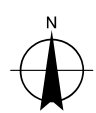
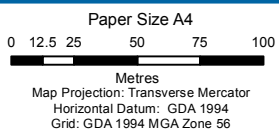
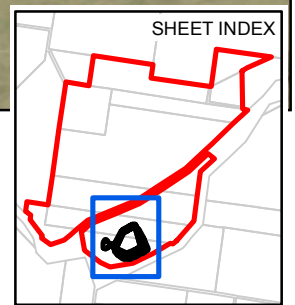


- LEGEND**
- Section (refer to figure 3-5)
  - Project boundary
  - Cadastre
  - 5m contours
  - Watercourse
  - Waterbody
  - Basin
  - Bench 1
  - Site access
  - Existing access
  - Site office / weigh bridge



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Bench 1

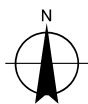
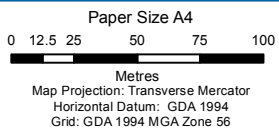
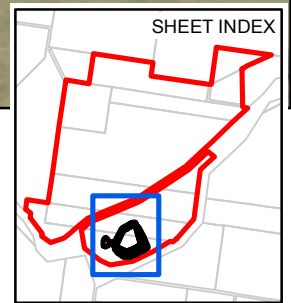
**Figure 3-2**





**LEGEND**

- Section (refer to figure 3-5)
- Project boundary
- Cadastre
- 5m contours
- Watercourse
- Waterbody
- Basin
- Bench 2
- Batter
- Existing access
- Site access
- Site office / weigh bridge



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**Bench 2**

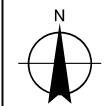
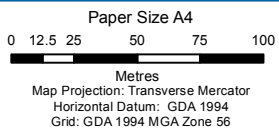
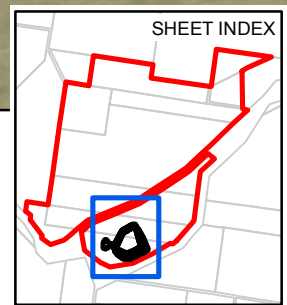
**Figure 3-3**





**LEGEND**

- Section (refer to figure 3-5)
- Project boundary
- Cadastre
- 5m contours
- Watercourse
- Waterbody
- Bench 3
- Batter
- Existing access
- Basin
- Site access
- Site office / weigh bridge

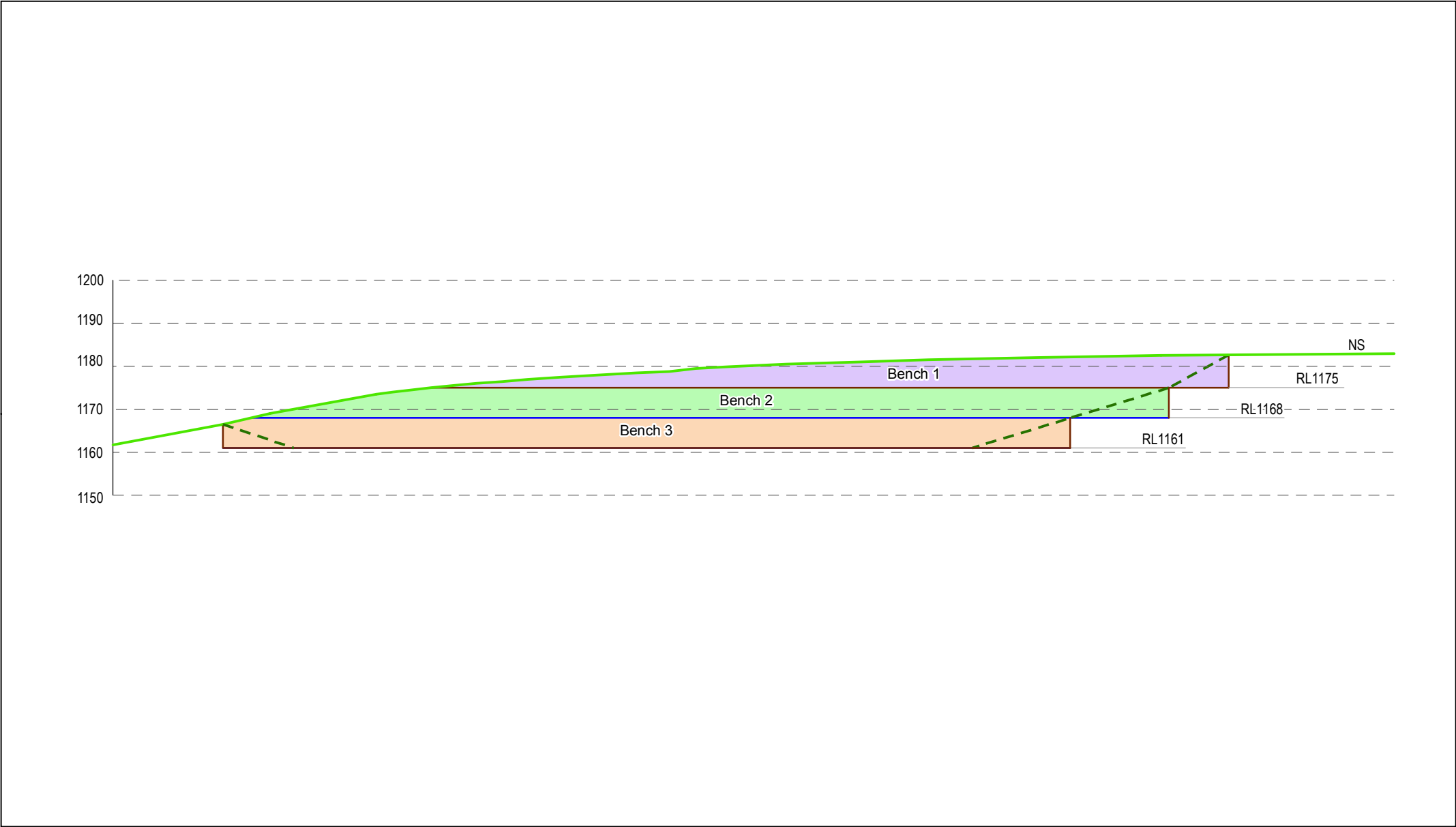


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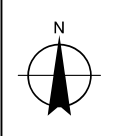
Job Number | 22-18380  
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**Bench 3**

**Figure 3-4**



Paper Size A4  
 0 7.5 15 22.5 30  
 Metres  
 Map Projection: Transverse Mercator  
 Horizontal Datum: GDA 1994  
 Grid: GDA 1994 MGA Zone 56



**LEGEND**  
 Bench 1  
 Bench 2  
 Bench 3  
 Natural surface  
 Final batter



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Quarry Section

Figure 3-6

The main activities during operation of the quarry are described below.

### **Drilling and blasting**

Overlying weathered material would be removed using bulldozers and excavators. Underlying fresh rock would require blasting.

Blasting would be strictly controlled and conducted by a suitably qualified blasting contractor who would bring explosives onto site as required and fill a series of holes that would be pre-drilled by a separate drilling contractor.

Bulk emulsion explosives such as Ammonium Nitrate Fuel Oil (ANFO) would be used. Following blasting, all blasting equipment and any unused explosives would be removed from site. No explosives would be stored on the Project site. Blasting would be undertaken in 20-30,000 tonne shots. It is anticipated that up to one blast per month would be undertaken.

#### **3.4.1 Crushing and screening**

Contractors would crush and screen the extracted material using mobile plant positioned close to the extraction area. An excavator would feed the excavated rock into a mobile primary crusher. The primary crusher would then pass the crushed material to a secondary mobile crusher for further crushing, at which point the material would be passed through a screening plant to sort the crushed aggregate into different grades depending on market demand. The screening plant would discharge the crushed and screened aggregate into a stockpile area using a radial stacking conveyor.

#### **3.4.2 Stockpiling**

Material would be stockpiled in designated areas. Material would be stored in various grades for sale or distribution. Ridge gravels may be brought to site from time to time to blend road base products. These components may form up to 10% of the finished product.

### **3.5 Extraction rate**

The Project would extract up to 300,000 tonnes of material per annum. The actual extraction rate would be dictated by demand requirements, however extraction would not exceed 300,000 tonnes in any twelve-month period. The total available resource is estimated to be 2.1 million tonnes.

The maximum extraction rate of 300,000 tpa has been nominated to allow sufficient capacity to service demand during the construction of the proposed wind farms in the area. Once the wind farms have been constructed, it is anticipated the extraction rate would reduce to less than 100,000 tpa.

The maximum daily extraction and haul rate would be about 3,000 tonnes but this extraction rate would be a rare occurrence.

The volume of material extracted from the quarry would be recorded using either a weighbridge or a loader with scales.

### **3.6 Project life and working hours**

As the demand for product from the site will vary depending on the progress of certain major projects and fluctuating market conditions, it is not possible to put firm durations on each stage of activity. However, the quarry is expected to commence operation in early 2017 and be in operation for at least 30 years.



Operations would generally be limited to the following times:

- Monday to Friday: 7.00 am to 5.00 pm
- Saturday: 8.00 am to 4.00 pm
- No work on Sundays or Public Holidays.

Staff may arrive and leave site before and after these times to 'start-up' and 'shut-down' the quarry but excavation, crushing or loading would not occur outside the times specified above. Blasting would only occur on weekdays between the hours of 10 am and 3 pm.

### 3.7 Workforce

The operational workforce for the Project will vary depending on the needs for specific activities (contracted crushing and screening, haulage, etc.), however it is anticipated to be up to a maximum of eight staff at any time. Once the site office is constructed and fully operational, an additional four staff will be required.

### 3.8 Operational plant and equipment

Equipment at the quarry would depend on levels of activity which would vary from time to time. A description of the plant and equipment to be used is provided in Table 3-2. The frequency of use is relevant to the periods when the quarry is operating. As an example, when the quarry is operating, the crusher will be operating 100% of the time but when there is no demand for material, the crusher would not be operating.

**Table 3-2 Proposed quarry plant and equipment**

Type	Approximate Number	Typical Frequency of use during operation	Description
Dozer	1	10%	Clearing and grubbing of vegetation and stripping of topsoil. Rehabilitation
Excavators	2	100%	Excavating material and stockpiling Clearing and grubbing of vegetation and stripping of topsoil
Screen	1	100%	Only for aggregate/gravel production and overburden screening
Front-end Loader	1	100%	Loading material onto the haul trucks and stockpiling material within the pit floor
Jaw, cone and impact crusher	1	100%	Crushing rock
Haul Trucks	Up to 100/day	100%	Delivery of materials to customers and stockpiling in pit if needed and carting unsuitable to rehabilitation areas.
Water Cart	1	10%	To water haul roads and stockpiles
Water Pump	3	10%	To dewater excavation/basin and to fill watercart from standpipe

Type	Approximate Number	Typical Frequency of use during operation	Description
			To water stockpiles and put moisture in products
Hand tools	5	5%	General activities maintaining plant
Light vehicles	Up to 12	20%	Transporting staff to, from and around site

### 3.9 Access and traffic

The source, destination and route of light and heavy vehicles accessing the quarry is not possible to predict, however it is assumed they would travel via various routes to projects and customers around the area via the Gwydir Highway. Alternate routes may be used to supply aggregate to specific projects, such as the Glen Innes Wind Farm project directly south of the Project site, shown on Figure 3-1.

The access road from the Gwydir Highway along the public road reserve has been approved as part of the Glen Innes Wind Farm and is not part of the Project. However, the intersections (one in and one out) with the Gwydir Highway will need to be upgraded. It is proposed to upgrade the accesses shared to incorporate Channelised Right-Turn (CHR(s)) and Auxiliary Left-Turn (AUL(s)) treatments (refer to Section 7.6).

#### 3.9.1 Construction traffic generation

During the construction phase, the traffic generated is expected to be limited to a few heavy vehicle movements relating to the construction of intersections. A few light vehicles would also access the site daily during the construction works.

#### 3.9.2 Operation traffic generation

##### *Workforce Traffic*

During operation it is likely that there would be a maximum of twelve workers or plant operators on the site at any one time. This would yield a daily workforce traffic generation in the order of 24 vehicle trips per day (vtpd). It is assumed the majority of the workforce would arrive between 6:30 am and 7:30 am and depart generally between 3:00 pm and 6:30 pm.

##### *Heavy Vehicle Traffic*

Truck and dog trailer combinations have a capacity of about 32 tonnes. At maximum daily production (i.e. 3,000 tonnes), the quarry is expected to generate about 100 truck and dog loads or 200 truck movements per day. The truck movements would start at 7 am and continue evenly throughout the day, until 5 pm.

During the construction of the Glen Innes Wind Farm, not all truck movements will enter the Gwydir Highway, as the Glen Innes Wind Farm is accessed directly from Wattle Vale to the south on roads to be constructed as part of that project.

This rate of maximum truck movements is expected to be infrequent and for short durations. The average number of truck movements is expected to be a lot less and there would be times when no trucks would be operating.

## **3.10 Site facilities**

### **3.10.1 Site drainage**

Surface flows from the quarry (rainfall or groundwater ingress) would drain to the sedimentation basin (either freely or by pumping depending on the stage of quarrying). Following an appropriate settling time for suspended sediments, water from these dams would discharge to a series of drainage lines that lead to Wellingrove Creek and the Severn River.

Surface runoff from upslope of the quarry would be prevented from entering the quarry by means of diversion drains along the southern edge.

All sediment and erosion controls would be designed and implemented in accordance with the *NSW Soils and Construction – Managing Urban Stormwater Volume 1 ‘the Blue Book’* (Landcom, 2004).

### **3.10.2 Dust suppression**

During dry conditions, exposed areas would be sprayed with water from a water cart to suppress dust. Water will be sourced from the sediment basin, which will be oversized to allow for water storage while still allowing sufficient capacity to meet the Blue Book requirements.

### **3.10.3 Site offices**

In the initial stages of the Project’s operation, the site would be managed from the existing operation in Glen Innes and no infrastructure beyond roads, fencing and stockpile hardstands, as shown in Figure 3-1, would be required. At some point in the future, an office, weighbridge and public carpark would be constructed adjacent to the access road. The site office would consist of a demountable building about 10 metres long by 4 metres wide.

### **3.10.4 Fuel storage**

Mobile plant refuelling would take place on site from a self-bunded portable fuel truck with a capacity of up to 10,000 litres. All scheduled plant and equipment maintenance would take place off site.

### **3.10.5 Lighting**

Quarrying would be limited to daylight hours, avoiding the need for lighting.

### **3.10.6 Utilities**

A rainwater tank would be connected to the site office to service the toilets and hand basin but water for domestic uses would be imported to site. Water for dust suppression and vehicle washing would be obtained from the sediment basin.

Toilet facilities would be provided with effluent being treated and disposed onsite via a septic tank.

Power is not required to operate the quarry.

### **3.10.7 Waste Management**

Small amounts of domestic refuse would be generated on site and be removed for recycling or disposal at a suitably licensed landfill. The extraction of rock material is not expected to generate any waste material, as all extracted material would be either sold as a product or retained for reuse during rehabilitation.



## **3.11 Decommissioning and rehabilitation**

### **3.11.1 Storage of topsoil and overburden**

Topsoil would be stripped and stored on site during the construction phase of the Project and progressively during bench establishment. Overburden not suitable for aggregate would be stockpiled for use in rehabilitation. Stockpiled overburden would be stabilised in accordance with the Blue Book.

### **3.11.2 Rehabilitation**

Following completion of quarrying, areas that are no longer in use would be landscaped and progressively rehabilitated. Rehabilitation would generally involve:

- Removal of all structures, equipment and other materials from the works area.
- Earthworks and landscaping to shape the land to maximum 3:1 batter slopes with a minimum 0.5% grade to allow free drainage to a small existing farm dam to the west, which will act as a sediment basin.
- Revegetation would use native and introduced pasture species to match existing conditions.
- Erosion and sedimentation control would remain in place until the site is appropriately reinstated and revegetated.
- Access roads would be retained for future uses.

A concept rehabilitation plan is provided in

Figure 3-6.

### **3.12 Capital investment**

The majority of plant required for the operation would be provided by contractors, so the capital investment would be limited to the site office, weighbridge and site access. This is expected to cost less than \$500,000.

### **3.13 Alternatives to the project**

Alternatives to the Project are summarised below.

#### **3.13.1 Extraction from alternative resource**

Extracting another resource (quarry) may have similar or greater impacts than the current Project. Another quarry location may require clearing, create water quality, noise or dust issues or add heavy vehicles to a road that was previously used mainly by light vehicles.

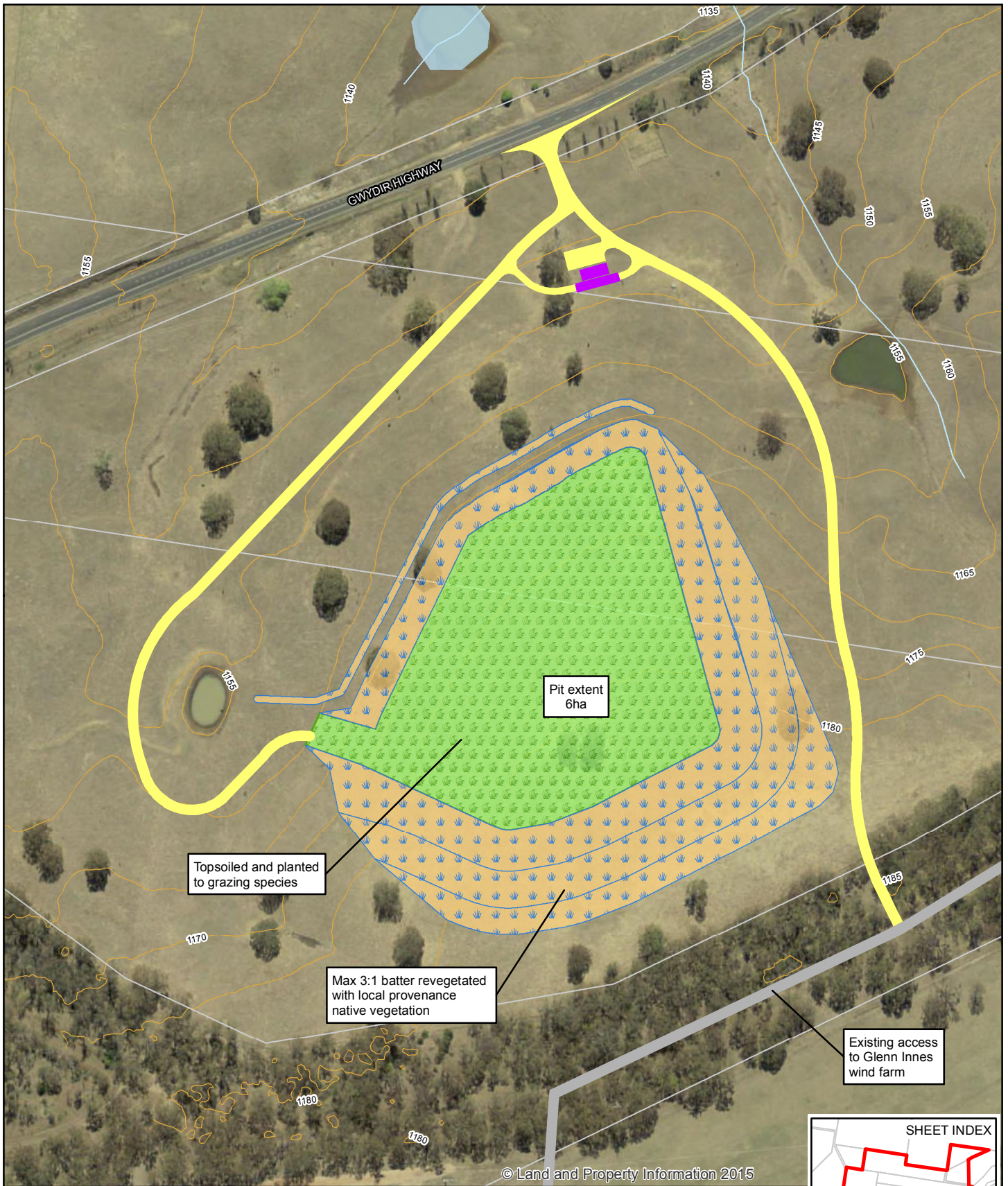
The Project site is ideally located adjacent to its core market, is clear of significant vegetation and is located in a sparsely populated area which reduces the potential disturbance to sensitive receivers.



### **3.13.2 Do nothing**

The “do nothing” option would avoid any impacts at the Project site but would also have the following consequences:

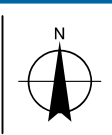
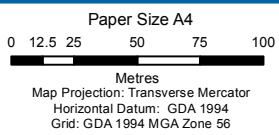
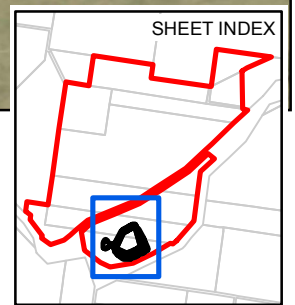
- The establishment of the wind farms may not proceed which could have significant economic and social implications to Glen Innes and the surrounding region.
- The high quality resources, identified at the Project site, would not be utilised.
- The direct economic benefits in the form of capital investment, plus expenditure associated with quarry operations and labour, providing an ongoing contribution to the local economy, will not be realised.
- The Project site would remain undeveloped and its ongoing use would likely be in the form of agricultural dryland grazing, which would not provide the economic benefits afforded by the Project.
- There may be pressure to establish new quarries that contain less suitable resources with greater environmental consequences or uncertainties.



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**LEGEND**

- Project boundary
- Site access
- Cadastre
- Existing access
- Watercourse
- Site office / weigh bridge
- Rehabilitation - local provenance native vegetation
- Rehabilitation - topsoiled and planted to grazing species
- 5m contours



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**Concept Rehabilitation Plan** **Figure 3-6**

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 Level 3, GHD Tower, 24 Honeysuckle Drive, Newcastle NSW 2300 T 61 2 4979 9999 F 61 2 4979 9988 E ntmil@ghd.com W www.ghd.com.au  
 ©2016. Whilst every care has been taken to prepare this map, GHD, GISSC and LPI make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and cannot accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the map being inaccurate, incomplete or unsuitable in any way and for any reason.  
 Data source: LPI: DCDB & DTDB, 2012, Aerial Imagery, 2016; GISSC: Aerial Imagery / Quarry Data, 2016. Created by: fmackay, tmorton



## 4. Statutory legislation

### 4.1 NSW Environmental Planning and Assessment Act 1979

The EP&A Act is the principal planning legislation in NSW. Relevant provisions of the EP&A Act are addressed in the following sections.

#### 4.1.1 Designated development

Clause 77A of the EP&A Act specifies 'designated development' as development declared in Schedule 3 of the EP&A Regulation or other environmental planning instrument. The Project is classified as 'designated development' because it falls within the specified category of 'extractive industries' under Schedule 3 as set out below:

1. *Extractive industries (being industries that obtain extractive materials by methods including excavating, dredging, tunnelling or quarrying or that store, stockpile or process extractive materials by methods including washing, crushing, sawing or separating):*
  - a. *that obtain or process for sale, or reuse, more than 30,000 cubic metres of extractive material per year, or*
  - b. *that disturb or will disturb a total surface area of more than 2 hectares of land by:*
    - i. *clearing or excavating, or*
    - ii. *constructing dams, ponds, drains, roads or conveyors, or*
    - iii. *storing or depositing overburden, extractive material or tailings, or*

**Comment:** The Project is an extractive industry that will extract and process hard rock quarry product, extracting up to 300,000 tpa and with a disturbance area of approximately 8 hectares.

#### 4.1.2 Regional development

Regional development is defined in Schedule 4A of the EP&A Act to include:

1. Development with a CIV over \$20 million.
2. Development with a CIV over \$5 million which is council related, lodged by or on behalf of the Crown (State of NSW), private infrastructure and community facilities or eco-tourist facilities.
3. Extractive industries, waste facilities and marinas that are designated development.
4. Certain coastal subdivisions.
5. Development with a CIV between \$10 million and \$20 million which are referred to the regional panel by the applicant after 120 days.
6. Crown DA (with a CIV under \$5 million) referred to the regional panel by the applicant or local council after 70 days from lodgement as undetermined, including where recommended conditions are in dispute.

**Comment:** The Project is considered to be regional development as it involves an extractive industry that is designated development (point 3).

#### 4.1.3 Integrated development

Integrated development is development (not being State significant development or complying development) that, in order for it to be carried out, requires a licence or approval listed in Section 91 of the EP&A Act, including:

- An Environment Protection Licence (EPL) from the NSW Environment Protection Authority (EPA) under Section 53 of the POEO Act (refer to Section 4.2).
- A Section 138 approval from the Roads and Maritime Service under Section 138 of the Roads Act

**Comment:** The Project is integrated development as it requires approval from the EPA.

#### **4.1.4 Environmental planning instruments**

Environmental planning instruments (EPIs) are made under Part 3 of the EP&A Act. The relevant EPIs are discussed in the following sections.

##### *State environmental planning policies*

#### **State Environmental Planning Policy (State and Regional Development) 2011**

Section 21(1a) of the *State Environmental Planning Policy (State and Regional Development) 2011* (SEPP SRD) provides that a Joint Regional Planning Panel (JRPP) exercises the consent authority functions of the council for the determination of development applications pertaining to regional development.

**Comment:** The JRPP would be the determining authority for the Project.

#### **State Environmental Planning Policy (Mining Petroleum and Extractive Industries) 2007**

The aims of the *State Environmental Planning Policy (Mining Petroleum and Extractive Industries) 2007* (MPEI SEPP), in recognition of the importance to New South Wales of mining, petroleum production and extractive industries, are:

- (a) to provide for the proper management and development of mineral, petroleum and extractive material resources for the purpose of promoting the social and economic welfare of the State,*
- (b) to facilitate the orderly and economic use and development of land containing mineral, petroleum and extractive material resources, and*
- (c) to establish appropriate planning controls to encourage ecologically sustainable development through the environmental assessment, and sustainable management, of development of mineral, petroleum and extractive material resources.*

**Comment:** Under the MPEI SEPP, extractive industries may be carried out with consent on any land for which agriculture or industry is permitted with or without consent. The Project site is predominantly zoned RU1 (Primary Production) pursuant to the *Glen Innes Severn Local Environmental Plan 2012* (Glen Innes Severn LEP), development for the purpose of extractive industries is permissible with development consent within the RU1 zone.

The MPEI SEPP establishes specific requirements for the assessment of development permissible under the SEPP. These include (in this case with respect to an extractive industry):

- *Consideration of the compatibility of the proposal with the existing uses and approved uses of land in the vicinity, potential impacts on preferred land uses in the vicinity, a comparison of the public benefits of these land uses with the proposal, and measures to avoid or minimize incompatibility.*
- *Consideration of conditions to be imposed on consents to ensure extractive industries are carried out in an environmentally responsible manner in respect of water resources, biodiversity and greenhouse gas emissions.*
- *Resource recovery aspects of the proposed extractive industry.*



- *The transport impacts of the proposal, including impacts and management of truck movements on public roads, taking into account advice from the Roads and Maritime.*
- *The need for conditions concerning rehabilitation*

This EIS has been prepared to support a DA and includes an assessment of all matters for consideration prescribed within MPEI SEPP.

### **State Environmental Planning Policy No. 33 (Hazardous and Offensive Development)**

*State Environmental Planning Policy No. 33 (Hazardous and Offensive Development)*

(SEPP 33) presents a systematic approach to planning and assessing proposals for potentially hazardous and offensive development or industry.

SEPP 33 applies to any proposal which falls under the policy's definition of 'potentially hazardous industry' or 'potentially offensive industry'. If not controlled appropriately some activities within these industries may create an offsite risk or offence to people, property or the environment, thereby making them potentially hazardous or potentially offensive.

Clause 3 of the *Hazardous and Offensive Development SEPP* defines a 'Potentially Hazardous Industry' as:

*"a development for the purposes of any industry which, if the development were to operate without employing any measures (including, for example, isolation from existing or likely future development on other land) to reduce or minimise its impact in the locality or on the existing or likely future development on other land, would pose a significant risk in relation to the locality:*

- (a) to human health, life or property, or*
- (b) to the biophysical environment, and includes a hazardous industry and a hazardous storage establishment.*

Clause 3 of the SEPP defines a Potentially Offensive Industry as:

***potentially offensive industry*** means a development for the purposes of an industry which, if the development were to operate without employing any measures (including, for example, isolation from existing or likely future development on other land) to reduce or minimise its impact in the locality or on the existing or likely future development on other land, would emit a polluting discharge (including for example, noise) in a manner which would have a significant adverse impact in the locality or on the existing or likely future development on other land, and includes an offensive industry and an offensive storage establishment.

**Comment:** The very nature of extractive industries suggests the potential for such uses to be hazardous or offensive to the local environment if not appropriately managed.

However, all appropriate site management controls and environmental impact mitigation measures would be implemented and monitored during the site's operations.

Additionally, given the location of the site, its separation from neighbours, and the intended management, mitigation and monitoring measures proposed to be implemented, no such detrimental impacts are anticipated to occur. A preliminary hazard analysis is provided in Section 7.10. In summary, if all mitigation measures provided in this EIS are implemented:

- There would be limited potential for polluting discharge from the site which would pose a significant risk to human health, life or property.
- There would be limited potential for polluting discharge from the site which would pose a significant risk to the biophysical environment.

## **State Environmental Planning Policy No. 44 - Koala Habitat**

*State Environmental Planning Policy 44* (SEPP 44) aims to encourage the 'proper conservation and management of areas of natural vegetation that provide habitat for Koalas (*Phascolarctos cinereus*) to ensure a permanent free-living population over their present range and reverse the current trend of Koala population decline'.

Schedule 1 of SEPP No. 44 identifies areas of land that are classified as being 'Core Koala Habitat' or 'Potential Koala Habitat'. They are defined as follows:

- Core Koala Habitat is an area of land with a resident population of koalas, evidenced by attributes such as breeding females (that is, females with young) and recent sightings of and historical records of a population.
- Potential Koala Habitat are areas of native vegetation where the trees of the types listed in Schedule 2 constitute at least 15 per cent of the total number of trees in the upper or lower strata of the tree component.

Under SEPP 44, if core Koala habitat is to be impacted by a proposal, an approved Koala Plan of Management is required prior to approval of the proposed development.

As discussed in Section 7.5, although the database search revealed Koala's have the potential to exist in the locality due to the lack of suitable habitat it is not considered to be core or potential Koala habitat.

## **State Environmental Planning Policy No. 55 – Remediation of Land**

*State Environmental Planning Policy No. 55 - Remediation of Land* (SEPP 55) provides a state-wide planning approach to the remediation of contaminated land and states that all remediation work must be carried out in accordance with:

- The contaminated land planning guidelines
- Any guidelines in force under the Contaminated Land Management Act 1997
- In the case of remediation work defined as category 1 remediation work under SEPP 55, a plan of remediation approved by the consent authority and prepared in accordance with the contaminated land planning guidelines

Clause 7(1) of the Policy states that 'a consent authority must not consent to the carrying out of any development on land unless:

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

**Comment:** The quarry has not been identified to be contaminated and it is therefore considered that the site is suitable for the proposed use, in respect to contamination.

### *Local environmental plans*

#### **Glen Innes Severn Local Environmental Plan 2012**

The Project is wholly located within the Glen Innes Severn LGA. The Glen Innes Severn LEP controls development within the LGA.

The Project is located on land within zone RU1 (Primary Production) (refer to Figure 4-1). The objectives of zone RU1 (Primary Production) 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.

**Comment:** Under the provisions of zone RU1 (Primary Production), development for the purpose of extractive industries is permissible with development consent. The Project is defined as an extractive industry and is therefore permissible on the land with development consent.

#### **Glen Innes Severn Council Development Control Plan 2014**

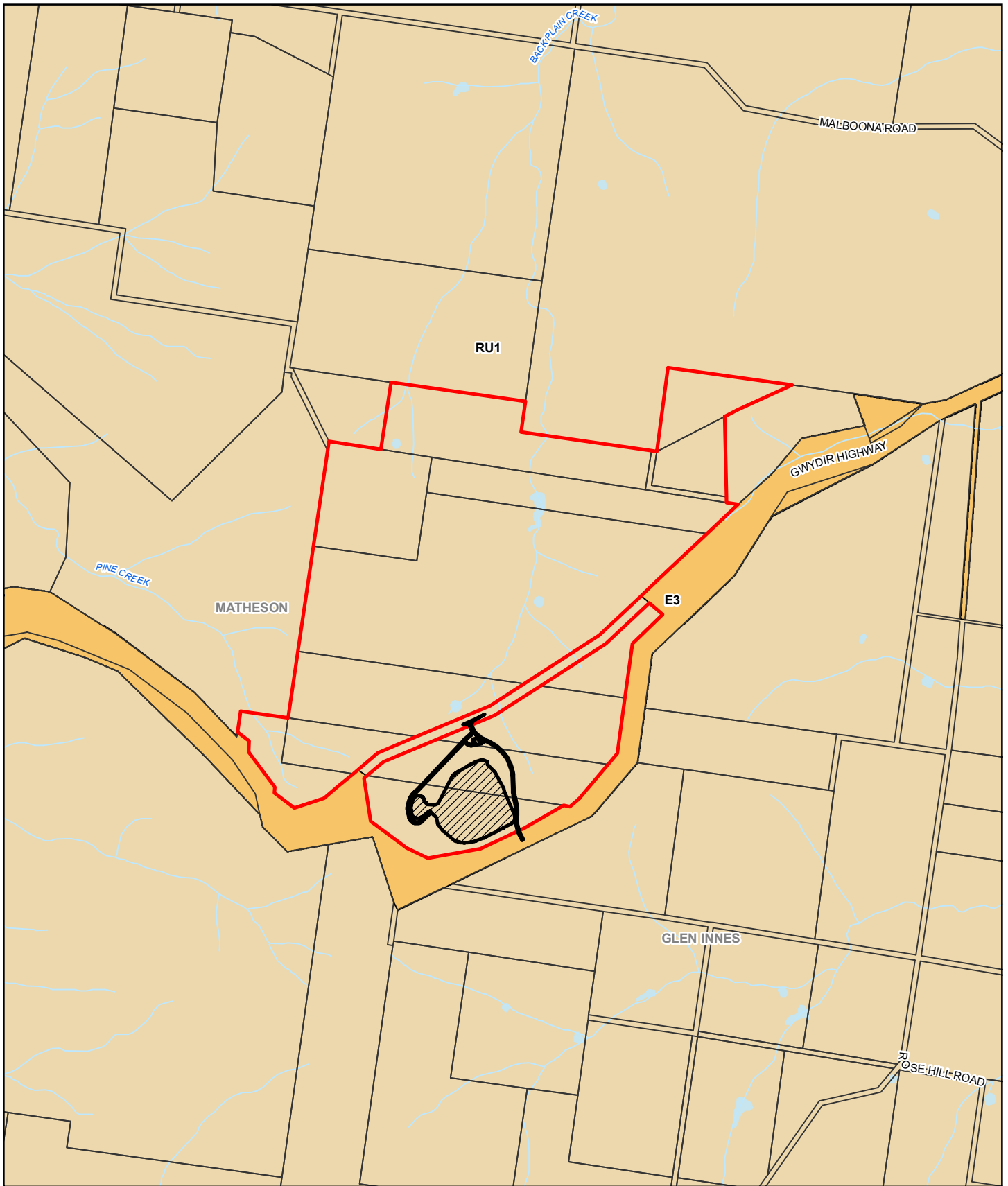
The *Glen Innes Severn Council Development Control Plan 2014* (DCP) contains detailed guidelines and planning controls applying to all development within the LGA.

Relevant chapters of the DCP that apply to the Project are listed below and the relevant provisions of each are addressed in Appendix C:








- Chapter 2 – Notification Procedures
- Chapter 4 – Rural Development
- Chapter 7 – Access and Parking.

**Comment:** The Project is consistent with the provisions of the DCP.

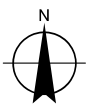




**LEGEND**

- |   |   |
|---|---|
|  Project boundary | <b>Land zoning</b>  |
|  Cadastre         |  E3 Environmental Management |
|  Disturbance area |  RU1 Primary Production      |
|  Watercourse      |   |
|  Waterbody        |   |

Paper Size A4  
 0 80 160 320 480 640  
 Metres  
 Map Projection: Transverse Mercator  
 Horizontal Datum: GDA 1994  
 Grid: GDA 1994 MGA Zone 56



Glen Innes Severn Council  
 Wattle Vale Quarry  
 Environmental Impact Statement

Job Number | 22-18380  
 Revision | 0  
 Date | 23 Dec 2016

**Land Zoning**

**Figure 4-1**

Level 3, GHD Tower, 24 Honeysuckle Drive, Newcastle NSW 2300 T 61 2 4979 9999 F 61 2 4979 9988 E [entmail@ghd.com](mailto:entmail@ghd.com) W [www.ghd.com.au](http://www.ghd.com.au)

G:\22\18380\GIS\Maps\Deliverables\SouthernQuarryEIS\2218380\_SQIEIS009\_LandZoning\_0.mxd  
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Data source: LPI: DCDB & DTDB, 2012, 2016; GISSC: Quarry Data, 2016; DoPI: LEP Zoning, 2012. Created by: fmackay, gmcdiarmid

#### 4.1.5 Development assessment

Part 4 of the EP&A Act applies to the assessment of development that requires consent.

##### *Matters for consideration*

The matters to be considered when determining a development application are outlined in Section 79C of the EP&A Act and include:

- a. *the provisions of:*
  - i. *any environmental planning instrument, and*
  - ii. *any proposed instrument that is or has been the subject of public consultation under this Act and that has been notified to the consent authority (unless the Secretary has notified the consent authority that the making of the proposed instrument has been deferred indefinitely or has not been approved), and*
  - iii. *any development control plan, and*
  - iv. *any planning agreement that has been entered into under Section 93F, or any draft planning agreement that a developer has offered to enter into under Section 93F, and*
  - v. *the regulations (to the extent that they prescribe matters for the purposes of this paragraph), and*
  - vi. *any coastal zone management plan (within the meaning of the Coastal Protection Act 1979),*

*that apply to the land to which the development application relates,*

**Comment:** The relevant EPIs and DCP applicable to the Project are addressed in the previous section. There are no proposed instruments that pertain to the Project or the site. No planning agreements pertain or are proposed to the Project or the site. The requirements of the regulations are addressed in the following section. No coastal zone management plan is applicable to the LGA.

- b. *the likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality,*

**Comment:** Impacts of the Project are discussed in Section 7.

- c. *the suitability of the site for the development,*

**Comment:** The site is considered suitable for the Project due to its zoning as RU1 (Primary Production) in the Glen Innes Severn LEP Further discussion around the Project's suitability is provided in Section 9.1.3.

- d. *any submissions made in accordance with this Act or the regulations,*

**Comment:** Comments made about the Project during consultation have been considered during EIS preparation. This is discussed further in Section 5. Once exhibited, further submissions will be received and considered by the consent authority. The proponent will review public submissions made during the exhibition period and prepare a response to those submissions, as required.

- e. *the public interest.*

**Comment:** The Project is considered to be in the public interest through direct means such as employment and wages, and indirectly via spending on goods and services in the region.

The Project would provide access to a total of up to approximately 2.1 million tonnes of hard rock quarry material and provide a long-term supply of construction materials into the local and

regional market. This Project would fulfil anticipated short and medium term demand for aggregate products for the construction of major wind farm projects in the region. In the long term, the Project will provide a long term supply of aggregate products to the Glen Innes district to replace the existing quarry east of Glen Innes which is nearing the end of its resources and is essential for the security and economic viability of the local and regional construction industry.

GISC has actively and comprehensively engaged with stakeholders, including the local community, to seek to understand the key concerns and issues associated with the Project and to help GISC to effectively manage these issues through appropriate location and design. This is discussed further in Section 5.

## 4.2 Other State legislation

Table 4-1 discusses the application of other NSW legislation to the Project.

**Table 4-1 Summary of other State legislation**

Legislation	Key requirements	Comment
<i>Heritage Act 1977</i>	The Heritage Act 1977 (Heritage Act) is administered by the NSW Heritage Council and aims to ensure that the heritage of NSW is adequately identified and conserved. An approval under section 60 of the Heritage Act is required for impacts to State Heritage Register listed heritage items. An excavation permit under section 140 of the Heritage Act is required for impacts to archaeological relics.	The <i>Aboriginal Cultural Heritage Assessment</i> (Appendix D) concluded “no items of European heritage value were identified during the survey. As such, no further recommendations for historic heritage are required”.
<i>Protection of the Environment Operations Act 1997</i>	The POEO Act establishes a licensing regime for pollution generating activities in NSW. Under Sections 47 and 48, an EPL is required for scheduled development work and scheduled activities respectively.	The Project would extract more than 30,000 tonnes of extractive material per year and therefore meets the definition of a scheduled activity under Clause 19 of Schedule 1 of the POEO Act.  An EPL is therefore required from the EPA.
<i>National Parks and Wildlife Act 1974</i> (NPW Act)	The NPW Act is administered by NSW Office of Environment and Heritage (OEH).  It is an offence not to notify the OEH of the location of Aboriginal sites and objects under Section 89A of the NPW Act.  Section 86 of the NPW Act provides that it is an offence to harm or desecrate an Aboriginal object or an Aboriginal place.	The <i>Aboriginal Cultural Heritage Assessment</i> (Appendix D) concluded “the proposed works are unlikely to lead to harm to Aboriginal objects”.



Legislation	Key requirements	Comment
	Approval is required from OEH to knowingly destroy, deface or damage; or knowingly cause or permit the destruction of or damage to an Aboriginal object or Aboriginal Place.	
<i>Native Vegetation Act 2003</i> (NV Act)	<p>The NV Act regulates the clearing of native vegetation on certain land in NSW and requires development consent granted by the Minister before such clearing activities are undertaken.</p> <p>Approval is required under this Act from the Minister to clear native vegetation in certain circumstances.</p>	<p>The NV Act does not apply to the clearing of native vegetation that is, or is part of, designated development within the meaning of the EPA Act and for which development consent has been granted (see section 25 of the NV Act).</p> <p>If development consent is granted for the Project, including any associated clearing of native vegetation, further approval under the NV Act will not be required.</p>
<i>Roads Act 1993</i>	The <i>Roads Act 1993</i> determines the rights of the public and adjacent land owners to use public roads, and establishes procedures for the opening and closing of public roads. Under the Act applications are required to be made for the closure of roads and for works in road reserves.	The Project involves the upgrading of the intersection on the Gwydir Highway (refer to Section 7.6) and therefore requires a Section 138 approval from RMS.
<i>Threatened Species Conservation Act 1995</i> (TSC Act)	Approval is required to: <ul style="list-style-type: none"> <li>(a) harm any animal that is of, or is part of, a threatened species, population or ecological community</li> <li>(b) pick any plant that is of, or is part of, a threatened species, population or ecological community</li> <li>(c) damage critical habitat</li> <li>(d) damage habitat of a threatened species, population or ecological community.</li> </ul>	The <i>Flora and Fauna Impact Assessment</i> (Appendix E) concluded “ <i>the project will not result in any significant impacts on native flora and fauna, including any threatened species or endangered ecological communities</i> ”.
<i>Water Act 1912</i>	The <i>Water Act 1912</i> has been repealed by the <i>Water Management Act 2000</i> . However, some of the licensing provisions remain in force where the water source is not covered by a water sharing plan. The Project	The commencement of the water sharing plans for the area render the governance of the <i>Water Act 1912</i> redundant and the Act

Legislation	Key requirements	Comment
	is located within a groundwater area currently administered by the <i>Water Act 1912</i> , as there is no water sharing plan in place in for the area.	therefore no longer applies to the site.
<i>Water Management Act 2000</i> (WM Act)	This Act regulates the taking, interception, storage and use of surface water and groundwater within areas subject to water sharing plans. There is no groundwater sharing plan applicable to the Project site, however surface water within the catchment area of the Project is managed under the <i>Water Sharing Plan for the NSW Border Rivers Unregulated and Alluvial Water Sources</i> . As such, surface water within the catchment is managed under the WM Act.	The Project may intercept groundwater but is within the maximum harvestable rights for the Project site. If groundwater is intercepted a water access licence will be required.
<i>Rural Fires Act 1997</i>	The Act requires approval of development on bushfire prone land, as identified by a “Bushfire Prone Land Map” prepared under Section 146 of the EP&A Act.	A review of the RFS website indicates the Project is on bushfire prone land. A bushfire risk assessment of the Project is included in Section 7.10.

### 4.3 Commonwealth Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) prescribes the Commonwealth’s role in environmental assessment, biodiversity conservation and the management of protected areas.

The EPBC Act is administered by the Department of the Environment and Energy (DotEE) and provides protection for listed Matters of National Environmental Significance (MNES). There are currently nine MNES:

- World heritage properties.
- National heritage properties.
- Wetlands of international importance.
- Listed threatened species and ecological communities.
- Listed migratory species.
- Protection of the environmental from nuclear actions.
- Commonwealth marine areas.
- The Great Barrier Reef Marine Park.
- Water resources.

**Comment:** The Project will not have, and is not likely to have, a significant impact on MNES or on the environment of Commonwealth land. Approval for the Project under the EPBC Act is not required. Refer to Section 7.5 and Appendix E for further details.

#### **4.4 Summary of approvals required**

The Project is classified as designated development as defined in Schedule 3 of the EP&A Regulation, as it is an extractive industry with an intended capacity of more than 30,000 cubic metres of material per year and disturbing a total surface area of more than 2 hectares of land.

The Project is also integrated development, in accordance with Section 91 of the EP&A Act, as an EPL under the POEO Act and a Section 138 approval under the *Roads Act 1993* will be required. A water access licence under the *WM Act* will also be required if the extraction intercepts groundwater.

The Project is also regional development as defined in Schedule 4A of the EP&A Act as it involves an extractive industry that is designated development. The JRPP will therefore be the consent authority for the Project, unless the Minister orders otherwise.



# 5. Consultation

## 5.1 Introduction

A consultation strategy was formulated as a part of the EIS process to assist in the identification of key stakeholders and issues for consideration. Consultation with a range of government agencies and community stakeholders was incorporated into the strategy to both inform the stakeholders of the project and to allow any issues of concern to be raised at an early stage of the planning process and incorporated into the EIS.

This chapter provides a description of the government and community consultation activities undertaken and outlines the key issues identified and where they are addressed in this document.

## 5.2 Consultation with government agencies

Issues identified in the SEARs and references to where these issues are considered in the EIS are outlined in Table 5-1.

**Table 5-1 SEARs and response**

SEARs key issues	Where addressed in the EIS
In particular, the EIS must include:	
<ul style="list-style-type: none"> <li>• a comprehensive description of the development, including:           <ul style="list-style-type: none"> <li>– a detailed site description and history of any previous quarrying on the site, including a current survey plan;</li> <li>– identification of the resource, including the amount, type and composition, as well as details regarding the timing and intensity of extractive operations, having regard to DRE’s requirements (Attachment 2);</li> <li>– the layout of the proposed works and components (including any existing infrastructure that would be used for the development);</li> <li>– an assessment of the potential impacts of the development, as well as any cumulative impacts, including the measures that would be used to minimise, manage or offset these impacts;</li> <li>– a summary of all proposed environmental management and monitoring measures for the development;</li> <li>– a detailed rehabilitation plan for the site;</li> <li>– any likely interactions between the development and any existing/approved developments and land uses in the area;</li> <li>– a list of any other approvals that must be obtained before the development may commence;</li> <li>– the permissibility of the development, including identification of the land use zoning of the site;</li> </ul> </li> </ul>	
	Section 2
	Section 2.2.1 and Appendix B
	Section 0 and Figure 3-1
	Section 7
	Section 8.1
	Section 3.11.2
	Section 2.2.2
	Section 4.4
	Section 4.1

SEARs key issues	Where addressed in the EIS
<ul style="list-style-type: none"> <li>– identification of sensitive receivers likely to be affected by the development using clear maps/plans, including key landform areas, such as conservation areas and waterways; and</li> </ul>	Section 2.3.5 and Figure 1-2
<ul style="list-style-type: none"> <li>• the reasons why the development should be approved, having regard to the economic, social and environmental aspects of the development and taking into consideration the objects of the <i>Environmental Planning &amp; Assessment Act 1979</i>; and</li> </ul>	Section 9
<ul style="list-style-type: none"> <li>• a signed declaration from the author of the EIS, certifying that the information contained within the document is neither false nor misleading.</li> </ul>	Included prior to the Executive Summary
<p>The EIS must assess the potential impacts of the proposal at all stages of the development, including the establishment, operation and decommissioning of the development</p>	Section 7
<p><b>Water</b> – including:</p> <ul style="list-style-type: none"> <li>• an annual site water balance for representative years over the life of the development and demonstration that sufficient water supplies would be available to meet operational requirements;</li> <li>• identification of any licensing requirements or other approvals required under the <i>Water Act 1912</i> and/or <i>Water Management Act 2000</i>;</li> <li>• a description of the measures proposed to ensure the development can operate in accordance with the requirements of any relevant Water Sharing Plan or water source embargo;</li> <li>• an assessment of activities that could cause erosion or sedimentation issues, and the proposed measures to prevent or control these impacts;</li> <li>• an assessment of the likely impacts of the development on the quality and quantity of surface and groundwater resources, having regard to the requirements of DPI Water (Attachment 2);</li> <li>• a detailed description of the proposed water management system, water monitoring program and other measures to mitigate surface and groundwater impacts; and</li> <li>• an assessment of potential downstream impacts from surface water runoff, having regard to the requirements of DRE (Attachment 2);</li> </ul>	Section 7.2 and Appendix F
<p><b>Air</b> – including:</p> <ul style="list-style-type: none"> <li>• an assessment of the likely air quality impacts of the development in accordance with the Approved Methods for the Modelling and Assessment of Air Pollutants in NSW, having regard to EPA requirements (Attachment 2). The assessment is to give particular attention to potential dust impacts on any</li> </ul>	Section 7.4 and Appendix G

SEARs key issues	Where addressed in the EIS
<p>nearby private receivers due to construction activities, the operation of the quarry and/or road haulage;</p>	
<p><b>Noise and Blasting</b> – including:</p> <ul style="list-style-type: none"> <li>• an assessment of the likely construction and operational noise and vibration impacts of the development in accordance with the NSW Industrial Noise Policy and the Interim Construction Noise Guideline, having regard to EPA requirements (Attachment 2);</li> <li>• an assessment of the likely road noise impacts (traffic and haulage) of the development under the NSW Road Noise Policy; and</li> <li>• an assessment of the likely blasting and vibration impacts of the development, having regard to the relevant ANZEC guidelines and paying particular attention to impacts on people, livestock, heritage items and infrastructure;</li> </ul>	<p>Section 7.3 and Appendix H</p>
<p><b>Biodiversity</b> – including:</p> <ul style="list-style-type: none"> <li>• accurate predictions of any vegetation clearing on site;</li> <li>• a detailed assessment of the potential biodiversity impacts of the development, paying particular attention to threatened species and/or populations (or their habitats), endangered ecological communities and groundwater dependent ecosystems, and having regard to the requirements of OEH (Attachment 2);</li> <li>• a detailed description of the proposed measures to maintain or improve the biodiversity values of the site in the medium to long term, as relevant; and</li> <li>• an assessment of whether a Species Impact Statement is required;</li> </ul>	<p>Section 7.5 and Appendix E</p>
<p><b>Heritage</b> – including:</p> <ul style="list-style-type: none"> <li>• - an assessment of the potential impacts on Aboriginal heritage (cultural and archaeological), including evidence of appropriate consultation with relevant Aboriginal communities/parties and documentation of the views of these stakeholders regarding the likely impact of the development on their cultural heritage, and having regard to OEH requirements (Attachment 2); and</li> <li>• - identification of Historic heritage in the vicinity of the development and an assessment of the likelihood and significance of impacts on heritage items, having regard to the requirements of relevant policies and guidelines listed in Attachment 1;</li> </ul>	<p>Section 7.7 and Appendix D</p>
<p><b>Transport</b> – including:</p>	<p>Section 7.6 and Appendix I</p>



SEARs key issues	Where addressed in the EIS
<ul style="list-style-type: none"> <li>an assessment of potential traffic impacts on the capacity, condition, safety and efficiency of the local and State road networks, detailing the nature of the traffic generated, transport routes, traffic volumes and potential impacts on local and regional roads, having regard to RMS requirements (Attachment 2);</li> <li>a description of the measures that would be implemented to maintain and/or improve the capacity, efficiency and safety of the road network (particularly the proposed transport routes) over the life of the development;</li> <li>evidence of any consultation with relevant roads authorities, regarding the establishment of agreed contributions towards road upgrades or maintenance; and</li> <li>a description of access roads, specifically in relation to nearby Crown roads, fire trails and travelling stock routes, having regard to the requirements of DPI Lands and Local Land Services (Attachment 2);</li> </ul>	
<p><b>Land</b> – including:</p> <ul style="list-style-type: none"> <li>an assessment of potential impacts on the quality and quantity of the soils and land capability of the site, including any likely disturbance of contaminated soils, and the proposed mitigation, management and remedial measures (as appropriate), having regard to EPA requirements (Attachment 2);</li> <li>an assessment of the likely impacts on landforms and topography, including the long-term geotechnical stability of any new landforms; and</li> <li>an assessment of the compatibility of the development with other land uses in the vicinity of the development, in accordance with the requirements of Clause 12 of State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007, having regard to the requirements of DPI Agriculture (Attachment 2);</li> </ul>	Section 7.1 and Appendix B
<p><b>Waste</b> – including:</p> <ul style="list-style-type: none"> <li>estimates of the quantity and nature of the waste streams that would be generated or received by the development and any measures that would be implemented to minimise, manage or dispose of these waste streams, having regard to EPA requirements (Attachment 2);</li> </ul>	Section 7.9
<p><b>Public Safety</b> – including:</p> <ul style="list-style-type: none"> <li>an assessment of the likely risks to public safety, paying particular attention to the transport, storage, handling and use of any hazardous or dangerous goods;</li> </ul>	Section 7.10

SEARs key issues	Where addressed in the EIS
<p><b>Visual</b> – including:</p> <ul style="list-style-type: none"> <li>an assessment of the likely visual impacts of the development on any surrounding private landowners and key vantage points in the public domain, paying particular attention to impacts on any nearby private residences and road users;</li> </ul>	Section 7.8
<p><b>Social &amp; Economic</b> – including:</p> <ul style="list-style-type: none"> <li>an assessment of the likely social and economic impacts of the development, including consideration of both the significance of the resource and the costs and benefits of the project; and</li> </ul>	Section 7.11
<p><b>Rehabilitation</b> – including:</p> <ul style="list-style-type: none"> <li>a detailed description of the proposed rehabilitation measures that would be undertaken throughout the development and during quarry closure;</li> <li>a detailed rehabilitation strategy, including justification for the proposed final landform and consideration of the objectives of any relevant strategic land use plans or policies; and</li> <li>the measures that would be undertaken to ensure sufficient financial resources are available to implement the proposed rehabilitation strategy.</li> </ul>	Section 3.11.2

### 5.3 Community consultation

The location of the quarry is relatively isolated, so large scale community consultation was considered unnecessary. GISC issued all neighbouring residents with a letter informing them about the Project with one response received. The issues raised in this response have been addressed by the EIS.

GISC have also informed the community about the Project via updates on their website.

Further community consultation will occur during the EIS assessment process.

### 5.4 Aboriginal consultation

The Glen Innes Local Aboriginal Land Council (LALC) was consulted in relation to the Project during the preparation of the *Aboriginal Cultural Heritage Assessment* (Appendix D), which states:

*“Aboriginal community consultation was undertaken via the Glen Innes LALC CEO Trevor Potter and Aboriginal Sites Officer Mr Jayden Potter. Trevor Potter did not identify knowledge of any specific sites in the area of the proposed quarry, but did identify the potential for sites to occur within the Project site based on knowledge of archaeological values in similar landscapes across the Tablelands. Trevor indicated that camp sites were known further along Back Plain Creek (north of the Project site)”.*

# 6. Risk assessment

## 6.1 Overview

This chapter provides the results of the identification and prioritisation of issues. The analysis was undertaken in the form of a preliminary, desktop level risk assessment, to broadly assess the potential environmental risks that may arise as a result of the Project. The preliminary environmental risk assessment identifies and ranks potential environmental risks with the aim of identifying potential impacts for detailed assessment.

The outcome of the assessment was used to inform the scope of further work and investigations. Proposed mitigation measures are provided in Section 7.

## 6.2 Risk assessment method

### 6.2.1 Impacts, risks and risk analysis

The Project is likely to result in some impacts to the surrounding environment. An impact can be considered as any change to the environment either wholly or partially resulting from activities associated with the Project. Impacts may either be beneficial to the environment and the community, or may give rise to changes that are considered less desirable.

The events or activities that are likely to lead to impacts that do not provide a benefit will require some level of monitoring, mitigation and/or land management. The extent of management or monitoring required will depend on the level of risk that may be associated with the impact.

Risk is generally measured as the result of a combined consideration of:

- How likely it is that an impact would occur ('likelihood').
- What would be the outcomes if it did occur ('consequence').

The environmental risk assessment was undertaken with general consideration of *AS/NZS ISO 31000:2009 Risk Management – Principles and Guidelines* (Australian Standards, 2009). This involves:

- Evaluating likelihood of occurrence
- Evaluating consequence
- Assigning a risk rating.

### 6.2.2 Evaluating likelihood

The likelihood of an impact occurring can be described in terms of probability. Overlaying this is the need to recognise the uncertainty that may be associated with the potential impacts, particularly during the initial risk assessment process. Where there is scientific uncertainty a cautious approach would identify a higher level of risk.

Each identifiable impact can be assigned a likelihood between remote and almost certain. In simplifying the possible impacts for the purpose of a risk assessment an element of subjectivity is introduced. The purpose of the risk assessment is not necessarily to agree on the probability of any particular impact, but to facilitate an understanding of the relative probability of different impacts.



To undertake the risk analysis for this Project, potential risks were given a ranking between one and three with regard to the likelihood of it occurring (assuming that the Project is designed and implemented with standard environmental controls) in accordance with the following definitions:

- 1 Lower: unlikely to occur
- 2 Medium: potential to occur
- 3 Higher: likely to occur.

### 6.2.3 Evaluating consequence

Assessing the consequences of a potential risk requires a degree of subjective assessment, as the likely consequences of an impact may consist of several elements. To undertake the risk analysis for the Project, potential risks were given a number between one and three with regard to the perceived consequence if left unmanaged, in accordance with the following definitions:

- 1 Lower: potential for insignificant to minor environmental change; localised implications; imperceptible or short term cumulative impacts; offsets readily available.
- 2 Medium: potential for moderate adverse environmental change; regional implications; modest or medium term cumulative impacts; offsets available.
- 3 Higher: potential for adverse environmental change; inter-regional implications; serious or long term cumulative impacts; offsets not readily available.

### 6.2.4 Risk rating

Based on the assessment of likelihood and consequence a foreseeable impact/risk can be assigned a risk rating. This enables higher rating risks to be identified early in the process for the purpose of focusing the environmental assessment process. The matrix shown in Table 6-1 was used to prioritise potential Project environmental risks as either category A, B or C.

**Table 6-1 Impact priority matrix**

	Consequence		
Likelihood	3 Higher	2 Medium	1 Lower
3 Higher	Category A	Category A	Category B
2 Medium	Category A	Category B	Category C
1 Lower	Category B	Category C	Category C

Category A issues were considered the highest priority and were the main focus of the environmental impact assessment.

In general, the following was applied when scoping requirements for the environmental impact assessment:

- Category A issues – require detailed specialist investigations and field work, and were the highest priority to enable identification of appropriate management and mitigation options
- Category B issues – desirable to undertake further investigations as part of the environmental assessment to address some uncertainties
- Category C issues – may not require detailed specialist investigations, particularly where identifiable management/mitigation guidelines exist, only broad or desktop investigations were undertaken.

### 6.3 Assessment results

The preliminary risk assessment for the Project involved:

- Identifying potential environmental issues (listed below)
- Identifying potential key risks (or impacts) associated with each of these potential issues
- Evaluating the likelihood of occurrence and consequence in accordance with the definitions provided in Section 6.2.
- Assigning a risk ranking/priority using Table 6-1.
- Deciding on a response – it was decided that a specialist study will be undertaken for any overall issues which included a risk ranking of category A or B.
- The potential environmental issues associated with the Project were considered to include (in no particular order):
  - Land resources
  - Water resources
  - Noise and vibration
  - Air quality and greenhouse gas emissions
  - Biodiversity
  - Traffic
  - Heritage
  - Visual amenity
  - Waste management
  - Hazards and risk
  - Socio-economic.

Table 6-2 provides the results of the preliminary environmental risk assessment for the Project. It includes:

- A summary of the potential issues and potential key risks (columns 1 and 2)
- Likelihood of occurrence and consequence (columns 3 and 4)
- The risk ranking/prioritisation categories that were assigned (column 5)
- A comment regarding the findings of the assessment (column 6).

**Table 6-2 Results of risk assessment and prioritisation of environmental issues**

Issue	Potential key risks	Likelihood	Consequence	Priority category	Comment/response
Soil and water	Erosion and sediment and surface water quality impacts during construction.	Higher	Medium	A	<p>The Project has some potential for erosion and sedimentation during construction and operation. There is also potential for changes to groundwater levels due to groundwater infiltration to the pits during operation. However, appropriate mitigation measures will be implemented to reduce the potential for off-site impacts.</p> <p>The Project has medium potential for erosion and sedimentation during operation. However, appropriate erosion and sediment management controls are proposed to manage surface water run-off.</p> <p>Flooding events may occur as a result of extreme or extended rainfall events. However, given the local climate and the locality of the Project site on the Waterloo Range with little risk of flooding, these types of events are unlikely to impact on the Project.</p> <p>The Project may have potential to alter groundwater levels and possibly affect the water quality which may have potential to affect groundwater dependent ecosystems.</p> <p>The SEARs have identified land resources and water resources as key issues requiring assessment. Potential land resource and water resource impacts are considered in Sections 7.1 and 7.2 respectively.</p>
	Erosion and sediment and/or surface water quality impacts, potential groundwater infiltration to pits, or impacts to groundwater dependent ecosystems (GDEs) during operation.	Medium	Medium	B	

Issue	Potential key risks	Likelihood	Consequence	Priority category	Comment/response
Noise and vibration	Noise emissions from site activities during construction affecting sensitive receptors.	Medium	Low	C	<p>The Project has potential to have noise impacts during the construction of the intersection at the highway and the access road, with other construction activities with potential to have noise impacts being:</p> <ul style="list-style-type: none"> <li>• Construction of fencing</li> <li>• Vegetation clearance, soil stripping and stockpiling</li> <li>• Construction of temporary drainage controls.</li> </ul> <p>However, construction activities will be short-term given the proximity of the site to sensitive receivers, the impacts are not expected to be significant.</p> <p>There will be impacts in relation to quarrying activities (blasting, material handling, crushing, screening, material handling and vehicle movements), noise and vibration from truck movements, and noise, vibration and air over-pressure from blasting. Hence there is potential for noise and vibration (during operation and construction).</p> <p>The SEARs have also identified this as a key issue requiring assessment. Potential noise and vibration impacts are considered in Section 0.</p>
	Noise emissions and vibration from quarry operations exceeding noise and blasting limits and affecting sensitive receptors.	Medium	Medium	B	
Air quality and greenhouse gas emissions	Dust emissions from construction activities and operations causing nuisance to sensitive receptors.	Medium	Medium	B	Some dust emissions will be generated during construction and operation in relation to land disturbance (areas stripped of soils, stockpiles, unsealed roads) and



Issue	Potential key risks	Likelihood	Consequence	Priority category	Comment/response
	Greenhouse gas emissions from operation of machinery during construction and operation.	Higher	Lower	B	<p>quarrying activities (blasting, material handling, crushing, screening, material handling and vehicle movements).</p> <p>The Project will also result in emissions from vehicles accessing the site during construction and operation, particularly trucks exporting products.</p> <p>The SEARs identified air as a key issue requiring assessment. Potential air quality impacts including both dust and greenhouse gas emissions are considered in Section 7.4.</p>
Biodiversity	Effects on threatened or vulnerable species through removal of vegetation and destruction of habitat	Medium	Medium	B	<p>The Project will result in the clearing of approximately 8 hectares of predominantly pasture land. This loss of vegetation may impact on species, populations and ecological communities listed under the EPBC Act and/or TSC Act.</p> <p>The SEARs have identified this as a key issues requiring assessment. This issue has been considered in Section 7.5.</p>
Traffic and access	Increase in traffic during construction and operation affecting the operation of the Gwydir Highway and local roads.	Higher	Medium	A	<p>Construction of the Project will generate additional traffic in the local area, including both light and heavy vehicle movements. Construction of the intersection at the Gwydir Highway will result in short-term traffic impacts.</p> <p>Heavy vehicle movements will also be requiring during operation of the Project in relation to the transport of quarry materials and may represent new potential traffic hazards.</p>