



Premise

BETTERGROW

Statement of Environmental Effects

EXTRACTIVE INDUSTRY AT GOOLMA ROAD, TWO MILE
FLAT




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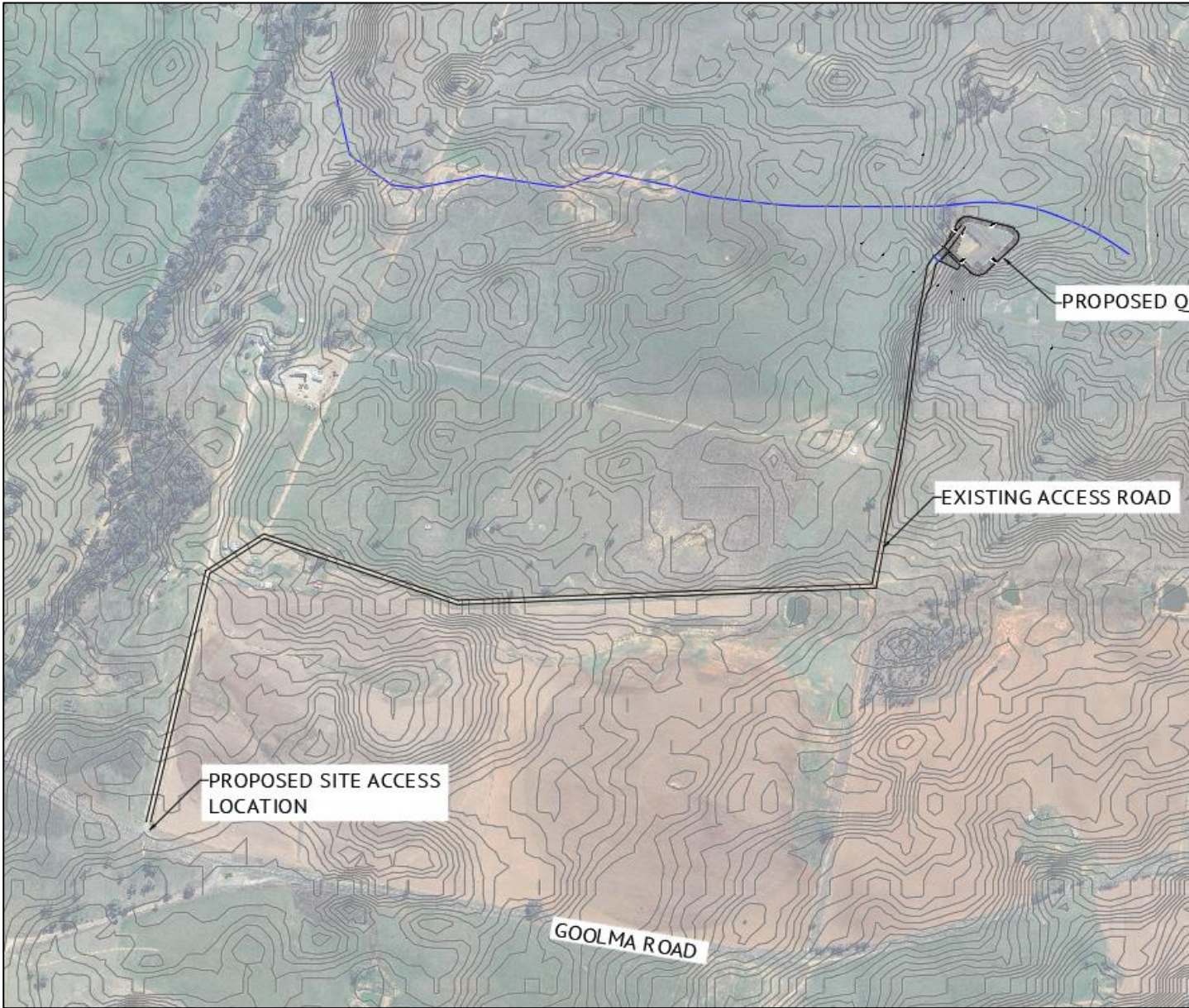
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1. INTRODUCTION

Premise Australia Pty Ltd has been commissioned by BetterGrow to prepare a Statement of Environmental Effects (SEE) to accompany a Development Application (DA) for an Extractive Industry at Lot 1 in DP 1083951 & Lot 1 in DP 1096542, known as, 2152 & 1988 Goolma Road, Two Mile Flat.

As depicted in the development plans attached in **Appendix A**, the DA seeks consent for the operation of a gravel quarry (extractive industry) at the abovementioned site. The proposed quarry would have approximate average production capacity of up to 30,000 tonnes per annum.

The subject site is located within the RU1 Primary Production zone under Clause 2.1 of the *Mid-Western Regional Local Environmental Plan 2012* (LEP).

This SEE has been prepared pursuant to the relevant provisions of the *Environmental Planning and Assessment Act 1979* (the EP&A Act) and *Environmental Planning and Assessment Regulation 2021* and is provided in the following format.

- **Section 2** of this report provides a description of the subject site and its locality.
- **Section 3** outlines the proposed development.
- **Section 4** details the planning framework applicable to the subject site and proposed development.
- **Section 5** identifies the impacts of the proposed development.
- **Section 6** provides a conclusion to the SEE.

2. THE SITE & ITS LOCALITY

2.1 The Site

The subject site is identified as Lot 1 DP 1083951 and Lot 1 in DP 1096542, 2152 & 1988 Goolma Road, Two Mile Flat. The subject site is located in a rural setting approximately 6.4km from the village of Goolma with the quarry area 8.1km from Goolma. Vehicular access to the quarry site is available from Goolma Road, a classified road which traverses the subject site.

The vast majority of the subject site is for agricultural purposes including livestock grazing and cropping.

The proposed quarry is positioned in the south-western extent of Lot 1 in DP 1096542. The nearest unrelated residential receiver is located approximately 1.2km west.

The existing condition of the subject site is depicted in **Figure 1**.

2.2 The Locality

The locality of the subject site is typically characterised by agricultural practices and land uses with scattered residential dwellings. The Cudgegong River is prominent throughout the subject site and surrounding area. The proposed quarry is sufficiently setback from the Cudgegong River and any environmentally sensitive areas.

The site locality is depicted in Figure 2.

Figure 1 – The Subject Site (Source: Premise)

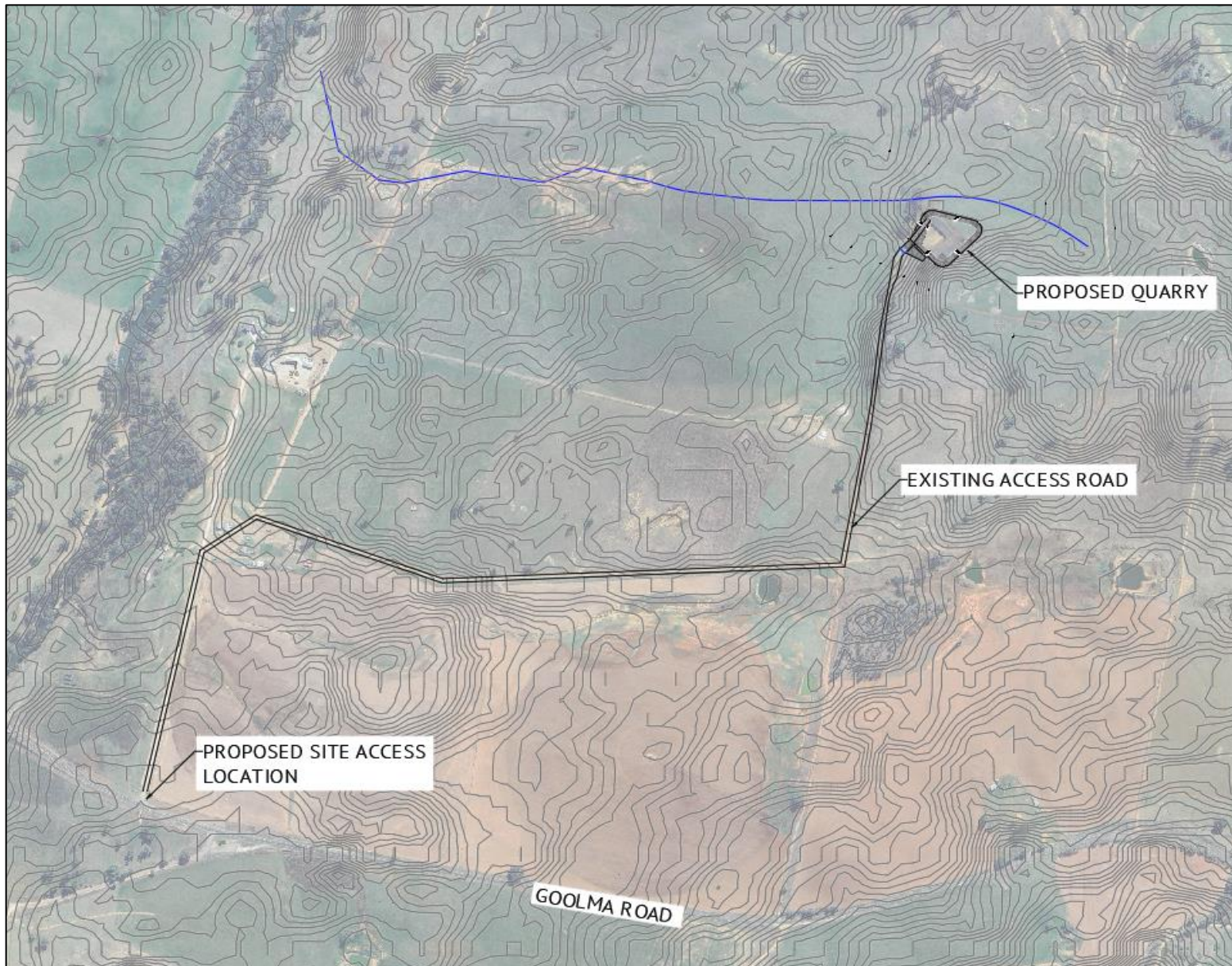


Figure 2 – The Site Locality (Source: ePlanning Spatial Viewer)

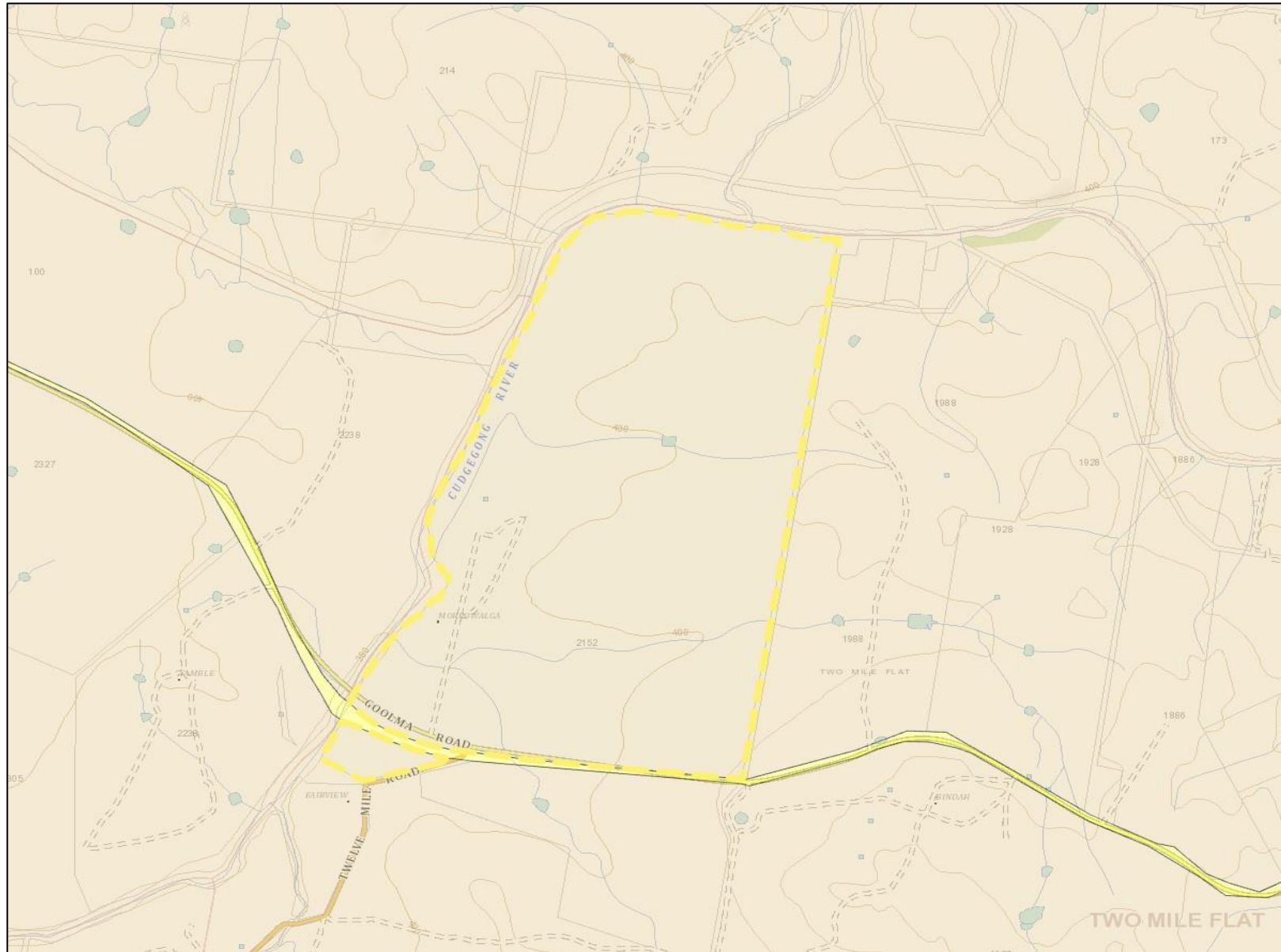
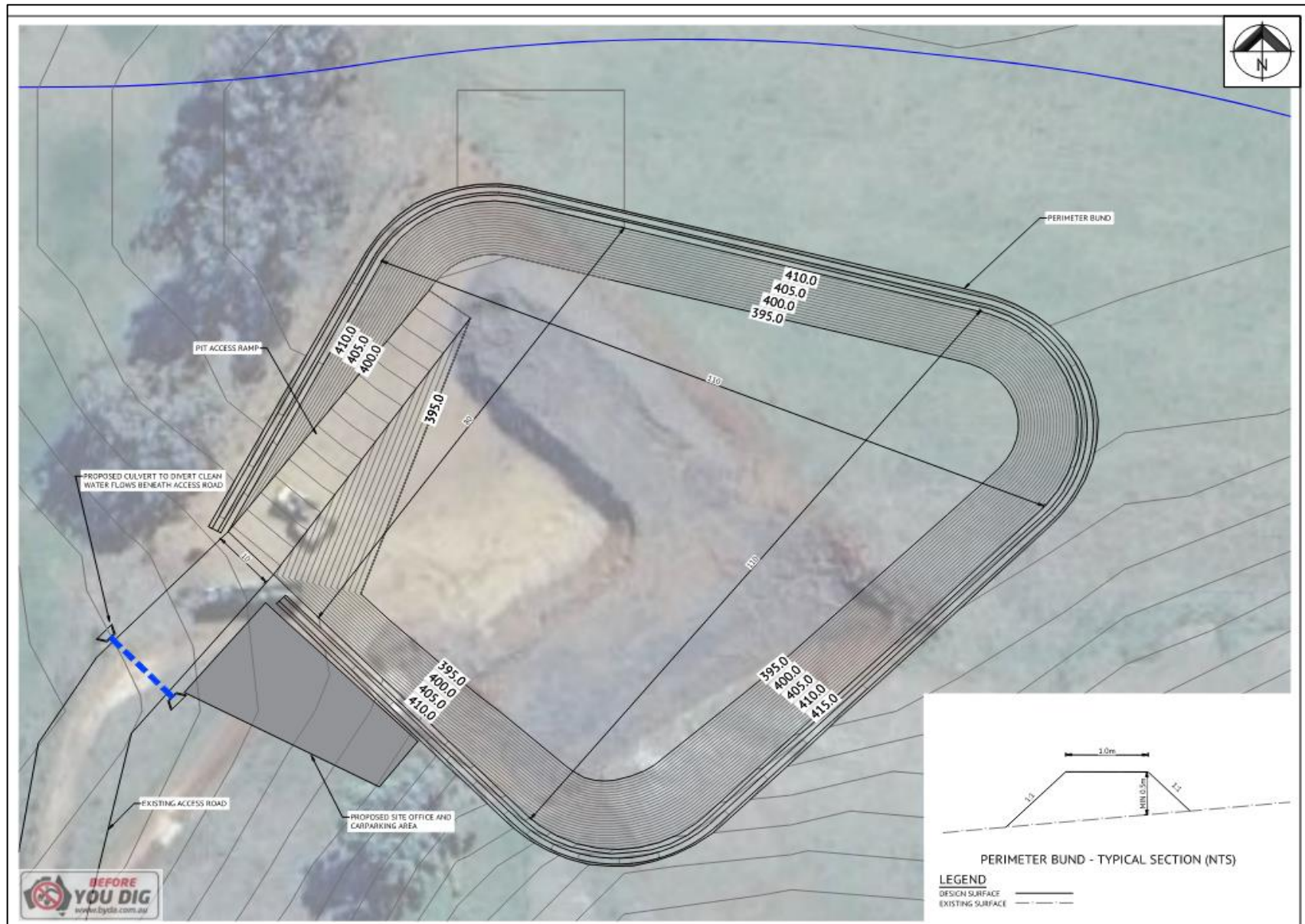


Figure 3 – Site Plan (Source: Premise)



3. THE DEVELOPMENT

3.1 Development Description

The proposed development is for the purposes of extractive industry (quarry). The footprint of the proposed quarry is identified within the attached development plans in **Appendix A**. The remainder of the subject site will continue to be used for extensive agricultural purposes. The development is formed of one distinct quarry pit which accounts for the overall extraction volume of up to 30,000 tonnes per year. The extracted material would provide material suitable for road base with the stockpile and processing area encompassed within the quarry boundaries.

The layout of the proposed development is depicted in **Figure 2**.

3.2 Site Rehabilitation and Final Landform

At the end of the life of the quarry, the subject site would be rehabilitated to achieve a final landform that is capable of future use for agricultural grazing and cropping activities.

The following are the key objectives for rehabilitation of the quarry:

- To produce a final landform that achieves a stable and functional drainage system at the site and minimises erosion and sedimentation.
- To provide rehabilitation areas that are similar to surrounding vegetation communities and provide suitable habitat for native fauna.
- To eliminate impacts from weeds and feral pests.
- To maintain site security and perimeter bunding to ensure public safety and stock exclusion.
- Maintain the limited visibility of the quarry operations from adjacent properties and the neighbouring road network.

The proposal would disturb approximately 9,000m² and 100% of this disturbance would be rehabilitated via the abovementioned measures to ensure the site is returned to its original landform.

4. STATUTORY PLANNING FRAMEWORK

4.1 Object of the EP&A Act

In New South Wales (NSW), the relevant planning legislation is the *Environmental Planning and Assessment Act 1979* (EP&A Act). The EP&A Act instituted a system of environmental planning and assessment in NSW and is administered by the Department of Planning, Industry & Environment (DPIE). In 2017, the Act was amended to provide a range of updated objects. The objects of the EP&A Act are:

“(a) To promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State’s natural and other resources,

(b) To facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment,

- (c) *To promote the orderly and economic use and development of land,*
- (d) *To promote the delivery and maintenance of affordable housing,*
- (e) *To protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats,*
- (f) *To promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage),*
- (g) *To promote good design and amenity of the built environment,*
- (h) *To promote the proper construction and maintenance of buildings, including the protection of the health and safety of their occupants,*
- (i) *To promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State,*
- (j) *To provide increased opportunity for community participation in environmental planning and assessment.”*

The proposed development is not considered to be antipathetic to the above objects.

4.2 Section 1.7

Section 1.7 of the EP&A Act requires consideration of Part 7 of the *Biodiversity Conservation Act 2016* (BC Act). Part 7 of the BC Act relates to an obligation to determine whether a proposal is likely to significantly affect threatened species. A development is considered to result in a significant impact in the following assessed circumstances.

Table 1 – Section 1.7

Test	Assessment
1. it is likely to significantly affect threatened species or ecological communities, or their habitats, according to the test in section 7.3, or	The development site is occupied by scattered vegetation. The site has historically been used for agricultural purposes. There is no substantive vegetation removal required for the development. Therefore, it is not anticipated that the proposed development will significantly affect threatened species or ecological communities, or their habitats.
2. the development exceeds the biodiversity offsets scheme threshold if the biodiversity offsets scheme applies to the impacts of the development on biodiversity values, or	As above.
3. it is carried out in a declared area of outstanding biodiversity value.	Not Applicable.

Source: Environmental Planning and Assessment Act 1979

4.3 Subordinate Legislation

The EP&A Act facilitates the preparation of subordinate legislation, consisting of:

- Environmental Planning Instruments (EPIs) (including State Environmental Planning Policies (SEPP), Local Environmental Plans (LEP), and deemed EPIs; and
- Development Control Plans (DCP).

In relation to the proposed development, the relevant subordinate legislation includes:

- Mid-Western Regional Local Environmental Plan 2012;
- State Environmental Planning Policy (Resilience and Hazards) 2021 (the Hazards SEPP);
- State Environmental Planning Policy (Transport and Infrastructure) 2021 (the Infrastructure SEPP);
- State Environmental Planning Policy (Resources and Energy) 2021 (the Energy SEPP);
- Mid-Western Regional Council Development Control Plan 2013.

The requirements of these are discussed in **Section 4.4** of this Statement.

4.4 Planning Instruments

4.4.1 LOCAL ENVIRONMENTAL PLAN

4.4.1.1 Introduction

The *Mid-Western Regional Local Environmental Plan 2012 (LEP)* is the applicable local planning instrument applying to the land. The aims of the LEP are:

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

(a) to promote growth and provide for a range of living opportunities throughout Mid-Western Regional,

(b) to encourage the proper management, development and conservation of resources within Mid-Western Regional by protecting, enhancing and conserving—

(i) land of significance to agricultural production, and

(ii) soil, water, minerals and other natural resources, and

(iii) native plants and animals, and

(iv) places and buildings of heritage significance, and

(v) scenic values,

(c) to provide a secure future for agriculture through the protection of agricultural land capability and by maximising opportunities for sustainable rural and primary production pursuits,

(d) to foster a sustainable and vibrant economy that supports and celebrates the Mid-Western Regional’s rural, natural and heritage attributes,

- (e) to protect the settings of Mudgee, Gulgong, Kandos and Rylstone by—*
- (i) managing the urban and rural interface, and*
- (ii) preserving land that has been identified for future long- term urban development, and*
- (iii) promoting urban and rural uses that minimise land use conflict and adverse impacts on amenity, and*
- (iv) conserving the significant visual elements that contribute to the character of the towns, such as elevated land and the rural character of the main entry corridors into the towns,*
- (f) to match residential development opportunities with the availability of, and equity of access to, urban and community services and infrastructure,*
- (g) to promote development that minimises the impact of salinity on infrastructure, buildings and the landscape.”*

The proposed development is not antipathetic to the aims of the plan as mentioned above.

4.4.1.2 Mapping

A review mapping via the NSW Planning Portal identifies the following applicable mapped constraints:

Table 2 – LEP Mapping Checklist

Constraint	Applicability	Section addressed
Land Application Map	Yes	N/A
Flood Planning Map, Active Street Frontages Map, Visually Sensitive Land Map	N/A	
Land Zoning Map	RU1 Primary Production	4.4.1.3
Lot Size Map	N/A	
Land Reservation Acquisition Map	N/A	
Heritage Map	Yes	4.4.1.7
Groundwater Vulnerability Map	Yes	4.4.1.4
Former LEP Boundaries Map	N/A	
Height of Buildings Map	N/A	
Terrestrial Biodiversity Map	Yes	4.4.1.5
Sewage Treatment Plant Buffer Map	N/A	
Additional Permitted Uses Map	N/A	

The above matters, together with other relevant LEP clauses, are discussed in the following sections.

4.4.1.3 Land Use Zoning

The subject site, being Lot 1 in DP 1083951 & Lot 1 in DP 1096542, is zoned RU1 Primary Production pursuant to the LEP. The objectives of the RU1 zone are:

- “ To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.*
- To encourage diversity in primary industry enterprises and systems appropriate for the area.*
- To minimise the fragmentation and alienation of resource lands.*
- To minimise conflict between land uses within this zone and land uses within adjoining zones.*
- To maintain the visual amenity and landscape quality of Mid-Western Regional by preserving the area’s open rural landscapes and environmental and cultural heritage values.*
- To promote the unique rural character of Mid-Western Regional and facilitate a variety of tourist land uses.”*

The proposed development is defined as extractive industry under the LEP as follows:

*“**extractive industry** means the winning or removal of extractive materials (otherwise than from a mine) by methods such as excavating, dredging, tunnelling or quarrying, including the storing, stockpiling or processing of extractive materials by methods such as recycling, washing, crushing, sawing or separating, but does not include turf farming.*

Note—

*Extractive industries are not a type of **industry**—see the definition of that term in this Dictionary.”*

Extractive industries are permitted with consent within the RU1 Primary Production zone as prescribed within the LEP 2012 which allows for Council consideration of the development proposal.

4.4.1.4 Groundwater Vulnerability Map

The subject site is identified as “groundwater vulnerable” on the LEP groundwater vulnerability map. As such, Clause 6.4 of the LEP applies with the objectives as follows:

“(a) to maintain the hydrological functions of key groundwater systems,

(b) to protect vulnerable groundwater resources from depletion and contamination as a result of development.”

Extraction-related activities shall be contained to the disturbed hill on site, with no dredging or excavation occurring within level areas where groundwater could be impacted. Furthermore, there is no indication any water table activity throughout the site. No use of extraction of groundwater is proposed within this development.

The quarry operations have been designed and the location of such activities strategically chosen to avoid significant adverse impacts.

4.4.1.5 Terrestrial Biodiversity

The subject site is identified as “high biodiversity” on the LEP terrestrial biodiversity map. Clause 6.5 of the LEP is applicable and the objectives are as follows:

- “(a) protecting native fauna and flora, and*
- (b) protecting the ecological processes necessary for their continued existence, and*
- (c) encouraging the conservation and recovery of native fauna and flora and their habitats.”*

The subject site has historically been disturbed for agricultural purposes including livestock grazing and cropping. As such, it is unlikely native vegetation is located within the boundaries of the quarry. The area of the proposed development has been specifically cited to avoid significant trees with the quarry only limited to clearing of disturbed grassland, consisting of introduced pasture species.

On the basis above, it is believed the development would not have an adverse impact on the condition, ecological value and significance of the flora and fauna.

4.4.1.6 Heritage Conservation

The subject site is identified as land occupied by a local heritage item under Schedule 5 of the LEP. The subject area is legally described as Heritage Item I369, “Morrowolga homestead”. The objectives of Clause 5.10 are as follows:-

- “(a) to conserve the environmental heritage of Mid-Western Regional,*
- (b) to conserve the heritage significance of heritage items and heritage conservation areas, including associated fabric, settings and views,*
- (c) to conserve archaeological sites,*
- (d) to conserve Aboriginal objects and Aboriginal places of heritage significance.”*

The development does not include any altering to the integrity of the heritage item, disturbing or excavating of an archaeological site or Aboriginal place of heritage significance. Furthermore, there are no Aboriginal cultural items, relics or artefacts located on the subject site or within the surrounding area. The quarry operations will not occur within proximity to the heritage item nor will be visible from Morrowolga homestead.

As such, the proposed development would not deter from the heritage significance of the item and further assessment is not required.

By virtue of the information above, it is believed the proposed development is not antipathetic to the matters of Clause 5.10 within the DRLEP.

4.4.2 STATE ENVIRONMENTAL PLANNING POLICY

4.4.2.1 State Environmental Planning Policy (Resilience and Hazards) 2021

Chapter 4 of the Hazards SEPP relates to remediation of land. Under clause 4.6(1) of the Hazards SEPP, the consent authority is precluded from granting development consent unless it has considered whether the land is contaminated and, if contaminated, whether the land is suitable in its contaminated or will be suitable after remediation for the purpose for which the development is proposed to be carried out.

A search undertaken under NSW EPA contaminated land register indicates that the site is not identified as contaminated land. It is understood the subject site has historically been used for broadacre primary production purposes and a small proportion of the site will be used for extractive industry. Given no contaminated area are recorded on or adjacent to the proposed development and no evidence of contamination is identified, it is considered highly unlikely that contamination exists and that would be affected by the development.

Therefore, it is considered that the site is likely to be suitable for the development.

4.4.2.2 State Environmental Planning Policy (Transport and Infrastructure) 2021

The State Environmental Planning Policy (Transport and Infrastructure) 2021 (ISEPP), Chapter 2, aims to facilitate the effective delivery of infrastructure across the state by:

“(a) improving regulatory certainty and efficiency through a consistent planning regime for infrastructure and the provision of services, and

(b) providing greater flexibility in the location of infrastructure and service facilities, and

(c) allowing for the efficient development, redevelopment or disposal of surplus government owned land, and

(d) identifying the environmental assessment category into which different types of infrastructure and services development fall (including identifying certain development of minimal environmental impact as exempt development), and

(e) identifying matters to be considered in the assessment of development adjacent to particular types of infrastructure development, and

(f) providing for consultation with relevant public authorities about certain development during the assessment process or prior to development commencing, and

(g) providing opportunities for infrastructure to demonstrate good design outcomes.”

The proposed development has frontage to Goolma Road, a classified road. Vehicle access to the subject site will be available from Goolma Road. The extractive industry is supported by an assessment of impacts associated with traffic and concludes:-

- The increase in the traffic volumes on the surrounding road network will not change the classifications of the roads under the functional road hierarchy.
- The percentage increases in the traffic volumes on the surrounding road network range from 1.0% for AADT on Goolma Road to 8.9% for the AM peak hour on Goolma Road. The percentage increase in traffic volume is not considered significant and the net daily traffic volume and peak hour volume generated by the quarry are easily absorbed into the surrounding road network with minimal impact on the capacity of the existing traffic streams using the road system.
- The additional traffic generated by the proposed quarry is well below the capacity of the road network at a Level of Service A and all roads would continue to operate satisfactorily.
- The existing access at the intersection of the quarry access road and Goolma Road is sufficient to handle the increase in vehicle traffic and currently has the appropriate site distances.

Pursuant to Schedule 3 of the SEPP, the proposed development is not of relevant size or capacity and as such, referral to Transport for New South Wales (TfNSW) is not required.

4.4.2.3 State Environmental Planning Policy (Resources and Energy) 2021

Chapter 2 of the Energy SEPP relates to mining, petroleum production and extractive industries. Pursuant to Section 2.9(3) of the Energy SEPP, extractive industry is permissible with consent on land on which development for the purposes of agriculture or industry may be carried out (with or without development consent) and extractive industry in any part of a waterway, an estuary in the coastal zone or coastal waters of the State that is not in an environmental conservation zone.

In accordance with Clause 2.17 of the SEPP, the development is located within a rural area with limited affected residential receptions and good separation to urban areas. The dwelling house on Lot 1 in DP 1083951 is sufficiently setback from the operations of the extractive industry.

The physical landscape and lack of residential receivers ensures noise and dust impacts are shielded. The development provides an excellent resource of good quality material to respond to internal operations and local demand. It is not proposed that the development would serve distant projects, with the primary intent to provide material for local activities (ie, within 75 km).

Clause 2.20 of the Energy SEPP identifies consideration to natural resource management and environmental management. The quarry is not located close to, and nor would it have any impact on, significant water recourse or areas of threatened species or sensitive biodiversity. The proposed development is accompanied by a Greenhouse Gas Assessment (**Appendix C**) which assess the potential for greenhouse gas (GHG) emissions to result from the construction and operation of the project. The GHG assessment provides the following conclusion:-

“Emissions resulting from the proposed development are considered negligible and insignificant in the context of existing state and national emissions. While the actual annual emissions resulting from the operation of the project may be higher in some years than others, reflecting potential variances in the required electrical supply, transport routes and production volumes, only minor contributions to state and national GHG emissions are anticipated to result.”

The quarry is unlikely to generate significant waste due to stockpiling of topsoil and ongoing use of all extracted material. As such, the development is considered consistent and compliant with Clause 2.21 of the SEPP.

Site rehabilitation works and restoration of the land is outlined within **Section 3.2** which demonstrates consistency with Clause 2.23 of this SEPP. Waste associated with the activity is deemed very low as all productions will either be used for rehabilitation or form part of the saleable product associated. All rehabilitation work would be undertaken within the confines of the subject site and public safety would be maintained at all times.

The proposed development is not deemed incompatible with the surrounding area and land uses.

4.4.3 DEVELOPMENT CONTROL PLANS

4.4.3.1 Mid-Western Regional Council Development Control Plan 2013

The Mid-Western Regional Council Development Control Plan 2013 (DCP) applies to the site. **Table 3** within **Appendix B** provides a summary of relevant matters raised via the DCP together with an assessment of project specific compliance.

As outlined within **Table 3** in **Appendix B**, the development is compliant with all relevant provisions of the Development Control Plan.

4.4.4 DEVELOPMENT CONTRIBUTIONS PLANS

The Development Contributions which apply to the proposed development include the following:

- Section 7.11 Contributions Plan – Extractive Industry Development Haulage Contribution
- Section 7.12 Fixed Development Consent Levy

It is anticipated the applicable development contributions charges will be calculated by Council in accordance with the aforementioned plans and requested as a condition of development consent.

4.5 Integrated Development

Section 4.46 of the EP&A Act states that development requiring consent and another activity approval is defined as Integrated Development. The proposed development is not classified as Integrated Development on the basis that there are no approvals or consents listed under the other Acts required to facilitate the development.

For the avoidance of doubt:

- A licence from the Environment Protection Authority pursuant to Schedule 1, Section 19 of the *Protection of the Environment Operations Act 1997* on the basis the proposed quarry does not entail extraction or processing greater than 30,000 tonnes of material per year;
- A licence is not required pursuant to the *Mining Act 1992* as the material to be extracted are not listed within Schedule 1 of the *Mining Regulation 2016*;
- The development does not require the gaining of a controlled activity approval pursuant to Part 3, Chapter 3 of the *Water Management Act 2000* on the basis no works are proposed within 40m of a waterbody or specified location;
- The development does not require the gaining of a dredging or reclamation permit under the *Fisheries Management Act 1994* as no suck works are proposed on water land; and
- The development does not require any works outlined within Section 138 of the *Roads Act 1993* and as such, no approval is required from the roads authority (MWRC).

On the basis of the information above, the development does not represent integrated development. Therefore, no approvals or consents from external bodies are required.

4.6 Designated Development

Section 4.10 of the EP&A Act and Schedule 3, Part 2 of the EP&A Regulations 2021 outlines the provision of designated development. By virtue of Clause 26, Schedule 3 of the EP&A Regulations, the development does not constitute designated development based on the follow:

- The development does not obtain or process for sale, or reuse, more than 30,000 cubic metres of extractive material per year, or
- The extractive industry would not disturb a total surface area of more than 2 hectares of land, or
- The proposed development is not located:

- In or within 40 metres of a natural waterbody, wetland or an environmentally sensitive area of State significance, or
- In or within 100 metres of a wetland, or
- Within 200 metres of a coastline, or
- In an area of contaminated soil or acid sulfate soil, or
- On land that slopes at more than 18 degrees to the horizontal, or
- If the facility involves blasting—within 1,000 metres of a residential zone or within 500 metres of a dwelling not associated with the development, or
- Within 500 metres of the site of another extractive industry facility that has operated during the last 5 years.

Based on the above, the development does not constitute designated development, and as such, an Environmental Impact Statement is not required.

5. IMPACTS, SITE SUITABILITY & THE PUBLIC INTEREST

Pursuant to the NSW Department of Planning and Environmental (DPE) publication *Application requirements* dated March 2022, this section of the report outlines the environmental impacts of the proposed development and measures required to protect the environment or lessen the harm to the environment.

This section also addresses the consideration at Section 4.15(c) and Section 4.15(e) of the Act that relate to the suitability of the site for the development and the public interest.

5.1 Context and Setting

The development site is located within a rural setting approximately 6.4km from the village of Goolma. The surrounding locality is characterised by large scale agricultural grazing and cropping with a small number of scattered residential dwellings.

The location of the quarry is 2.4km from Goolma Road is not visible from the nearest residential receiver or the aforementioned road due to the slope and form of the land. The land slope provides shielding from receivers and Goolma road and the opportunity to work within the landscape to minimise visual intrusion.

By virtue of the impact assessment that ensues below it is determined that the context of the site and operations of the quarry it is deemed appropriate for the proposed use and would not be expected to lead to any significant detrimental impacts to nearby receivers or the wider environment.

5.2 Access, Transport and Traffic

The subject site has frontage to Goolma Road. The quarry is accessed via an intersection on Goolma Road, then approximately 2.4 km of internal access roads to reach the location of the proposed quarry's site offices and carparking areas. These facilities are adjacent to the entry point to the main operational area of the quarry.

The intersection of Goolma Road and the quarry access road forms a standard Tee-Intersection. The intersection is located approximately 300m to the east of Yamble Bridge and approximately 150m west of the intersection between Twelve Mile Road and Goolma Road.

To support the application, consideration of traffic impacts has been completed in the following sections.

Section 2.22 of *State Environmental Planning Policy (Resources and Energy) 2021* (RESEPP) requires the consent authority to give consideration to the potential impact of a proposed resource development on the traffic network. If a project would result in the transport of materials on a public road, the consent authority must, within 7 days, refer the application to Transport for NSW (TfNSW). The consent authority is required to take into consideration any submission that TfNSW provides within 21 days.

The project will result in the transfer of materials on a public road; it is therefore expected that Council will refer the application to TfNSW. To provide a robust assessment of potential impacts, an assessment of traffic impacts is required. The following is considered in this regard:

- An assessment of the existing traffic conditions, including details of the intersection between the existing property access and Goolma Road.
- Outlines the proposed development, including the expected generation of additional traffic to be added to the existing road network.
- An assessment of the impact of the proposed development on the existing road network. This includes the intersection between the existing property access and Goolma Road and the ability of the surrounding road network to absorb the increase in traffic volumes.
- Mitigation measures and additional works as required to minimise impacts of the proposed quarry on the existing road network.

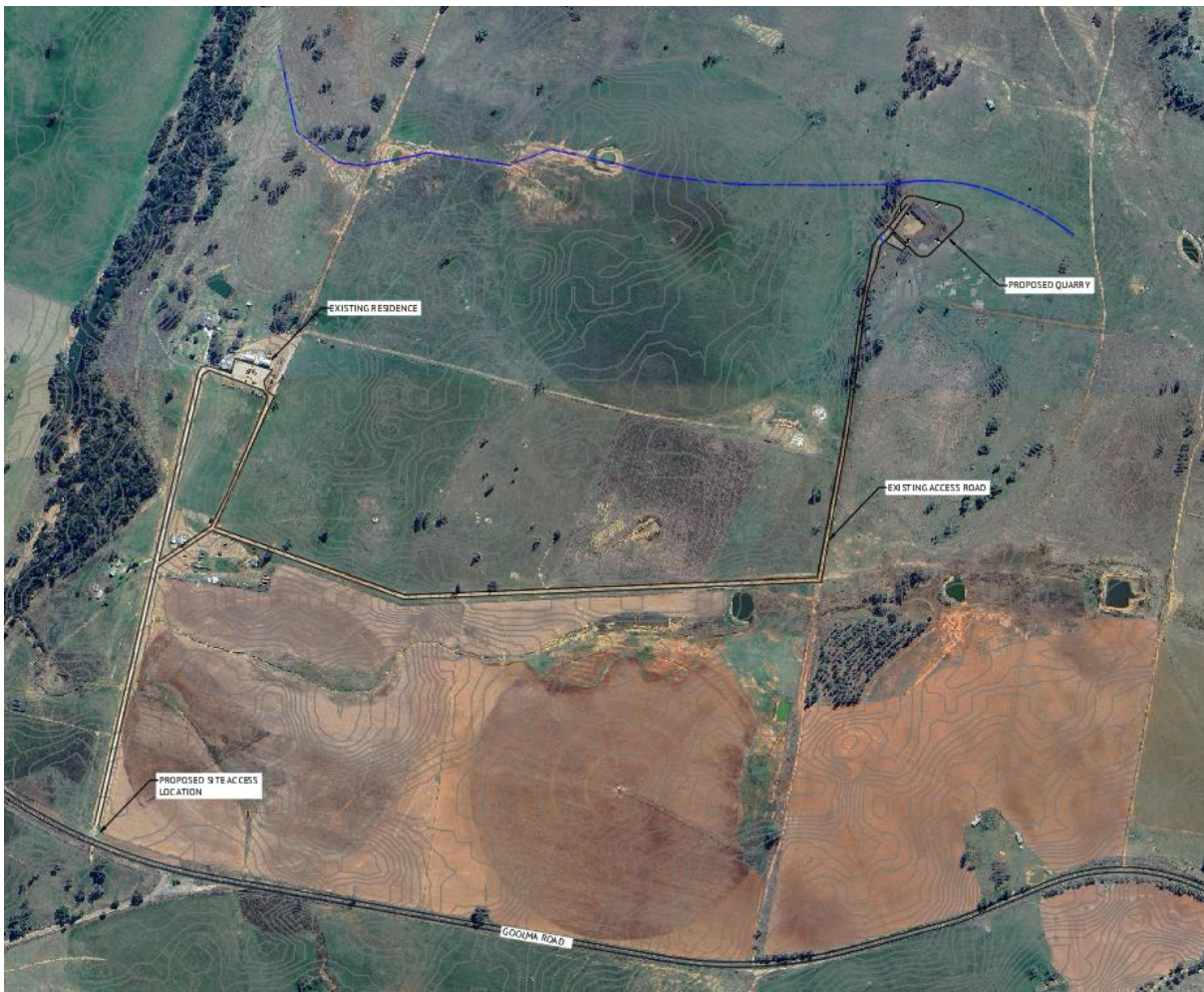
5.2.1 EXISTING CONDITIONS

5.2.1.1 Site access

The proposed quarry site is accessed via an existing internal access track of approximately 2.4 km in length. The access road connects to the main entrance for the property at 2152 Goolma Road, where there is an existing intersection with Goolma Road. The existing internal access, and existing property entrance for 2152 Goolma Road are shown on **Figure 3**.

The intersection of Goolma Road and the existing property entrance for 2152 Goolma Road forms a standard Tee-Intersection. The intersection is located approximately 300m to the east of Yamble Bridge and approximately 150m west of the intersection between Twelve Mile Road and Goolma Road as shown in **Figure 4**.

Figure 3 – Impact assessment area



5.2.1.2 Existing traffic conditions

5.2.1.2.1 Road network hierarchy

The TfNSW *Guide to Traffic Generating Developments* proposes four basic road classes as the basis for the functional hierarchy of a road network.

A functional classification considers the relative balance of the traffic mobility function and amenity/access functions of streets and roads and defines the purpose of a road within the context of a road network.

The four road classes are arterial, sub-arterial, collector and local roads and are defined below in **Table 3**. Goolma Road is an arterial road.

Table 3 – Road classes and functions

Road Class	Road Function
Arterial roads	Roads whose main function is to carry through traffic from one region to another forming the principal means of communication for major traffic movements.

Road Class	Road Function
Sub-Arterial roads	Those roads which supplement the arterial roads in providing for through traffic movement to an individually determined limit that is sensitive to both roadway characteristics and adjoining land uses.
Collector roads	Roads that distribute traffic between the arterial roads and the local street system and provide access to adjoining property.
Local roads	Subdivisional roads whose main traffic function is to provide access to adjoining property.

5.2.1.3 Existing roadway conditions

The existing roadway configuration, conditions and intersection facilities of Goolma Road are outlined in the following sections of the report. There are currently no known current or proposed roadworks, traffic management works or bikeways proposed for the section of Goolma Road analysed within this assessment.

5.2.1.3.1 Goolma Road

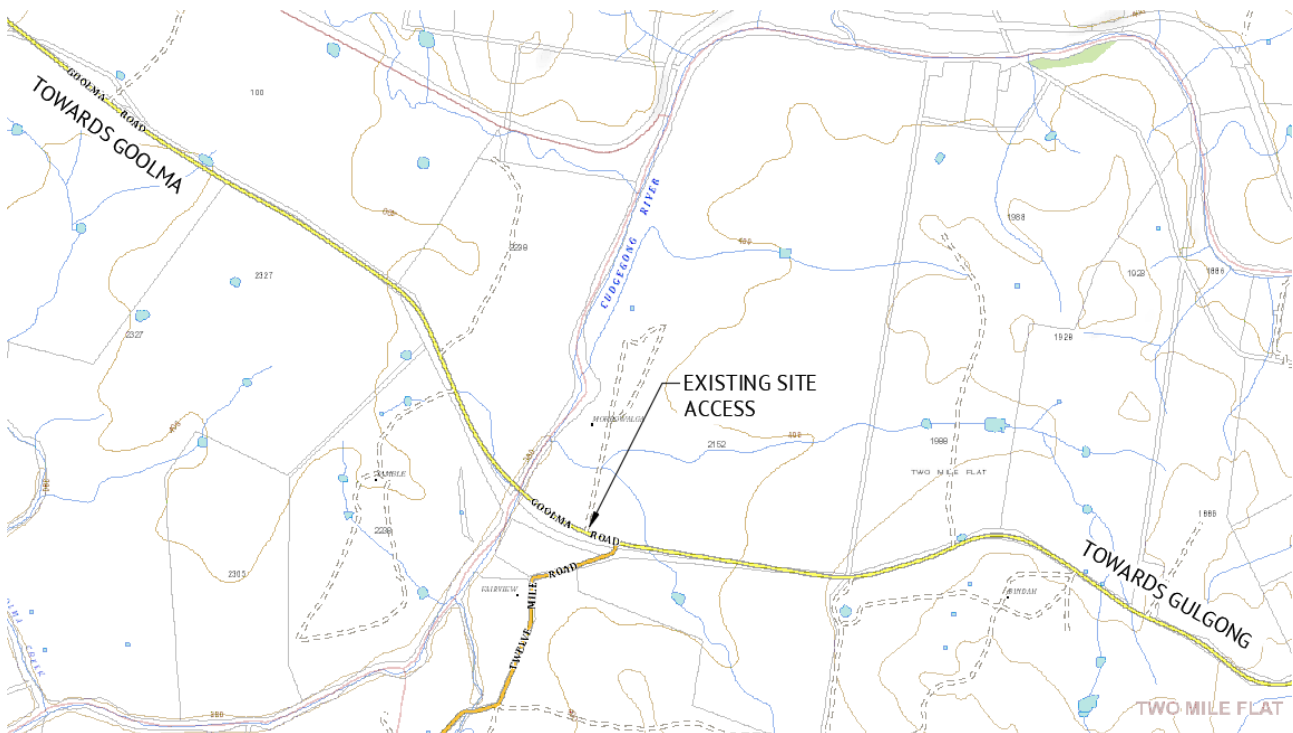
Goolma Road is a Classified Main Road, with a gazetted road number of 633 and connects Wellington in the southwest to Gulgong in the northeast. Goolma Road connects the localities of Spicers Creek, Goolma and Guntawang.

Goolma Road is a two-way, two-lane bitumen sealed road with a 3.5 m wide carriageway in each direction. The roadway is centreline and edge line marked with variable width bitumen sealed shoulders. Single and double centrelines are provided as appropriate where sight distance is limited due to horizontal curves and undulations in the vertical alignment of the road. Goolma Road is speed limited at 100km/h.

As shown in **Figure 4**, the alignment of the initial sections of the roadway to the east towards Gulgong is undulating. Several horizontal curves are posted with advisory speed signage of 85km/hr. Goolma Road undulates until the intersection with Gardiners Road, approximately 5km from the site entrance.

The alignment of the initial sections of the roadway to the west towards Goolma is slightly undulating with large horizontal curves. None of the curves up to the intersection with Mebul Road have any advisory speed signage, approximately 4km from the site entrance.

Figure 4 - Goolma Rd Alignment



5.2.1.3.2 Intersection of Goolma Road and the quarry access road

As mentioned in **Section 5.2.1**, the proposed quarry is accessed via an internal unpaved access road which forms a standard Tee-Intersection with Goolma Road.

The internal access track is an unpaved, two-way road of approximately 7m in width. The road narrows to a total width of 5m through an access gate, approximately 30m from the edge of Goolma Road.

5.2.1.4 Traffic flow

5.2.1.4.1 Key roads

For the purpose of this report, Goolma Road is considered to be the only key road of note as it is the only access way for all vehicles entering or exiting the proposed quarry. All traffic generated by the proposed quarry is expected to travel either east or west along Goolma Road.

Traffic counts were obtained from Mid-Western Regional Council for the preparation of this report. Mid-Western Regional Council placed traffic classifiers on Goolma Road approximately 10m to west of Guntawang Bridge, approximately 14km east of the site entrance. As Goolma Road is an arterial road with only minor connecting roads between Guntawang Bridge and the property access, the traffic count data at Guntawang Bridge can be assumed to be consistent with the expected traffic volumes of Goolma Road at the existing property entrance.

Premise was provided with data over the following periods with complete readings available for:

- Wednesday 21 June 2019 to Tuesday 4 July 2019.
- A Summary of the data provided can be found in Appendix A

Premise notes that whilst the above data is relatively recent, it falls within a period where COVID lockdowns may have impacted the volume of traffic on the road network. For this reason, Premise has analysed the traffic count data from a nearby station (Newell Highway 6145) to scale the provided data on Goolma Road.

The traffic count station on Newell Highway (6145) recorded an average daily traffic volume of 2792 vehicles for the month of June 2019, this is compared to an average daily traffic volume of 3040 for the month of June 2023. This results in an increase of approximately 10%. As such, the traffic count data provided by Council has been scaled by 10% to reflect the post covid increase in traffic flows.

5.2.1.4.2 Existing traffic flow

Average Annual Daily Traffic (AADT)

Annual Average Daily Traffic (AADT) is defined as the total volume of traffic passing a roadside observation point over a period of a year divided by the number of days in the year.

Based on the traffic classifier counts carried out and an assessment of the data recorded, estimates of the AADT and vehicle speed statistics on Goolma Road at the location of the existing site access are provided in **Table 4** below.

Table 4 – Existing 2024 AADT

Location	Average Annual Daily Traffic (AADT – veh/day)	Heavy Vehicles (%)	Mean Speed (km/hr)	85% Speed (km/hr)
Goolma Rd at Access Intersection	1997	17.2%	95.9	104.4

For all traffic movements it is assumed traffic is split evenly in both directions.

Peak Hour Traffic Volumes

Analysis of the provided data identifies peak hour traffic flows at the following times as outlined in **Table 5** for all traffic movements it is assumed traffic flows are split evenly in both directions.

Table 5 – Existing 2024 Peak Hour Traffic

Location/Direction	Time	Peak Hour Traffic (Veh/hr)		
		Total	Light Vehicles	Heavy Vehicles
Goolma Road Westbound	Morning Peak - 10:00-11:00	79	65	14
	Evening Peak - 15:00-16:00	90	77	13
Goolma Road Eastbound	Morning Peak - 10:00-11:00	79	65	14
	Evening Peak - 15:00-16:00	90	77	13

5.2.1.4.3 Existing roadway capacity

The provision of roads within a rural area provides two main functions:

- to cater for moving vehicles; and
- to allow for development and to provide access to adjoining property.

In carrying out the above functions, a road must also be capable of handling the traffic demands placed on it. Roads have varying capacities dependent on the function they are performing. AUSTRROADS *Guide to Traffic Management* states:

“Capacity analysis provides the basis for determining the number of lanes, lane disciplines and lane types to be provided, having regard for the volume and composition of traffic and the prevailing roadway and traffic control conditions. For a given number of traffic lanes, capacity analysis provides a mean of determining the traffic carrying performance of a road under the prevailing road, traffic and control conditions.”

The physical characteristics of a roadway such as lane width, alignment and frequency of intersections make up the prevailing roadway conditions.

The road’s capacity and a driver’s expectations of the operational characteristics of a traffic stream defines a qualitative measure denoted as the Level of Service (LOS) of a road.

Level of service definitions combine such factors as speed, travel time, safety, convenience, and traffic interruptions and fall into six levels of service categories ranging from A down to F. The categories are graduated from Level of Service A down through six levels to Level of Service F that is a zone of forced flow.

Table 4.5 in TfNSW *Guide to Traffic Generating Developments* 2002 has been used to estimate the LOS capacity for Goolma Road. Based on an assessment of the existing road and the data provided by Council, Goolma Road,

- Is situated within rolling topography with 40% of the road not suitable for overtaking, and
- Has >15% heavy vehicles.

The capacity and LOS of Goolma Road is therefore determined to have LOS A with a two-way hourly capacity of 310 vehicles per hour.

The TfNSW *Guide to Traffic Generating Developments* 2002 describes Level of Service A as:

“The top level is a condition of free flow in which individual drivers are virtually unaffected by the presence of others in the traffic stream. Freedom to select desired speeds and to manoeuvre within the traffic stream is extremely high, and the general level of comfort and convenience provided is excellent.”

5.2.1.5 Design speed

As mentioned in **Section 5.2.1.3.1**, the posted speed of Goolma Rd is 100km/hr. However Based on the provided traffic count data from Mid-Western Regional Council, the mean speed of Goolma Road is 95.9 km/hr, with an 85% speed of 104.4 km/hr. For this report, a design speed of 110km/hr has been adopted, 10km/hr above the posted speed of the road. As this speed is higher than the recorded 85% speed, this is deemed to be conservative.

5.2.1.6 Current Traffic Generation of Site

Premise was provided the existing traffic volumes into the site by the client for the current site agricultural use, with the AADT and peak hour traffic volumes summarised in **Table 6** and **Table 7**. The existing traffic to and from the existing site is split evenly between eastbound and westbound on Goolma Road.

The typically (largest) trucks used for the current site are truck and dog trailers with a payload of 37 tonnes. The standard maximum length of the truck and dog combination is 19 m.

Table 6 – AADT generation for existing commercial agricultural usage of the site

	Total	Light Vehicles	Heavy Vehicles
AADT (Veh/d)	22	20	2

Table 7 – Existing Peak Hour Traffic Volumes for existing commercial agricultural usage of the site

	Right In (From Gulgong)		Left In (From Goolma)		Right Out (Towards Goolma)		Left Out (Towards Gulgong)	
	Light Vehicles	Heavy Vehicles	Light Vehicles	Heavy Vehicles	Light Vehicles	Heavy Vehicles	Light Vehicles	Heavy Vehicles
AM Peak (Veh/hr)	2	1	2	1	1	0	1	0
PM Peak (Veh/hr)	1	0	1	0	2	1	2	1

5.2.1.7 Adaptation of appropriate computer models

Intersection (and access) performance has been assessed using SIDRA Intersection Version 9 Network (SIDRA). SIDRA is an advanced micro-analytical traffic tool for evaluation of intersections. The SIDRA network model determines the backward spread of congestion as queues on downstream lanes block upstream lanes and applies capacity constraint to oversaturated upstream lanes, thus limiting the flows entering downstream lanes.

SIDRA reports intersection performance in terms of a range of parameters including:

- **Demand Volumes (V):** The modelled number of vehicles arriving at the intersection during the assessment hour. Demand volumes are calculated by dividing the peak hour volume by the peak flow factor (PFF). SIDRA's default PFF of 95% has been adopted for all movements,
- **Degree of Saturation (DoS):** The ratio of the demand volume, V, to the theoretical capacity. An intersection is considered to be operating at its practical capacity when the DoS reaches 0.80 for priority control, 0.85 for a roundabout and 0.90 for traffic signals,
- **Average Delay (D):** The mean control delay including both queuing delay and geometric delay for all vehicles arriving during the assessment period including the delay experienced after the end of the flow period until the departure of the last vehicle arriving during the flow period, and
- **95th Percentile Back of Queue Length (Q):** The maximum backward extent of the queue relative to the stop line or give-way / yield line during a signal cycle or gap acceptance cycle below which 95% of all queue lengths fall. The 95th percentile back of queue length is generally accepted as the maximum queue length for design purposes.

5.2.1.8 Goolma Rd and Quarry Access Road Intersection – PRE-development Conditions

Pre-development intersection analysis has been undertaken at the intersection between Goolma Road and the proposed Quarry Access Road based on the existing 2024 traffic volumes as outlined in **Section 5.2.1.2. Appendix D** shows SIDRA output results with key outputs from the SIDRA model provided in **Table 8** and summarised below. It has been conservatively assumed for this analysis that the peak hour traffic flows for Goolma Rd and the Quarry Access Road are aligned.

- The overall degree of saturation (DoS) for the intersection is 0.05 for both the AM & PM Peak Hour.
- The maximum average control delay for any movement is 8.7 seconds, which is for the Western approach left turn during the AM peak.
- There is no predicted queue distance for either the AM or PM peak.
- The level of service for each leg of the intersection is Level of Service A for both the AM and PM peak hour.

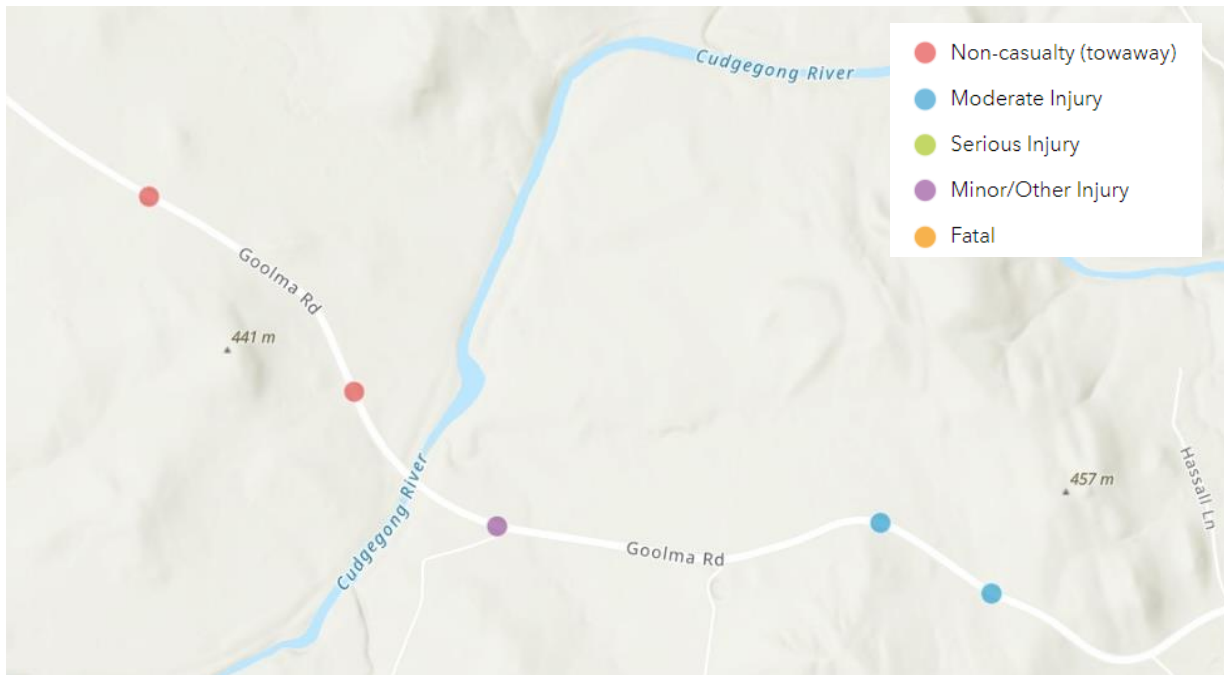
Table 8 – SIDRA Output – Intersection Goolma Road and Site Access, 2024 Existing Conditions

Movement	AM Peak				PM Peak			
	PHT (veh/hr)	DoS (%)	Delay (sec)	95% Queue (m)	PHT (veh/hr)	DoS (%)	Delay (sec)	95% Queue (m)
East Approach:								
Right	3	0.05	8.5	0	1	0.05	7.5	0
Through	78		0	0	87		0	0
North Approach:								
Left	1	0.00	5.8	0	3	0.01	6.3	0
Right	1		6.0	0	3		6.7	0
West Approach:								
Left	3	0.04	8.7	0	1	0.05	7.8	0
Through	76		0.0	0	89		0	0

5.2.2 TRAFFIC SAFETY

A review of the TfNSW Centre for Road Safety Crash and Casualty Statistics database for all injury crashes along Goolma Road in the vicinity of the site has been carried out. The crash database provides the location and severity of all injury and fatal crashes for the five-year period from 2018 to 2023. The crash search recorded 3 casualty crashes and 2 non-casualty crashes on Goolma Road, with the location of the crashes as shown in **Figure 5**.

Figure 5 - TfNSW Crash Search Map



The crash and injury type are summarised below:

- Overtaking, resulting in no casualties.
- Object on road, resulting in no casualties.
- Head on, resulting in 2 injures.
- One off road to the left in a left bend and hitting object resulting in a moderate injury.
- One off road to the left in a right bend resulting in a moderate injury.

Of the above recorded incidents, there does not appear to be any pattern or any locations of re-occurring similar incidents that would highlight sections of the road being excessively unsafe. The number and type of incidents recorded are consistent with other rural classified roads in the area.

Given the class of road and crash types, it is concluded that the road network is currently operating in a manner consistent with rural classified roads.

5.2.2.1 Parking Supply and Demand

As the proposed development is on a rural property fronting a rural arterial road there is currently no on-street parking provisions and/or demand. The current site has off street parking provisions that meets the demand of the existing activities at the site.

5.2.2.2 Modal Split

5.2.2.2.1 Public Transport

A high-quality public transport catchment means an area serviced by public transport at an all-day service frequency of at least four (4) services per hour (headway of 15 minutes).

The proposed quarry is located in a rural setting, setback approximately 2.4km from Goolma Road. There are currently no public transport services operating on Goolma Road which would be suitable to allow for site personnel to travel to and from the proposed quarry.

There are no railway stations located within the vicinity of the proposed site.

5.2.2.2.2 Pedestrian Network

As mentioned above, the proposed quarry is setback approximately 2.4km from Goolma Road. As such there are no existing pedestrian routes, pedestrian infrastructure and therefore no potential areas where pedestrian flows might conflict with vehicles.

5.2.2.3 Proposed Developments in the Vicinity

A recent search of Mid-Western Regional Council's database of 'Development Applications on Exhibition' reveals there are currently no proposed developments in the vicinity of the site.

5.2.3 OVERVIEW OF PROPOSED DEVELOPMENT

The proposed development consists of a quarry as shown on the DA Drawings. The quarry is to consist of a quarry pit, material processing and stockpiling area within the pit and associated site office and site personnel parking areas. The proposed quarry has a preliminary total output of 130,000m³ of material, with an estimated yearly output of approximately 15,000m³, (30,000 tpa).

It is anticipated the quarry will generally operate 6 days a week, between the hours of 6am and 6pm, for approximately 260 days per year, subject to final DA determination.

5.2.3.1 Staging and timing of development

The construction period is scheduled to commence early 2024 with the quarry operational by mid-2024. Based on the above-mentioned proposed extraction, the quarry will have an expected lifespan of approximately 8.5 years.

5.2.3.2 Selection of appropriate design vehicle

Vehicles expected to access the property would include light vehicles (staff and contractors), non-articulated heavy vehicles, 19 m semi-trailers and truck and dog combinations. Quarried product would be transported directly to end users, using one or a combination of the heavy vehicles listed above. For the sake of this report, a Truck and Dog with a 37t capacity has been assumed to be the primary vehicle.

5.2.3.3 Access

5.2.3.3.1 Access Location

Access to the proposed quarry site is to be via an existing internal unsealed access track, with an existing property access to Goolma Road as shown in **Figure 6**. This is the preferred location for the following reasons.

- There is currently an existing Tee Intersection, with a paved surface extending from the road verge to the property entrance.
- There are good sight distances in both directions.
- There is no vegetation either side of the access way to impact sight distances.

An alternate location for the intersection with Goolma Road was investigated at the location as shown in **Figure 6**, however this option was not preferred due to the following reasons.

- This location is located on a small, single lane, unpaved road in poor condition.
- There is no existing intersection or paved surface extending past the road verge.

- This location is located on the inside of a corner, with vegetation impacting sight distances for right turn out.

Figure 6 - Alternate Site Access Location



5.2.3.3.2 Sight and stopping distance of Access Location

Sight distance

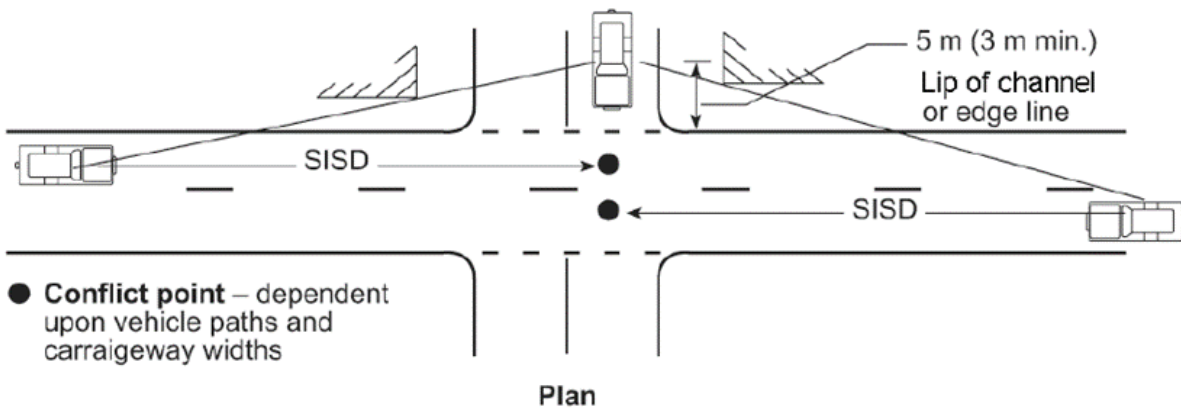
Premise has conducted a desktop analysis of the existing sight and stopping distances using LIDAR survey data and aerial imagery. Premise understand that no changes to the intersection or surrounding land are proposed as part of the development. Measurements from the LIDAR survey data indicate there is currently a sight distance of 400m in a westerly direction (for left turn out) and a sign distance of 450m in an easterly direction (for right turn out).

Austrroads Guide to Road Design - Part 4A: Unsignalised and Signalised Intersections outlines the requirements for sight distance for unsignalised intersections.

The guide recommends that the Safe Intersection Sight Distance (SISD) should be the minimum sight distance provided on the Major Road at any intersection.

The method of measuring SISD is shown in Figure 7.

Figure 7 - Guide to Measuring SISD for Unsignalised Intersections



The Austroads guide provides a formula for calculating SISD values for vehicles at varying design speeds and road conditions. The following formula is used to determine the SISD for heavy vehicles:

Figure 8 - Sight Distance Equation

$$SISD = \frac{D_T \times V}{3.6} + \frac{V^2}{254 \times (d + 0.01 \times a)}$$

where

- SISD = safe intersection sight distance (m)
- D_T = decision time (sec) = observation time (3 sec) + reaction time (sec) – refer to *AGRD Part 3* (Austroads 2016b) for a guide to values
- V = operating (85th percentile) speed (km/h)
- d = coefficient of deceleration – refer to Table 3.3 and *AGRD Part 3* for a guide to values
- a = longitudinal grade in % (in direction of travel: positive for uphill grade, negative for downhill grade)

Based on the above formula and adoption of an operating 85th percentile speed of 110 km/hr and a westbound longitudinal uphill grade of 1%, a minimum SISD of 305m and 295 m are required for the eastbound and westbound lanes of Goolma Road respectively. This distance is less than the observed distance onsite and therefore the existing sight distances are deemed to be sufficient.

Stopping distance

Stopping Sight Distance (SSD) as defined by Austroads' "Guide to Traffic Management Part 3: Geometric Design" is defined as the distance to enable a normally alert driver, travelling at the design speed on wet pavement to perceive, react and brake to stop before reaching a hazard on the road ahead. SSD is derived from two components:

1. The distance travelled during the total reaction time.
2. The distance travelled during the braking time from the design speed to a stop and their relationship is shown in the Equation below.

$$SSD = \frac{R_T V}{3.6} + \frac{V^2}{254(d + 0.01a)} \quad 1$$

where

- R_T = reaction time (sec)
- V = operating speed (km/h)
- d = coefficient of deceleration (longitudinal friction factor)
- a = longitudinal grade (% , + for upgrades and – for downgrades)

Figure 9 - Stopping Distance Equation

Using the above equation, an operating (85th percentile) speed of 110km/h, and a westbound longitudinal uphill grade of 1%, a minimum stopping distance of 215m and 205m is required for eastbound and westbound lanes of Goolma Road respectively.

5.2.3.3.3 Service vehicle access

Given the size and location of the proposed quarry, all service vehicles will enter and exit the site via the main access way as shown in **Figure 3**. There is no separate service vehicle access to be provided off Goolma Road.

5.2.3.4 Circulation

Circulation refers to the internal traffic management strategies implemented to promote the safe and efficient movement of traffic within the site. Internal traffic management may generally involve the use of signage, bollards, line marking or physical barriers to reduce traffic conflicts and ensure smooth traffic flow within the site. The internal traffic management for the site is to be designed to accommodate the largest vehicle anticipated to use the site.

5.2.3.4.1 Proposed pattern of circulation

The proposed quarry has been designed to allow for circulation of all vehicles. Internal roadways are to be designed such that heavy vehicles can enter the quarry pit to be loaded with sufficient room to turn around and drive out in a forward direction. Site personnel personal parking is setback from the main internal roadway, allowing for easy manoeuvring.

As the quarry site is a substantial distance from the intersection with Goolma Road, all vehicles will be able to exit Goolma Road in a forward direction and turn back on Goolma Road in a forward direction.

5.2.3.4.2 Internal track widths

Internal tracks have been designed for a minimum road width of 7m to allow for easy passing of heavy vehicles if required.

5.2.3.4.3 Service area layout

The service area for the proposed quarry will be dependent on the operational requirements of the quarry. An allowance has been made for site offices and personnel parking external to the pit, however it is anticipated minor servicing of plant machinery will occur within the quarry pit in a location away from the daily operations of the quarry. Major servicing of plant machinery is expected to occur offsite. An allowance for service vehicles to remove plant machinery from site for major servicing has been made within the estimated average annual daily traffic.

5.2.3.5 Parking

5.2.3.5.1 Parking requirements

It is anticipated the quarry will have a total workforce of 2, with each worker driving to site in their own vehicle. To accommodate any visitors, couriers, or service providers an additional 2 parking spaces will be required. No truck parking has been allowed for as it is assumed trucks will only attend the site to be loaded.

A total of 4 parking spaces will therefore be required for the proposed development.

5.2.3.5.2 Proposed parking supply layout

The 4 carparking spaces for the proposed quarry will be located within the site offices and carparking area. In this area there will be sufficient space to accommodate all staff and visitor parking, as well as an allowance for temporary loading zones for service vehicles and couriers.

5.2.4 IMPACT OF PROPOSED DEVELOPMENT

5.2.4.1 Trip Generation

The preferred hierarchy of data sources for traffic generation rates is:

1. Traffic generation survey of an existing development similar to the proposed development in terms of its land use, scale, location, etc.
2. Guide to Traffic Generating Developments Updated traffic surveys, RMS (2013).
3. Guide to Traffic Generating Development, RTA (2002), and
4. First principles assessment preferably based on forecast usage data.

As there are no available traffic surveys of similar developments and the above referenced documents do not sufficiently cover quarries of a similar size, first principals have been adopted based on forecasted extraction rates and worker numbers on the site.

5.2.4.1.1 Average Annual Daily Traffic (AADT)

The operational phase of the proposed quarry will result in an annual output of approximately 30,000 tpa of material. All material will be exported from the site using trucks, accessing the site via an internal access track with an intersection onto Goolma Road at the location as shown in **Figure 3**.

Based on the above proposed annual output, estimated traffic volumes are as follows:

- The standard truck to be used by the site is a 19m truck and dog with a capacity of 37 tons. Therefore, given the annual forecasted extraction of 30,000 tpa, on average, three (3) truckloads a day will be required to export the extracted material from site.
- An allowance of one service vehicle every second day has been assumed and added to the above average truckloads for a combined daily average of four (4) trucks/day (8 movements)
- Two Workers will attend the site each day, travelling in their own vehicles to create a daily average of two (2) vehicles/day.
- The AADT for the proposed quarry is summarised in **Table 9**.

Table 9 – AADT Generation for Proposed Quarry

	Total	Light Vehicles	Heavy Vehicles
AADT (Veh/d)	12	4	8

5.2.4.1.2 Peak Hour

To calculate the potential peak hour maximum movements, it is assumed one loader will be operating, with the capacity to load 6 trucks an hour generating a maximum of 6 truckloads, (12 movements) an hour. Peak hour will occur when the maximum loader capacity coincides with the site personnel arriving or departing. This is generally the first and last hour of quarry operation.

The estimated peak hour vehicle movements generated from the proposed quarry during the operational phase is summarised in **Table 10**.

Table 10 – Peak Hour Traffic Generation for Proposed Quarry

	Total	Light Vehicles	Heavy Vehicles
AM Peak (Veh/hr)	14	2	12
PM Peak (Veh/hr)	14	2	12

For the purpose of analysis, it is assumed the AM and PM peak of the existing agricultural site use will coincide with the proposed quarry peak hour peak. In reality this is unlikely, however, this is a more conservative method to analyse the expected traffic volumes. The peaks have been combined, with the following data as shown in **Table 11** used in the post development intersection analysis.

Table 11 – Post Development, Total Site Peak Hour Traffic

	Total	Light Vehicles	Heavy Vehicles
AM Peak (Veh/hr)	22	8	14
PM Peak (Veh/hr)	22	8	14

5.2.4.1.3 Daily and seasonal factors

It is not expected that any daily or seasonal factors will affect the maximum peak hour traffic generated from the site. Supply of the quarried product will be driven by demand which will fluctuate due to local and regional requirements, resulting in fluctuations in daily traffic volumes only.

5.2.4.1.4 Pedestrian generation and movements

Given the location and extent of the proposed quarry, there are no additional pedestrian movements anticipated around or near the site.

5.2.4.2 Traffic distribution

5.2.4.2.1 Hourly Distribution of Trips

The hourly distribution of trips has been calculated using the assumptions as mentioned above.

The capacity of the quarry to load trucks, with one loader running, will be a maximum of 6 trucks per hour, therefore a maximum of 12 movements per hour are assumed for general operation of the quarry.

The peak hour will exist for the first and last hour of the quarry operations, where the above truck movements coincide with the workers arriving and exiting site. Given the hours of operation of 6am to 6pm, the AM peak will be between 6am to 7am, and the PM peak will be between 5pm and 6pm.

For the hours in between, the operation of the quarry loader (maximum of 6 trucks, 12 movements) will govern the maximum vehicle movements for the site.

5.2.4.2.2 Trip distribution

There is no specific destination for the quarry product other than local and regional usage, and thus it is assumed vehicle movements will be split evenly along Goolma Road to the east and west. It is assumed that employees reside in the local area and therefore their movements will be split evenly along Goolma Road.

Based on the assumed traffic distribution described above the total post development traffic movements to and from the site has been determined in **Table 12** below.

Table 12 – Distribution of Total Peak Hour Traffic Generation of the Site

	Right In		Left In		Right out		Left Out	
	Heavy	light	Heavy	light	Heavy	light	Heavy	light
AM Peak	4	3	4	3	3	1	3	1
PM Peak	3	1	3	1	4	3	4	3

5.2.4.3 Impact of generated traffic

The impact of the additional traffic generated from the proposed quarry has been analysed and split into three sections, the impact on traffic safety, the impact of additional traffic on Goolma Rd and the impact of additional traffic on the intersection of Goolma Rd and the site access.

5.2.4.3.1 Impact on Traffic Safety

As referenced in **Section 5.2.2**, from a traffic safety perspective, Goolma Road is currently operating in a manner consistent with other rural, classified roads in the area. The existing access way to be utilised by quarry traffic has the required sight distances and will be sufficient to accommodate heavy vehicles.

The site is currently utilised by heavy vehicles associated with ongoing agricultural operations and operates in an acceptable manner. The proposed movements associated with the proposed extractive industry are minor in nature and would not make any significant change to vehicle numbers compared to those currently associated with the site. Upgrades of the intersection are not required.

5.2.4.3.2 Impact of expected traffic on Key Roads

A comparison of the AADT and peak hour traffic volumes on Goolma Road for the 2024 existing conditions and the 2024 post development conditions are provided in **Table 13**.

Table 13 – Comparison of Goolma Road traffic volumes and net increase in trips

Road		2024 'Existing' traffic volume	2024 Post Development traffic volume	Net increase
Goolma Road	AADT	1,997 veh/day	2003 veh/day	0.3%
	AM peak hour	158 veh/hour	165 veh/hour	4.4%
	PM peak hour	180 veh/hour	187 veh/hour	3.8%

The proposed quarry would result in a percentage increase in traffic volumes on the surrounding road network ranging from 0.3% (AADT on Goolma Road) to 4.4% (AM peak hour on Goolma Road). The percentage increase in traffic volume is not considered significant.

As mentioned above in **Section 5.2.1.4.3**, Goolma Road has a maximum two-way hourly capacity of 310 vehicles per hour. Based on the predicted 2024 traffic volume, and the expected increase in traffic due to the proposed quarry, Goolma Rd will have a proposed traffic volume of 187 veh/hr during the PM peak. As this is lower than the hourly capacity of 310 vehicles per hour, a LOS A will be maintained for Goolma Rd following construction of the proposed quarry.

The net increase in daily traffic volume and peak hour volume generated by the proposed quarry would be easily absorbed into the surrounding road network with minimal impact on the capacity of the existing traffic streams using the road system.

5.2.4.3.3 Post 10 year traffic flow

TfNSW generally require an assessment to be carried out to determine if there are any impacts from proposed developments for a + 10 years post development scenario.

Existing traffic volumes on roads are expected to increase over time and for a road such as Goolma Road, the natural growth of the traffic volume is expected to be low and in the order of 1% per annum.

On this basis, the existing AADT on Goolma Road would grow over 10 years from the existing 1,997 veh/day to 2,206 veh/day.

The existing peak hour traffic would grow from 158 veh/hr to 176 veh/hr in the morning peak and from 180 veh/hr to 198 veh/hr in the evening peak.

Whilst the traffic volumes on the surrounding roads may increase over time, the production output from the quarry would be in accordance with the approval to produce 30,000 tpa.

The number of trucks transporting the product from the quarry are determined by the output produced by the quarry. As the truck movements to transport 30,000 tonne per annum are fixed, the number of haulage trucks on the roads forms a lesser percentage over time when compared to the 10 year growth of traffic on Goolma Road.

Therefore, the relative potential impact of the transport of product from the quarry would decrease over time.

Notwithstanding this, the maximum post development peak hour traffic on Goolma Road would grow to a maximum of 205 veh/hr and continue to operate at a LOS A.

5.2.4.3.4 Impact of expected traffic on key intersections

Intersection analysis

Intersection analysis has been undertaken at the intersection between Goolma Road and the site access based on 2034 post development traffic volumes. **Appendix D** shows the SIDRA output results for the above intersection, with key outputs from the SIDRA model provided in **Table 14** and summarised below.

- The overall degree of saturation (DoS) for the intersection is 0.06 for both the AM & PM Peak Hour.
- The maximum average control delay for any movement is 9.9 seconds, which is for the eastern approach right turn during PM Peak.
- The maximum queue length does not exceed 1 metre.
- The level of service for each leg of the intersection is Level of Service A for both the AM and PM peak hour.

Table 14 – SIDRA Output – Intersection of Goolma Rd and Site Access, Design Year

Movement	AM Peak				PM Peak			
	PHT (veh/hr)	DoS (%)	Delay (sec)	95% Queue (m)	PHT (veh/hr)	DoS (%)	Delay (sec)	95% Queue (m)
East Approach:								
Right	7	0.06	9.5	1	4	0.06	9.9	0
Through	87		0.1	1	96		0	0
North Approach:								
Left	4	0.01	6.9	0	7	0.02	6.7	1
Right	4		7.7	0	7		7.4	1
West Approach:								
Left	7	0.05	9.3	0	4	0.06	9.8	0
Through	85		0.0	0	98		0	0

5.2.4.3.5 Impact of Construction Traffic during Construction Stages

The construction stage of the proposed quarry is expected to consist of the following items.

- Mobilisation of temporary site sheds to form the ongoing office and worker amenities facilities.
- Installation of soil and water management controls.
- Removal of topsoil and other unsuitable materials.

The construction stage of the proposed quarry is expected to be minimal, and based on works already completed onsite to allow for local, site usage of product it is not anticipated to involve removal of large quantities of topsoil or other materials.

The estimated vehicle movements generated from the site during the construction stage of the quarry is summarised in **Table 15**.

Table 15 – Proposed Quarry Traffic Generation

Direction	Average Annual Daily Traffic (veh/day)	Peak Hour Traffic (veh/hr)	
		AM	PM
Entering Site	5	3	1
Exiting Site	5	1	3
Total	10	4	4

As the estimated vehicle movements generated during the construction stage of the quarry are lower than the anticipated volumes of traffic during the operational phase of the quarry, the operational traffic volumes have been adopted for all analysis.

5.2.4.3.6 Impact of Other proposed developments in vicinity

As mentioned above in **Section 5.2.2.3**, there are no known proposed developments in the vicinity of the site which might have an impact on traffic generation on Goolma Road.

5.2.4.4 Assessment of traffic noise

The NSW Road Noise Policy, prepared by the Department of Environment, Climate Change and Water NSW (DECCW) adopts a distance of 600m from a project as an appropriate study distance to assess the impact of traffic noise on adjoining property. Premise has therefore assumed any properties outside a 600m radius from the site entrance will not be adversely affected by any traffic noise from vehicles accelerating or decelerating to enter the site.

One dwelling, located at 4889 Twelve Mile Road is located within the 600m radius from the site entrance. This property is located approximately 400m from the site entrance off Goolma Road.

5.2.4.4.1 Noise attenuation measures

To mitigate the impact of noise to this dwelling, trucks entering and exiting the site are to adhere to the following guidelines.

- No engine breaking is to be utilised when slowing to enter the site entrance off Goolma Road.
- Drivers are not to hold vehicles when exiting the site onto Goolma Road.
- Excessive revving of engines is not permitted when exiting the site.
- Trucks are not to stage on Twelve Mile Road or Goolma Road prior to entering the site, adequate staging areas are provided at the quarry locations.

As the proposed increase in heavy vehicle traffic on Goolma Road is only an 1% increase in the AADT, provided the above measures are adhered to, it is not anticipated the proposed increase in traffic will result in any noticeable additional noise to the property at 4889 Twelve Mile Road.

5.2.4.5 Recommended works

5.2.4.5.1 Quarry site Works

This report has been prepared assuming that the works for the proposed quarry as outlined in the concept design will be fully implemented during detailed design of the quarry. These works include.

- The ability for all vehicles to enter and exit the site in a forward direction,

- The provision of four car parking places for site personnel and visitors,
- Sufficient waiting areas for heavy vehicles, and
- Provision of service vehicle unloading areas.

5.2.4.5.2 Intersection of Goolma Road and Existing Site Access

No upgrades proposed.

5.2.5 SUMMARY

The surrounding road network is suitable to accommodate the proposed development. The project is acceptable from a traffic perspective on the basis of the following:

- The increase in the traffic volumes on the surrounding road network will not change the classifications of the roads under the functional road hierarchy.
- The percentage increases in the traffic volumes on the surrounding road network range from 1.0% for AADT on Goolma Road to 8.9% for the AM peak hour on Goolma Road. The percentage increase in traffic volume is not considered significant and the net daily traffic volume and peak hour volume generated by the quarry are easily absorbed into the surrounding road network with minimal impact on the capacity of the existing traffic streams using the road system.
- The additional traffic generated by the proposed quarry is well below the capacity of the road network at a Level of Service A and all roads would continue to operate satisfactorily.
- The existing property access at the intersection of the quarry access road and Goolma Road is sufficient to handle the increase in vehicle traffic and currently has the appropriate site distances.

5.3 Air Quality

The use of adjoining land is for primary production purposes and has potential to generate dust and vehicle emissions. There are no other industrial or extractive activities in the vicinity of the subject site that would give rise to significant air quality impacts.

As the proposed quarry is significantly separated from potentially affected receivers it is not considered likely that the quarry operations would lead to any significant or detrimental air quality impacts. Other potential impacts including greenhouse gas emissions are outlined within **Appendix C**.

5.3.1.1 Mitigation Measures

Potential air quality impacts can be minimised through the application of appropriate mitigation measures, described below:

- Maintain the dust suppressant internal road service to minimise emissions.
- Maintenance of plant and machinery in accordance with manufacturer's specifications.
- Strategic watering as required, utilising reclaimed surface water run-off.
- Temporary suspension of vehicle movements during extreme dry and/or windy weather conditions.
- Covering loads of trucks exiting the site.
- Limit of vehicle speed on the private access and internal access roads.

5.4 Noise

The subject site is located in a rural area with the predominant land use activity being primary production including grazing and cropping. As previously outlined in **Section 5.1**, there are scattered residential dwellings within the greater locality. The quarry operations are unlikely to impact the closest residential receivers. As stated previously, the topography and land form of the subject site shields potential noise impacts to residential receivers.

5.4.1.1 Mitigation Measures

- Works would be undertaken in accordance with the standard daytime hours recommended by the NSW Environment Protection Authority.
- Any noise complaint would be investigated, recorded and managed accordingly.

5.5 Visual

Due to the locality of the quarry within the subject site the likelihood of a visual impact is very low. The topography and land form surrounding the quarry ensures the extractive industry is shielded from Goolma Road and all residential receivers within the greater area.

As such, no visual mitigation measures are required.

5.6 Heritage

The subject site is modified through agricultural practices and is thus unlikely to contain any items of indigenous heritage significance. A search of the Office of Environment (OEH) Aboriginal Heritage Information Management System (AHIMS) in respect of the subject site confirms that there are no known sites or instances of Aboriginal significance in or within 200m of the subject site. Furthermore, previous surveying of the Gudgegong River did not identify any Aboriginal objects or places of heritage significance.

The Morrowlga homestead, local heritage item I369, is located Lot 1 in DP 1083951. The proposed development will not be visible from the homestead. It is believed the development is not antipathetic to Aboriginal or non-Aboriginal items, relics or objects.

5.7 Soils

The proposed development would impact an area of 9,000m². Potential soil impacts relate to erosion and sedimentation. The soil resource would be protected through retaining the vegetative cover which surrounds the quarry and maintain cover on perimeter bunding to ensure the boundaries are stabilised, minimising the move of sediment into the quarry.

Erosion and sediment controls would be implemented in accordance with Council's requirements and *Managing Urban Stormwater: Soils and Construction* (Blue Book) to minimise erosion and sediment impacts.

5.8 Surface Water

The proposed quarry is located a suitable distance from surrounding watercourses and the Cudgegong River. Surface water run-off within the quarry would be managed via a diversion drain in accordance with Figure 5-6 from the Landcom Soils and Construction Manual.

Development of perimeter bunding along the quarry pit and surface water storage measures would ensure appropriate management of quarry water.

Additional detail relating to surface water is depicted in **Drawing C004** within **Appendix A**.

5.9 Flora and Fauna

The subject site has historically been operated for primary production including livestock grazing and cropping. As such, the site is primarily covered by introduced species. The area of the proposed quarry has been specified sited to avoid any potential of the removal of vegetation.

The quarry would be limited to clearing of disturbed grassland, consisting of introduced pasture species. The subject site does not require further assessment of flora or fauna impacts.

5.10 Waste

There is no waste quarry material anticipated from the development as all extracted materials are saleable or useable on site. General refuse produced within the site would be minor in volume and would be disposed of at Council's waste facility by the operator.

5.11 Greenhouse Gas Assessment

As outlined within **Section 4.4.2.3** and **Appendix C**, greenhouse gas emissions associated with the development such as gasoline / petrol use, industrial processes, wastewater handling, oil and grease consumption land use change construction materials, waste, employee and business travel are excluded as it believed no significant impact would rise and these activities would not present a major source of emissions.

5.11.1 MITIGATION MEASURES

Potential management measures to minimise the generation of GHG emissions include:

- Minimising transport route distances associated with the construction and operation of the project.
- Sourcing construction materials from on-site, or the local region where possible, avoiding GHG emissions resulting from transportation over long distances.
- Using recycled or low impact materials (with lower embodied energy) where possible to minimise emissions.
- Training of staff and contractors on efficient driving practices and practices to improve energy efficiency (i.e throttling down and switching machinery off when not in use).
- Regular maintenance and inspections of plant and machinery in accordance with manufacturer's specifications.
- The incorporation of energy efficient equipment and infrastructure into the design of the project (where practical) (i.e implementation of energy efficient lighting systems)
- Ongoing reviews on the efficiency of extraction processes during operation including measures to minimise double handling and to ensure that hauling activities are undertaken along efficient routes.

5.12 Natural Hazards

The development is not identified as prone to bushfire or flood hazard.

5.13 Social Impacts

The proposed quarry would not have an adverse impact on the local community. The existing way of life, culture and community cohesion would not be comprised on the basis that the progressive rehabilitation and

ongoing management would essentially limit external impacts. The development of a local quarry provides a beneficial local resource for materials, which is positive for the economy and local developers.

5.14 Cumulative Impacts

It is not anticipated that the development would result in any cumulative impacts including:

- individual impacts so close in time that the effects of one are not dissipated before the next (time crowded effects);
- individual impacts so close in space that the effects overlap (space crowded effects);
- repetitive, often minor impacts eroding environmental conditions (nibbling effects); or
- different types of disturbances interacting to produce an effect which is greater or different than the sum of the separate effects (synergistic effects).

5.15 Suitability of the Site

As demonstrated throughout **Section 5** of this report, the proposed development would not result in any adverse impacts to the subject site, adjacent properties or the greater locality. Therefore, the subject site is considered appropriate for the development, the site attributes are to be conducive to the development and as such, the site is suitable for the extractive industry.

6. CONCLUSION

6.1 Conclusion

Premise Australia has been commissioned by BetterGrow to prepare a Statement of Environmental Effects (SEE) to accompany a Development Application (DA) for the extractive industry (gravel quarry) at Goolma Road, Two Mile Flat.

The proposed development is permissible with consent in the RU1 Primary Production zone pursuant to the *Mid-Western Regional Local Environmental Plan 2012* and by virtue of Clause 2.9(3) of the State Environmental Planning Policy (Resources and Energy) 2021. The development does not represent designated development as the extent of disturbance is less than two hectares, no environmental triggers apply and the annual extraction volume is below 30,000 cubic metres. Furthermore, the proposed development is not integrated as outlined within **Section 4.5**.

The development is not antipathetic to the land zoning or objectives.

In consideration of the planning requirements under Section 4.15(1) of the *Environmental Planning and Assessment Act 1979*, it is requested that Council support and consent to the proposed development of extractive industry at the subject site.



APPENDIX A

DEVELOPMENT PLANS



APPENDIX B

DCP COMPLIANCE TABLE

Table 16 – Development Control Plan Matters and Assessment

Performance criteria	Acceptable solutions	Assessment	Compliance?
5.4 Environmental Controls			
Protection of Aboriginal Archaeological Items	<p>a) Aboriginal archaeological relics are protected by the provisions of the National Parks and Wildlife Act 1974, which makes the disturbance or destruction of these relics, without permission of the Director, an offence.</p> <p>b) Proponents should determine whether their site has potential archaeological significance and if so, should submit an archaeological survey with their development application. Generally, where a site is located near a water course or on an elevated area, an archaeological study will be required.</p> <p>c) Proponents should determine if the development application is classified as integrated development under Section 4.46 of the EP&A Act 1979 and if an Aboriginal Heritage Impact Permit is required.</p>	<p>As outline within Section 4.4.16 and Section 5.6, the subject site is not occupied by an Aboriginal item, object or relic. As such, the development would not impact Aboriginal archaeological significance.</p> <p>As outlined in Section 4.5, the development is not classified as integrated development.</p>	Yes
Bushfire Management	<p>a) Where the development site is affected by a bushfire hazard as identified on the Bushfire Prone Land Map produced by the NSW Rural Fire Service, the design and management of the development shall</p>	<p>The subject site is mapped as bushfire prone; however, there is no residential activity proposes. As such, compliance with “Planning for Bushfire Protection” is not required.</p>	Yes

Performance criteria	Acceptable solutions	Assessment	Compliance?
	<p>comply with the guideline "Planning for Bushfire Protection" and where required; the Australian Standard AS 3959 - Construction of Buildings in Bush Fire Prone Areas.</p> <p>b) Buildings shall be located to ensure that requirements for fuel free or fuel reduced zones do not impact on existing native vegetation on the site.</p> <p>c) Proponents should determine if the development application is classified as integrated development under Section 4.46 of the EP & A Act 1979 and if a Bushfire Safety Authority is required.</p>	<p>As outlined in Section 4.5, the development is not classified as integrated development.</p>	
<p>Riparian and Drainage Line Environments</p>	<p>a) Proponents must identify all drainage lines, streams, creeks and rivers on development plans and identify how the development has been designed to respect and be setback from such waterways and their vegetation.</p> <p>b) Proponents should determine if the development application is classified as integrated development under Section 4.46 of the EP & A Act 1979 and if a water use approval, water management work approval or activity approval is required.</p>	<p>The development plans within Appendix A clearly identify all drainage lines and waterbodies within proximity to the proposed development and this is discussed in Section 5.8</p>	<p>Yes</p>
<p>Pollution and Waste Management</p>	<p>a) Proponents should indicate all waste streams i.e. trade, liquid, chemical, solid, medical, and clarify how they will be managed and contained safely on-site and disposed of such that there are no environmental impacts or effects on</p>	<p>The operations of the development do not involve pollution and waste management. The impact of the development on groundwater and salinity has been previously address in Section 4.4.1.4.</p>	<p>Yes</p>

Performance criteria	Acceptable solutions	Assessment	Compliance?
	<p>adjoining properties, stormwater or sewerage systems or waterways.</p> <p>b) Proponents should determine if the development application is classified as integrated development under Section 4.46 of the EP&A Act 1979 and if an environmental protection license is required.</p> <p>c) Proponents will refer to Groundwater Vulnerability Mapping associated with Mid-Western Regional Council Local Environmental Plan 2012.</p>		
<p>Threatened Species and Vegetation Management</p>	<p>a) An assessment of any potential impact on native flora and fauna is to accompany a development application. If considered necessary by Council a Flora and Fauna Impact Assessment will be required from a suitably qualified professional. This Assessment will determine whether a Species Impact Statement will be required.</p> <p>b) Development applications should indicate all existing vegetation.</p> <p>c) Buildings and access areas should be sited to avoid removal of trees.</p>	<p>The development site is highly disturbed due to ongoing and historical agricultural activity. The development does not propose the removal of any vegetation, including native grass.</p>	<p>Yes</p>



APPENDIX C

GREENHOUSE GAS ASSESSMENT





APPENDIX D

SIDRA ANALYSIS