the search area lacked any records of this species. As such, the subject site is unlikely to be critical to the lifecycle of the species.	N/A	i. This species is associated with PCT 53. As such, up to 0.054 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering the absence of records from the search area, it is unlikely that the proposal will jeopardise the long-term survival of the species.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.
Calidris ferruginea	Curlew Sandpiper	It generally occupies littoral and estuarine habitats, and in New South Wales is mainly found in intertidal mudflats of sheltered coasts. It also occurs in non-tidal swamps, lakes and lagoons on the coast and sometimes inland. It forages in or at the edge of shallow water, occasionally on exposed algal mats or waterweed, or on banks of beach-cast seagrass or seaweed. It roosts on shingle, shell or sand beaches; spits or islets on the coast or in wetlands; or sometimes in salt marsh, among beach-cast seaweed, or on rocky shores. There are no records within 10 km of the subject site. As such, it is unlikely for the subject site to be critical to the species lifecycle	N/A	i. This species is associated with PCT 53. As such, up to 0.054 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering the absence of records from the search area, it is unlikely that the proposal will jeopardise the long-term survival of the species.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.

Species Name	Common Name	a.	b.	c.	d.	e.	Impact Significance
Limosa limosa	Black-tailed Godwit	Primarily a coastal species. Usually found in sheltered bays, estuaries and lagoons with large intertidal mudflats and/or sandflats. Further inland, it can also be found on mudflats and in water less than 10 cm deep, around muddy lakes and swamps. Individuals have been recorded in wet fields and sewerage treatment works. There are no records within 10 km of the subject site and suitable habitat is scarce. As such, it is unlikely for the subject site to be critical to the species lifecycle	N/A	i. This species is associated with PCT 53. As such, up to 0.054 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering the absence of records from the search area, it is unlikely that the proposal will jeopardise the long-term survival of the species.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.
^^*Callocephalon fimbriatum*	Gang-gang Cockatoo	In spring and summer, generally found in tall mountain forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. In autumn and winter, the species often moves to lower altitudes in drier more open eucalypt forests and woodlands, particularly box-gum and box-ironbark assemblages, or in dry forest in coastal areas and often found in urban areas. May also occur in sub-alpine Snow Gum (*Eucalyptus pauciflora*) woodland and occasionally in temperate rainforests. Favours old growth forest and woodland attributes for nesting and roosting. Nests are located in hollows that are 7 cm in diameter or larger in eucalypts and 3 metres or more above the ground. Although present habitat may be suitable, it is scarce and there are no records within 10 km of the subject site.	N/A	i. This species is associated with PCTs 266 and 277. As such, up to 0.33 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering the absence of records from the search area, it is unlikely that the proposal will jeopardise the long-term survival of the species.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.

Species Name	Common Name	a.	b.	c.	d.	e.	Impact Significance
		As such, it is unlikely for the subject site to be critical to the species lifecycle.					
^*Calyptorhynchus lathami lathami*	South-eastern Glossy Black-Cockatoo	Inhabits open forest and woodlands of the coast and the Great Dividing Range where stands of sheoak occur. Feeds almost exclusively on the seeds of several species of she-oak (*Casuarina and Allocasuarina species*), shredding the cones with the massive bill. There are no records within 10 km of the subject site, no appropriate feed tree species within the subject site and no large hollows suitable for breeding in this species. As such, it is unlikely for the subject site to be critical to the species lifecycle.	N/A	i. This species is associated with PCTs 266. As such, up to 0.219 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering the absence of records from the search area, it is unlikely that the proposal will jeopardise the long-term survival of the species.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.
Glossopsitta pusilla	Little Lorikeet	Forages primarily in the canopy of open *Eucalyptus* forest and woodland, yet also finds food in *Angophora*, *Melaleuca* and other tree species. Riparian habitats are particularly used, due to higher soil fertility and hence greater productivity. Isolated flowering trees in open country, e.g. paddocks, roadside remnants and urban trees also help sustain viable populations of the species. Although the roadside remnants and scattered paddock trees may be suitable habitat, it would not be ideal, and there are no records within 10 km of the subject site. Further there are no hollow-bearing smooth-barked gums, which are the preferred breeding habitat for this species.	N/A	i. This species is associated with PCTs 266 and 277. As such, up to 0.33 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering the absence of records from the search area, it is unlikely that the proposal will jeopardise the long-term survival of the species.	No, AOBV not present within or close to the subject site.	Yes. See Appendix F	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.

Species Name	Common Name	a.	b.	c.	d.	e.	Impact Significance
		As such, it is unlikely for the subject site to be critical to the species lifecycle.					
Lathamus discolor	Swift Parrot	As breeding habitat is restricted to Tasmania and a much greater quantity of higher quality habitat exists in the study area, it is unlikely that the subject site is critical to the long-term survival of the species.	N/A	i. This species is associated with PCTs 266 and 277. As such, up to 0.33 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering that breeding habitat is restricted to Tasmania and the vegetation is already fragmented within the subject site, as well as there being no records within 10 km, it is unlikely that the proposal will jeopardise the long-term survival of the species.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.
^^*Neophema pulchella*	Turquoise Parrot	Lives on the edges of eucalypt woodland adjoining clearings, timbered ridges and creeks in farmland. Usually seen in pairs or small, possibly family, groups and have also been reported in flocks of up to thirty individuals. Prefers to feed in the shade of a tree and spends most of the day on the ground searching for the seeds or grasses and herbaceous plants, or browsing on vegetable matter. There are no records within 10 km of the subject site and vegetation is scarce. As such, it is unlikely for the subject site to be critical to the species lifecycle.	N/A	i. This species is associated with PCTs 266 and 277. As such, up to 0.33 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering the absence of records from the search area, it is unlikely that the proposal will jeopardise the long-term survival of the species.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.

Species Name	Common Name	a.	b.	c.	d.	e.	Impact Significance
^^*Polytelis swainsonii*	Superb Parrot	The Superb Parrot inhabits Box-Gum, Box-Cypress and River Red Gum forests and woodlands. The riparian zone of the Murrumbidgee catchment is part of the species core breeding area in southern NSW. As such there are twenty-eight records within the 10 km search area, the closest being ~ 870 km from the subject site. The majority of sightings were in 2020, with three in 2021, and one as recent as August 2022. Although 3 small tree hollows occur in the subject site, none of these were within the preferred species of Eucalypt for breeding. Further the site is not along the Murrumbidgee, which is the preferred breeding area for this species. Given that the proposal will be removing a relatively insignificant amount of vegetation (0.33 ha), it is unlikely that the proposal will place a local population at risk of extinction.	N/A	i. This species is associated with PCTs 266 and 277. As such, up to 0.33 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. As the proposal will only remove a relatively insignificant amount of associated vegetation (0.33 ha) and two hollow-bearing trees, it is unlikely that the scope of works will jeopardise the long-term survival of the species.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.
^^*Ninox connivens*	Barking Owl	The Barking Owl inhabits woodlands and open forests and can persist in areas of fragmented remnants and partly cleared farmland. Nesting, however, requires large hollows which were absent from the subject site. As such, it is unlikely that the proposal will threaten the lifecycle of the species.	N/A	i. This species is associated with PCTs 53, 266 and 277. As such, up to 0.385 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering the absence of large hollows (required for reproduction) from the subject site, the subject site is unlikely to be of importance to the long-term survival of this species.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.

Species Name	Common Name	a.	b.	c.	d.	e.	Impact Significance
^^*Tyto novaehollandiae*	Masked Owl	The Masked Owl inhabits dry eucalypt forests and woodlands. Although it nests within heavily forested areas, it often hunts along the edges of forests, such as roadsides and water margins. Roosting and breeding, however, occurs in large tree hollows and caves, which the subject site lacked. Furthermore, the species has not been observed within the 10 km search area. As such, it is unlikely that the subject site is of value to their lifecycle.	N/A	i. This species is associated with PCTs 53, 266 and 277. As such, up to 0.385 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering the absence of large hollows and caves, and of records from within 10 km, the subject site is unlikely to be of importance to the long-term survival of this species.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.
Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	Found in eucalypt woodlands (including Box-Gum Woodland) and dry open forest of the inland slopes and plains inland of the Great Dividing Range; mainly inhabits woodlands dominated by stringybarks or other rough-barked eucalypts, usually with an open grassy understorey, sometimes with one or more shrub species; also found in mallee and River Red Gum (*Eucalyptus camaldulensis*) Forest bordering wetlands with an open understorey of acacias, saltbush, lignum, cumbungi and grasses; usually not found in woodlands with a dense shrub layer; fallen timber is an important habitat component for foraging; also recorded, though less commonly, in similar woodland habitats on the coastal ranges and plains. There is one record within 10 km of the subject site at 4.6 km. Suitable habitat is scarce. As such, it is unlikely that the subject site is of value to their lifecycle.	N/A	i. This species is associated with PCTs 266 and 277. As such, up to 0.33 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering there is only one record from the search area and its proximity to the subject site, it is unlikely that the proposal will jeopardise the long-term survival of the species.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.

Species Name	Common Name	a.	b.	c.	d.	e.	Impact Significance
Chthonicola sagittata	Speckled Warbler	Inhabits a wide range of Eucalyptus dominated communities that have a grassy understorey, often on rocky ridges or in gullies. Typical habitat would include scattered native tussock grasses, a sparse shrub layer, some eucalypt regrowth and an open canopy. Large, relatively undisturbed remnants are required for the species to persist in an area. The diet consists of seeds and insects, with most foraging taking place on the ground around tussocks and under bushes and trees. Pairs are sedentary and occupy a breeding territory of about ten hectares, with a slightly larger home-range when not breeding. There are no records within the 10 km search area and considering the degraded nature of the site, suitable habitat within the subject site is scarce. As such, it is unlikely that the subject site is of value to their lifecycle.	N/A	i. This species is associated with PCTs 266 and 277. As such, up to 0.33 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering the absence of records from the search area, it is unlikely that the proposal will jeopardise the long-term survival of the species.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix** F	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.
^Anthochaera phrygia	Regent Honeyeater	Inhabits dry open forest and woodland, particularly Box-Ironbark woodland, and riparian forests of River Sheoak. Regent Honeyeaters inhabit woodlands that support a significantly high abundance and species richness of bird species. These woodlands have significantly large numbers of mature trees, high canopy cover and abundance of mistletoes. There is one record within 10 km of the subject site, it is at 9.7km. Suitable habitat is already fragmented and scare. As such, it is unlikely that the subject site is of value to their lifecycle.	N/A	i. This species is associated with PCTs 266 and 277. As such, up to 0.33 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering the limited records from the search area, it is unlikely that the proposal will jeopardise the long-term survival of the species.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix** F	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.

Species Name	Common Name	a.	b.	c.	d.	e.	Impact Significance
Epthianura albifrons	White-fronted Chat	The White-fronted Chat inhabits areas directly adjacent to wetlands, foraging amongst grasses. There are no records in the 10 km search area. Given that the proposal will be removing a relatively insignificant amount of associated habitat (0.054 ha), it is unlikely to place a local population at risk of extinction.	N/A	i. This species is associated with PCT 53. As such, up to 0.054 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering that associated wetland habitat was largely absent, and no nests were encountered, it is unlikely that the proposal will jeopardise the long-term survival of the species.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.
Grantiella picta	Painted Honeyeater	The species constructs its nests in the outer canopy of drooping eucalypts, she-oaks, and paperbark. There are no records within the 10 km search area and limited suitable habitat. It is therefore unlikely that the subject site would constitute critical habitat for the species.	N/A	i. This species is associated with PCTs 266 and 277. As such, up to 0.33 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering the small area of available habitat, it is unlikely that the proposal will jeopardise the long-term survival of the species.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.
Melithreptus gularis gularis	Black-chinned Honeyeater (eastern subspecies)	Occupies mostly upper levels of drier open forests or woodlands dominated by box and ironbark eucalypts, especially Mugga Ironbark (*Eucalyptus sideroxylon*), White Box (*E.*	N/A	i. This species is associated with PCTs 266 and 277. As such, up to 0.33 ha of associated habitat will be removed/modified by this proposal.	No, AOBV not present	Yes. See Appendix F	No significant impact will arise to the local viability of this

Species Name	Common Name	a.	b.	c.	d.	e.	Impact Significance
		albens), Inland Grey Box (*E. microcarpa*), Yellow Box (*E. melliodora*), Blakely's Red Gum (*E. blakelyi*) and Forest Red Gum (*E. tereticornis*). Also inhabits open forests of smooth-barked gums, stringybarks, ironbarks, river sheoaks (nesting habitat) and tea-trees. Feeding territories are large making the species locally nomadic. Recent studies have found that the Black-chinned Honeyeater tends to occur in the largest woodland patches in the landscape as birds forage over large home ranges of at least 5 hectares. Foraging tree species are present (*E. albens, E. melliodora* and *E. blakelyi*), however, not in large contiguous woodland patches and nesting habitat was not present. There are no records within the 10 km search area and limited suitable habitat. It is therefore unlikely that the subject site would constitute critical habitat for the species.		ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering the small area of available habitat, it is unlikely that the proposal will jeopardise the long-term survival of the species.	within or close to the subject site.		species or its habitat due to the undertaking of the proposal.
Pomatostomus temporalis temporalis	Grey-crowned Babbler (eastern subspecies)	A gregarious species, Grey-crowned Babblers inhabit open woodlands in large family groups. The subject site may represent suitable habitat for the species. To this, there is a single record from the search area (dating to 2020), at 4.6 km from the subject site. Family clans build and maintain several conspicuous dome-shaped nests year-round that are typically found in shrubs and sapling eucalypts. The field survey failed to detect any individual or group, nor any of their conspicuous nests. This suggests that, if used at all, the subject site would constitute foraging rather than roosting/breeding habitat.	N/A	i. This species is associated with PCTs 266 and 277. As such, up to 0.33 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering the absence of nests detected during the field survey, it is unlikely that the proposal will jeopardise the long-term survival of the species.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.

Species Name	Common Name	a.	b.	c.	d.	e.	Impact Significance
		Thus, the subject site does not represent critical habitat necessary for the maintenance of their lifecycle.					
Daphoenositta chrysoptera	Varied Sittella	The Varied Sittella inhabits eucalypt forests and woodlands. Although the subject site may reflect suitable habitat for the species, there are no records within the search area. The field survey also failed to encounter any of their nests (although they may have been overlooked). Given that the proposal will be removing a relatively insignificant amount of vegetation (0.33 ha), it is unlikely to place a local population at risk of extinction.	N/A	i. This species is associated with PCTs 266 and 277. As such, up to 0.33 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering the absence of records from the search area and of nests from the subject site, it is unlikely that the proposal will jeopardise the long-term survival of the species.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.
Artamus cyanopterus cyanopterus	Dusky Woodswallow	The Dusky Woodswallow inhabits dry, open eucalypt forests and woodlands, as well as grasslands. While the subject site may represent suitable habitat for the species, there are no records from the 10 km search area. Given that the proposal will be removing a relatively insignificant amount of vegetation (0.33 ha), it is unlikely to place a local population at risk of extinction.	N/A	i. This species is associated with PCTs 53, 266 and 277. As such, up to 0.385 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering the absence of records from the search area and the lack of nests at the subject site, it is unlikely that the proposal will jeopardise the long-term survival of the species.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.

Species Name	Common Name	a.	b.	c.	d.	e.	Impact Significance
Melanodryas cucullata cucullata	Hooded Robin (south-eastern form)	The Hooded Robin requires a structurally diverse habitat, featuring mature eucalypts, saplings, some small shrubs, and a ground layer of moderately tall native grasses. As such, the subject site did not satisfy the conditional criteria for the species, due to it being largely cleared. There are no records within the 10 km search area. Given that the proposal will be removing a relatively insignificant amount of vegetation (0.33 ha), it is unlikely to place a local population at risk of extinction.	N/A	i. This species is associated with PCTs 266 and 277. As such, up to 0.33 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering the absence of records from the search area and the small size of the impacted habitat, it is unlikely that the proposal will jeopardise the long-term survival of the species.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.
Petroica boodang	Scarlet Robin	The Scarlet Robin inhabits dry eucalypt forests and woodlands, typically with an understory that is open and grassy. As such, the subject site satisfied the conditional criteria for the species. There are, however, no records from within the 10 km search area. Given that the proposal will be removing a relatively insignificant amount of vegetation (0.33 ha) compared to that which will continue to exist in the study area, it is unlikely to place a local population at risk of extinction.	N/A	i. This species is associated with PCT 266 and 277. As such, up to 0.33 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering the absence of records from the search area and the small size of the impacted habitat, it is unlikely that the proposal will jeopardise the long-term survival of the species.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.
Petroica phoenicea	Flame Robin	Breeds in upland tall moist eucalypt forests and woodlands, often on ridges and slopes. Prefers clearings or areas with open	N/A	i. This species is associated with PCT 266 and 277. As such, up to 0.33 ha of	No, AOBV not	Yes. See **Appendix** F	No significant impact will arise to the local

Species Name	Common Name	a.	b.	c.	d.	e.	Impact Significance
		understoreys. The groundlayer of the breeding habitat is dominated by native grasses and the shrub layer may be either sparse or dense. Occasionally occurs in temperate rainforest, and also in herbfields, heathlands, shrublands and sedgelands at high altitudes. In winter, birds migrate to drier more open habitats in the lowlands (i.e. valleys below the ranges, and to the western slopes and plains). In winter lives in dry forests, open woodlands and in pastures and native grasslands, with or without scattered trees. Birds forage from low perches, from which they pounce onto small invertebrates which they take from the ground or off tree trunks, logs and other coarse woody debris. There are three records within 10 km of the subject site, the closest being 4.7 km. Given that the proposal will be removing a relatively insignificant amount of vegetation (0.33 ha) compared to that which will continue to exist in the study area, it is unlikely to place a local population at risk of extinction.		associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering the absence of records from the search area and the small size of the impacted habitat, it is unlikely that the proposal will jeopardise the long-term survival of the species.	present within or close to the subject site.		viability of this species or its habitat due to the undertaking of the proposal.
Stagonopleura guttata	Diamond Firetail	The Diamond Firetail inhabits eucalypt woodlands with a native grass dominated understorey. As such, the subject site satisfied the conditional criteria for the species. There are, however, no records from within the 10 km search area. The field survey also failed to encounter any of their nests (although they may have been overlooked). Given that the proposal will be removing a relatively insignificant amount of vegetation (0.33 ha) compared to that which will continue	N/A	i. This species is associated with PCTs 266 and 277. As such, up to 0.33 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering the absence of records	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.

Species Name	Common Name	a.	b.	c.	d.	e.	Impact Significance
		to exist in the study area, it is unlikely to place a local population at risk of extinction.		from the search area and the small size of the impacted habitat, it is unlikely that the proposal will jeopardise the long-term survival of the species.			
Dasyurus maculatus	Spotted-tailed Quoll	Recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline. Quolls use hollow-bearing trees, fallen logs, other animal burrows, small caves and rock outcrops as den sites. Mostly nocturnal, although will hunt during the day; spend most of the time on the ground, although also an excellent climber and will hunt possums and gliders in tree hollows and prey on roosting birds. Use communal 'latrine sites', often on flat rocks among boulder fields, rocky cliff-faces or along rocky stream beds or banks. There are no records within 10 km of the subject site, habitat is scarce as the subject site is largely cleared. Given that the proposal will be removing a relatively insignificant amount of vegetation (0.33 ha) compared to that which will continue to exist in the study area, it is unlikely to place a local population at risk of extinction.	N/A	i. This species is associated with PCTs 266 and 277. As such, up to 0.33 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering the absence of records from the search area and lack of suitable den sites, it is unlikely that the proposal will jeopardise the long-term survival of the species.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix** F	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.
Phascogale tapoatafa	Brush-tailed Phascogale	Prefer dry sclerophyll open forest with sparse groundcover of herbs, grasses, shrubs or leaf litter. Also inhabit heath, swamps, rainforest and wet sclerophyll forest. Agile climber foraging preferentially in rough barked trees of 25 cm DBH or greater.	N/A	i. This species is associated with PCTs 266 and 277. As such, up to 0.33 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further	No, AOBV not present within or close to the	Yes. See **Appendix** F	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.

Species Name	Common Name	a.	b.	c.	d.	e.	Impact Significance
		There are no records within 10 km of the subject site, habitat is scarce as the subject site is largely cleared. Given that the proposal will be removing a relatively insignificant amount of vegetation (0.33 ha) compared to that which will continue to exist in the study area, it is unlikely to place a local population at risk of extinction.		exacerbate fragmentation, albeit to a minor extent. iii. Considering the absence of records from the search area, it is unlikely that the proposal will jeopardise the long-term survival of the species.	subject site.		
Phascolarctos cinereus	Koala	Inhabit eucalypt woodlands and forests. Feed on the foliage of more than 70 eucalypt species and 30 non-eucalypt species, but in any one area will select preferred browse species. Highly selective browser, highly dependent on the presence of food tree species. As per the Western Slopes and Plains Koala Management Area, three Feed Tree Species (*Eucalyptus albens, Eucalyptus melliodora* and *Eucalyptus blakelyi)* were present at the subject site. There are no records within 10 km of the subject site, habitat is scarce as the subject site is largely cleared. As such, the proposal in its current form is unlikely to place a local population at risk of extinction.	N/A	i. This species is associated with PCTs 53, 266 and 277. As such, up to 0.385 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering the absence of records and relatively insignificant area of habitat to be removed (0.385 ha), it is unlikely that the proposal will jeopardise the long-term survival of the species.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.
Cercartetus nanus	Eastern Pygmy-possum	Found in a broad range of habitats from rainforest through sclerophyll (including Box-Ironbark) forest and woodland to heath, but in most areas woodlands and heath appear to be preferred, except in north-eastern NSW where they are most frequently encountered in rainforest. They may occupy small patches of vegetation in fragmented landscapes and although the species prefers habitat with a rich	N/A	i. This species is associated with PCT 277. As such, up to 0.112 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.

Species Name	Common Name	a.	b.	c.	d.	e.	Impact Significance
		shrub understorey, they are known to occur in grassy woodlands and the presence of Eucalypts alone is sufficient to support populations in low densities. Feeds largely on nectar and pollen collected from banksias, eucalypts and bottlebrushes; an important pollinator of heathland plants such as banksias; soft fruits are eaten when flowers are unavailable. Shelters in tree hollows, rotten stumps, holes in the ground, abandoned bird-nests, Ringtail Possum dreys or thickets of vegetation. Nest-building occurs primarily in tree hollows. Only three small hollows occur within the subject site. Considering that sparse eucalypt woodland adjacent to grassland can support low density populations of this species, the habitat within the subject site may be suitable, despite clearance and scarcity. However, there are no records within the 10 km search area. Indeed, there are only two records of this species for the entire Cabonne LGA, both from near to Goobang National Park. As such, the proposal in its current form is unlikely to place a local population at risk of extinction.		exacerbate fragmentation, albeit to a minor extent. iii. Considering the absence of records and relatively insignificant area of habitat to be removed (0.112 ha), it is unlikely that the proposal will jeopardise the long-term survival of the species.			
Petaurus norfolcensis	Squirrel Glider	Inhabits mature or old growth Box, Box-Ironbark woodlands and River Red Gum forest west of the Great Dividing Range and Blackbutt-Bloodwood forest with heath understorey in coastal areas. Prefers mixed species stands with a shrub or Acacia midstorey. Live in family groups of a single adult male one or more adult females and offspring. Require abundant tree hollows for	N/A	i. This species is associated with PCTs 266 and 277. As such, up to 0.33 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further	No, AOBV not present within or close to the subject site.	Yes. See **Appendix** F	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.

Species Name	Common Name	a.	b.	c.	d.	e.	Impact Significance
		refuge and nest sites. Only three small hollows were present. Diet varies seasonally and consists of *Acacia* gum, eucalypt sap, nectar, honeydew and manna, with invertebrates and pollen providing protein. There are two records within 10 km of the subject site, the closest being 6 km and the other nearly 10 km. As such, the proposal in its current form is unlikely to place a local population at risk of extinction.		exacerbate fragmentation, albeit to a minor extent. iii. Considering the limited records, their proximity, and relatively insignificant area of habitat to be removed (0.33 ha), it is unlikely that the proposal will jeopardise the long-term survival of the species.			
Petrogale penicillata	Brush-tailed Rock-wallaby	Occupy rocky escarpments, outcrops and cliffs with a preference for complex structures with fissures, caves and ledges, often facing north. Shelter or bask during the day in rock crevices, caves and overhangs and are most active at night when foraging. Browse on vegetation in and adjacent to rocky areas eating grasses and forbs as well as the foliage and fruits of shrubs and trees. Highly territorial and have strong site fidelity with an average home range size of about 15 ha. Males tend to have larger home ranges than females. There are no records within 10 km of the subject site. The site is lacking in required rock outcrops. As such, the proposal in its current form will not place a local population at risk of extinction.	N/A	i. This species is associated with PCTs 266 and 277. As such, up to 0.33 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering the absence of records, quality habitat and relatively insignificant area of associated habitat to be removed (0.33 ha), it is unlikely that the proposal will jeopardise the long-term survival of the species.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix** F	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.
Pteropus poliocephalus	Grey-headed Flying-fox	Occur in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops. Roosting camps are generally located within 20 km of a regular	N/A	i. This species is associated with PCT 266 and 277. As such, up to 0.33 ha of associated habitat will be removed/modified by this proposal.	No, AOBV not present within or	Yes. See **Appendix** F	No significant impact will arise to the local viability of this species or its

Species Name	Common Name	a.	b.	c.	d.	e.	Impact Significance
		food source and are commonly found in gullies, close to water, in vegetation with a dense canopy. Individual camps may have tens of thousands of animals and are used for mating, and for giving birth and rearing young. Site fidelity to camps is high; some camps have been used for over a century. Can travel up to 50 km from the camp to forage; commuting distances are more often <20 km. The nearest mapped camp is in Cowra, ~50 km south. Considering the large distance to the nearest mapped camp, and lack of records within 10 km of the subject site, the proposal will not place a local population at risk of extinction.		ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering the absence of records and relatively insignificant area of habitat to be removed (0.33 ha), it is unlikely that the proposal will jeopardise the long-term survival of the species.	close to the subject site.		habitat due to the undertaking of the proposal.
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	The Yellow-bellied Sheathtail-bat roosts in groups in small tree hollows. There are no records within 10 km of the subject site and only three hollows potentially suitable for roosting. Given that the proposal will be removing a relatively insignificant amount of vegetation (0.33 ha), relative to that which will continue to exist in the wider study and search areas, it is unlikely to place a local population at risk of extinction.	N/A	i. This species is associated with PCTs 53, 266 and 277. As such, up to 0.385 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering the absence of records and that a greater quantity of vegetation will continue to exist in the wider study and search areas, it is unlikely that the proposal will jeopardise the long-term survival of the species	No, AOBV not present within or close to the subject site.	Yes. See **Appendix** F	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.

Species Name	Common Name	a.	b.	c.	d.	e.	Impact Significance
Chalinolobus dwyeri	Large-eared Pied Bat	Roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin (*Petrochelidon ariel*), frequenting low to mid-elevation dry open forest and woodland close to these features. Females have been recorded raising young in maternity roosts (c. 20-40 females) from November through to January in roof domes in sandstone caves and overhangs. They remain loyal to the same cave over many years. Found in well-timbered areas containing gullies. There are no records within 10 km of the subject site and suitable habitat, such as caves for roosting, is absent. As such, the proposal in its current form will not place a local population at risk of extinction. The potential extent of impacts to this species can be further minimised by adhering to the mitigation advice outlined in **Section 7**.	N/A	i. This species is associated with PCT 277. As such, up to 0.112 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering the absence of records and that a greater quantity of vegetation will continue to exist in the wider study ad search areas, it is unlikely that the proposal will jeopardise the long-term survival of the species	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.
Chalinolobus picatus	Little Pied Bat	The Little Pied Bat roosts in caves, rock outcrops, tunnels, and buildings, as well as small tree hollows. There are no records within 10 km of the subject site and a lack of hollows for roosting. Given that the proposal will be removing a relatively insignificant amount of vegetation (0.054 ha), it is unlikely to place a local population at risk of extinction. The potential extent of impacts to this species can be further minimised by adhering to the mitigation advice outlined in **Section 7**.	N/A	i. This species is associated with PCT 53. As such, up to 0.054 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering that there are no records within the 10 km search area and that a greater quantity of vegetation will	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.

Species Name	Common Name	a.	b.	c.	d.	e.	Impact Significance
				continue to exist in the wider study and search area, it is unlikely that the proposal will jeopardise the long-term survival of the species			
Falsistrellus tasmaniensis	Eastern False Pipistrelle	Prefers moist habitats, with trees taller than 20 m. Generally roosts in eucalypt hollows, but has also been found under loose bark on trees or in buildings. There are no records within 10 km of the subject site and a lack of hollows for roosting. Given that the proposal will be removing a relatively insignificant amount of vegetation (0.33 ha), it is unlikely to place a local population at risk of extinction.	N/A	i. This species is associated with PCTs 266 and 277. As such, up to 0.33 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering that there are no records within the 10 km search area and that a greater quantity of vegetation will continue to exist in the wider study and search area, it is unlikely that the proposal will jeopardise the long-term survival of the species	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.
Nyctophilus corbeni	Corben's Long-eared Bat	Inhabits a variety of vegetation types, including mallee, bulloke *Allocasuarina leuhmanni* and box eucalypt dominated communities, but it is distinctly more common in box/ironbark/cypress-pine-vegetation that occurs in a north-south belt along the western slopes and plains of NSW and southern Queensland. Roosts in tree hollows, crevices, and under loose bark. There are no records within 10 km of the subject site and a lack of preferred tree species.	N/A	i. This species is associated with PCT 266. As such, up to 0.219 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering that there are no records within the search area and that a greater	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.

Species Name	Common Name	a.	b.	c.	d.	e.	Impact Significance
		As such, it is unlikely to place a local population at risk of extinction.		quantity of vegetation will continue to exist within the wider study and search areas, it is unlikely that the proposal will jeopardise the long-term survival of the species.			
Miniopterus orianae oceanensis	Large Bent-winged Bat	Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings and other man-made structures. Form discrete populations centred on a maternity cave that is used annually in spring and summer for the birth and rearing of young. Maternity caves have very specific temperature and humidity regimes. At other times of the year, populations disperse within about 300 km range of maternity caves. Breeding or roosting colonies can number from 100 to 150,000 individuals. Hunt in forested areas, catching moths and other flying insects above the treetops. There are no records within 10 km of the subject site and roosting caves are absent. As such, it is unlikely to place a local population at risk of extinction.	N/A	i. This species is associated with PCT 266 and 277. As such, up to 0.33 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering that there are no records within the search area it is unlikely that the proposal will jeopardise the long-term survival of the species.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.
Synemon plana	Golden Sun Moth	Occurs in Natural Temperate Grasslands and grassy Box-Gum Woodlands in which groundlayer is dominated by wallaby grasses *Austrodanthonia* spp. Grasslands dominated by wallaby grasses are typically low and open - the bare ground between the tussocks is thought to be an important microhabitat feature for the Golden Sun Moth, as it is typically these areas on which the females are observed displaying to attract males. Habitat may contain several wallaby grass species, which	N/A	i. This species is associated with PCT 266 and 277. As such, up to 0.33 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.

Species Name	Common Name	a.	b.	c.	d.	e.	Impact Significance
		are typically associated with other grasses particularly spear-grasses *Austrostipa* spp. or Kangaroo Grass *Themeda australis.* Wallaby grass (*R. bipartitum*) is present in the subject site with a balance of bare ground and tussocks in places, as well as *Austrostipa scabra* having been recorded. However, there are no records within 10 km of the subject site and the majority of grass vegetation is cropped or weedy, adjacent to fragmented woodland, therefore there is a lack of suitable habitat. As such, it is unlikely to place a local population at risk of extinction.		iii. Considering that the appropriate vegetation composition was not present, and that there are no records from within the search area, it is unlikely that the proposal will jeopardise the long-term survival of the species.			
Keyacris scurra	Key's Matchstick Grasshopper	Typically found in native grasslands and grassy woodlands but it has also been recorded in other vegetation associations usually containing a native grass understory (especially kangaroo grass *Themeda triandra*) and known food plants (particularly Asteraceae). Opportunistic sightings (as opposed to records from systematic surveys) have been reported in a wide range of vegetation types in south-east NSW, including wet sclerophyll forest, montane low forest, dry woodlands, heathland, and montane grasslands. In some reported locations there is an absence of *Themeda* and very few or no Asteraceae. There are no records within 10 km of the subject site and most of the grass vegetation is cropped, adjacent to fragmented woodland, therefore there is a lack of suitable habitat. As such, it is unlikely to place a local population at risk of extinction.	N/A	i. This species is associated with PCT 266 and 277. As such, up to 0.33 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering that the appropriate vegetation composition was not present, and that there are no records from within the search area, it is unlikely that the proposal will jeopardise the long-term survival of the species.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.

Species Name	Common Name	a.	b.	c.	d.	e.	Impact Significance
Ammobium craspedioides	Yass Daisy	Found in moist or dry forest communities, Box-Gum Woodland and secondary grassland derived from clearing of these communities. Grows in association with a large range of eucalypts (*Eucalyptus blakelyi, E. bridgesiana, E. dives, E. goniocalyx, E. macrorhyncha, E. mannifera, E. melliodora, E. polyanthemos, E. rubida*). Apparently unaffected by light grazing, as populations persist in some grazed sites. Found in a number of TSRs, Crown reserves, cemeteries and roadside reserves within the region. There are associated vegetation communities and species present, however, there are no records within 10 km of the subject site as the species distribution is restricted to localities in the Yass District and south of Wagga Wagga and north of Bigga. As such, it is unlikely to place a local population at risk of extinction.	N/A	i. This species is associated with PCT 266 and 277. As such, up to 0.33 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering the absence of records due to highly restricted distribution, it is unlikely that the proposal will jeopardise the long-term survival of the species.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.
Cullen parvum	Small Scurf-pea	In known populations in Victoria and NSW, plants are found in grassland, River Red Gum (*Eucalyptus camaldulensis*) Woodland or Box-Gum Woodland, sometimes on grazed land and usually on table drains or adjacent to drainage lines or watercourses, in areas with rainfall of between 450 and 700 mm. There are no records within 10 km of the subject site and no associated vegetation communities present. Suitable habitat is fragmented and only two minor non-perennial watercourses exist within the site. As such, it is unlikely to place a local population at risk of extinction.	N/A	i. This species is associated with PCT 277. As such, up to 0.33 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering the absence of records and the unsuitability of the subject site for individuals, it is unlikely that the proposal	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.

Species Name	Common Name	a.	b.	c.	d.	e.	Impact Significance
				will jeopardise the long-term survival of the species.			
Swainsona recta	Small Purple-pea	Before European settlement Small Purple-pea occurred in the grassy understorey of woodlands and open-forests dominated by Blakely's Red Gum *Eucalyptus blakelyi*, Yellow Box *E. melliodora*, Candlebark Gum *E. rubida* and Long-leaf Box *E. goniocalyx*. Grows in association with understorey dominants that include Kangaroo Grass *Themeda australis*, poa tussocks *Poa* spp. and spear-grasses *Austrostipa* spp. There are no records within 10 km of the subject sites and the associated habitat is fragmented. The required quality understorey is not present. As such, it is unlikely to place a local population at risk of extinction.	N/A	i. This species is associated with PCT 266 and 277. As such, up to 0.33 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering the absence of records and the unsuitability of the subject site for individuals, it is unlikely that the proposal will jeopardise the long-term survival of the species.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.
Swainsona sericea	Silky Swainson-pea	As the Silky Swainson-pea grows in the understorey of Box-Gum Woodlands, the subject site represents suitable canopy habitat for the species. There are, however, no records from within the 10 km search area and habitat is fragmented. The required quality understorey is not present. It is unlikely that the subject site represents critical habitat for the species.	N/A	i. This species is associated with PCT 266 and 277. As such, up to 0.33 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering the absence of records and the unsuitability of the subject site for individuals, it is unlikely that the proposal will jeopardise the long-term survival of the species.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.

Species Name	Common Name	a.	b.	c.	d.	e.	Impact Significance
Acacia ausfeldii	Ausfeld's Wattle	Found to the east of Dubbo in the Mudgee-Ulan-Gulgong area of the NSW South Western Slopes bioregion, with some records in the adjoining Brigalow Belt South, South Eastern Highlands and the Sydney Basin bioregions. Populations are recorded from Yarrobil National Park, Goodiman State Conservation Area and there is a 1963 record from Munghorn Gap Nature Reserve. A large population is also known from Tuckland State Forest to the northwest of Gulgong. Associated species include *Eucalyptus albens, E. blakelyi* and *Callitris* spp., with an understorey dominated by *Cassinia* spp. and grasses. Suitable canopy tree species are present in the associated vegetation communities (*E. albens* and *E. blakelyi*) within the subject site, however *Cassina* spp. were not detected in the understorey, nor were any similar species of *Acacia*. There are no records from within the 10 km search area and habitat is fragmented. It is unlikely that the subject site represents critical habitat for the species.	N/A	i. This species is associated with PCT 266 and 277. As such, up to 0.33 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering the absence of records in the search area and limited understorey habitat within the subject site, it is unlikely that the proposal will jeopardise the long-term survival of the species.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.
^^*Pilularia novae-hollandiae*	Austral Pillwort	The Austral Pillwort grows in shallow swamps and waterways, often among grasses and sedges. Sedge habitat was present within PCT 53 at the edge of the extraction area dams, however, there are no suitable waterways present, and the species was not detected in the field survey There are no records from within the 10 km search area.	N/A	i. This species is associated with PCT 53. As such, up to 0.054 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.

Species Name	Common Name	a.	b.	c.	d.	e.	Impact Significance
		As such, it is unlikely that the subject site is critical habitat for the species.		iii. Considering that there are no records within the search area and the relatively insignificant area of PCT (0.054) that will be affected, it is unlikely that the proposal will jeopardise the long-term survival of the species.			
^*Prasophyllum petilum*	Tarengo Leek Orchid	Grows in open sites within Natural Temperate Grassland at the Boorowa and Delegate sites. Also grows in grassy woodland in association with River Tussock *Poa labillardieri*, Black Gum *Eucalyptus aggregata* and tea-trees *Leptospermum* spp. near Queanbeyan and within the grassy groundlayer dominated by Kangaroo Grass under Box-Gum Woodland at Ilford (and Hall, ACT). Apparently highly susceptible to grazing, being retained only at little-grazed travelling stock reserves (Boorowa & Delegate) and in cemeteries (near Queanbeyan, Ilford and Hall). Population density at the Boorowa site is higher in the open grassland dominated by wallaby grasses *Austrodanthonia* spp., compared to that within the denser stands of Kangaroo Grass *Themeda australis*. The associated canopy tree species were not present within the subject site. Common understorey species were also lacking, aside from Wallaby Grass (*R. bipartitum*). There are no records within 10 km of the subject site and the habitat is degraded and generally lacking in associated species. It is unlikely that the subject site represents critical habitat for the species.	N/A	i. This species is associated with PCT 277. As such, up to 0.112 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering the absence of records and relatively insignificant area of habitat to be removed (0.112 ha), it is unlikely that the proposal will jeopardise the long-term survival of the species.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.

Species Name	Common Name	a.	b.	c.	d.	e.	Impact Significance
Prasophyllum sp. Wybong		A perennial orchid, appearing as a single leaf over winter and spring. Flowers in spring and dies back to a dormant tuber over summer and autumn. Known to occur in open eucalypt woodland and grassland. There are no records within 10 km of the subject site and the associated habitat is degraded. It is unlikely that the subject site represents critical habitat for the species.	N/A	i. This species is associated with PCT 266 and 277. As such, up to 0.33 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering the absence of records and relatively insignificant area of habitat to be removed (0.112 ha), it is unlikely that the proposal will jeopardise the long-term survival of the species.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.
Euphrasia arguta		Historic records of the species noted the following habitats: 'in the open forest country around Bathurst in sub humid places', 'on the grassy country near Bathurst', and 'in meadows near rivers'. Plants from the Nundle area have been reported from eucalypt forest with a mixed grass and shrub understorey; here, plants were most dense in an open disturbed area and along the roadside, indicating the species had regenerated following disturbance. The number of plants at a given site may vary over time depending on the season and disturbance history. As with other species of *Euphrasia*, this species is semi-parasitic and attaches to the roots of other associated plants. There are no records within 10 km of the subject site and the associated habitat is degraded.	N/A	i. This species is associated with PCT 266 and 277. As such, up to 0.33 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering the absence of records and relatively insignificant area of habitat to be removed (0.112 ha), it is unlikely that the proposal will jeopardise the long-term survival of the species.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.

Species Name	Common Name	a.	b.	c.	d.	e.	Impact Significance
		It is unlikely that the subject site represents critical habitat for the species.					
Grevillea wilkinsonii	Tumut Grevillea	The associated native vegetation in the Goobarragandra sites are typically remnant riverine shrub communities adjacent to open-forest, with the most common tree species being Blakely's Red Gum (*Eucalyptus blakelyi*), Apple Box (*E. bridgesiana*), Yellow Box (*E. melliodora*), and Red Stringybark (*E. macrorhyncha*) and with Kurrajongs (*Brachychiton populneus*) sometimes growing in nearby paddocks. The population at Gundagai is growing on the upper slope of a steep hill on Serpentinite rock. The associated native vegetation at this site is a grassy White Box (*Eucalyptus albens*) woodland with scattered shrubs of Pink Wedding Bush (*Ricinocarpos bowmanii*) and Hop Bush (*Dodonaea viscosa*). The groundcover is dominated by Kangaroo Grass (*Themeda triandra*) and Snow Grass (*Poa sieberiana*). Associated canopy tree species were present within the subject site, *E. blakeyli* and *E. melliodora*. However, associated understorey species were not detected. There are no records within 10 km of the subject site and the associated habitat is degraded. The natural distribution of this species is highly restricted, two occurrences are recorded, one along the Goobarragandra River (20 km east of Tumut) and one at a dual property boundary at Gundagai. Both are at least 200 km from the subject site. It is unlikely that the subject site represents critical habitat for the species.	N/A	i. This species is associated with PCT 266 and 277. As such, up to 0.33 ha of associated habitat will be removed/modified by this proposal. ii. The study area is already very fragmented. The proposal will further exacerbate fragmentation, albeit to a minor extent. iii. Considering the absence of records and the unsuitability of the subject site for individuals, it is unlikely that the proposal will jeopardise the long-term survival of the species.	No, AOBV not present within or close to the subject site.	Yes. See **Appendix F**	No significant impact will arise to the local viability of this species or its habitat due to the undertaking of the proposal.

BC Act Test of Significance for Threatened Ecological Communities

Community	a.	b.	c.	d.	e.	Impact Significance
White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland, in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes South East Corner and Riverina Bioregions.	N/A	i. The proposal in its current form would remove up to 0.33 ha of this CEEC from the subject site. Occurring as isolated, remnant patches of White Box grassy woodland (total number of habitat trees = 2), this CEEC was highly degraded and was not demonstrating recent recruitment. Although the CEECs broader area of occupancy was not thoroughly investigated, it was incidentally observed to occur in road corridors within the study area. These areas would not experience any edge effects (e.g., weed invasions or changes in water) linked to the proposal. Therefore, while the removal of this pocket of CEEC from the subject site is undesirable, the removal of 0.33 ha will not significantly reduce its area of occupancy. ii. The proposal may remove up to 0.33 ha of this CEEC from the subject site. However, as above, its continued presence in the surrounding road corridors will ensure that its local occurrence will not be jeopardised with extinction.	i. The proposal will impact up to 0.33 ha of this CEEC. While the total area of occupancy within the study area is not known, the community was observed to extend well outside the impact footprint. As such, the proposal will not significantly reduce the occurrence of this TEC. ii. The proposal would eliminate isolated, small pockets of this CEEC. Given the more substantial examples nearby, which displayed connectivity, the impact of this loss will not be significant. iii. Due to its small patch size and poor understorey species assemblage, this example of the CEEC is unlikely to be important to the long-term survival of the CEEC in the area. Regardless, if possible, the proponent should aim to avoid impacts to this CEEC.	No. AOBV not present	Yes, the following KTPs would be exacerbated by the proposal: • Anthropogenic Climate Change • Clearing of native vegetation • Competition from feral honeybees, *Apis mellifera* • Invasion of native plant communities by exotic perennial grasses • Loss of Hollow-bearing Trees Additionally, the following KTPs have potential to be exacerbated by the proposal: • Bushrock removal – **Unlikely** • Competition and grazing by the feral European Rabbit, *Oryctolagus cuniculus* (L.) – **Unlikely** • Importation of Red Imported Fire Ants *Solenopsis invicta* Buren 1972 – **Unlikely** • Infection by *Psittacine Circoviral* (beak and feather) Disease affecting endangered psittacine species and populations – **Likely** • Infection of frogs by amphibian chytrid causing the disease chytridiomycosis – **Unlikely** • Infection of native plants by *Phytophthora cinnamomi* – **Unlikely** • Introduction of the Large Earth Bumblebee *Bombus terrestris* (L.) – **Unlikely** • Invasion and establishment of exotic vines and scramblers – **Unlikely** • Invasion and establishment of Scotch Broom (*Cytisus scoparius*) – **Unlikely** • Invasion and establishment of the Cane Toad (*Bufo marinus*) - **Unlikely**	No significant impact

Community	a.	b.	c.	d.	e.	Impact Significance
					• Invasion of native plant communities by African *Olive Olea europaea* subsp. *cuspidata* (Wall. ex G. Don) Cif.- **Unlikely** • Invasion of native plant communities by *Chrysanthemoides monilifera* – **Unlikely** • Invasion of the Yellow Crazy Ant, *Anoplolepis gracilipes* (Fr. Smith) into NSW – **Unlikely** • Invasion, establishment and spread of Lantana (*Lantana camara* L. sens. Lat) – **Unlikely** • Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants - **Unlikely** • Removal of dead wood and dead trees - **Unlikely**	

APPENDIX E – MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE

The EPBC Act protects nationally and internationally important flora, fauna, ecological communities and heritage places, which are defined in the EPBC Act as matters of national environmental significance. The EPBC Act policy Matters of National Environmental Significance: Significant Impact Guidelines 1.1 (DoE, 2013) forms the basis of determining if impact to protected matters is significant.

The EPBC Act Protected Matters search has identified four wetlands of international importance, four TECs, 31 threatened species and 10 migratory species that could possibly occur in the study area. Assessment of the subject site determined that no Ramsar wetland would be impacted by the development.

The following tables give an overview of the assessments of these threatened entities and shows that the Proposed activity:

1. Is not likely to have a significant impact on a matter of national environmental significance. The matters of national environmental significance are:
    i. World heritage properties.
    ii. National heritage places.
    iii. Wetlands of international importance.
    iv. Threatened species and ecological communities.
    v. Migratory species.
    vi. Commonwealth marine areas.
    vii. The Great Barrier Reef Marine Park. And;
    viii. Nuclear actions (including uranium mines).
    ix. A water resource, in relation to coal seam gas development and large coal mining development.
2. Is not likely to have a significant impact on the environment in general (for actions by Commonwealth agencies or actions on Commonwealth land) or the environment on Commonwealth land (for actions outside Commonwealth land).

Notes: Important Population as determined by the Environment Protection and Biodiversity Conservation Act 1999, is one that for a vulnerable species:

a) is likely to be key source populations either for breeding or dispersal

b) is likely to be necessary for maintaining genetic diversity

c) is at or near the limit of the species range.

A ‘significant impact’ is an impact which is important, notable, or of consequence, having regard to its context or intensity (DoE, 2013).

Wetlands of International Importance

Name	Proximity	Assessment of significance required (Yes / No)
Banrock station wetland complex	700 - 800 km upstream	No, the proposal does not occur close to the wetland.
Hattah-Kulkyne Lakes	500 - 600 km upstream	No, the proposal does not occur close to the wetland.
Riverland	700 - 800 km upstream	No, the proposal does not occur close to the wetland.
The Coorong, and Lakes Alexandrina and Albert Wetland	800 - 900 km upstream	No, the proposal does not occur close to the wetland.

EPBC Act-Listed Threatened Ecological Communities

Name	Status	Assessment of significance required (Yes / No)
Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregion	Endangered	No, this community does not occur within the subject site.
Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	Endangered	No, this community does not occur within the subject site.
Poplar Box Grassy Woodland on Alluvial Plains	Endangered	No, this community does not occur within the subject site.
Weeping Myall Woodlands	Endangered	No, this community does not occur within the subject site.
White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	No, the community in this form does not occur within the subject site.

EPBC Act-listed Critically Endangered and Endangered Species

Booroolong Frog (*Litoria booroolongensis*)	
Significant Impact Guideline	**Assessment**
Lead to a long-term decrease in the size of a population	The proposal will impact up to 0.112 ha of potential habitat for the Booroolong Frog. This is not a priority management area for the species. It is at the edge of the species known distribution, if a population were to be present, it would be significant. The species inhabit permanent streams with some fringing vegetation cover such as ferns, sedges or grasses; adults occur on or near cobble banks and other rock structures within stream margins; and they shelter under rocks or amongst vegetation near the ground on the stream edge. There are no permanent watercourses within the subject site and any aquatic habitat is degraded. There are no records of the species from within the 10 km search area. The area of associated PCT 277 to be removed/modified (0.112 ha) is relatively insignificant. Therefore, it is unlikely for proposal to induce a long-term decline in the size of a population.
Reduce the area of occupancy of the species	As indicated above, no population appears to be present. As such, the proposal should not reduce the species area of occupancy.
Fragment an existing population into two or more populations	Although the proposal would widen existing fragmentation, it would not significantly exacerbate issues concerning it. Furthermore, no new fragments would be produced.
Adversely affect habitat critical to the survival of a species	Permanent watercourses and quality fringing aquatic vegetation were absent were absent. The lack of records suggests that the site holds no special value to the species.
Disrupt the breeding cycle of a population	It is unlikely that a breeding population of Booroolong Frogs are present, see above.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposal will remove/modify up 0.112 ha of potential habitat for the species. This removal/modification of available habitat is unlikely to cause the species to decline.
Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species habitat	There is the potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Introduce disease that may cause the species to decline	Machinery used on site can potentially act as a transport for biosecurity risks. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Interfere with the recovery of the species.	Modification of steam channels and loss of cobble banks; loss of native streamside vegetation; damage to stream margins by stock; predation of eggs and tadpoles by introduced fish; weed invasion of streamside habitats, particularly by willows; disease - chytrid fungus; changes to water quality through sedimentation and use of herbicides or pesticides near streams; stream drying caused by severe drought or water extraction/impoundment; large amounts of sedimentation due to wild horse activity, causing filling of breeding crevices; high density of fossicking and in particular the illegal use of powered sluices and deliberate damming of stretches to facilitate use; feral pig activities that damage habitat and erode stream margins are the main threats to this species. The proposal will not exacerbate these threats further. Therefore, the proposal is unlikely to interfere with species recovery.
Conclusion	**No significant impact**

Australasian Bittern (*Botaurus piciloptilus*)	
Significant Impact Guideline	**Assessment**
Lead to a long-term decrease in the size of a population	The proposal will impact up to 0.054 ha of potential habitat for the Australasian Bittern. This is not a priority management area for the species. It is at the edge of the species known distribution, if a population were to be present, it would be significant. Australian Bitterns inhabit permanent freshwater bodies flanked by tall dense vegetation, which the subject site contained but it was degraded, and unlikely to be occupied by this species. There are no records of the species from within the 10 km search area and the proposal would remove/modify a relatively insignificant area of the associated PCT 53 (0.054 ha). Therefore, it is unlikely for proposal to induce a long-term decline in the size of a population.
Reduce the area of occupancy of the species	As indicated above, although the subject site may be conducive to habitation, no population appears to be present. As such, the proposal should not reduce the species area of occupancy.
Fragment an existing population into two or more populations	Although the proposal would widen existing fragmentation, it would not significantly exacerbate issues concerning it. Furthermore, no new fragments would be produced.
Adversely affect habitat critical to the survival of a species	*Typha* and *Eleocharis* species, which are typically associated with breeding habitat, were absent. The lack of records suggests that the site holds no special value to the species.
Disrupt the breeding cycle of a population	It is unlikely that a breeding population of Australasian Bitterns are present, see above.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposal will remove/modify up 0.054 ha of potential habitat for the species. This removal/modification of available habitat is unlikely to cause the species to decline.
Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species habitat	There is the potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Introduce disease that may cause the species to decline	Machinery used on site can potentially act as a transport for biosecurity risks. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Interfere with the recovery of the species.	Drainage of wetlands and alterations of natural flows; reduced water quality; predation by introduced species; use of herbicides, pesticides, and other chemicals; inappropriate grazing and burning of wetland areas; and changes in rainfall from anthropogenic climate change are the main threats to this species. The proposal will not exacerbate these threats further. Therefore, the proposal is unlikely to interfere with the recovery of the species within the region.
Conclusion	**No significant impact**

Australian Painted Snipe (*Rostratula australis*)	
Significant Impact Guideline	**Assessment**
Lead to a long-term decrease in the size of a population	The proposal will impact up to 0.054 ha of potential habitat for the Australian Painted Snipe. This is not a priority management area for the species. It is at the edge of the species known distribution, if a population were to be present, it would be significant. The species inhabits swamps, dams, and marshlands, sheltering/nesting underneath tall vegetation (e.g., grasses, tussocks, and reeds). While the water bodies within the subject site may be broadly suitable for the species, there are no records from the 10 km search area. The proposal will impact a relatively insignificant area of associated PCT 53 (0.054 ha). As such, it is unlikely for the proposal to induce a long-term decline in the size of a population.
Reduce the area of occupancy of the species	As indicated above, no population appears to be present. Therefore, the proposal should not reduce the species area of occupancy.
Fragment an existing population into two or more populations	Although the proposal would widen existing fragmentation, it would not significantly exacerbate issues concerning it. Furthermore, no new fragments would be produced.
Adversely affect habitat critical to the survival of a species	The lack of records suggests that the site holds no special value to the species.
Disrupt the breeding cycle of a population	It is unlikely that a breeding population of Australian Painted Snipes are present at the subject site, see above.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposal will remove/modify up 0.054 ha of potential habitat for the species. This removal/modification of available habitat is unlikely to cause the species to decline.
Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species habitat	There is the potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Introduce disease that may cause the species to decline	Machinery used on site can potentially act as a transport for biosecurity risks. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Interfere with the recovery of the species.	Drainage of wetlands and alterations of natural flows; reduced water quality; predation by introduced species; use of herbicides, pesticides, and other chemicals; inappropriate grazing and burning of wetland areas; and exotic weed incursions are the main threats to this species. The proposal will not exacerbate these threats further. Therefore, the proposal is unlikely to interfere with the recovery of the species within the region.
Conclusion	**No significant impact**

Curlew Sandpiper (*Calidris ferruginea*)	
Significant Impact Guideline	**Assessment**
Lead to a long-term decrease in the size of a population	The proposal will impact up to 0.054 ha of potential habitat for the Curlew Sandpiper. This is not a priority management area for the species. It is at the edge of the species distribution, if a population were to be present, it would be significant. The species generally occupies littoral and estuarine habitats, and in NSW is mainly found in intertidal mudflats of sheltered coasts. It also occurs in non-tidal swamps, lakes and lagoons on the coast and sometimes inland. It forages in or at the edge of shallow water, occasionally on exposed algal mats or waterweed, or on banks of beach-cast seagrass or seaweed. It roosts on shingle, shell or sand beaches; spits or islets on the coast or in wetlands; or sometimes in salt marsh, among beach-cast seaweed, or on rocky shores. While the subject site may be marginally suitable for the species, there are no records from the 10 km search area. The proposal impacts a relatively insignificant area of associated PCT 53 (0.054 ha). As such, it is unlikely for the proposal to induce a long-term decline in the size of a population.
Reduce the area of occupancy of the species	As indicated above, no population appears to be present. Therefore, the proposal should not reduce the species area of occupancy.
Fragment an existing population into two or more populations	Although the proposal would widen existing fragmentation, it would not significantly exacerbate issues concerning it. Furthermore, no new fragments would be produced.
Adversely affect habitat critical to the survival of a species	The lack of records suggests that the site holds no special value to the species.
Disrupt the breeding cycle of a population	It is unlikely that a breeding population of Curlew Sandpipers are present at the subject site, see above.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposal will remove/modify up 0.054 ha of potential habitat for the species. This removal/modification of available habitat is unlikely to cause the species to decline.
Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species habitat	There is the potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Introduce disease that may cause the species to decline	Machinery used on site can potentially act as a transport for biosecurity risks. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Interfere with the recovery of the species.	Development pressure and human disturbance in roosting foraging sites in coastal areas; tidal feeding grounds abroad are affected by land reclamation for agriculture and industry; recreational human disturbance at roosting and foraging sites; flow reduction in the Murray-Darling Basin due to habitat degradation; climate change; mangrove incursion; groundwater pollution; and weed invasion, are the main threats to this species. The proposal will not exacerbate these threats further. Therefore, the proposal is unlikely to interfere with the recovery of the species within the region.
Conclusion	**No significant impact**

Gang-gang Cockatoo (*Callocephalon fimbriatum*)	
Significant Impact Guideline	**Assessment**
Lead to a long-term decrease in the size of a population	The proposal will impact up to 0.33 ha of potential habitat for the Gang-gang Cockatoo. This is not a priority management area for the species. In spring and summer, this species is generally found in tall mountain forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. In autumn and winter, the species often moves to lower altitudes in drier more open eucalypt forests and woodlands, particularly box-gum and box-ironbark assemblages, or in dry forest in coastal areas and often found in urban areas. Favours old growth forest and woodland attributes for nesting and roosting. Nests are located in hollows that are 7 cm in diameter or larger in eucalypts and 3 metres or more above the ground. There are no records from the search area. The proposal will impact a relatively insignificant area of PCTs 266 and 277. As the subject site contained only two hollow-bearing trees, and fragmented habitat, it is unlikely to be attractive to this species for nesting or foraging. Therefore, it is unlikely that the proposal would induce a long-term decline in this species.
Reduce the area of occupancy of the species	As indicated above, the absence of records and the lack of ideal woodland habitat within the subject site, the proposal would not reduce the species' area of occupancy.
Fragment an existing population into two or more populations	Although the proposal would widen existing fragmentation, it would not significantly exacerbate issues concerning it. Furthermore, no new fragments would be produced.
Adversely affect habitat critical to the survival of a species	Given the absence of records and the lack of ideal woodland habitat within the subject site it is unlikely habitat critical for the species.
Disrupt the breeding cycle of a population	No breeding population is present, see above.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposal will remove/modify up 0.33 ha of potential habitat for the species. This removal/modification of available habitat is unlikely to cause the species to decline.
Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species habitat	There is the potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Introduce disease that may cause the species to decline	Machinery used on site can potentially act as a transport for biosecurity risks. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Interfere with the recovery of the species.	Loss of key breeding and foraging habitat from intensive wildfire events and inappropriate hazard reduction burns; loss and degradation of breeding and foraging habitat from rural and urban development; loss of breeding and foraging habitat from forestry management practices; climate change impacts to habitat suitability and distribution; Psittacine circovirus disease; infestation of habitat by invasive weeds.; and aggressive exclusion from forest and woodland habitat by over abundant Noisy Miners are the main threats to this species. The proposal will not exacerbate these threats further. Therefore, the proposal is unlikely to interfere with species' recovery within the region.
Conclusion	**No significant impact**

Swift Parrot (*Lathamus discolor*)	
Significant Impact Guideline	**Assessment**
Lead to a long-term decrease in the size of a population	The proposal will impact up to 0.33 ha of potential habitat for the Swift Parrot. This is not a priority management area for the species. Swift Parrots undertake seasonal migrations, breeding in Tasmania in the spring and summer before migrating in the autumn and winter to the Australian mainland. The proposal will remove/modify a relatively insignificant area of associated PCTs 266 and 277 (0.33 ha). Given the absence of records from the 10 km search area, it is unlikely that the proposal would induce a decline in the population of the species.
Reduce the area of occupancy of the species	As indicated above, it is unlikely that the removal of 0.33 ha of potential habitat will significantly reduce the species area of occupancy.
Fragment an existing population into two or more populations	As indicated above, it is unlikely that a population of Swift Parrots are present. As such, the proposal should not reduce the species area of occupancy.
Adversely affect habitat critical to the survival of a species	As indicated above, it is unlikely that the subject site represents habitat critical to the survival of the species.
Disrupt the breeding cycle of a population	As this species breeds exclusively in Tasmania, breeding will not be interrupted by this proposal.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposal will remove/modify up 0.33 ha of potential habitat for the species. This removal/modification of available habitat is unlikely to cause the species to decline.
Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species habitat	There is the potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Introduce disease that may cause the species to decline	Machinery used on site can potentially act as a transport for biosecurity risks. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Interfere with the recovery of the species.	Loss of key breeding and foraging habitats (through intensive wildlife events and to rural and urban development); impacts of anthropogenic climate change; Psittacine circovirus disease; predation by introduced species; illegal capture for use within the wildlife trade; and infestation of habitat by weeds are the main threats to this species. The proposal alone is unlikely to directly interfere with the recovery of the species within the region.
Conclusion	**No significant impact**

Regent Honeyeater (*Anthochaera phrygia*)	
Significant Impact Guideline	**Assessment**
Lead to a long-term decrease in the size of a population	The proposal will impact up to 0.33 ha of potential habitat for the Regent Honeyeater. This is not a priority management area for the species. The species inhabits dry open forest and woodland, particularly Box-Ironbark woodland, and riparian forests of River Sheoak. Regent Honeyeaters inhabit woodlands that support a significantly high abundance and species richness of bird species. These woodlands have significantly large numbers of mature trees, high canopy cover and abundance of mistletoes. The species breeds between July and January in Box-Ironbark and other temperate woodlands and riparian gallery forest dominated by River Sheoak. Regent Honeyeaters usually nest in horizontal branches or forks in tall mature eucalypts and Sheoaks. Also nest in mistletoe haustoria. There is one record within the 10 km search area at 9.7 km. The proposal will remove/modify a relatively insignificant area of associated PCTs 266 and 277 (0.33 ha) that does not fit the above criteria for appropriate woodland. It is unlikely that the proposal would induce a decline in the population of the species.
Reduce the area of occupancy of the species	As indicated above, it is unlikely that the removal of 0.33 ha of potential habitat will significantly reduce the species area of occupancy.
Fragment an existing population into two or more populations	As indicated above, it is unlikely that a population of Regent Honeyeaters are present in significant numbers. As such, the proposal should not reduce the species area of occupancy.
Adversely affect habitat critical to the survival of a species	As indicated above, it is unlikely that the subject site represents habitat critical to the survival of the species.
Disrupt the breeding cycle of a population	As there are only three known key breeding areas, two of them in NSW - Capertee Valley and Bundarra-Barraba regions, breeding will not be interrupted by this proposal.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposal will remove/modify up 0.33 ha of potential habitat for the species. This removal/modification of available habitat is unlikely to cause the species to decline.
Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species habitat	There is the potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Introduce disease that may cause the species to decline	Machinery used on site can potentially act as a transport for biosecurity risks. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Interfere with the recovery of the species.	Habitat loss, fragmentation and degradation; competition from larger more aggressive honeyeaters; small population size and restricted habitat availability making the species vulnerable to stochastic events; disturbance at nesting sites; and drought limiting water availability are the main threats to this species. Considering proximity and scarcity of records, and absence of key habitat, the proposal alone is unlikely to directly interfere with the recovery of the species within the region.
Conclusion	**No significant impact**

Hooded Robin, south-eastern form (*Melanodryas cucullata cucullata*)	
Significant Impact Guideline	**Assessment**
Lead to a long-term decrease in the size of a population	The proposal will impact up to 0.33 ha of potential habitat for the Hooded Robin. It is within a priority management area for the species. Prefers lightly wooded country, usually open eucalypt woodland, acacia scrub and mallee, often in or near clearings or open areas. Requires structurally diverse habitats featuring mature eucalypts, saplings, some small shrubs and a ground layer of moderately tall native grasses. As there are two associated PCTs present (PCTs 266 and 277), it is possible that the subject site could support a population of the species. However, there are no records from the 10 km search area and the subject site is limited in structural diversity and quality habitat. As such, it is unlikely for the proposal to induce a long-term decline in the size of a population.
Reduce the area of occupancy of the species	As indicated above, although the subject site may be conducive to inhabitation, no population appears to be present. As such, the proposal should not reduce the species area of occupancy.
Fragment an existing population into two or more populations	Although the proposal would widen existing fragmentation, it would not significantly exacerbate issues concerning it. Furthermore, no new fragments would be produced.
Adversely affect habitat critical to the survival of a species	The lack of records suggests that the site holds no special value to the species.
Disrupt the breeding cycle of a population	It is unlikely that a breeding population of Hooded Robins are present at the subject site, see above.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposal will remove/modify up 0.33 ha of potential habitat for the species. This removal/modification of available habitat is unlikely to cause the species to decline.
Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species habitat	There is the potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Introduce disease that may cause the species to decline	Machinery used on site can potentially act as a transport for biosecurity risks. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Interfere with the recovery of the species.	Clearing of woodlands; modification and destruction of ground habitat; competition of Noisy Miners; and increasing drought conditions due to anthropogenic climate change are the main threats to this species. The proposal alone is unlikely to directly interfere with the recovery of the species within the region.
Conclusion	**No significant impact**

Spotted-tailed Quoll (*Dasyurus maculatus*)	
Significant Impact Guideline	**Assessment**
Lead to a long-term decrease in the size of a population	The proposal will impact up to 0.33 ha of potential habitat for this species. It is not within a priority management area for the species. Recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline. Quolls use hollow-bearing trees, fallen logs, other animal burrows, small caves and rock outcrops as den sites. As there are two associated PCTs present (PCTs 266 and 277), it is possible that the subject site could support a population of the species. However, there are no records from the 10 km search area and the subject site is limited in quality habitat including suitably large hollows. As such, it is unlikely for the proposal to induce a long-term decline in the size of a population.
Reduce the area of occupancy of the species	As indicated above, although the subject site may be conducive to inhabitation, no population appears to be present. As such, the proposal should not reduce the species area of occupancy.
Fragment an existing population into two or more populations	Although the proposal would widen existing fragmentation, it would not significantly exacerbate issues concerning it. Furthermore, no new fragments would be produced.
Adversely affect habitat critical to the survival of a species	The lack of records suggests that the site holds no special value to the species.
Disrupt the breeding cycle of a population	It is unlikely that a breeding population of Spotted-tailed Quolls are present at the subject site, see above.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposal will remove/modify up 0.33 ha of potential habitat for the species. This removal/modification of available habitat is unlikely to cause the species to decline.
Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species habitat	There is the potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Introduce disease that may cause the species to decline	Machinery used on site can potentially act as a transport for biosecurity risks. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Interfere with the recovery of the species.	Loss, fragmentation and degradation of habitat; competition with introduced predators such as cats and foxes; deliberate poisoning, shooting and trapping, primarily in response to chicken predation; roadkill; and poisoning from eating cane toads in the wild, are the main threats to this species. The proposal alone is unlikely to directly interfere with the recovery of the species within the region.
Conclusion	**No significant impact**

Koala (*Phascolarctos cinereus*)	
Significant Impact Guideline	**Assessment**
Lead to a long-term decrease in the size of a population	The proposal will impact up to 0.385 ha of potential habitat for the Koala. This is not a priority management area for this species. The Koala is a highly selective browser, dependent on the presence of food tree species. The subject site holds value to the species as it has TECs present that contain food source trees. It associated with PCTs 53, 266 and 277 found within the subject site. However, there are no records within the 10 km search area and the proposal will impact a relatively insignificant area of associated PCTs (0.385 ha). As such, these works will not induce a long-term decline in the population of the Koala.
Reduce the area of occupancy of the species	As other habitat corridors will continue to exist following development, the Koala's area of occupancy will not be significantly reduced.
Fragment an existing population into two or more populations	The proposal would widen the existing fragmentation through the new alignment, although the extent of widening would not be significant, and no new fragments would be produced.
Adversely affect habitat critical to the survival of a species	The habitat within the subject site is unlikely to be critical habitat for the species.
Disrupt the breeding cycle of a population	Given the insignificant amount of vegetation at site, compared to the rest of the wider study and search areas, it is highly unlikely that the footprint supports a breeding population of the species.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposal will remove/modify up 0.385 ha of potential habitat for the species. This removal/modification of available habitat is unlikely to cause the species to decline.
Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species habitat	There is the potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Introduce disease that may cause the species to decline	Machinery used on site can potentially act as a transport for biosecurity risks. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Interfere with the recovery of the species.	Habitat loss, modification, and fragmentation; vehicular strikes; predation by dogs; koala disease; heat stress; anthropogenic climate change; and inadequate support for fauna rehabilitation are the main threats to this species. The proposal is unlikely to directly interfere with the recovery of the species within the region.
Conclusion	**No significant impact**

Small Purple-pea (*Swainsona recta*)	
Significant Impact Guideline	**Assessment**
Lead to a long-term decrease in the size of a population	The proposal will impact up to 0.33 ha of potential habitat for this species. It is not within a priority management area for the species. It is at the edge of the species distribution, if a population were to be present, it would be significant. Grows in association with understorey dominants that include Kangaroo Grass *Themeda australis*, poa tussocks *Poa* spp. and spear-grasses *Austrostipa* spp. Plants die back in summer, surviving as a rootstocks until they shoot again in autumn. Flowers throughout spring, with a peak in October. The associated understorey species were not present within the subject site. As there are two associated PCTs present (PCTs 266 and 277), it is possible that the subject site could support a population of the species. However, there are no records from the 10 km search area and the subject site is limited in quality habitat. The area of PCTs to be impacted is relatively insignificant. As such, it is unlikely for the proposal to induce a long-term decline in the size of a population.
Reduce the area of occupancy of the species	As indicated above, no population appears to be present. As such, the proposal should not reduce the species area of occupancy.
Fragment an existing population into two or more populations	Although the proposal would widen existing fragmentation, it would not significantly exacerbate issues concerning it. Furthermore, no new fragments would be produced. No population was detected in the field survey or records, therefore there is no risk of fragmentation for this species.
Adversely affect habitat critical to the survival of a species	The lack of records suggests that the site holds no special value for the species.
Disrupt the breeding cycle of a population	It is unlikely that any population of this species is present at the subject site, see above.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposal will remove/modify up to 0.33 ha of potential habitat for the species. This removal/modification of available habitat is unlikely to cause the species to decline.
Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species habitat	There is the potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Introduce disease that may cause the species to decline	Machinery used on site can potentially act as a transport for biosecurity risks. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Interfere with the recovery of the species.	Grazing and tramping by domestic stock; habitat loss and degradation due to development, inappropriate rail maintenance and weed invasion; increased competition from other native grassland species due to reduced fire frequency; increased competition from Black Cypress Pine; loss of small populations due to natural or un-natural catastrophic events; accidental damage through recreation; construction of inappropriate hazard reduction control lines; railway embankment erosion; and feral pigs, are the main threats to this species. The proposal alone is unlikely to directly interfere with the recovery of the species within the region.
Conclusion	**No significant impact**

Tarengo Leek Orchid (*Prasophyllum petilum*)	
Significant Impact Guideline	**Assessment**
Lead to a long-term decrease in the size of a population	The proposal will impact up to 0.112 ha of potential habitat for this species. It is not within a priority management area for the species. It is at the edge of the species distribution, if a population were to be present, it would be significant. Grows in open sites within Natural Temperate Grassland at the Boorowa and Delegate sites. Also grows in grassy woodland in association with River Tussock *Poa labillardieri*, Black Gum *Eucalyptus aggregata* and tea-trees *Leptospermum* spp. near Queanbeyan and within the grassy groundlayer dominated by Kangaroo Grass under Box-Gum Woodland at Ilford (and Hall, ACT). Population density at the Boorowa site is higher in the open grassland dominated by wallaby grasses *Austrodanthonia* spp., compared to that within the denser stands of Kangaroo Grass *Themeda australis*. Wallaby grass is present within the subject site, however, other associated woodland and understorey species are not. As there is an associated PCT present (PCT 277), it is possible that the subject site could support a population of the species. However, there are no records from the 10 km search area and the subject site is limited in quality habitat. The area of PCT to be impacted is relatively insignificant. As such, it is unlikely for the proposal to induce a long-term decline in the size of a population.
Reduce the area of occupancy of the species	As indicated above, no population appears to be present. As such, the proposal should not reduce the species area of occupancy.
Fragment an existing population into two or more populations	No population was detected in the field survey or records, therefore there is no risk of fragmentation for this species.
Adversely affect habitat critical to the survival of a species	Although the proposal would widen existing fragmentation, it would not significantly exacerbate issues concerning it. Furthermore, no new fragments would be produced. The lack of records suggests that the site holds no special value for the species.
Disrupt the breeding cycle of a population	It is unlikely that any population of this species is present at the subject site, see above.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposal will not remove/modify potential habitat for the species. This removal/modification of available habitat is unlikely to cause the species to decline.
Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species habitat	There is the potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Introduce disease that may cause the species to decline	Machinery used on site can potentially act as a transport for biosecurity risks. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Interfere with the recovery of the species.	Habitat loss, fragmentation and degradation due to a broad range of development; inappropriate mowing or grazing regimes; competition from other native and non-native plant species; chance extinctions due to their small and few populations; land management practices that are not supportive of conservation; and road widening and other development pressures at the Muswellbrook population, are the main threats to the species. The proposal alone is unlikely to directly interfere with the recovery of the species within the region.
Conclusion	**No significant impact**

Prasophyllum sp. Wybong	
Significant Impact Guideline	**Assessment**
Lead to a long-term decrease in the size of a population	The proposal will impact up to 0.33 ha of potential habitat for this species. It is not within a priority management area for the species. Endemic to NSW, it is known from near Ilford, Premer, Muswellbrook, Wybong, Yeoval, Inverell, Tenterfield, Currabubula and the Pilliga area. Most populations are small, although the Wybong population contains by far the largest number of individuals. The distribution is highly restricted but does, however, overlap with White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland EPBC Act-listed threatened ecological community. The key eucalypt species of this TEC are present but the understorey is not the EPBC Act-listed quality habitat required to support this species. As there are two associated PCTs present (PCT 266 and 277), it is possible that the subject site could support a population of the species. However, there are no records from the 10 km search area and the subject site is approximately 100 km from the closest known population at Yeoval. The area of PCT to be impacted is relatively insignificant. As such, it is unlikely for the proposal to induce a long-term decline in the size of a population.
Reduce the area of occupancy of the species	As indicated above, no population appears to be present. As such, the proposal should not reduce the species area of occupancy.
Fragment an existing population into two or more populations	No population was detected in the field survey or records, therefore there is no risk of fragmentation for this species.
Adversely affect habitat critical to the survival of a species	Although the proposal would widen existing fragmentation, it would not significantly exacerbate issues concerning it. Furthermore, no new fragments would be produced. The lack of records suggests that the site holds no special value for the species.
Disrupt the breeding cycle of a population	It is unlikely that any population of this species is present at the subject site, see above.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposal will not remove/modify potential habitat for the species. This removal/modification of available habitat is unlikely to cause the species to decline.
Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species habitat	There is the potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Introduce disease that may cause the species to decline	Machinery used on site can potentially act as a transport for biosecurity risks. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Interfere with the recovery of the species.	Habitat clearance, weed invasion, vehicle traffic, inappropriate disturbance regimes, chemical drift from agricultural properties, illegal collection, trampling by people and climate change, are the main threats to the species. The proposal alone is unlikely to directly interfere with the recovery of the species within the region.
Conclusion	**No significant impact**

Euphrasia arguta	
Significant Impact Guideline	**Assessment**
Lead to a long-term decrease in the size of a population	The proposal will impact up to 0.33 ha of potential habitat for this species. It is not within a priority management area for the species or at the edge of the species distribution. Grows in grassy riparian areas, recorded from Bathurst to Walcha area (possibly extinct). It was rediscovered in the Nundle area of the NSW north western slopes and tablelands in 2008, the majority of plants are located in Nundle State Forest. As there are two associated PCTs present (PCT 266 and 277), it is possible that the subject site could support a population of the species. However, there are no records from the 10 km search area and the subject site is limited in suitable habitat being largely cropped and otherwise disturbed, or having been historically, and not a riparian area. The area of PCTs to be impacted is relatively insignificant. As such, it is unlikely for the proposal to induce a long-term decline in the size of a population.
Reduce the area of occupancy of the species	As indicated above, no population appears to be present. As such, the proposal should not reduce the species area of occupancy.
Fragment an existing population into two or more populations	No population was detected in the field survey or records, therefore there is no risk of fragmentation for this species.
Adversely affect habitat critical to the survival of a species	Although the proposal would widen existing fragmentation, it would not significantly exacerbate issues concerning it. Furthermore, no new fragments would be produced. The lack of records suggests that the site holds no special value for the species.
Disrupt the breeding cycle of a population	It is unlikely that any population of this species is present at the subject site, see above.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposal will not remove/modify potential habitat for the species. This removal/modification of available habitat is unlikely to cause the species to decline.
Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species habitat	There is the potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Introduce disease that may cause the species to decline	Machinery used on site can potentially act as a transport for biosecurity risks. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Interfere with the recovery of the species.	Livestock grazing, and road maintenance and clearing of roadside vegetation for fire breaks, are the main threats to the species. The proposal alone is unlikely to directly interfere with the recovery of the species within the region.
Conclusion	**No significant impact**

Tumut Grevillea (*Grevillea wilksonii*)	
Significant Impact Guideline	**Assessment**
Lead to a long-term decrease in the size of a population	The proposal will impact up to 0.219 ha of potential habitat for this species. It is not within a priority management area for the species. It is at the edge of the species distribution, if a population were to be present, it would be significant. Most plants occur in open sunny areas, those found under the canopy of dense vegetation tend to be spindly and are sometimes subject to sooty mould infestations. The associated native vegetation in the Goobarragandra sites are typically remnant riverine shrub communities adjacent to open-forest. At Gundagai, it grows on the upper slope of a steep hill on Serpentinite rock. The groundcover is dominated by Kangaroo Grass (*Themeda triandra*) and Snow Grass (*Poa sieberiana*). The associated understorey species are not present within the subject site. As there is an associated PCT present (PCT 266), it is possible that the subject site could support a population of the species. However, there are no records from the 10 km search area and the subject site is limited in quality habitat. The area of PCT to be impacted is relatively insignificant. As such, it is unlikely for the proposal to induce a long-term decline in the size of a population.
Reduce the area of occupancy of the species	As indicated above, the proposal will not reduce the species area of occupancy.
Fragment an existing population into two or more populations	Although the proposal would widen existing fragmentation, it would not significantly exacerbate issues concerning it. Furthermore, no new fragments would be produced. No population was detected in the field survey or records, therefore there is no risk of fragmentation for this species.
Adversely affect habitat critical to the survival of a species	The lack of records suggests that the site holds no special value for the species.
Disrupt the breeding cycle of a population	It is unlikely that any population of *G. wilksonii* is present at the subject site, see above.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposal will remove/modify up to 0.219 ha of potential habitat for the species. This removal/modification of available habitat is unlikely to cause the species to decline.
Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species habitat	There is the potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Introduce disease that may cause the species to decline	Machinery used on site can potentially act as a transport for biosecurity risks. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Interfere with the recovery of the species.	Grazing by domestic stock; habitat/population loss and degradation due to weed invasion and competition with native species; severe floods and climate change induced extreme events; habitat loss and degradation due to clearance; private land ownership changes leading to non-sympathetic practices; and localised disturbances, are the main threats to this species. The proposal alone is unlikely to directly interfere with the recovery of the species within the region.
Conclusion	**No significant impact**

EPBC Act-listed Vulnerable Species

Southern Bell Frog (*Litoria raniformis*)	
Significant Impact Guideline	**Assessment**
Lead to a long-term decrease in the size of an important population of a species	The proposal will impact up to 0.054 ha of potential habitat for the Southern Bell Frog (PCT 53). There are no priority management areas within the study area, nor are there records from within the 10 km search area. However, it is at the edge of the species distribution. Found in bulrushes and other emergent vegetation in or at the edges of permanent or semi-permanent water. Lakes, dams, ponds, swamps, wetlands, slow moving streams, drains, culverts and other human modified environments that hold water may all provide suitable habitat. Considering that PCT 53 is in one of the most disturbed areas of the subject site, the relatively small area to cleared, there are no records in the 10 km search area and this species was not detected in the field survey, the project is unlikely to increase negative impact for an important population of this species.
Reduce the area of occupancy of an important population	It is unlikely that an important population exists at the site, see above.
Fragment an existing important population into two or more populations	It is unlikely that an important population exists at the site, see above.
Adversely affect habitat critical to the survival of a species	The habitat within the subject site is unlikely to be critical for the species.
Disrupt the breeding cycle of an important population	It is unlikely that an important population exists at the site, see above.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposal will remove/modify up to 0.054 ha of potential habitat for the species. This removal/modification of available habitat is unlikely to cause the species to decline.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species habitat	There is the potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Introduce disease that may cause the species to decline	Machinery used on site can potentially act as a transport for biosecurity risks. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Interfere with the recovery of the species.	Alterations to drainage patterns and stormwater runoff; Chytrid Fungus; predation by feral animals (including exotic fish); and loss of habitat are the main threats for this species. The proposal is unlikely to significantly interfere with the recovery of the species within the region.
Conclusion	**Non-significant impact**

Pink-tailed Legless Lizard (*Aprasia parapulchella*)	
Significant Impact Guideline	**Assessment**
Lead to a long-term decrease in the size of an important population of a species	The proposal will impact up to 0.33 ha of potential habitat for the Pink-tailed Legless Lizard (PCTs 266 and 277). There are no priority management areas within the study area, nor are there records from within the 10 km search area. The subject site is close to the western range limit for this species, which extends as far west as Forbes. This species' habitat consists of grassland and grassy woodland with rocky outcrops or partially soil-bound rocks with ant galleries present. Predominantly Kangaroo grass (*Themeda australis*) and other native grasses are associated with populations. Although some rocky habitat is present, it does not align with the ideal habitat for this species: partially embedded rock within slopes. Further there is a lack of native grasses as the main understorey within this subject site. Considering the above, the subject site is unlikely to contain an important population of this species.
Reduce the area of occupancy of an important population	The proposal will impact up to 0.33 ha of potential habitat for the Pink-tailed Legless Lizard
Fragment an existing important population into two or more populations	The proposal is not expected to result in any fragmentation for this species.
Adversely affect habitat critical to the survival of a species	Considering the above, the habitat within the subject site is unlikely to be critical for the species.
Disrupt the breeding cycle of an important population	It is unlikely that an important population exists at the site, see above.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposal will remove/modify up to 0.33 ha of potential habitat for the species. This removal/modification of available habitat is unlikely to cause the species to decline.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species habitat	There is the potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Introduce disease that may cause the species to decline	Machinery used on site can potentially act as a transport for biosecurity risks. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Interfere with the recovery of the species.	Habitat loss and fragmentation; habitat degradation through rock removal; habitat degradation through pasture improvement including slashing, ploughing and sowing of non-native species; habitat degradation through intensive grazing by stock; habitat degradation through invasion of habitat by weeds or escaped pasture species; lack of knowledge of how habitat management practices influence site occupancy and species persistence; predation by feral or domestic cats and foxes; and changed fire regimes that result in changes to vegetation structure and composition, are the main threats to this species. The proposal is unlikely to significantly interfere with the recovery of the species within the region.
Conclusion	**Non-significant impact**

Striped Legless Lizard (*Delma impar*)	
Significant Impact Guideline	**Assessment**
Lead to a long-term decrease in the size of an important population of a species	The proposal will impact up to 0.112 ha of potential habitat for the Striped Legless Lizard (PCT 277). There are no priority management areas within the study area, nor are there records from within the 10 km search area. Indeed, the nearest records are from Yass, ~150 km to the south. Considering the above, the subject site is unlikely to contain an important population of this species.
Reduce the area of occupancy of an important population	It is unlikely that an important population exists at the site, see above.
Fragment an existing important population into two or more populations	It is unlikely that an important population exists at the site, see above.
Adversely affect habitat critical to the survival of a species	Considering the distance to any known populations, the habitat within the subject site is unlikely to be critical for the species.
Disrupt the breeding cycle of an important population	It is unlikely that an important population exists at the site, see above.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposal will remove/modify up to 0.112 ha of potential habitat for the species. This removal/modification of available habitat is unlikely to cause the species to decline.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species habitat	There is the potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Introduce disease that may cause the species to decline	Machinery used on site can potentially act as a transport for biosecurity risks. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Interfere with the recovery of the species.	Habitat loss and fragmentation; habitat degradation through pasture improvement including rock removal, slashing, ploughing and sowing of non-native species; habitat degradation through invasion of habitat by weeds or escaped pasture species; habitat degradation through intensive grazing by stock; lack of knowledge of how habitat management practices influence site occupancy and species persistence; predation by feral or domestic cats and foxes; and changed fire regimes that result in changes to vegetation structure and composition, are the main threats for this species. The proposal is unlikely to significantly interfere with the recovery of the species within the region.
Conclusion	**Non-significant impact**

White-throated Needletail (*Hirundapus caudacutus*)	
Significant Impact Guideline	**Assessment**
Lead to a long-term decrease in the size of an important population of a species	The proposal will impact up to 0.385 ha of potential habitat for this species (PCTs 53, 266 and 277). The subject site is not at the edge of its geographic distribution, there are no priority management areas within the study area, nor are there records from within the 10 km search area. Records near farmland are generally of flying above partly cleared pasture or remnant paddock edge vegetation. Considering the above, that the species' wider state and national records from inland are mostly vagrant and near analogous cleared land to the subject site in its current form and what it will continue to be, the project is unlikely to negatively impact an important population of this species.
Reduce the area of occupancy of an important population	It is unlikely that an important population exists at the site, see above.
Fragment an existing important population into two or more populations	It is unlikely that an important population exists at the site, see above.
Adversely affect habitat critical to the survival of a species	Given the absence of records within the study area and considering that this species is aerial and wide ranging, The habitat within the subject site is unlikely to be critical for the species.
Disrupt the breeding cycle of an important population	It is unlikely that an important population exists at the site, see above.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposal will remove/modify up to 0.385 ha of potential habitat for the species. This removal/modification of available habitat is unlikely to cause the species to decline.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species habitat	There is the potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Introduce disease that may cause the species to decline	Machinery used on site can potentially act as a transport for biosecurity risks. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Interfere with the recovery of the species.	Vegetation clearing and rotor strike from windfarms are the main threats to this species. The proposal is unlikely to exacerbate the above threats and is therefore unlikely to interfere with the recovery of the species within the region.
Conclusion	**No significant impact**

South-eastern Glossy Black-Cockatoo (*Calyptorhynchus lathami lathami*)	
Significant Impact Guideline	**Assessment**
Lead to a long-term decrease in the size of an important population of a species	The proposal will impact up to 0.219 ha of potential habitat for this species (PCT 266). The study area is within a priority management area, however, there are no records from within the 10 km search area. The subject site is not at the edge of the species distribution. Dependent on large hollow-bearing eucalypts for nest sites and feeds exclusively on *Casuarina* and *Allocasuarina,* of which large hollows and feed tree species are absent. The absence of records indicates that no population occurs in the general area.
Reduce the area of occupancy of an important population	It is unlikely that an important population exists at site, see above. If a population were to occur, the removal of 0.219 ha of associated habitat is unlikely to be significant.
Fragment an existing important population into two or more populations	Although the proposal would widen existing fragmentation, it would not significantly exacerbate issues concerning it. Furthermore, no new fragments would be produced.
Adversely affect habitat critical to the survival of a species	The habitat within the subject site is unlikely to be critical to the species given the absence of records, lack of feed trees, and absence of suitably large breeding hollows.
Disrupt the breeding cycle of an important population	The absence of records suggests that no individuals are present (save the potential vagrant). Further, there are no feeding trees or breeding trees present.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposal will remove/modify up to 0.219 ha of potential habitat for the species. This removal/modification of available habitat is unlikely to cause the species to decline.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species habitat	There is the potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Introduce disease that may cause the species to decline	Machinery used on site can potentially act as a transport for biosecurity risks. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Interfere with the recovery of the species.	Habitat clearance for development; decline of hollow-bearing trees; excessively frequent fire eliminating hollows and food, and disturbing breeding; feral herbivores; reduced access to surface water; moisture stress due to climate change damaging associated trees; domestic stock grazing; illegal bird smuggling and egg collection; weed invasion; and exclusion of Aboriginal custodians, are the main threats to this species. The proposal is unlikely to significantly exacerbate the above threats and is therefore unlikely to interfere with the recovery of the species within the region.
Conclusion	**No significant impact**

Superb Parrot (*Polytelis swainsonii*)	
Significant Impact Guideline	**Assessment**
Lead to a long-term decrease in the size of an important population of a species	The proposal will impact up to 0.33 ha of potential habitat for the Superb Parrot (PCT 266 and 277). Although the subject site is not at the geographic edge of the species distribution, the search area contained twenty-eight records (the most recent of which is from 2022 at 8.6 km from the subject site, and the closest is at 880 m) and the study area is within an NSW priority management area. Therefore, if Superb Parrots were to be present at the subject site, this would constitute an important population. Despite there being twenty-eight records within the 10 km search area, none are from within the subject site, but are as close as within the study area. Although habitat within the quarry site (existing and proposed) is already degraded and has limited suitable required hollow-bearing trees for this species to nest. This species was not detected during the field survey. Furthermore, it is unlikely that the removal of a relatively insignificant amount of associated habitat (0.33 ha) and only two hollow-bearing trees would induce a long-term population decline (if present).
Reduce the area of occupancy of an important population	The proposal will impact up to 0.33 ha of potential habitat for the Superb Parrot, this is unlikely to be significant due to the large amount of remnant habitat which will be retained in the wider search area.
Fragment an existing important population into two or more populations	Although the proposal would widen existing fragmentation, it would not significantly exacerbate issues concerning it. Furthermore, no new fragments would be produced.
Adversely affect habitat critical to the survival of a species	Given the relatively small amount of habitat, and scarcity of hollow-bearing trees, it is unlikely that the habitat is critical to the survival of this species.
Disrupt the breeding cycle of an important population	As a bird that congregates in large breeding colonies, the absence of records in the subject site and intermittent sightings in the wider search area suggests that individuals do not rely on the subject site.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposal will remove/modify up to 0.33 ha of potential habitat for the species. This removal/modification of available habitat is unlikely to cause the species to decline.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species habitat	There is the potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Introduce disease that may cause the species to decline	Machinery used on site can potentially act as a transport for biosecurity risks. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Interfere with the recovery of the species.	Loss of hollow bearing trees and habitat fragmentation and loss are the main threats for this species. The proposal is unlikely to exacerbate the above threats to a degree that this proposal interferes with the recovery of the species within the region.
Conclusion	**Non-significant impact**

Brown Treecreeper, eastern subspecies (*Climacteris picumnus victoriae*)	
Significant Impact Guideline	**Assessment**
Lead to a long-term decrease in the size of an important population of a species	The proposal will impact up to 0.33 ha of potential habitat for the Brown Treecreeper, eastern subspecies (PCTs 266 and 277). The subject site is not at the edge of its geographic distribution. It is, however, within a priority management area and there is within the search area one record (dating to 2020); approximately 4.6 km to the northeast. Given the age of this record, and the absence of preceding/subsequent records, suggests that this sighting may have been a vagrant. Further, there are only two hollow-bearing trees within the footprint and the scattered paddock trees do not represent preferred habitat for this species. As such, the subject site is unlikely to contain an important population of this species.
Reduce the area of occupancy of an important population	It is unlikely that an important population exists at the site, see above.
Fragment an existing important population into two or more populations	It is unlikely that an important population exists at the site, see above.
Adversely affect habitat critical to the survival of a species	The habitat within the subject site is unlikely to be critical for the species, see above.
Disrupt the breeding cycle of an important population	It is unlikely that an important population exists at the site, see above.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposal will remove/modify up to 0.33 ha of potential habitat for the species. This removal/modification of available habitat is unlikely to cause the species to decline.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species habitat	There is the potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Introduce disease that may cause the species to decline	Machinery used on site can potentially act as a transport for biosecurity risks. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Interfere with the recovery of the species.	Historical loss of woodland due to agriculture, forestry, mining and residential development; fragmentation of woodland; loss of tree hollows, mature eucalypts and fallen timber from overgrazing and firewood collection; loss of ground litter from compaction and overgrazing; inappropriate forestry management practices; loss of understorey habitat; invasive weed competition with natives; aggressive exclusion by over abundant Noisy Miners; and land management resulting in woodland degradation; are the main threats to this species. The proposal alone is unlikely to directly interfere with the recovery of the species within the region.
Conclusion	**Non-significant impact**

Painted Honeyeater (*Grantiella picta*)	
Significant Impact Guideline	**Assessment**
Lead to a long-term decrease in the size of an important population of a species	The proposal will impact up to 0.33 ha of potential habitat for the Painted Honeyeater (PCTs 266 and 277). The subject site is not at the edge of its geographic distribution, nor are there priority management areas within the study area. There are no records within the 10 km search area. As such, no important population would occur at the subject site.
Reduce the area of occupancy of an important population	It is unlikely that an important population exists at the site, see above.
Fragment an existing important population into two or more populations	It is unlikely that an important population exists at the site, see above.
Adversely affect habitat critical to the survival of a species	The Painted Honeyeater is nomadic and occurs at low densities throughout its range. The greatest concentrations of the bird and almost all breeding occurs on the inland slopes of the Great Dividing Range in NSW, Victoria and southern Queensland. During the winter it is more likely to be found in the north of its distribution. Inhabits Boree/ Weeping Myall (*Acacia pendula*), Brigalow (*A. harpophylla*) and Box-Gum Woodlands and Box-Ironbark Forests. Box-Gum Woodland habitat that is associated with this species is already fragmented and degraded without mistletoe. The habitat within the subject site is unlikely to be critical for the species.
Disrupt the breeding cycle of an important population	It is unlikely that an important population exists at the site, see above.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposal will remove/modify up to 0.33 ha of potential habitat for the species. This removal/modification of available habitat is unlikely to cause the species to decline.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species habitat	There is the potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Introduce disease that may cause the species to decline	Machinery used on site can potentially act as a transport for biosecurity risks. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Interfere with the recovery of the species.	Habitat clearance, disturbance, and fragmentation; the removal of large trees with heavy mistletoe infestations; overgrazing of grassy woodlands; habitat incursion by exotic weeds; inappropriate fire regimes; and competition with larger, more aggressive honeyeaters are the main threats to this species. The proposal alone is unlikely to directly interfere with the recovery of the species within the region.
Conclusion	**Non-significant impact**

Diamond Firetail (*Stagonopleura guttata*)	
Significant Impact Guideline	**Assessment**
Lead to a long-term decrease in the size of an important population of a species	The proposal will impact up to 0.33 ha of potential habitat for the Diamond Firetail (PCTs 266 and 277). The subject site is not at the edge of its geographic distribution, nor are there records from within the 10 km search area. The study area is, however, within a priority management area for the species. Found in grassy eucalypt woodlands, including Box-Gum Woodlands and Snow Gum (*Eucalyptus pauciflora*) Woodlands. Also occurs in open forest, mallee, Natural Temperate Grassland, and in secondary grassland derived from other communities. It was not detected during the field survey. The habitat is already fragmented and degraded, the Box Gum species are scattered within the subject site and the understorey is either lacking or weedy. Given that the proposal will be removing a relatively insignificant amount of vegetation – 0.33 ha - compared to that which will continue to exist in the wider search area, it is unlikely for the scope of works to place a local population at risk of extinction.
Reduce the area of occupancy of an important population	It is unlikely that an important population exists at site, see above. If a population were to occur, the removal of 0.33 ha of associated habitat is unlikely to be significant.
Fragment an existing important population into two or more populations	Although the proposal would widen existing fragmentation, it would not significantly exacerbate issues concerning it. Furthermore, no new fragments would be produced.
Adversely affect habitat critical to the survival of a species	The habitat within the subject site is unlikely critical habitat given the absence of records.
Disrupt the breeding cycle of an important population	It is unlikely that an important population exists at the site, see above.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposal will remove/modify up to 0.33 ha of potential habitat for the species. This removal/modification of available habitat is unlikely to cause the species to decline.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species habitat	There is the potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Introduce disease that may cause the species to decline	Machinery used on site can potentially act as a transport for biosecurity risks. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Interfere with the recovery of the species.	Clearing and fragmentation of woodlands; poor regeneration of habitat; invasion by exotic weed species; predation of eggs and aggressive exclusion by over abundant Noisy Miners are the main threats to this species. The proposal alone is unlikely to directly interfere with the recovery of the species within the region.
Conclusion	**Non-significant impact**

Brush-tailed Rock Wallaby (*Petrogale penicillata*)	
Significant Impact Guideline	**Assessment**
Lead to a long-term decrease in the size of an important population of a species	The proposal will impact up to 0.33 ha of potential habitat for the Brush-tailed Rock Wallaby (PCTs 266 and 277). The subject site is at the edge of the species geographic distribution, however, there are no priority management areas within the study area, nor are there records from within the 10 km search area. It was not detected during the field survey. The habitat is already fragmented and degraded, the rocky terrain present in the subject site is limited. They live in highly rocky terrain such as escarpments, boulder piles and rocky pinnacles. They generally prefer sites that are north-facing and contain numerous ledges and crevices, this complex habitat is lacking within the subject site. Considering the above, the subject site is unlikely to contain an important population of this species.
Reduce the area of occupancy of an important population	It is unlikely that an important population exists at the site, see above.
Fragment an existing important population into two or more populations	Although the proposal would widen existing fragmentation, it would not significantly exacerbate issues concerning it. Furthermore, no new fragments would be produced. It is unlikely that an important population exists at the site.
Adversely affect habitat critical to the survival of a species	It is unlikely that the habitat at the subject site is critical to the survival of the species.
Disrupt the breeding cycle of an important population	It is unlikely that an important population exists at the site, see above.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposal will not remove/modify up to 0.33 ha of potential habitat for the species. This removal/modification of available habitat is unlikely to cause the species to decline.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species habitat	There is the potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Introduce disease that may cause the species to decline	Machinery used on site can potentially act as a transport for biosecurity risks. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Interfere with the recovery of the species.	Feral predation; competition for forage and refuge areas with goats; inappropriate fire regimes; competition for food and shelter with other native macropods; invasive weed infestation; road kill; and habitat degradation due to feral pigs, are the main threats to this species. The proposal is unlikely to significantly interfere with the recovery of the species within the region.
Conclusion	**Non-significant impact**

Grey-headed Flying Fox (*Pteropus poliocephalus*)	
Significant Impact Guideline	**Assessment**
Lead to a long-term decrease in the size of an important population of a species	The proposal will impact up to 0.33 ha of potential habitat for the Grey-headed Flying Fox (PCTs 266 and 277). The study area is not within a priority management area nor are there records from within the 10 km search area. It is not on the edge of the species distribution. The nearest mapped flying fox camp is at Cowra, ~50 km to the south. Considering the above, the subject site is unlikely to contain an important population of this species.
Reduce the area of occupancy of an important population	Considering the above, the subject site is unlikely to contain an important population of this species.
Fragment an existing important population into two or more populations	Considering the above, the subject site is unlikely to contain an important population of this species.
Adversely affect habitat critical to the survival of a species	The absence of records and known camps from within the search area indicates that no critical habitat is present.
Disrupt the breeding cycle of an important population	Considering the above, the subject site is unlikely to contain an important population of this species.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposal will remove/modify up to 0.33 ha of potential habitat for the species. This removal/modification of available habitat is unlikely to cause the species to decline.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species habitat	There is the potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Introduce disease that may cause the species to decline	Machinery used on site can potentially act as a transport for biosecurity risks. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Interfere with the recovery of the species.	Loss of roosting and foraging sites; electrocution on powerlines, entanglement in netting and on barbed wire; heat stress; conflict with humans; incomplete knowledge of abundance and distribution across the species' range; illegal shooting, are the main threats to this species. The proposal is unlikely to significantly interfere with the recovery of the species within the region.
Conclusion	**Non-significant impact**

Large-eared Pied Bat (*Chalinolobus dwyeri*)	
Significant Impact Guideline	**Assessment**
Lead to a long-term decrease in the size of an important population of a species	The proposal will impact up to 0.112 ha of potential habitat for the Large-eared Pied Bat (PCT 277). The study area is not within a priority management area nor are there records from within the 10 km search area. The subject site is not at the edge of the species distribution. Given the above, it is unlikely for any population to be present.
Reduce the area of occupancy of an important population	It is unlikely that an important population exists at site, see above.
Fragment an existing important population into two or more populations	It is unlikely that an important population exists at site, see above.
Adversely affect habitat critical to the survival of a species	Given the above, it is unlikely that the habitat is critical to the survival of the species.
Disrupt the breeding cycle of an important population	It is unlikely that an important population exists at site, see above.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposal will remove/modify up to 0.112 ha of potential habitat for the species. This removal/modification of available habitat is unlikely to cause the species to decline.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species habitat	There is the potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Introduce disease that may cause the species to decline	Machinery used on site can potentially act as a transport for biosecurity risks. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Interfere with the recovery of the species.	Clearing and isolation of forest and woodland habitats near cliffs, caves and old mine workings for agriculture or development; loss of foraging habitat close to cliffs, caves and old mine workings from forestry activities and too-frequent burning, usually associated with grazing; damage to roosting and maternity sites from mining operations, and recreational caving activities; use of pesticides; disturbance to roosting areas by goats; and insufficient understanding of habitat requirements, are the main threats to this species. The proposal is unlikely to significantly interfere with the recovery of the species within the region.
Conclusion	**Non-significant impact**

Corben's Long-eared Bat (*Nyctophilus corbeni*)	
Significant Impact Guideline	**Assessment**
Lead to a long-term decrease in the size of an important population of a species	The proposal will impact up to 0.219 ha of potential habitat for Corben's Long-eared Bat (PCT 266). The study area is not within a priority management area nor are there records from within the 10 km search area. It is, however, on the edge of the species distribution, therefore if a population was to be present, it would be considered important. The habitat is already fragmented and degraded with limited suitability for roosting. Given the absence of records, it is unlikely for any population to be present.
Reduce the area of occupancy of an important population	It is unlikely that an important population exists at site, see above. If a population were to occur, the removal of 0.219 ha of associated habitat is unlikely to be significant.
Fragment an existing important population into two or more populations	Although the proposal would widen existing fragmentation, it would not significantly exacerbate issues concerning it. Furthermore, no new fragments would be produced.
Adversely affect habitat critical to the survival of a species	Given the above, it is unlikely that the habitat is critical to the survival of the species.
Disrupt the breeding cycle of an important population	Given that there are only two hollow-bearing trees within the footprint, it is unlikely that the proposal would impact the breeding cycle of this species.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposal will remove/modify up to 0.219 ha of potential habitat for the species. This removal/modification of available habitat is unlikely to cause the species to decline.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species habitat	There is the potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Introduce disease that may cause the species to decline	Machinery used on site can potentially act as a transport for biosecurity risks. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Interfere with the recovery of the species.	Loss of remnant semi-arid woodland and mallee habitat; loss of hollow-bearing trees; application of pesticides in or adjacent to foraging areas; inappropriate fire regimes; disturbance to winter roosting and breeding sites; and loss or modification of habitat, are the main threats to this species. The proposal is unlikely to significantly interfere with the recovery of the species within the region.
Conclusion	**Non-significant impact**

Golden Sun Moth (*Synemon plana*)	
Significant Impact Guideline	**Assessment**
Lead to a long-term decrease in the size of an important population of a species	The proposal will impact up to 0.33 ha of potential habitat for the Golden Sun Moth (PCTs 266 and 277). The study area is not within a priority management area nor are there records from within the 10 km search area. It is, however, on the edge of the species distribution, therefore if a population was to be present, it would be considered important. Wallaby grass (*R. bipartitum*) is present in the subject site with a balance of bare ground and tussocks in places, as well as *Austrostipa scabra* having been recorded. However, there are no records within 10 km of the subject site and the majority of understorey vegetation is cropped or weedy, adjacent to fragmented woodland, therefore there is a lack of suitable habitat. Given the absence of nearby records, it is unlikely for any population to be present.
Reduce the area of occupancy of an important population	It is unlikely that an important population exists at site, see above. If a population were to occur, the removal of 0.33 ha of associated habitat is unlikely to be significant.
Fragment an existing important population into two or more populations	Although the proposal would widen existing fragmentation, it would not significantly exacerbate issues concerning it. Furthermore, no new fragments would be produced.
Adversely affect habitat critical to the survival of a species	Given the above, it is unlikely that the habitat is critical to the survival of the species.
Disrupt the breeding cycle of an important population	Given the absence of nearby records, it is unlikely for any population to be present.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposal will remove/modify up to 0.33 ha of potential habitat for the species. This removal/modification of available habitat is unlikely to cause the species to decline.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species habitat	There is the potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Introduce disease that may cause the species to decline	Machinery used on site can potentially act as a transport for biosecurity risks. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Interfere with the recovery of the species.	Loss and degradation of habitat by urban, residential, infrastructure and agricultural development; modifications to agricultural practices (e.g. fertiliser application, ploughing and inappropriate grazing); overstocking that results in modification of soil structure through compaction, increased nutrient loads, and promotion of weeds; invasion of habitat by weeds, particularly exotic pasture species (e.g. *Phalaris aquatica, Paspalum dilatatum* and *Avena* spp.); colonisation of wallaby grass grassland habitat by dense Kangaroo Grass tussocks; fragmentation and small size of remnants; and invasion of habitat by St John's wort, are the main threats to this species. The proposal is unlikely to significantly interfere with the recovery of the species within the region.
Conclusion	**Non-significant impact**

Yass Daisy (*Ammobium craspedioides*)	
Significant Impact Guideline	**Assessment**
Lead to a long-term decrease in the size of an important population of a species	The proposal will impact up to 0.33 ha of potential habitat for the Yass Daisy (PCTs 266 and 277). The study area is not within a priority management area nor are there records from within the 10 km search area. It is, however, on the edge of the species distribution, therefore if a population was to be present, it would be considered important. It was not detected during the field survey. The habitat is already fragmented and degraded. The species' distribution is restricted to localities in the Yass District and south of Wagga Wagga and north of Bigga. Given the absence of records and restricted distribution, it is unlikely for a population to be present.
Reduce the area of occupancy of an important population	It is unlikely that an important population exists at site, see above. If a population were to occur, the removal of 0.33 ha of associated habitat is unlikely to be significant.
Fragment an existing important population into two or more populations	Although the proposal would widen existing fragmentation, it would not significantly exacerbate issues concerning it. Furthermore, no new fragments would be produced.
Adversely affect habitat critical to the survival of a species	Given the above, it is unlikely that the habitat is critical to the survival of the species.
Disrupt the breeding cycle of an important population	Given the absence of records and restricted distribution, it is unlikely for a population to be present.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposal will remove/modify up to 0.33 ha of potential habitat for the species. This removal/modification of available habitat is unlikely to cause the species to decline.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species habitat	There is the potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Introduce disease that may cause the species to decline	Machinery used on site can potentially act as a transport for biosecurity risks. Environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Interfere with the recovery of the species.	Agricultural developments including pasture modification and cropping; intensification of grazing regimes; invasion of weeds including pasture grasses; roadworks (particularly widening or re-routing); and inappropriate mowing or slashing in the cemetery sites where species occurs, are the main threats to this species. The proposal is unlikely to significantly interfere with the recovery of the species within the region.
Conclusion	**Non-significant impact**

EPBC Act-listed Migratory Species

White-throated Needletail (*Hirundapus caudacutus*)	
Significant Impact Guideline	**Assessment**
Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species	As the species is very widely distributed, and as the subject site contains only small areas of potential foraging habitat it is unlikely to constitute important habitat for this species.
Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species	It is unlikely that the proposal site constitutes important habitat for this species. While there is potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species, environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.	It is unlikely that an ecologically significant proportion of the population occurs within or is dependent on the proposal site. The proposal is unlikely to seriously disrupt the lifecycle for this species.
Conclusion	**Non-significant impact**

Curlew Sandpiper (*Calidris ferruginea*)	
Significant Impact Guideline	**Assessment**
Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species	As the species is very widely distributed, mainly coastal, and the subject site contains only small areas of potential foraging habitat it is unlikely to constitute important habitat for this species.
Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species	It is unlikely that the proposal site constitutes important habitat for this species. While there is potential for works to introduce invasive species to the proposal site or exacerbate existing infestations of significant invasive species, environmental safeguards for the management of biosecurity risks will be implemented (see **Section 7**).
Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.	It is unlikely that an ecologically significant proportion of the population occurs within or is dependent on the proposal site. The proposal is unlikely to seriously disrupt the lifecycle for this species.
Conclusion	**Non-significant impact**

APPENDIX F – KEY THREATENING PROCESSES

Key Threatening Processes (KTP) predicted as acting on the study area that may be exacerbated by the proposal.

Class	Name	NSW status	Comm. status	Likelihood of Occurrence	Exacerbated by Proposal?
Threat	Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands	KTP		**Unlikely**	**No** No waterways are present within the subject site.
Threat	Anthropogenic Climate Change	KTP	KTP	**Very Likely**	**Yes** Some unavoidable emissions will occur from construction machinery.
Threat	Bushrock removal	KTP		**Likely**	**Potentially** Deposits of rock were detected along the margins of PCT 53 adjacent ponds in the current extraction area. If, during construction, bushrock, is required to be removed, it should be relocated nearby rather than disposed of.
Threat	Clearing of native vegetation	KTP	KTP	**Very Likely**	**Yes** Up to 0.385 ha of native vegetation will be cleared by the current proposal.
Threat	Competition and grazing by the feral European Rabbit, *Oryctolagus cuniculus*	KTP	KTP	**Unlikely**	**Potentially** The spread of grassy weeds that may result from these works could encourage rabbit activity.
Threat	Competition and habitat degradation by Feral Goats, *Capra hircus*	KTP	KTP	**Unlikely**	**No** The proposal does not include any activities that would exacerbate this threat.
Threat	Competition from feral honey bees, *Apis mellifera*	KTP		**Likely**	**Yes** The loss of tree hollows would exacerbate this threat.
Threat	Forest eucalypt dieback associated with over-abundant psyllids and Bell Miners	KTP		**Unlikely**	**No** The proposal does not include any activities that would exacerbate this threat
Threat	Habitat degradation and loss by Feral Horses (brumbies, wild horses), *Equus caballus*	KTP		**Unlikely**	**No** The proposed development will not increase occupancy by this species.
Threat	Herbivory and environmental degradation caused by feral deer	KTP		**Unlikely**	**No** The proposed development will not increase occupancy by this species.

Class	Name	NSW status	Comm. status	Likelihood of Occurrence	Exacerbated by Proposal?
Threat	High frequency fire resulting in the disruption of life cycle processes in plants and animals and loss of vegetation structure and composition	KTP		**Unlikely**	**No** Fire frequency will not increase due to activities undertaken as part of the proposal.
Threat	Importation of Red Imported Fire Ants *Solenopsis invicta*	KTP	KTP	**Unlikely**	**Potentially** Machinery used on site can potentially act as a transport for biosecurity risks, however, this species is not known to occur nearby.
Threat	Infection by Psittacine Circoviral (beak and feather) Disease affecting endangered psittacine species and populations	KTP	KTP	**Likely**	**Potentially** The loss of tree hollows can exacerbate this threat by encouraging reuse of nest hollows.
Threat	Infection of frogs by amphibian chytrid causing the disease chytridiomycosis	KTP	KTP	**Unlikely**	**Potentially** Machinery used on site can potentially act as a transport for biosecurity risks.
Threat	Infection of native plants by *Phytophthora cinnamomi*	KTP	KTP	**Unlikely**	**Potentially** Machinery used on site can potentially act as a transport for biosecurity risks.
Threat	Introduction of the Large Earth Bumblebee *Bombus terrestris*	KTP		**Unlikely**	**Potentially** Machinery used on site can potentially act as a transport for biosecurity risks.
Threat	Invasion and establishment of exotic vines and scramblers	KTP		**Unlikely**	**Potentially** Machinery used on site can potentially act as a transport for biosecurity risks.
Threat	Invasion and establishment of Scotch Broom (*Cytisus scoparius*)	KTP		**Unlikely**	**Potentially** Machinery used on site can potentially act as a transport for biosecurity risks.
Threat	Invasion and establishment of the Cane Toad (*Bufo marinus*)	KTP	KTP	**Unlikely**	**Potentially** Machinery used on site can potentially act as a transport for biosecurity risks, however, this species is not known to occur nearby.
Threat	Invasion of native plant communities by African *Olive Olea europaea* subsp. *cuspidata*	KTP		**Unlikely**	**Potentially** Machinery used on site can potentially act as a transport for biosecurity risks.
Threat	Invasion of native plant communities by *Chrysanthemoides monilifera*	KTP		**Unlikely**	**Potentially** Machinery used on site can potentially act as a transport for biosecurity risks.

Class	Name	NSW status	Comm. status	Likelihood of Occurrence	Exacerbated by Proposal?
Threat	Invasion of native plant communities by exotic perennial grasses	KTP		**Very likely**	**Yes** Exotic perennial grasses are already established at the site, increased disturbance could increase their spread.
Threat	Invasion of the Yellow Crazy Ant, *Anoplolepis gracilipes* into NSW	KTP		**Unlikely**	**Potentially** Machinery used on site can potentially act as a transport for biosecurity risks, however, this species is not known to occur nearby.
Threat	Invasion, establishment and spread of Lantana (*Lantana camara*)	KTP		**Unlikely**	**Potentially** Machinery used on site can potentially act as a transport for biosecurity risks.
Threat	Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants	KTP	KTP	**Unlikely**	**Potentially** Machinery used on site can potentially act as a transport for biosecurity risks.
Threat	Loss of Hollow-bearing Trees	KTP		**Very Likely**	**Yes** Up to two hollow-bearing trees, containing 3 small hollows, would be cleared by the proposal. It is suggested that the proponent attempt to minimise the removal of habitat vegetation to reduce the impacts association with this KTP.
Threat	Loss or degradation (or both) of sites used for hill-topping by butterflies	KTP		**Unlikely**	**No** No sites known or suspected to be present.
Threat	Predation and hybridisation by Feral Dogs, *Canis lupus familiaris*	KTP		**Unlikely**	**No** The proposed works would not increase the likelihood of this threat.
Threat	Predation by *Gambusia holbrooki* (Plague Minnow or Mosquito Fish)	KTP		**Unlikely**	**Potentially** Although there are watercourses present nearby, the scope of works will not exacerbate this KTP.
Threat	Predation by the European Red Fox *Vulpes vulpes*	KTP	KTP	**Unlikely**	**No** Ease of access for feral foxes will not be increased by the proposal
Threat	Predation by the Feral Cat *Felis catus*	KTP	KTP	**Unlikely**	**No** Ease of access for feral cats will not be increased by the proposal
Threat	Predation, habitat degradation, competition and disease transmission by Feral Pigs, *Sus scrofa*	KTP	KTP	**Unlikely**	**No** Ease of access for feral pigs will not be increased by the proposal
Threat	Removal of dead wood and dead trees	KTP		**Unlikely**	**Potentially** No substantial deposits of dead wood were encountered during the field deployment. If, however during development timber is

Class	Name	NSW status	Comm. status	Likelihood of Occurrence	Exacerbated by Proposal?
					uncovered, it is recommended that it be relocated nearby to avoid exacerbating this KTP.

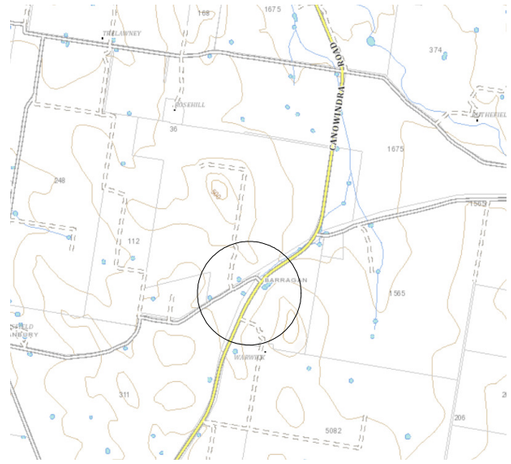
INDEX

Sheet No.

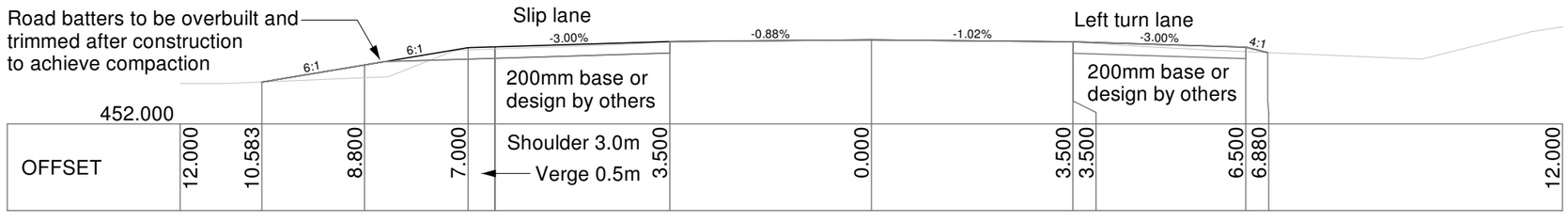
1	Cover
2	Plan and longsections
3 - 8	Cross sections Canowindra Rd
9 - 10	Cross sections Quarry Access Rd
11	ASD SISD and MGSD
12	Turning Paths
13	Culvert Design
14	Linemarking and signs
15	Culvert Extension Ch 215.7

Point	Easting	Northing	Elevation	Code
1	657658.529	6303402.103	434.850	PM170330
3	656744.884	6302510.236	454.880	ST01

CONTROL



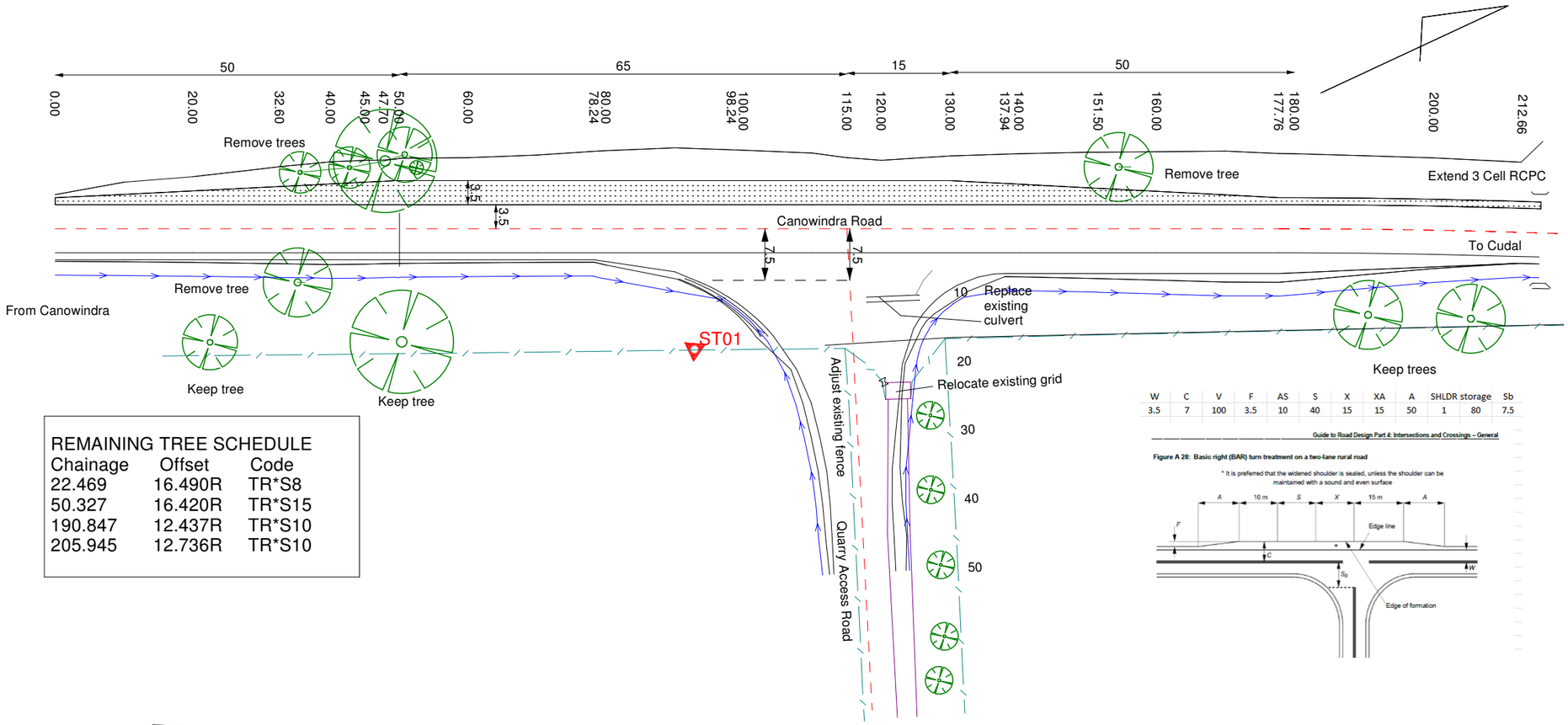
CANOWINDRA ROAD QUARRY ACCESS INTERSECTION



130

TYPICAL CROSS SECTION
CH 50 - 130

ISSUE STATUS	COORD SYSTEM	SURVEY	DESIGN		DRAWING	Total Sheets: 15
	MGA Zone 55	DUNCAN PRIESTLEY CIVIL ENGINEERING	DUNCAN PRIESTLEY CIVIL ENGINEERING	**DUNCAN PRIESTLEY CIVIL ENGINEERING**	CANOWINDRA RD ISECT V3 - MP	
29/03/2025	HEIGHT DATUM			**McNAUGHT EARTHMOVING**	PLAN NUMBER	**Sheet Number: 1**
SCALE: $SCALE	AHD	SURVEYED: D Priestley	DESIGNED: D Priestley	**CANOWINDRA RD QUARRY ACCESS INTERSECTION**		
				5083 CANOWINDRA RD		



W	C	V	F	AS	S	X	XA	A	SHLDR storage	Sb
3.5	7	100	3.5	10	40	15	15	50	1	80	7.5

Guide to Road Design Part 4: Intersections and Crossings – General

Figure A 28: Basic right (BAR) turn treatment on a two-lane rural road

* It is preferred that the widened shoulder is sealed, unless the shoulder can be maintained with a sound and even surface

REMAINING TREE SCHEDULE

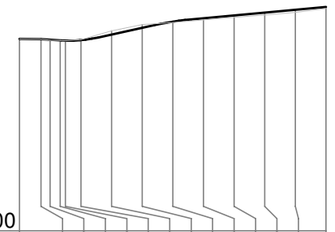
Chainage	Offset	Code
22.469	16.490R	TR*S8
50.327	16.420R	TR*S15
190.847	12.437R	TR*S10
205.945	12.736R	TR*S10

Datum R.L. 450.000

Chainage	Cut/Fill	Design	Existing
0.000	F0.000	455.107	455.107
10.000	C0.000	454.957	454.957
20.000	F0.000	454.811	454.811
30.000	F0.000	454.669	454.669
32.600	C0.000	454.632	454.632
40.000	F0.000	454.528	454.528
45.000	F0.000	454.471	454.471
47.700	C0.000	454.443	454.443
49.400	F0.000	454.425	454.425
50.000	F0.000	454.419	454.419
60.000	C0.000	454.314	454.314
70.000	F0.000	454.225	454.225
78.243	C0.000	454.159	454.159
80.000	C0.000	454.144	454.144
90.000	C0.000	454.050	454.050
98.243	F0.000	453.935	453.935
100.000	C0.000	453.911	453.911
110.000	F0.000	453.772	453.772
115.000	C0.000	453.698	453.698
120.000	F0.000	453.616	453.616
130.000	C0.000	453.458	453.458
137.943	C0.000	453.335	453.335
140.000	F0.000	453.303	453.303
150.000	C0.000	453.155	453.155
151.500	C0.000	453.142	453.142
160.000	F0.000	453.068	453.068
170.000	F0.000	452.982	452.982
177.761	F0.000	452.938	452.937
180.000	C0.000	452.929	452.929
190.000	C0.000	452.889	452.889
200.000	C0.000	452.845	452.845
212.659	F0.000	452.782	452.782
215.700	C0.000	452.766	452.766
Alignment Details		B=24°55'26" D=177.76	R=1175.00 L=83.10

Scale Horizontal 1:1000 Vertical 1:200

CANOWINDRA ROAD



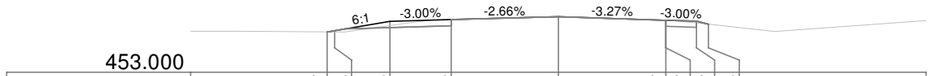
Datum R.L. 438.000

Station	Cut/Fill	Design	Existing
0.000	F0.000	453.649	453.649
3.500	F0.006	453.627	453.621
5.000	F0.025	453.580	453.555
6.618	F0.016	453.530	453.514
7.479	F0.000	453.509	453.508
10.000	C0.047	453.545	453.591
15.000	C0.302	454.002	454.304
20.000	C0.261	454.551	454.812
25.000	F0.064	455.052	454.989
30.000	F0.125	455.330	455.205
35.000	F0.144	455.560	455.416
40.000	F0.190	455.790	455.600
45.000	F0.219	456.020	455.801
50.000	F0.117	456.250	456.133

Scale Horizontal 1:1000 Vertical 1:500

QUARRY ACCESS

ISSUE STATUS	COORD SYSTEM	SURVEY	DESIGN	DUNCAN PRIESTLEY CIVIL ENGINEERING	DRAWING	Total Sheets: 15
	MGA Zone 55	DUNCAN PRIESTLEY CIVIL ENGINEERING	DUNCAN PRIESTLEY CIVIL ENGINEERING	McNAUGHT EARTHMOVING	CANOWINDRA RD ISECT V3 - MP	
29/03/2025	HEIGHT DATUM			CANOWINDRA RD QUARRY ACCESS INTERSECTION	PLAN NUMBER	**Sheet Number: 2**
SCALE: $SCALE	AHD	SURVEYED: D Priestley	DESIGNED: D Priestley	5083 CANOWINDRA RD		



453.000

DESIGN		454.317	454.358	454.658	454.718	454.811	454.697	454.697	454.667	454.568		
NATURAL	454.336	454.317	454.315	454.525	454.718	454.811	454.697	454.697	454.610	454.568		454.687
OFFSET	12.000	7.546	7.300	5.500	3.500	0.000	3.500	3.500	4.500	4.895		12.000

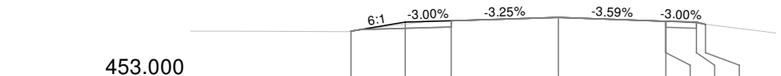
20



453.000

DESIGN		453.864	454.099	454.399	454.489	454.528	454.400	454.400	454.370	454.196		
NATURAL	453.848	453.864	453.874	454.018	454.489	454.528	454.400	454.400	454.278	454.196		454.258
OFFSET	12.000	9.708	8.300	6.500	3.500	0.000	3.500	3.500	4.500	5.197		12.000

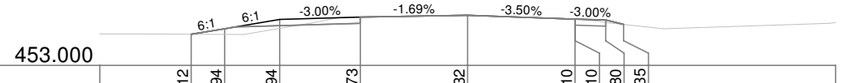
40



453.000

DESIGN		454.504	454.798	454.843	454.957	454.831	454.831	454.801	454.727			
NATURAL	454.505	454.504	454.735	454.843	454.957	454.831	454.831	454.758	454.727			
OFFSET	12.000	6.765	5.000	3.500	0.000	3.500	3.500	4.500	4.796			12.000

10



453.000

DESIGN		454.012	454.194	454.494	454.573	454.632	454.510	454.510	454.480	454.335		
NATURAL	454.020	454.012	454.007	454.207	454.573	454.632	454.510	454.510	454.403	454.335		454.397
OFFSET	12.000	9.022	7.930	6.130	3.500	0.000	3.500	3.500	4.500	5.081		12.000

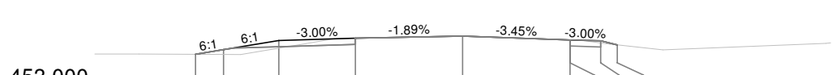
32



453.000

DESIGN		454.871	454.949	454.979	455.107	454.957	454.957	454.928	454.868			
NATURAL	454.607	454.871	454.932	454.979	455.107	454.957	454.957	454.896	454.868			
OFFSET	12.000	4.963	4.500	3.500	0.000	3.500	3.500	4.500	4.736			12.000

0



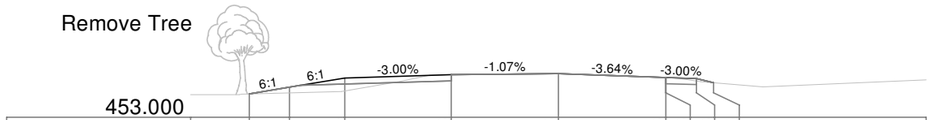
453.000

DESIGN		454.075	454.228	454.528	454.603	454.669	454.548	454.548	454.518	454.383		
NATURAL	454.085	454.075	454.070	454.275	454.603	454.669	454.548	454.548	454.446	454.383		454.456
OFFSET	12.000	8.716	7.800	6.000	3.500	0.000	3.500	3.500	4.500	5.042		12.000

30

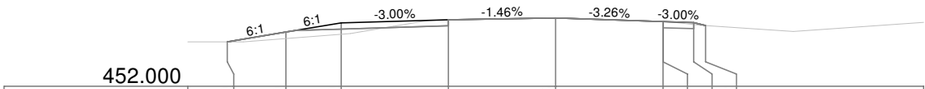
Scale Horizontal 1:200 Vertical 1:200

ISSUE STATUS	COORD SYSTEM	SURVEY	DESIGN	DUNCAN PRIESTLEY CIVIL ENGINEERING	DRAWING	Total Sheets: 15
	MGA Zone 55	DUNCAN PRIESTLEY CIVIL ENGINEERING	DUNCAN PRIESTLEY CIVIL ENGINEERING	McNAUGHT EARTHMOVING	CANOWINDRA RD ISECT V3 - MP	
29/03/2025	HEIGHT DATUM			CANOWINDRA RD QUARRY ACCESS INTERSECTION	PLAN NUMBER	**Sheet Number: 3**
SCALE: $SCALE	AHD	SURVEYED: D Priestley	DESIGNED: D Priestley	5083 CANOWINDRA RD		



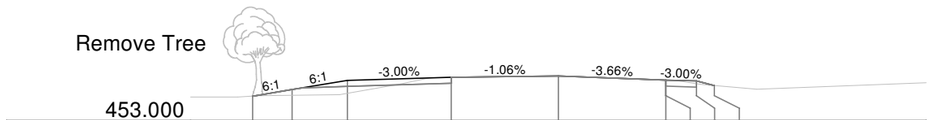
DESIGN		453.765	453.984	454.284	454.388	454.425	454.298	454.298	454.268	454.128		
NATURAL	453.738	453.765	453.797	453.858	454.388	454.425	454.298	454.298	454.183	454.128		454.220
OFFSET	12.000	10.084	8.770	6.970	3.500	0.000	3.500	3.500	4.500	5.060		12.000

49



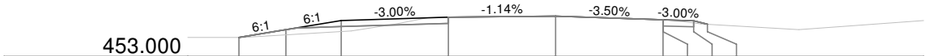
DESIGN		453.449	453.769	454.069	454.174	454.225	454.111	454.111	454.081	453.982		
NATURAL	453.449	453.449	453.556	453.695	454.174	454.225	454.111	454.111	454.018	453.982		454.088
OFFSET	12.000	10.716	8.800	7.000	3.500	0.000	3.500	3.500	4.500	4.893		12.000

70



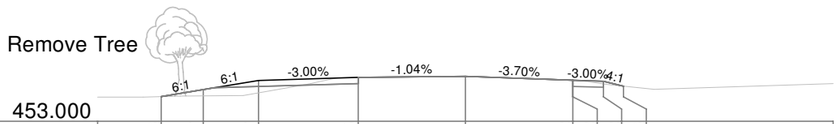
DESIGN		453.789	454.004	454.304	454.406	454.443	454.315	454.315	454.285	454.137		
NATURAL	453.758	453.789	453.818	453.886	454.406	454.443	454.315	454.315	454.197	454.137		454.224
OFFSET	12.000	9.975	8.685	6.885	3.500	0.000	3.500	3.500	4.500	5.090		12.000

47



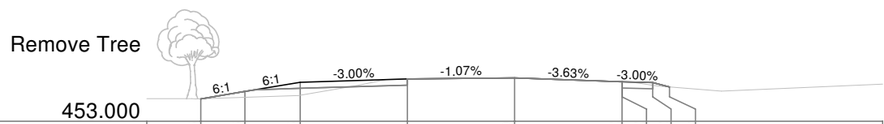
DESIGN		453.614	453.869	454.169	454.274	454.314	454.191	454.191	454.161	454.048		
NATURAL	453.614	453.614	453.699	453.809	454.274	454.314	454.191	454.191	454.091	454.048		454.169
OFFSET	12.000	10.331	8.800	7.000	3.500	0.000	3.500	3.500	4.500	4.953		12.000

60



DESIGN		453.808	454.037	454.337	454.435	454.471	454.342	454.342	454.312	454.148		
NATURAL	453.790	453.808	453.834	453.931	454.435	454.471	454.342	454.342	454.220	454.148		454.230
OFFSET	12.000	9.926	8.550	6.750	3.500	0.000	3.500	3.500	4.500	5.156		12.000

45

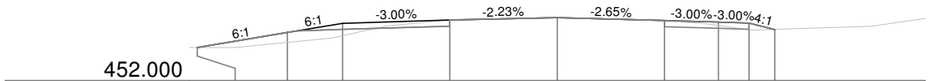


DESIGN		453.736	453.976	454.276	454.381	454.419	454.292	454.292	454.262	454.124		
NATURAL	453.737	453.736	453.783	453.848	454.381	454.419	454.292	454.292	454.178	454.124		454.218
OFFSET	12.000	10.240	8.800	7.000	3.500	0.000	3.500	3.500	4.500	5.051		12.000

50

Scale Horizontal 1:200 Vertical 1:200

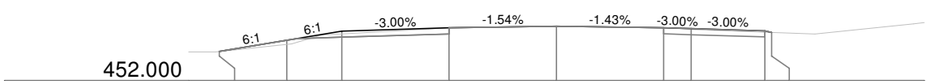
ISSUE STATUS	COORD SYSTEM	SURVEY	DESIGN	DUNCAN PRIESTLEY CIVIL ENGINEERING	DRAWING	Total Sheets: 15
	MGA Zone 55	DUNCAN PRIESTLEY CIVIL ENGINEERING	DUNCAN PRIESTLEY CIVIL ENGINEERING	McNAUGHT EARTHMOVING	CANOWINDRA RD ISECT V3 - MP	
29/03/2025	HEIGHT DATUM			CANOWINDRA RD QUARRY ACCESS INTERSECTION	PLAN NUMBER	**Sheet Number: 4**
SCALE: $SCALE	AHD	SURVEYED: D Priestley	DESIGNED: D Priestley	5083 CANOWINDRA RD		



452.000

DESIGN		453.076	453.566	453.866	453.971	454.050	453.957	453.904	453.874	453.666	
NATURAL	453.076	453.076	453.245	453.462	453.971	454.050	453.957	453.793	453.655	453.666	454.023
OFFSET	12.000	11.739	8.800	7.000	3.500	0.000	3.500	5.264	6.264	7.095	12.000

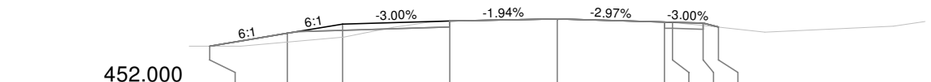
90



452.000

DESIGN		452.947	453.314	453.614	453.719	453.772	453.723	453.696	453.623	453.568	
NATURAL	452.935	452.947	453.177	453.520	453.719	453.772	453.722	453.671	453.576	453.568	453.894
OFFSET	12.000	10.999	8.800	7.000	3.500	0.000	3.500	4.395	6.798	7.019	12.000

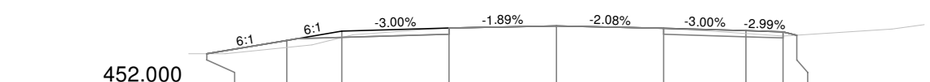
110



452.000

DESIGN		453.249	453.671	453.971	454.077	454.144	454.040	454.032	454.002	453.877	
NATURAL	453.249	453.249	453.384	453.543	454.076	454.144	454.040	454.019	453.932	453.877	454.054
OFFSET	12.000	11.336	8.800	7.000	3.500	0.000	3.500	3.764	4.764	5.265	12.000

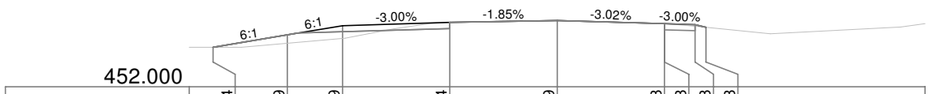
80



452.000

DESIGN		453.006	453.440	453.740	453.845	453.911	453.838	453.757	453.721	453.609	
NATURAL	453.006	453.006	453.209	453.537	453.845	453.911	453.838	453.665	453.581	453.609	453.956
OFFSET	12.000	11.405	8.800	7.000	3.500	0.000	3.500	6.185	7.395	7.844	12.000

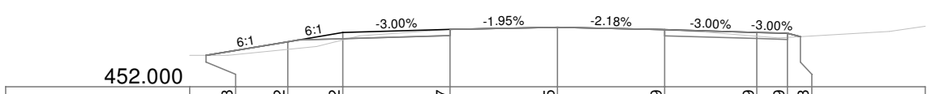
100



452.000

DESIGN		453.284	453.689	453.989	454.094	454.159	454.053	454.053	454.023	453.933	
NATURAL	453.284	453.284	453.414	453.569	454.094	454.159	454.053	454.053	453.967	453.933	454.056
OFFSET	12.000	11.227	8.800	7.000	3.500	0.000	3.500	3.500	4.500	4.857	12.000

78



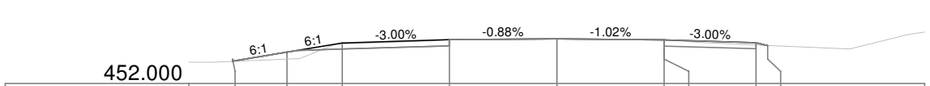
452.000

DESIGN		453.018	453.462	453.762	453.867	453.935	453.859	453.769	453.739	453.633	
NATURAL	453.018	453.018	453.215	453.520	453.867	453.935	453.859	453.647	453.608	453.633	453.968
OFFSET	12.000	11.464	8.800	7.000	3.500	0.000	3.500	6.500	7.500	7.926	12.000

98

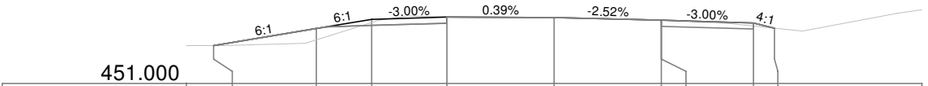
Scale Horizontal 1:200 Vertical 1:200

ISSUE STATUS	COORD SYSTEM	SURVEY	DESIGN		DRAWING	
	MGA Zone 55	DUNCAN PRIESTLEY CIVIL ENGINEERING	DUNCAN PRIESTLEY CIVIL ENGINEERING	**DUNCAN PRIESTLEY CIVIL ENGINEERING**	CANOWINDRA RD ISECT V3 - MP	Total Sheets: 15
29/03/2025	HEIGHT DATUM			**McNAUGHT EARTHMOVING**	PLAN NUMBER	**Sheet Number: 5**
SCALE: $SCALE	AHD	SURVEYED: D Priestley	DESIGNED: D Priestley	**CANOWINDRA RD QUARRY ACCESS INTERSECTION**		
				5083 CANOWINDRA RD		



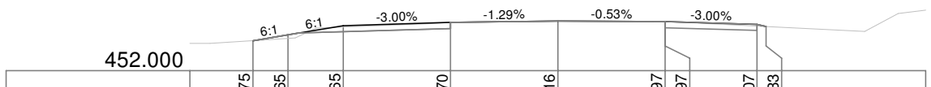
DESIGN	452.726	453.023	453.323	453.428	453.458	453.423	453.423	453.333	453.238		
NATURAL	452.699	452.726	452.799	453.284	453.428	453.458	453.423	453.423	453.254	453.238	453.680
OFFSET	12.000	10.583	8.800	7.000	3.500	0.000	3.500	3.500	6.500	6.880	12.000

130



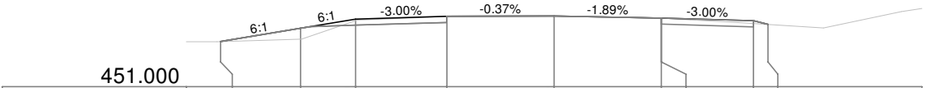
DESIGN	452.235	452.794	453.094	453.168	453.154	453.066	453.066	452.976	452.803	
NATURAL	452.236	452.235	452.426	452.987	453.168	453.155	453.066	453.066	452.874	452.803	453.409
OFFSET	12.000	11.108	7.753	5.953	3.500	0.000	3.500	3.500	6.500	7.192	12.000

150



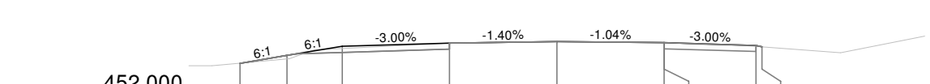
DESIGN	452.975	453.165	453.465	453.570	453.616	453.597	453.597	453.507	453.433		
NATURAL	452.888	452.975	453.046	453.417	453.570	453.616	453.597	453.597	453.448	453.433	453.968
OFFSET	12.000	9.944	8.800	7.000	3.500	0.000	3.500	3.500	6.500	6.795	12.000

120



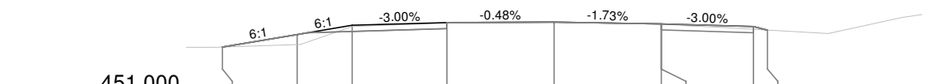
DESIGN	452.466	452.900	453.200	453.290	453.303	453.236	453.236	453.146	453.028		
NATURAL	452.463	452.466	452.549	453.143	453.290	453.303	453.236	453.236	453.058	453.028	453.545
OFFSET	12.000	10.880	8.277	6.477	3.500	0.000	3.500	3.500	6.500	6.975	12.000

140



DESIGN	452.989	453.244	453.544	453.649	453.698	453.662	453.662	453.572	453.525		
NATURAL	452.906	452.989	453.127	453.470	453.649	453.698	453.662	453.662	453.539	453.525	453.876
OFFSET	12.000	10.332	8.800	7.000	3.500	0.000	3.500	3.500	6.500	6.688	12.000

115

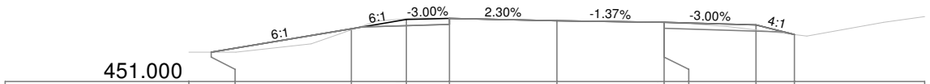


DESIGN	452.519	452.925	453.225	453.318	453.335	453.274	453.274	453.184	453.070		
NATURAL	452.511	452.519	452.601	453.185	453.318	453.335	453.274	453.274	453.096	453.070	453.573
OFFSET	12.000	10.825	8.384	6.584	3.500	0.000	3.500	3.500	6.500	6.958	12.000

137

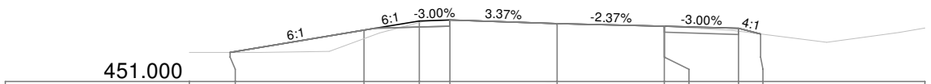
Scale Horizontal 1:200 Vertical 1:200

ISSUE STATUS	COORD SYSTEM	SURVEY	DESIGN		DRAWING	Total Sheets: 15
	MGA Zone 55	DUNCAN PRIESTLEY CIVIL ENGINEERING	DUNCAN PRIESTLEY CIVIL ENGINEERING	**DUNCAN PRIESTLEY CIVIL ENGINEERING**	CANOWINDRA RD ISECT V3 - MP	
29/03/2025	HEIGHT DATUM			**McNAUGHT EARTHMOVING**	PLAN NUMBER	**Sheet Number: 6**
SCALE: $SCALE	AHD	SURVEYED: D Priestley	DESIGNED: D Priestley	**CANOWINDRA RD QUARRY ACCESS INTERSECTION**		
				5083 CANOWINDRA RD		



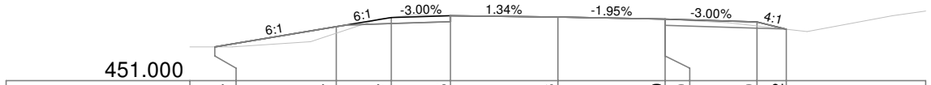
DESIGN	451.959	451.959	452.720	453.020	453.062	452.982	452.934	452.934	452.844	452.531		
NATURAL	451.959	451.959	452.685	453.050	453.062	452.982	452.934	452.934	452.683	452.531		453.114
OFFSET	12.000	11.273	6.706	4.906	3.500	0.000	3.500	3.500	6.500	7.752		12.000

170



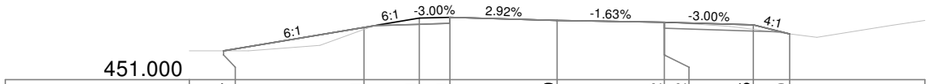
DESIGN	451.949	451.949	452.677	452.977	453.007	452.889	452.806	452.806	452.734	452.554		
NATURAL	451.949	451.949	452.400	452.922	453.007	452.889	452.806	452.806	452.645	452.554		452.745
OFFSET	12.000	10.670	6.300	4.500	3.500	0.000	3.500	3.500	5.917	6.637		12.000

190



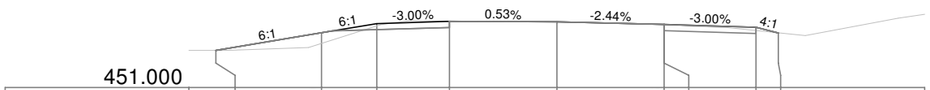
DESIGN	452.097	452.097	452.757	453.057	453.115	453.068	453.000	453.000	452.910	452.672		
NATURAL	452.097	452.097	452.546	453.055	453.115	453.068	453.000	453.000	452.778	452.672		453.263
OFFSET	12.000	11.190	7.230	5.430	3.500	0.000	3.500	3.500	6.500	7.454		12.000

160



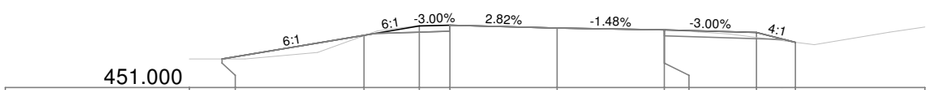
DESIGN	451.937	451.937	452.701	453.001	453.031	452.929	452.872	452.872	452.785	452.490		
NATURAL	451.937	451.937	452.638	453.013	453.031	452.929	452.872	452.872	452.637	452.490		452.930
OFFSET	12.000	10.884	6.300	4.500	3.500	0.000	3.500	3.500	6.403	7.583		12.000

180



DESIGN	452.215	452.215	452.789	453.089	453.160	453.142	453.056	453.056	452.966	452.784		
NATURAL	452.215	452.215	452.443	453.009	453.160	453.142	453.056	453.056	452.860	452.784		453.387
OFFSET	12.000	11.120	7.675	5.875	3.500	0.000	3.500	3.500	6.500	7.229		12.000

151

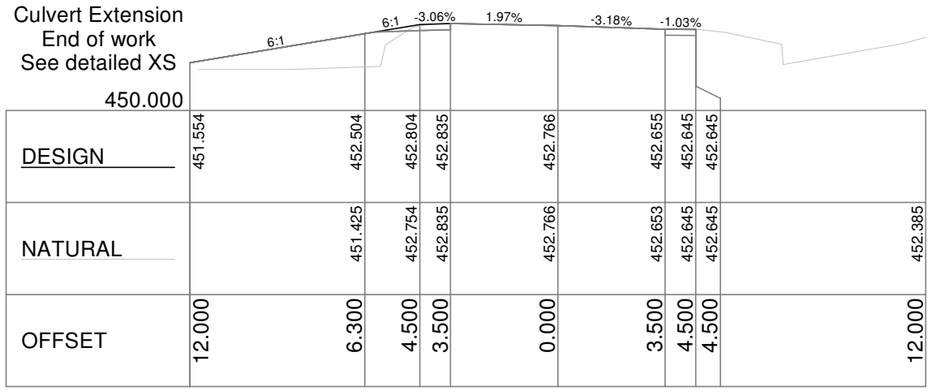


DESIGN	451.934	451.934	452.706	453.006	453.036	452.938	452.886	452.886	452.796	452.477		
NATURAL	451.934	451.934	452.695	453.029	453.036	452.937	452.886	452.886	452.635	452.477		452.972
OFFSET	12.000	10.931	6.300	4.500	3.500	0.000	3.500	3.500	6.500	7.774		12.000

177

Scale Horizontal 1:200 Vertical 1:200

ISSUE STATUS	COORD SYSTEM	SURVEY	DESIGN	DUNCAN PRIESTLEY CIVIL ENGINEERING	DRAWING	Total Sheets: 15
	MGA Zone 55	DUNCAN PRIESTLEY CIVIL ENGINEERING	DUNCAN PRIESTLEY CIVIL ENGINEERING	McNAUGHT EARTHMOVING	CANOWINDRA RD ISECT V3 - MP	
29/03/2025	HEIGHT DATUM			CANOWINDRA RD QUARRY ACCESS INTERSECTION	PLAN NUMBER	**Sheet Number: 7**
SCALE: $SCALE	AHD	SURVEYED: D Priestley	DESIGNED: D Priestley	5083 CANOWINDRA RD		



215

Volumes Report
Mar 05, 2025 08:45PM

Job: CANOWINDRA RD ISECT V2.mjo

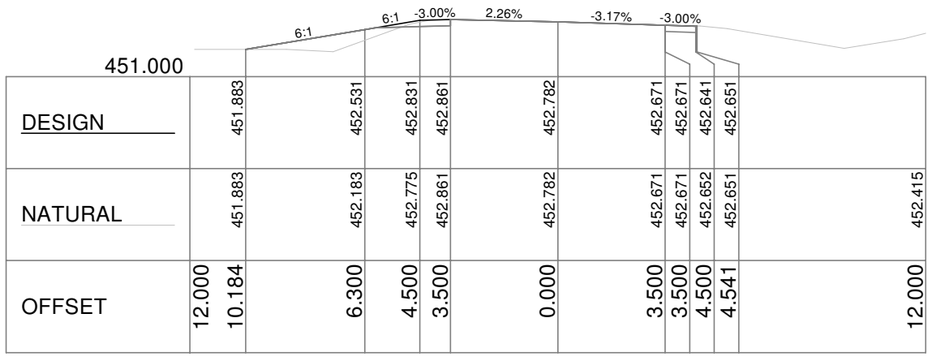
ALIGNMENT: ALIGN1
DESIGN SURFACE: DESIGN
NATURAL SURFACE: NATURAL

LEFT LIMIT STRING:LBAT
RIGHT LIMIT STRING:CL

Stripping Volume 0.000
Base Volume 134.130

Total Cut 86.571
Total Fill 174.254

Net Volume 87.684 Fill



212

RIGHT Flare and LH TURN LANE

Volumes Report

Apr 16, 2024 08:24PM

Job: CANOWINDRA RD ISECT.mjo

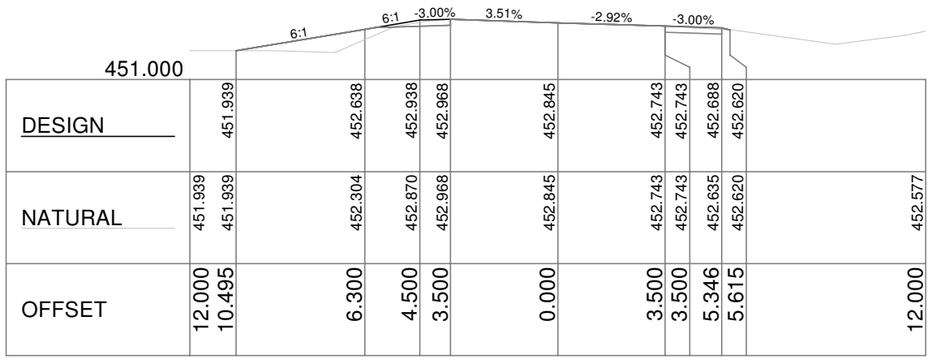
ALIGNMENT: ALIGN1
DESIGN SURFACE: DESIGN
NATURAL SURFACE: NATURAL

LEFT LIMIT STRING:R3500
RIGHT LIMIT STRING:RBAT1

Stripping Volume 0.000
Base Volume 77.482

Total Cut 48.058
Total Fill 4.793

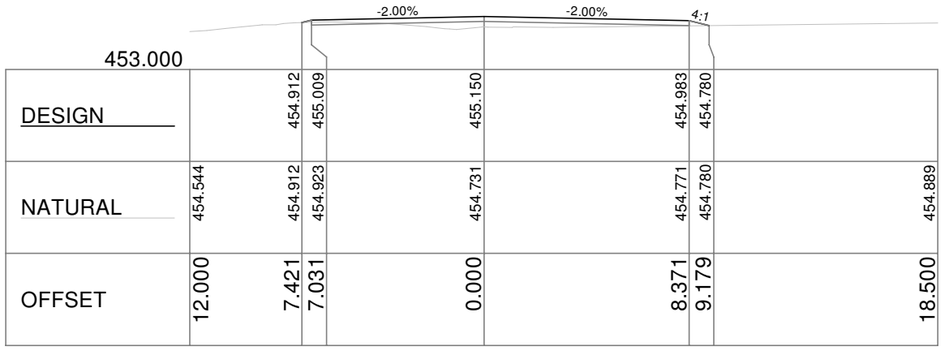
Net Volume 43.265 Cut



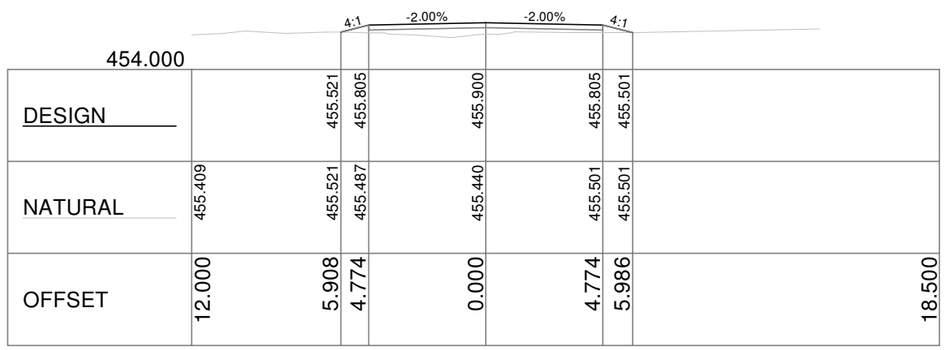
200

Scale Horizontal 1:200 Vertical 1:200

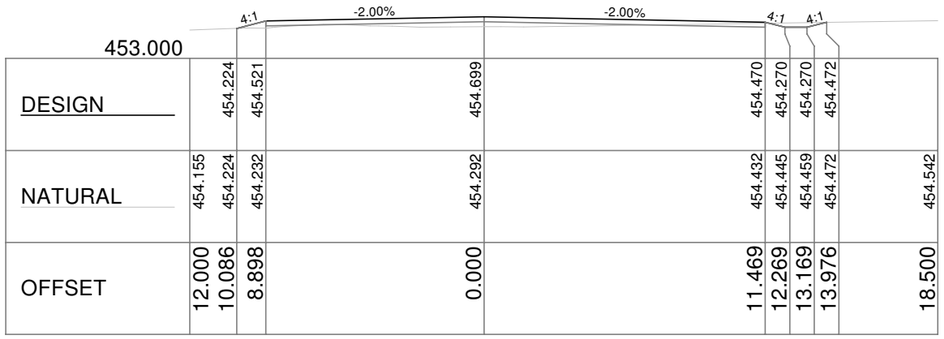
ISSUE STATUS	COORD SYSTEM	SURVEY	DESIGN	DUNCAN PRIESTLEY CIVIL ENGINEERING	DRAWING	Total Sheets: 15
	MGA Zone 55	DUNCAN PRIESTLEY CIVIL ENGINEERING	DUNCAN PRIESTLEY CIVIL ENGINEERING	McNAUGHT EARTHMOVING	CANOWINDRA RD ISECT V3 - MP	
29/03/2025	HEIGHT DATUM			CANOWINDRA RD QUARRY ACCESS INTERSECTION	PLAN NUMBER	**Sheet Number: 8**
SCALE: $SCALE	AHD	SURVEYED: D Priestley	DESIGNED: D Priestley	5083 CANOWINDRA RD		



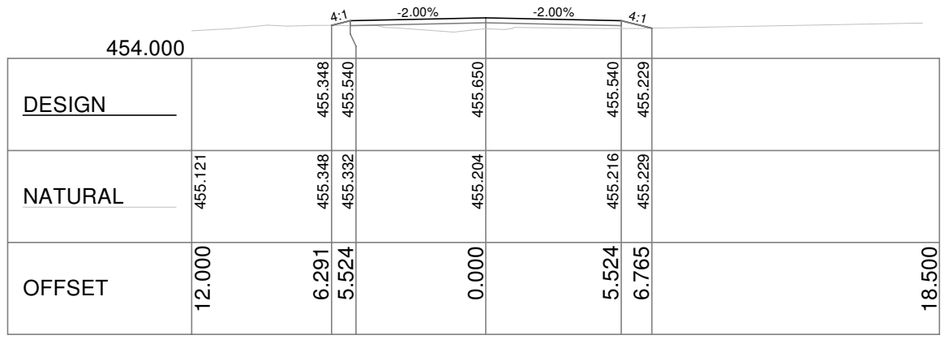
20



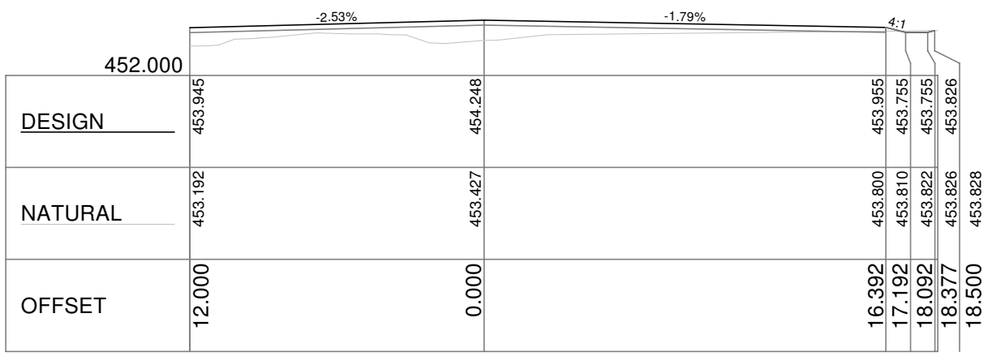
35



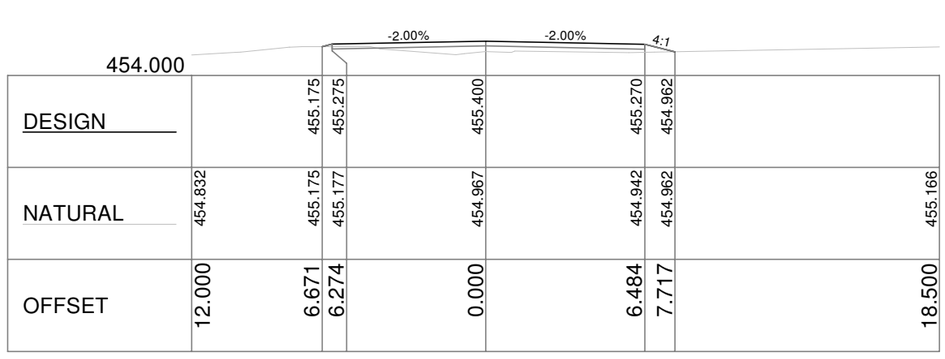
15



30



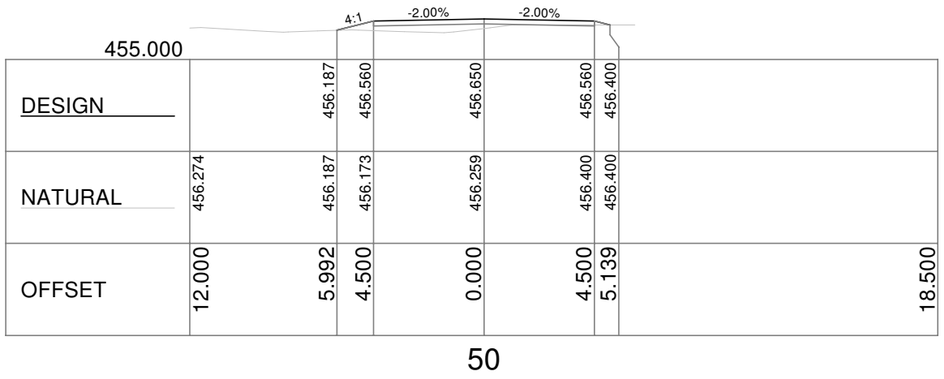
10



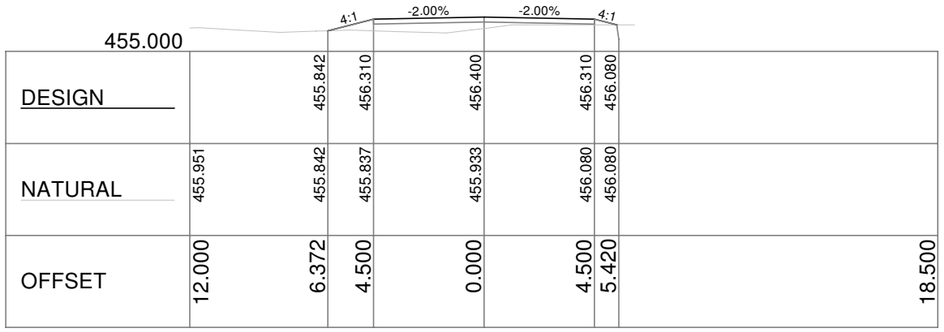
25

Scale Horizontal 1:200 Vertical 1:200

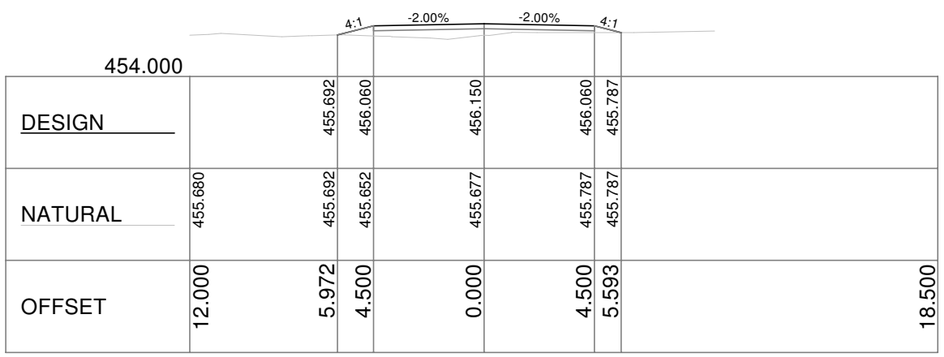
ISSUE STATUS	COORD SYSTEM	SURVEY	DESIGN	DUNCAN PRIESTLEY CIVIL ENGINEERING	DRAWING	Total Sheets: 15
	MGA Zone 55	DUNCAN PRIESTLEY CIVIL ENGINEERING	DUNCAN PRIESTLEY CIVIL ENGINEERING	McNAUGHT EARTHMOVING	CANOWINDRA RD ISECT V3 - MP	
29/03/2025	HEIGHT DATUM			**CANOWINDRA RD QUARRY ACCESS INTERSECTION**	PLAN NUMBER	**Sheet Number: 9**
SCALE: $SCALE	AHD	SURVEYED: D Priestley	DESIGNED: D Priestley	**5083 CANOWINDRA RD**		



50



45



40

Volumes Report
Apr 16, 2024 10:30PM

Job: ISECT.mjo

ALIGNMENT: ALIGN2
DESIGN SURFACE: DESIGN
NATURAL SURFACE: NATURAL

Stripping Volume 0.000
Base Volume 16.690

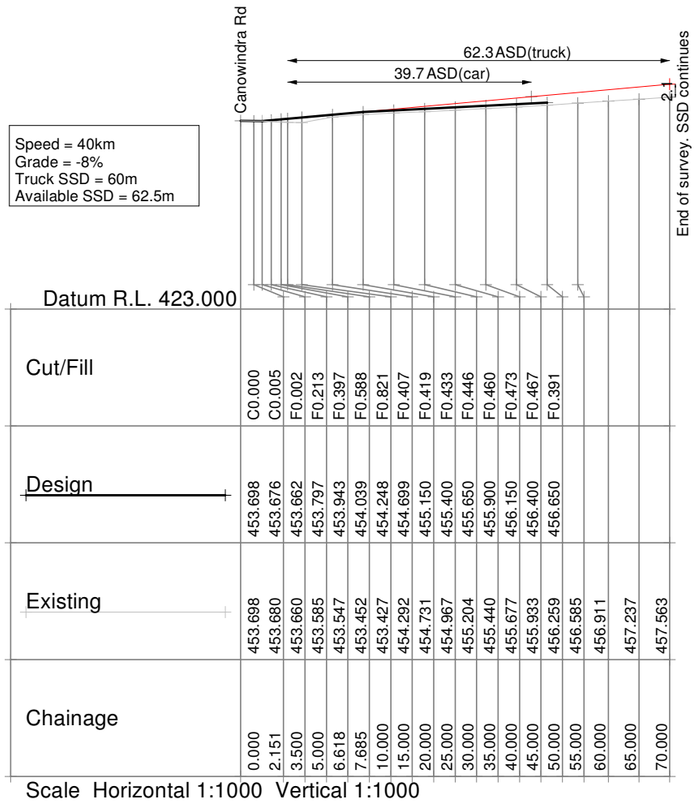
Total Cut 256.290
Total Fill 0.369

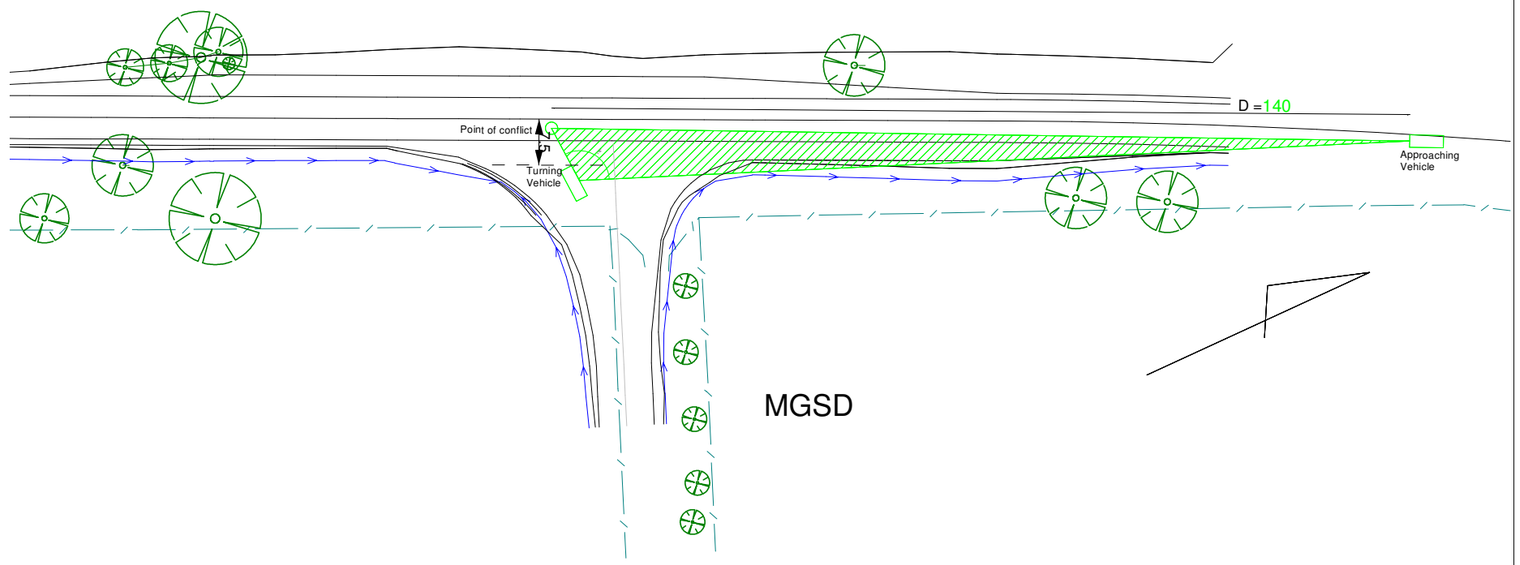
Net Volume 255.920 Cut

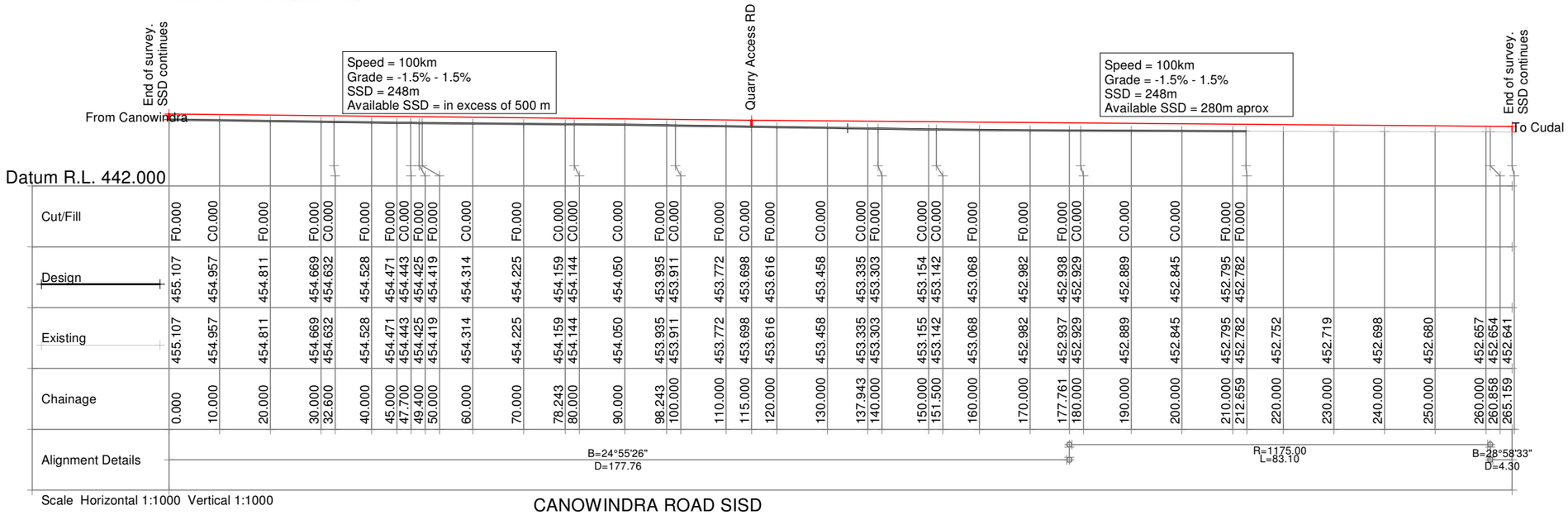
Note: This excess cut could be used on LHT Lane

Scale Horizontal 1:200 Vertical 1:200

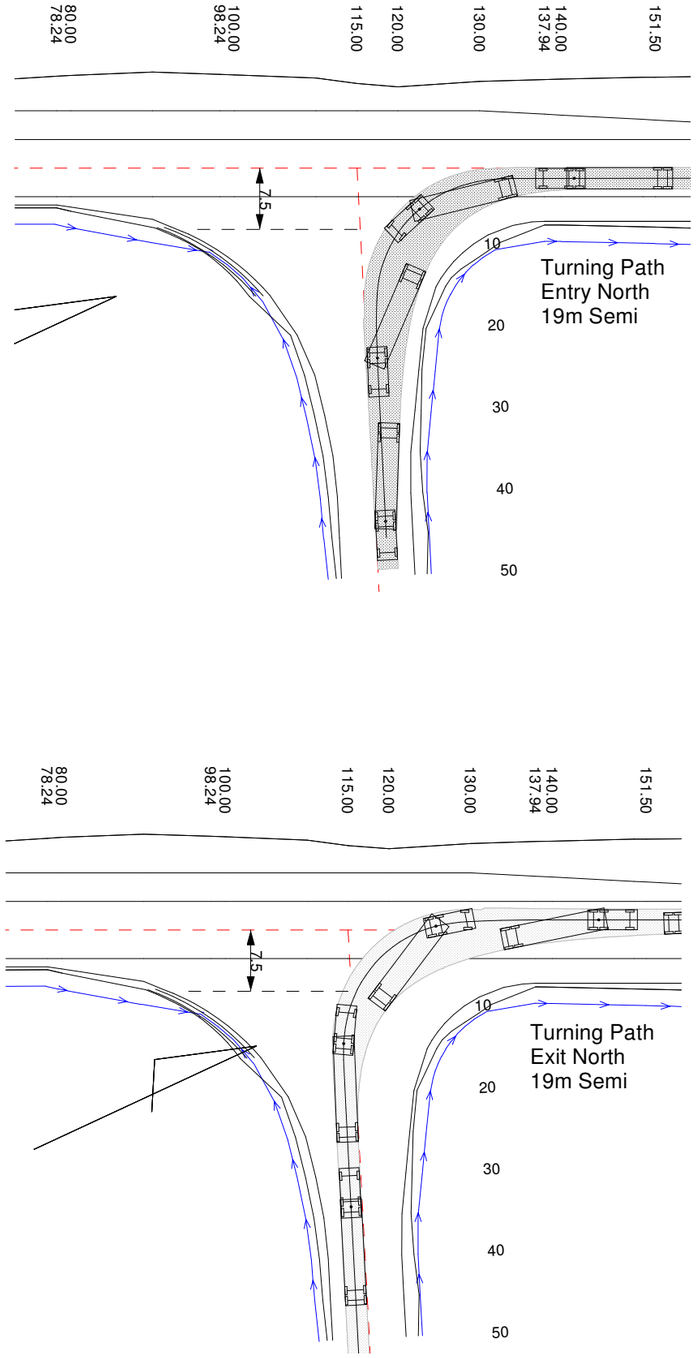
ISSUE STATUS	COORD SYSTEM	SURVEY	DESIGN	**DUNCAN PRIESTLEY CIVIL ENGINEERING**	DRAWING	Total Sheets: 15
	MGA Zone 55	DUNCAN PRIESTLEY CIVIL ENGINEERING	DUNCAN PRIESTLEY CIVIL ENGINEERING	**McNAUGHT EARTHMOVING**	CANOWINDRA RD ISECT V3 - MP	
29/03/2025	HEIGHT DATUM			**CANOWINDRA RD QUARRY ACCESS INTERSECTION**	PLAN NUMBER	**Sheet Number: 10**
SCALE: $SCALE	AHD	SURVEYED: D Priestley	DESIGNED: D Priestley	**5083 CANOWINDRA RD**		

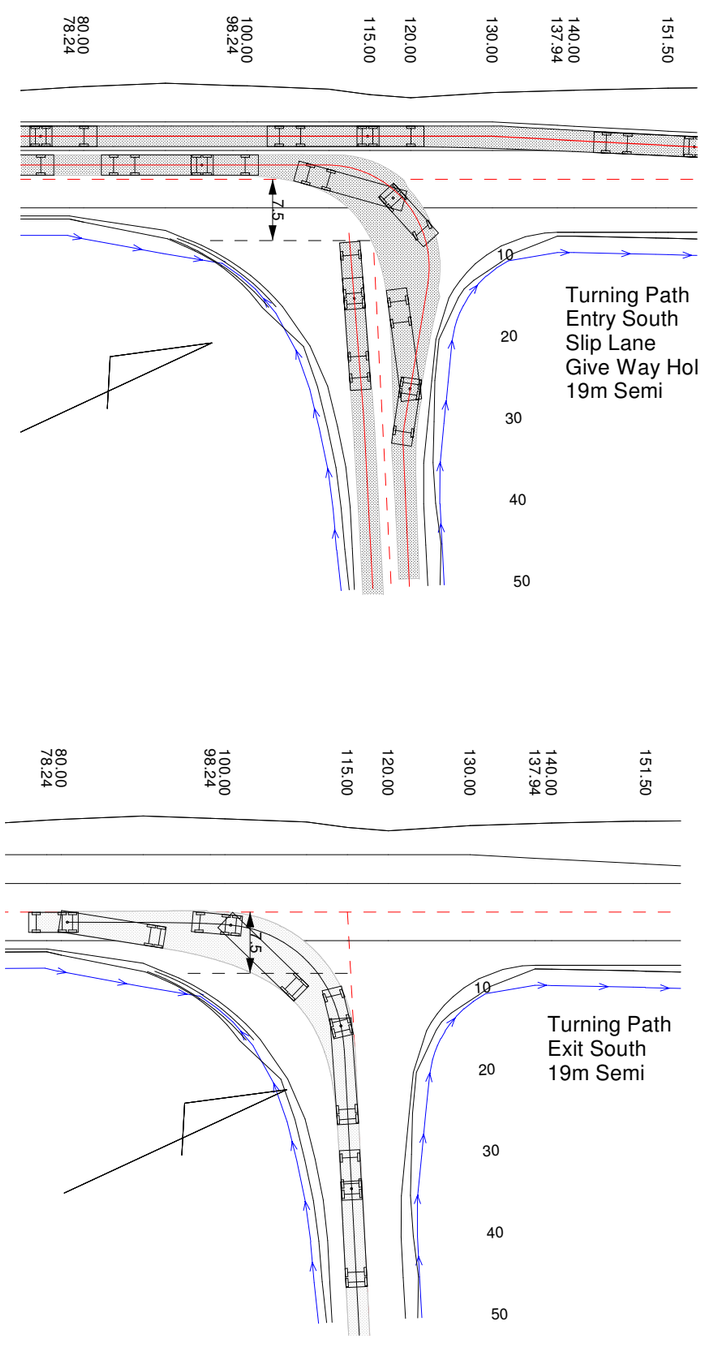




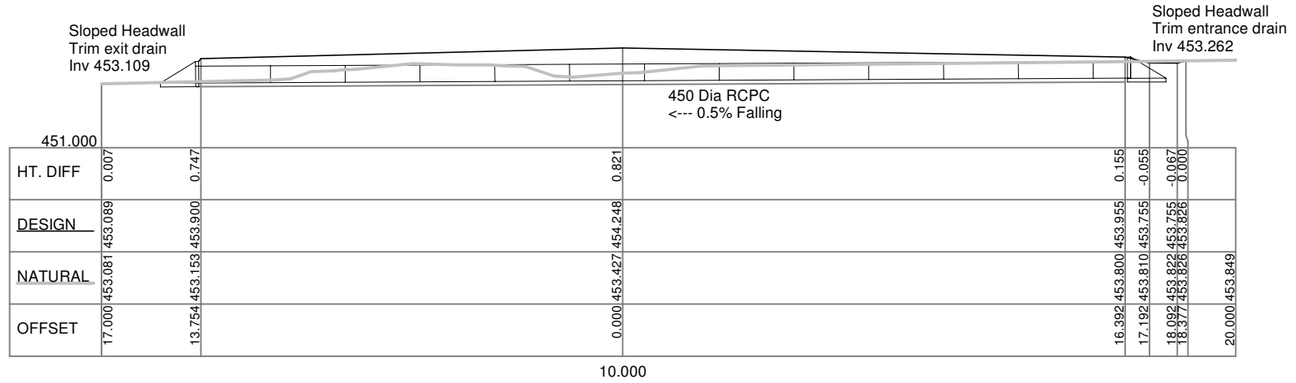


ISSUE STATUS	COORD SYSTEM	SURVEY	DESIGN		DRAWING	Total Sheets: 15
	MGA Zone 55	DUNCAN PRIESTLEY CIVIL ENGINEERING	DUNCAN PRIESTLEY CIVIL ENGINEERING	**DUNCAN PRIESTLEY CIVIL ENGINEERING**	CANOWINDRA RD ISECT V3 - MP	
29/03/2025	HEIGHT DATUM			**McNAUGHT EARTHMOVING**	PLAN NUMBER	**Sheet Number: 11**
SCALE: $SCALE	AHD	SURVEYED: D Priestley	DESIGNED: D Priestley	**CANOWINDRA RD QUARRY ACCESS INTERSECTION**		
				5083 CANOWINDRA RD		





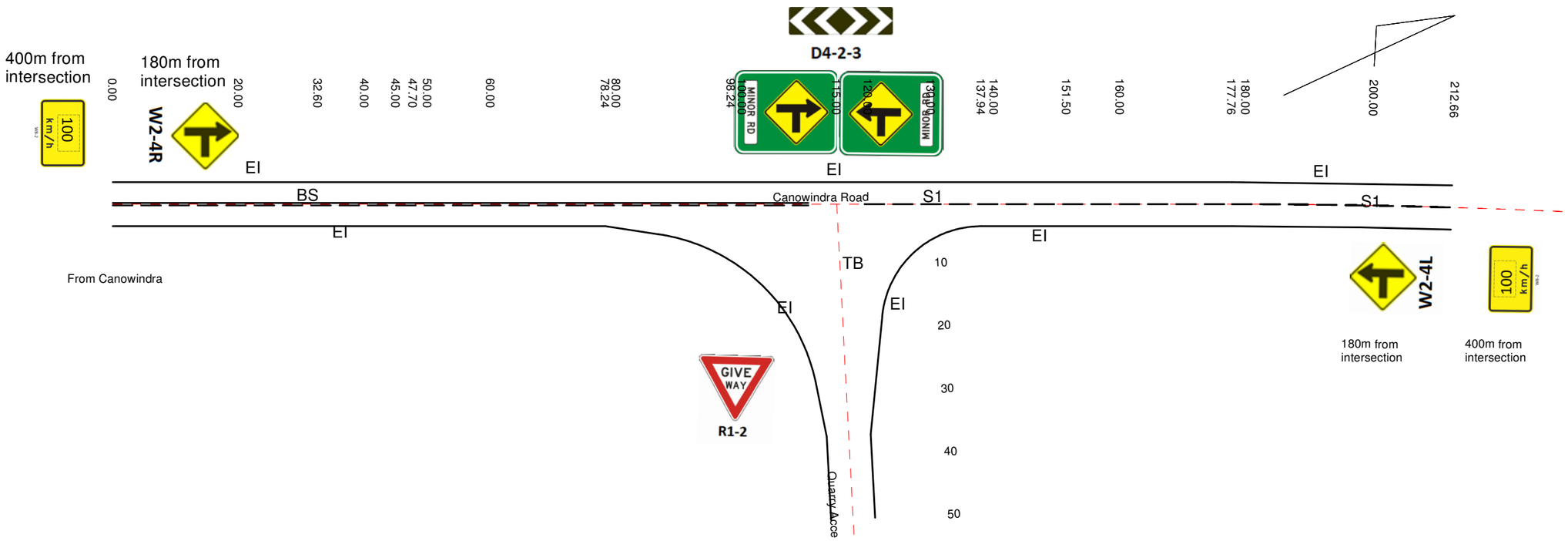
ISSUE STATUS	COORD SYSTEM	SURVEY	DESIGN	DUNCAN PRIESTLEY CIVIL ENGINEERING	DRAWING	Total Sheets: 15
	MGA Zone 55	DUNCAN PRIESTLEY CIVIL ENGINEERING	DUNCAN PRIESTLEY CIVIL ENGINEERING	McNAUGHT EARTHMOVING	CANOWINDRA RD ISECT V3 - MP	
29/03/2025	HEIGHT DATUM			CANOWINDRA RD QUARRY ACCESS INTERSECTION	PLAN NUMBER	**Sheet Number: 12**
SCALE: $SCALE	AHD	SURVEYED: D Priestley	DESIGNED: D Priestley	5083 CANOWINDRA RD		



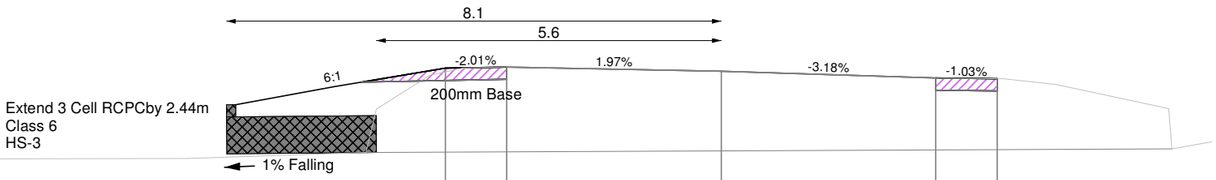
HT. DIFF	0.007	0.747	0.821	0.155	-0.055	-0.067	0.000					
DESIGN	453.089	453.900	454.248	453.955	453.755	453.822	453.826					
NATURAL	453.081	453.153	453.427	453.800	453.810	453.755	453.826					453.849
OFFSET	17.000	13.754	0.000	16.392	17.192	18.092	18.377					20.000

10.000

ISSUE STATUS	COORD SYSTEM	SURVEY	DESIGN		DRAWING	Total Sheets: 15
	MGA Zone 55	DUNCAN PRIESTLEY CIVIL ENGINEERING	DUNCAN PRIESTLEY CIVIL ENGINEERING	**DUNCAN PRIESTLEY CIVIL ENGINEERING**	CANOWINDRA RD ISECT V3 - MP	
29/03/2025	HEIGHT DATUM			**McNAUGHT EARTHMOVING**	PLAN NUMBER	**Sheet Number: 13**
SCALE: $SCALE	AHD	SURVEYED: D Priestley	DESIGNED: D Priestley	**CANOWINDRA RD QUARRY ACCESS INTERSECTION**		
				5083 CANOWINDRA RD		



ISSUE STATUS	COORD SYSTEM	SURVEY	DESIGN	DUNCAN PRIESTLEY CIVIL ENGINEERING	DRAWING	Total Sheets: 15
	MGA Zone 55	DUNCAN PRIESTLEY CIVIL ENGINEERING	DUNCAN PRIESTLEY CIVIL ENGINEERING	McNAUGHT EARTHMOVING	CANOWINDRA RD ISECT V3 - MP	
29/03/2025	HEIGHT DATUM			CANOWINDRA RD QUARRY ACCESS INTERSECTION	PLAN NUMBER	**Sheet Number: 14**
SCALE: $SCALE	AHD	SURVEYED: D Priestley	DESIGNED: D Priestley	5083 CANOWINDRA RD		



450.000

HT. DIFF		0.061	0.000	-0.000	0.002	0.000		
DESIGN	451.334	452.815	452.835	452.766	452.655	452.645		
NATURAL		452.754	452.835	452.766	452.653	452.645	451.614	
OFFSET	15.000	13.384	4.500	3.500	0.000	3.500	4.500	8.000

215.7
CULVERT EXTENSION

ISSUE STATUS	COORD SYSTEM	SURVEY	DESIGN		DRAWING	Total Sheets: 15
	MGA Zone 55	DUNCAN PRIESTLEY CIVIL ENGINEERING	DUNCAN PRIESTLEY CIVIL ENGINEERING	**McNAUGHT EARTHMOVING**	CANOWINDRA RD ISECT V3 - MP	
29/03/2025	HEIGHT DATUM			**CANOWINDRA RD QUARRY ACCESS INTERSECTION**	PLAN NUMBER	**Sheet Number: 15**
SCALE: $SCALE	AHD	SURVEYED: D Priestley	DESIGNED: D Priestley	**5083 CANOWINDRA RD**		