Annexure 1

STATUTORY PLANNING CONSIDERATIONS

In determining the Development Application, Council is required to consider those matters listed under Section 4.15 of the *Environmental Planning and Assessment (Amendment) Act, 1979.* Matters of consideration are as follows:

1 S.4.15 (1) (a)(i) Provision of any Environmental Planning Instrument

1.1 Gwydir Local Environmental Plan 2013 (GLEP)

The subject development is located with the Gwydir Shire Council area and as such is governed by the Gwydir Local Environment Plan 2013 (GLEP).

The relevant aims of this GLEP plan are:

(a) *to encourage the proper management, development and conservation of environmental, economic and social resources in Gwydir,*
(b) *to facilitate economic growth and development consistent with the aim specified in paragraph (a) and that:*

- *(i) minimise the cost to the community of fragmented and isolated development, and*
- *(ii) facilitates the efficient and effective delivery of amenities and services, and*
- *(iii) facilitates stimulation of demand for a range of residential, enterprise and employment opportunities and promotes agricultural diversity, and*
- *(iv) utilises, where feasible, existing infrastructure and roads when considering new development and future potential development,*

(c) *to facilitate development in accordance with flood management planning,*
(d) *to facilitate development that is compatible with adjoining and nearby uses,*
(e) *to facilitate development that is appropriate in scale and type to the characteristics of the zone,*
(f) *identify, protect and conserve places of European heritage significance and Aboriginal heritage and cultural significance,*
(g) *to identify, protect, conserve and enhance natural assets.*

Proponents Submission

The proposed development is considered consistent with the aims of the Local Environment Plan. In particular, the proposal will facilitate the development of the Inland Railway Project which will enhance Australia's existing nation rail network and serve the interstate freight markets by providing for future rail freight demand and stimulating growth for regional development along the Inland Rail corridor.

Staff Comment

The proposed quarry will utilise approximately 9.5 hectares of the property Tikitere (total property size - 1698.5 hectares) which operates mainly a dry land and irrigated cropping and

grazing operation. The areas to be utilised by quarrying activities do not currently form part of the properties general operations and is not considered prime agricultural land. The Primary Quarry (Hard Rock Quarry) will involve the removal of an existing volcanic plug which is quite steep and sparsely vegetated with iron bark trees, low shrubs and weeds. The volcanic plug is isolated from other vegetation areas as it is surrounded by cropping fields. The Secondary Quarry (Soft Rock Quarry) is to be an extension of the existing on-farm quarry which is located on the edge of sizable remanent native vegetation area. The existing on-farm quarry has no prior development approval. The proposed quarrying operation will not impact on timber, mineral, soil, water nor areas of archaeological or heritage significance or high scenic or recreational value.

There are no known places of archaeological or heritage significance.

It is considered that the operation of the proposed quarry satisfactorily meets the aims of the GLEP.

1.1.1 Land Use Definition

The proposed development is categorised as an "extractive industry" under the GLEP. Extractive industry is defined as:

> ***"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."* (Gwydir Local Environment Plan 2013, 30 August 2013, Dictionary).

Extractive material is defined under the GLEP as:

> ***"extractive material*** *means sand, soil, gravel, rock or similar substances that are not minerals within the meaning of the Mining Act 1992."* (Gwydir Local Environment Plan 2013, 30 August 2013, Dictionary).

Proponents Submission

The intended land use, as defined in GLEP as extractive industry, is a permissible land use, with development consent, within the RU1 – Primary Production zone.

Staff Comment

The proposed development complies with both the above definitions.

1.1.2 Zoning

The proposed development site is located within the RU1 Primary Production zone under the GLEP. Extractive industries are permissible land use in this zone with consent. The objectives of the RU1 Primary Production zone are as follows:

"***Objectives of zone***

- *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 with this zone and land uses with adjoining zones."*

Proponents Submission

The proposal is for an 'extractive industry', which is permissible, with development consent, within the RU1 Primary Production Zone. The protection of natural resources and places has been fully taken into consideration in the planning for this development. The continued utilisation of the land will minimise fragmentation and alienation. The proposed development is therefore considered to be both compatible and consistent with the surrounding land uses and would be considered to satisfactorily meet the objectives of the RU1 Primary Production Zone.

Staff Comment

The proposed quarry is categorised as designated development in the RU1 Primary Production zone of the GLEP, and is therefore permitted with consent.

The proposed quarry is located on the 1698.5 Ha property "Tikitere" which is predominantly cleared for agricultural uses, as is the adjacent surrounding land. Part of the property consists of remanent patches of native vegetation including the volcanic plug that is proposed to become the Primary Quarry site and the existing on-farm quarry proposed as the Secondary Quarry site.

Tikitere is surrounded by various other agricultural activities including cropping, grazing and feedlots. The Camurra Boggabilla Railway line runs from north to south dissects the property through the western half.

Access to mineral and other extractive materials will not be compromised.

The proposed quarry location will involve the clearing parts of remanent native vegetation including several mature trees, shrubs, ground covers and weeds species. However the sites are not located in an environmentally sensitive area as provided by the GLEP.

The proposal will utilise an existing ground water bore licence and will not impact further on water resources.

There are no places, items and buildings of heritage significance nor Aboriginal relics and places, that have been identified at the two proposed quarry sites.

The proposed quarry is surrounded by cropped areas but is not located on prime cropping and pasture land and does not relate to a farm adjustment, urban development, or impact on the community for amenities or services.

The courts have held that provided a development is consistent with one or more objectives within a zone, it can legally be considered by the Panel to be consistent with the objectives of the zone.

It is considered that the operation of the proposed quarry satisfactorily meets the above objectives of the RU1 Primary Production zone.

1.1.3 Relevant miscellaneous provisions under Part 5 of the GLEP

1.1.3.1Clause 5.9 Preservation of Trees and Vegetation

> *The objective of this clause is to preserve the amenity of the area, including biodiversity values, through the preservation of trees and other vegetation*.

Proponents Submission

No submission

Staff Comment

Although the proposed development will involve the removal of vegetation it is not considered that amenity of the area will be significantly affected and that in general the amenity of the area will be preserved. It is considered that the operation of the proposed quarry satisfactorily meets the above objective.

1.1.3.2 Clause 5.10 Heritage Conservation

> *The objectives of this clause are as follows:*
> *(a) To conserve the environmental heritage of Gwydir,*
> *(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.*

Proponents Submission

The proposed development is not in the vicinity of any heritage items in accordance with Council's Local Environmental Plan or under State or Federal legislation. A preliminary assessment of the sites Archaeological Heritage has been included in Section 4.10 *(see page 82 of the Environmental Impact Statement, February 2018, by SMK Consultants – Annexure 3)*. The conclusion to the assessment indicated it was unlikely that items of heritage significance exist within the development area. No sites of European heritage would be disturbed by the proposal.

Staff Comment

The proposed site of the development is not listed in Schedule 5 of the GLEP or the NSW Heritage Register as a place of or item of Aboriginal or European or environmental heritage significance. As such this clause does not apply to the proposed development

1.1.3.3 Clause 5.11 Bush fire hazard reduction

This clause relates to the carrying out of Bush Fire hazard reduction in accordance with the Rural Fires Act 1997.

Proponents Submission

The subject site is not considered bushfire prone land. The development does not involve the erection of any buildings or dwellings. The majority of the area will be bare of vegetation and other readily flammable materials.

Staff Comment

The proposed development site is not located within the currently identified Bush Fire Prone areas. However, even land locate outside critical bush fire areas can be effected by grass fires and the like, so it is prudent to implement fire mitigation measure in all areas of the Gwydir to protect life, livestock and assets.

1.1.4 Relevant additional local provisions under Part 6 of the GLEP

Clause 6.1 Earthworks

The objective of this clause is to ensure that earthworks for which development consent is required will not have a detrimental impact on environmental functions and processes, neighbouring uses, cultural or heritage items or features of the surrounding land.

Proponents Submission

No submission

Staff Comment

By its very nature quarrying involves substantial earthworks, however the proposed sites for the quarries on Tikitere have been chosen carefully to minimise and mitigate any impacts on the environmental functions and process of the area.

The proposed quarry operation, in total, shall remove 2.8 hectares of Semi-evergreen Vine Thicket Endangered Ecological Community (SEVT ECC). The primary quarry will involve the removal of a volcanic plug which is isolated from other vegetation remnants on the property by cropping lands. Vegetation on this is generally sparse and degraded. It is unlikely that its removal will have a significant impact on the overall environmental process on the property be it the transversing of native fauna which are generally high mobile or the remaining 74.9 hectares SEVT ECC which will remain untouched. The secondary quarry is located in an area of exiting substantially disturbed land and its rehabilitation after quarrying concludes with native vegetation indicative of the area will enhance and fortify the native vegetation remnants on the property.

However, if erosion and/or contamination is not adequately managed throughout the quarry operations and rehabilitation processes soil degradation may threaten the viability of the area for both agriculture and ecological communities. It will be necessary for the proponent

to ensure erosion and contamination controls form part of the overall quarry management plan.

The proposed quarry is deemed to have little or no effect on neighbouring uses. No cultural or heritage items or features are identified in the surrounding area which would be impacted by the proposed development.

1.2 New England North West Regional Plan 2036 (NENWRP)

The New England North West Regional Plans vision states: "Nationally valued landscapes and strong, successful communities from the Great Dividing Range to the rich black soil plans".

In order to achieve the vision the NENWRP outlines the following regionally focused goals;

- A strong and dynamic regional economy
- A healthy environment with pristine waterways
- Strong infrastructure and transport networks for a connected future
- Attractive and thriving communities

In particular, the Gwydir Shires key priorities under the NENWRP include;

- Deliver a variety of housing options in Bingara and Warialda, and promote development that contributes to the unique character of Gravesend, Cobbadah, Upper Horton, Croppa Creek, North Star and Warialda Rail.
- Continue to develop access and logistics infrastructure on appropriate sites to encourage new industry opportunities.
- Support the development of employment lands.
- Expand nature-based, adventure and cultural tourism places and enhance visitor experiences
- Encourage diversification in agriculture, horticulture and agribusiness to grow these sectors and harness domestic and international opportunities
- Promote a vibrant, youthful and mobile workforce and provide service for the ageing population.
- Identify and promote wind, solar and other renewable energy production opportunities.

Proponents Submission

The key priorities for the Gwydir area of relevance to this proposal include:

- Continue to develop access and logistics infrastructure on appropriate sites to encourage new industry opportunities.
- Encourage diversification in agriculture, horticulture and agribusiness to grow these sectors and harness domestic and international opportunities

The proposed development will allow for the development of the Inland Railway Project, providing access to new markets and encouraging a variety of new agricultural and industry opportunities within the domestic and international markets,

Staff Comment

The proposed development is considered to satisfy the NENWRP's objective to provide "Strong infrastructure and transport networks for a connected future" as the proposed quarry operation will provide material to the Inland Rail Project to enable the reconstruction of the Narrabri to Boggabilla rail line.

Similarly, the proposed development satisfies the following particular key priorities identified by the Gwydir Shire Council under the NENWRP:

- Continue to develop access and logistics infrastructure on appropriate sites to encourage new industry opportunities.
- Support the development of employment lands.

1.3 State Legislative Requirements

1.3.1 Environmental Planning and Assessment Act 1979 (EP&A Act) & Environmental Planning and Assessment Regulations 2000 (EP&A Reg)

Proponents Submission

This Environmental Impact Statement has been prepared in accordance with the requirements of the EP&A Act. It provides an environmental impact assessment and details of how the Quarry will be development and operated to protect the environment, community and provide for ecological sustainable development.

Staff Comment

Notwithstanding Council's Local Environmental Plan, the proposed quarry/extractive industry development is classified as *designated development* under s4.10 of the EP&A Act and the provisions of Schedule 3(1)(19) of the EP&A Reg. The proposed quarry seeks to extract, process and store more than 30,000m^3 per year and will disturb a total ground surface area greater than 2 hectares of land.

Further, the proposal is required to obtain approval from the NSW Environmental Protection Authority as a scheduled activity in accordance with s43(a) of the *Protection of the Environment Operations Act 1997* (POEO Act). The proposed quarry is considered to be a land based extractive industry involving the extraction, processing and storage of more than 30,000 tonnes per year under Schedule 1(19) of the POEO Act. As such and pursuant to s4.46 of the EP&A Act the proposed quarry is also deemed to be *integrated development*.

Thus it is determined that the proposed quarry is designated and integrated. In addition to the above the proposed development is considered to be regionally significant development under Schedule 7(7)(a) of State Environmental Planning Policy (State and Regional Development) 2011 and as such will be assessed by Council and determined by the Regional Planning Panel.

1.3.2 Biodiversity Conservation Act 2016

Proponents Submission

The Biodiversity Conservation Act commenced on 25 August 2017. Whilst the new Biodiversity Conservation Act 2016 has been introduced, due to issues with utilising this Act and Regulations, the provision for previous legislation (Threatened Species Conservation Act 1995 (TSC Act)) have been retained until the 25th February 2018. In accordance with the TSC Act a Biodiversity Impact Statement has been prepared by Advitech Pty Ltd and included as Appendix 8 *(see Annexure 4).*

Staff Comment

Under the transitional arrangements, for the implementation of the Biodiversity Conservation Act 2016, applications lodged prior to the 25th February 2018, may be assessment under, the now repealed, Threatened Species Conservation Act 1995 (TSC). The proposed quarry development application was lodge on the 21st February 2018 and therefore will be assessed in accordance with the TSC. A Biodiversity Impact Statement (BIS) for the proposed sites was prepared by Advitech Environmental Pty Ltd, a copy of which is provided at Annexure 4.

As such it is considered that the proposed development is compliant with this Act.

1.3.3 National Parks and Wildlife Act 1974

Proponents Submission

The proposal has been prepared in accordance with the requirements of this Act. There are no national parks, nature reserves, regional parks, state conservation areas, historical sites, karst conservation areas or Aboriginal areas within the subject area. A preliminary assessment of cultural heritage was undertaken and included in this report *(See Annexure 3 - Environmental Impact Statement, February 2018, by SMK Consultants)*. A search of the Aboriginal Heritage Information Management System (AHIMS) database also showed there are no Aboriginal places or sites identified within a 1km radius of the property boundary. Given the site's extensive history of cultivation and agricultural land use it was concluded that places, objects and features of significance were unlikely to be discovered within the subject site. These considerations protect the objectives of the Act.

Staff Comment

The proposed quarry site is located within and alongside cleared and extensively disturbed agricultural land and consists of disturbed and degraded native vegetation. The implementation and operation of the proposed quarry will have no effect on national parks, nature reserves, regional parks, state conservation areas, historical sites, karst conservation areas or any known Aboriginal areas. As such it is considered that the proposed development is compliant with this Act.

1.3.4 The Heritage Act 1977

Proponents Submission

There are no known non-indigenous heritage items identified within or near the development site.

Staff Comment

No items or sites of Aboriginal, European or Cultural heritage significance were identified for the proposed site of the feedlot under the GLEP or State heritage register.

A submission was received, which will be discussed in greater detail elsewhere in this report, suggesting inadequacies in the EIS with regards to Aboriginal artefacts and ceremonial sites on the property 'Tikitere' and in the lack of consultation with the Aboriginal Community regarding the proposed development. The submission refers to carved trees and stone artefacts which were found on the property and along Tackinbri Creek. The submission also raised the possibility that the hard basalt rock outcrop (volcanic plug being the site of the primary quarry) being used as a site of pre-colonial Aboriginal axe production.

It is confirmed that a single fallen scarred tree was discovered 2 kilometres to the south west of the proposed development area, however no other scar trees have been found. No ceremonial sites were identified within the property bounds or at the proposed development sites. In the past an isolated artefact was also found in an area of erosion on an access track bordering the rail line approximately 250m south west of the proposed development site. Extensive searches by both the Inland Rail Project and the proponent's consultant SMK failed to locate any further artefacts. It is presumed that the artefact was relocated to the site during initial rail line construction. Any areas of Aboriginal heritage significance located along Tackinbri Creek will remain unaffected by the proposed development.

The proposed development was advertised and exhibited for a period 28 days in accordance with the EPA Act 1979. No other submissions were received by Council.

The proponent has satisfied the requirements of Due Diligence and as such it is considered that the proposed development is compliant with this Act.

1.3.5 Threatened Species Conservation Act 1995

Proponents Submission

The proposal has been prepared as per the requirements of this Act. A Biodiversity Impact Assessment has been prepared by Advitech Pty Ltd and included as Appendix *(see Annexure 4)*. The Assessment concluded that the proposed development will not have a significant impact on NSW and / or Commonwealth listed threatened species, populations or ecological communities if the construction, operation and rehabilitation of the site is undertaken in accordance with this report.

Staff Comment

The following endangered, critically endangered or vulnerable species and/or ecological communities are likely found to inhabit the area in and around the proposed development site:

Name	Level
Semi- Evergreen Vine Thicket in the Brigalow Belt South and Nandewar Bioregion	**Endangered Ecological Community (TSC Act & EPBC Act)**
Glossopsitta pusilla (Little Lorikeet)	Vulnerable species
Neophema pulchella (Turquoise Parrot)	Vulnerable species
Climacteric picumnus ssp victoriae (Brown Treecreeper)	Vulnerable species
Chthonicola sagittata (Speckled Warbler)	Vulnerable species
Meithreptus gularis (Black-chinned Honeyeater)	Vulnerable species
Pomatostomus temporalis temporalis (Grey-crowned Babbler)	Vulnerable species
Daphoenositta chrysoptera (Varied Sittella)	Vulnerable species
Artamus cyanopterus (Dusky Woodswallow)	Vulnerable species
Melanodryas cucullata cucullata (Hooded Robin)	Vulnerable species
Macropus dorsalis (Black-striped Wallaby)	Endangered species
Saccolaimus flaviventris (Yellow-bellied Sheathtail-bat)	Vulnerable species
Chalinolobus picatus (Little Pied Bat)	Vulnerable species
Nyctophilus corbeni (Corben's Long Eared Bat)	Vulnerable species

The proposed development will result in the removal of 2.8 hectares of isolated and degraded Semi-evergreen Vine Ticket SEVT), which represents 3.7 percent of this community located within the property "Tikitere" (and the clearing of 0.1 percent of this community mapped in the Border Rivers- Gwydir Rivers region), and the removal of 9 habitat trees, located at the primary quarry site.

The assessment of threatened species and ecological communities, biodiversity and the impacts of the proposed development in relation to the above factors have been addressed as a part of 4.9 of this report and in the Biodiversity Impact Assessment (see Annexure 4).

1.3.6 Rural Fires Act 1997

Proponents Submission

The site is not mapped as bush fire prone land. The development does not involve the erection of any buildings or dwellings. The quarry will be free of vegetation and other readily flammable materials. A firebreak will be maintained around the development footprint. All weather roads will provide access for fire-fighting and the firebreak will provide access around the Quarry. Water available for quarrying activities will provide an adequate supply for fire-fighting purposes.

Staff Comment

The proposed development does not fall within the current Bush Fire Prone Area for the Gwydir Shire Council and as such is considered to be a low risk site. The applicant is to

provide a low fuel buffer zone around the proposed site and adequate emergency mitigation and evacuation procedures. The proposed site is deemed to comply with this act.

1.3.7 Protection of the Environment Operations Act 1997

Proponents Submission

An Environmental Protection Licence (EPL) issued under Section 48 of the Protection of the Environment Operations Act 1997 (POEO Act) is required for any scheduled development or activity listed in Schedule 1 of the Act. Sub clause 19 of Schedule 1 lists 'land-based extractive activities' involving the extraction, processing or storage of more than 30,000 tonnes per year of extractive materials as a scheduled activity.

The proposal therefore requires an Environmental Protection Licence (EPL). The Environment Protection Authority (EPA) administers the management of EPL's. An application for a licence will be lodged, if development consent is granted.

Staff Comment

The proposed quarry development involves the extraction, processing and storage of 500,000 tonnes of material per year which exceeds the threshold under cl 22, Schedule 1 of the Protection of the Environmental Operations Act 1997 and therefore requires an Environmental Protection Licence (EPL) from the Environmental Protection Authority (EPA). As such the proposed quarry will be conditioned to obtain an EPL and submit a detailed draft management plan for the operation of the quarry, including the mitigation measures proposed to manage and avoid environmental or social impacts.

1.3.8 Water Management Act 2000

Proponents Submission

The watercourses and groundwater in the vicinity of the property will be protected through rigorous design and management practices, including diversion banks and sediment traps. Appropriate buffers are to be maintained in order to minimise the risk of stream pollution.

Staff Comment

The proposed development is to make use of the properties existing ground water bore licence (90CA811293) which has a water access entitlement of 486 megalitres per year (WAL15704). In addition, water captured in the quarries sediment pond shall also be utilised, primarily for dust suppression. No further licenses are deemed to be required however, it should be confirmed whether the existing bore licence is sufficient to satisfy the quarry operations and continue to gratify crop irrigation requirements for the property. If so, no further water licences will be required and the application is considered to have satisfied the requirements of this Act.

1.4 State Environmental Planning Policies

The proposal before Council is subject to the following relevant State Environmental Planning Policies (SEPP):

SEPP 33 – Hazardous and Offensive Development;
SEPP 44 – Koala Habitat Protection;
SEPP 55 - Remediation of Land; and
SEPP Infrastructure 2007
SEPP Mining, Petroleum Production and Extractive Industries 2007
SEPP Rural Lands 2008
SEPP State and Regional Development 2011

The proposed development has been assessed in relation to the objectives and provisions of these SEPPs.

1.4.1 SEPP 33 – Hazardous and Offensive Development

Proponents Submission

No submission

Staff Comment

This State Policy has the aim of ensuring that Council has sufficient information to assess whether a proposal represents hazardous or offensive development. Under the SEPP the definitions for a potentially hazardous industry and potentially offensive industry are given as:

> ***"potentially hazardous industry** means 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."*
>
> and
>
> ***"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."*

The proposal has the potential to have an adverse impact on the amenity of nearby residents in terms of noise and dust emissions. The EIS provides sufficient information to address relevant matters for consideration under Clause 13 of the SEPP.

The Guidelines state that "the key consideration in the assessment of a potentially offensive industry is that the consent authority is satisfied there are adequate safeguards to ensure emissions from a facility can be controlled to a level at which they are not significant."

The EIS has demonstrated that the potential impacts of activities associated with the proposed development will take place outside of the minimum separation distance criteria for rural residences and communities and therefore does not constitute a "potentially hazardous development" or "potential offensive industry".

It is considered that assessment under the SEPP has been complied with.

1.4.2 SEPP 44 – Koala Habitat Protection

Proponents Submission

The land included in the local government areas listed under Schedule 1 is subject to assessment under this Policy. The Gwydir Shire is included as the Yallaroi Shire in Schedule 1 of SEPP 44 and therefore an assessment of Koala Habitat is required. An assessment of potential koala habitat was undertaken in accordance with SEPP 44 as part of the Biodiversity Impact Assessment prepared by Advitech Pty Ltd.

The Policy provides the following definitions:

- ***Core Koala Habitat*** means 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.
- ***Guidelines*** means the guidelines, as inforce from time to time, made for the purposes of this Policy by the Director.
- ***Potential Koala Habitat*** means areas of native vegetation where the trees for the types listed in Schedule 2 constitute at least 15% of the total number of trees in the upper or lower strata of the tree component.

The assessment determined that no primary or secondary feed trees (western slopes and plains region) were identified within or adjacent to the proposal area and no indications of Koalas were observed during the survey. Preferred habitat in the local area occurs along creeks and box woodland with the nearest record located about 8.5 kilometres north-east of the proposal area (Figure 7). As such, the site is not considered to constitute potential koala habitat as defined under SEPP 44.

On this basis, the requirements of SEPP 44 do not need any further consideration in this assessment.

Staff Comment

The aim of SEPP 44 is:

> *"…to encourage the proper conservation and management of areas of natural vegetation that provide habitat for Koalas, to ensure permanent free living populations over the present range and to reverse the current trend of population decline.*

(a) by requiring the preparation of plans of management before development consent can be granted in relation to areas of core koala habitat, and

(b) by encouraging the identification of areas of core koala habitat, and

(c) by encouraging the inclusion of areas of core koala habitat in environment protection zones."

SEPP 44 applies to all local government areas listed in Schedule 1 – Local Government Areas; while Koala feed trees are listed in Schedule 2 – Koala Food Tree Species. Circular B35 (Department of Planning 1995b) accompanies SEPP 44 and guides its implementation. The former Barraba, Bingara and Yallaroi Shire Councils were listed in the Schedule.

SEPP 44 requires that development applications must consider the presence of 'potential' and 'core' koala habitat where the land area in question is greater than one hectare. Potential koala habitat is defined as 'areas of native vegetation where the trees of the types listed in Schedule 2 constitute at least 15% of the total number of trees in the upper or lower strata of the tree component' (Department of Planning 1995a).

Where potential habitat is identified, the area must be investigated for core koala habitat, defined as 'an area of land with a resident breeding population of koalas, evidenced by attributes such as breeding females and recent sightings and historical records of a population' (Department of Planning 1995a).

Under the EP&A Act, it is the responsibility of the consent or determining authority to form a view as to whether a proposed development or activity is likely to significantly affect koalas or their habitat. This is achieved by undertaking an Assessment of Significance under Section 5A of the EP&A Act. If the impact is deemed likely to be significant, a species impact statement must be prepared.

In NSW, the koala is listed as a vulnerable species on Schedule 2 of the TSC Act. A vulnerable species is one which is 'likely to become endangered unless the circumstances and factors threatening its survival or evolutionary development cease to operate'. A survey of koalas in 1986–87 found that the koala had disappeared from 50–75% of its historic range in NSW (Reed *et al*. 1990).

The conservation status of koalas on the western slopes and plains is variable. Clearing and degradation of koala habitat is continuing and/or threats associated with urban and semi-urban development are increasing. Habitat fragmentation is extreme in many parts of this area.

Primary food tree species:

River red gum *E. camaldulensis*	Coolabah *E. coolabah*

Secondary food tree species:

Dirty gum *E. chloroclada*	Blakely's red gum *E. blakelyi*
Bimble box *E. populnea*	Apple-topped box *E. bridgesiana*

Pilliga box *E. pilligaensis*	Black box *E. largiflorens*
Fuzzy box *E. conica*	Mallee red gum *E. nandewarica*
Western grey box *E. macrocarpa*	*E. vicina*
Yellow box *E. melliodora*	*E. volcanica*
White box *E. albens*	Red box *E. polyanthemos*
Dwyer's red gum *E. dwyeri*	Orange gum *E. prava*
Tumbledown gum *E. dealbata*	

Stringybarks/supplementary species:

E. macrorhyncha	Narrow-leaved stringybark *E. sparsifolia*

Listed supplementary species under SEPP 44 were identified in the proposed project area, namely Narrow-leaved stringybark E. (*E. marcrorhyncha sparsifola*) and will be impacted on the Primary Quarry site.

In viewing the Primary Quarry site it is steep, with a rough ground surface with degraded and sparse vegetation cover. The site is isolated from other vegetation by highly cultivated fields. The ironbark's viewed were sparsely situated on the site and appeared to be in a distress condition.

The Secondary Quarry site is devoid of mature trees of any kind. No koalas were sited during the investigation on either the Primary or Secondary Quarry sites.

Staff agrees with the proponent's submission that it is unlikely that the proposed development will have any impact on known or unknown communities or habitat. Conditions controlling the use of water across the property and clearing of remnant vegetation will be included in the draft consent conditions.

It is considered that assessment under the SEPP has been complied with.

1.4.3 SEPP 55 - Remediation of Land

Proponents Submission

The proposed development site is not considered as contaminated land as it has not historically been subject to any contaminating activities. The proposal will involve rehabilitation of the site on completion of the resource extraction.

Staff Comment

This State Policy is required to be considered in the processing and determination of development applications.

The purpose of this policy is to provide a state-wide planning approach to the remediation of land. In particular, this policy aims to promote the remediation of contaminated land for the purposes of reducing the risk of harm to human health or other aspects of the environment.

In accordance with clause 7 of SEPP 55, following a search of Council records, the subject land is not identified as being potentially contaminated and is considered to be suitable

for the intended use. The requirements of the SEPP are therefore satisfied.

It is considered that assessment under the SEPP has been complied with.

1.4.4 SEPP Infrastructure 2007

Proponents Submission

The subject proposal is not identified in Schedule 3 of the SEPP as traffic generating development to be referred to the Roads and Maritime Services as the proposal is defined as 'any other purpose' and will not generate 200 or more vehicle movements.

Staff Comment

Under the provision of Schedule 3 of the SEPP the proposed quarry is considered "Traffic Generating Development" requiring referral as the proposed quarry is a type of "industry".

The proposed quarry was referred to Council's Technical Services Department and NSW Roads and Maritime Services.

The initial intention of the proposed development was not to use any roads outside of the property "Tikitere" for the haulage materials. Instead taking advantage of the rail corridor running through the central western half of the property and transport processed material directly from the Primary Quarry site to the rail line where it was to be loaded onto rail carts for further transportation. Under this scenario the only vehicle movements on road outside of the property generated by the proposed quarry operation would be light vehicles driven by employees and maintenance contractors. These movement were expected to constitute and extra 12 movements a day.

However, recently the applicant has advised that the quarrying contractor may deem it necessary to use roads outside of the property for the haulage of some material. Apart from a map of potential road routes no further information was able to be furnished.

Council has agreed to enter into a planning agreement when and if material is hauled on roads external to the property "Tikitere". Without an estimated number of movements it is difficult to tell if the number of movements will exceed the minimum of 200 or more vehicle movements under Schedule 3 of the SEPP. When sufficient information is received regarding the number of movements, a determination, of whether or not the development will be re-referred to Roads and Maritime Services, will be made.

Further detail regarding the potential road routes can be found at s4.12 of this report.

Conditions will be included in the Schedule of Condition to address the potential referral to Roads and Maritime Services and the entering into a planning agreement with Council when and if the haulage of material is altered to include roads outside of "Tikitere".

1.4.5 SEPP Mining, Petroleum Production and Extractive Industries 2007

Proponents Submission

Clause 12 of the SEPP provides a number of matters that a consent authority must consider before determining a development application. These matters are similar to, but are in different terms to; the relevant matters contained in the GLEP and are considered in the body of this report.

Clause 13 requires that Council must consider the compatibility of development proposals on land in the vicinity of existing mines etc. or of land containing mineral or extractive resources. This provision is to ensure that these resources are not sterilised by incompatible development on surrounding land and is a matter for Council to consider. The proposed development involves a long-term plan to maintain access to a historically used gravel resource.

Clause 14 requires the consent authority to ensure that the development is undertaken in an environmentally responsible manner to avoid or minimise:

- Impacts on significant water resources;
- Impacts on threatened species and biodiversity; and
- Greenhouse gas emissions.

These are matters for Council and are addressed below.

Clause 15 requires that the consent authority consider whether the proposed resource recovery is efficient. Modern equipment and best practice management principles are used in the operation of the quarry to ensure the resource recovery is efficient and economically viable.

Clause 16 (1) requires the consent authority to consider whether a consent should contain conditions to:

- Require some or all the material to be transported by means other than by public road;
- Require the preparation and implementation of a code of conduct relating to the transport of materials on public roads

The proposal involves the transportation of material directly from the Quarry to the railway, without leaving the Proponent's property. The material will not be transported along public roads.

Clause 16 (2) requires the consent authority to provide a copy of the development application to each roads authority for the roads used and the Roads and Maritime Services within seven (7) days of receipt. This is a matter for Council, however it should be noted that public road will only be use in the initial set-up of the Quarry and not for haulage purposes.

Clause 16 (3) provides that the consent authority must not determine the development application until it has taken into consideration any submission received for the road authorities and the Roads and Maritime Service within 21 days after the Authority was provided with a copy of the application, and each of them with a copy of the determination. This is a matter for Council.

Clause 17 requires that the consent authority must consider whether or not the consent should be issued subject to conditions requiring rehabilitation of the land affected by the development. This is a matter for Council and rehabilitation is considered below. The project proposal includes a rehabilitation component.

Whist sections of the property are classified as Biophysical Strategic Agricultural Land, the subject site is not included within these areas.

Staff Comment

The proposed development is permissible with consent using the provisions of Clause 7(3) of the *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007*. Clause 7(3)(a) states that development for the purposes of an extractive industry may be carried out on land on which development for the purposes of agriculture or industry is permitted (with or without consent).

The property is zoned RU1 Primary Production under the provisions of *GLEP*. All types of agriculture are permitted with or without consent on the subject land and therefore, an extractive industry is permitted subject to the submission and approval of a Development Application using the provisions of the SEPP.

Before determining an application for the purposes of an extractive industry, the consent authority must take into consideration the matters listed under the SEPP.

> *Clause 12 Compatibility of proposed mine, petroleum production or extractive industry with other land uses* as follows:
>
> *(a) (i) the existing uses and approved uses of land in the vicinity of the development,*
>
> The surrounding land uses are predominately dry land and irrigated cropping and cattle grazing properties with rural dwellings. The nearest dwelling is 1.7km from the quarry site. The site or adjoining lands are not identified as State Significant Farmland.
>
> *(ii) whether or not the development is likely to have a significant impact on the uses that, in the opinion of the consent authority having regard to land use trends, are likely to be the preferred uses of land in the vicinity of the development,*
>
> The EIS details existing buffers that will minimise potential impacts on rural dwellings and adjoining land uses. Living and Working in Rural Areas 2007 recommends as a guide minimum buffers for extractive industries. The recommended buffer distance to rural dwellings of 1000m (for quarries with blasting) is achieved for the development with the closet dwelling being 1.7km away. The potential impacts to adjoining uses are likely to be noise, dust and increased traffic movements from the quarry operations. With implementation of the proposed mitigating measures in the EIS and imposition of the draft conditions of consent, the development is unlikely to have a significant impact on the current and preferred land uses in the vicinity of the development.

(iii) any ways in which the development may be incompatible with any of those existing, approved or likely preferred uses,

The EIS recommends measures to avoid and minimise potential impacts of the development. Through the General Terms of Approval issued by the EPA and draft conditions imposed by Council on the development, it is unlikely that there will be substantial incompatibility issues with the development and adjoining land uses.

(b) evaluate and compare the respective public benefits of the development and the land uses referred to in paragraph (a)(i) and (ii)

The operation of the proposed quarry will result in benefits to the local and regional economy and will help generate employment opportunities whilst assisting in the delivery of much need rail infrastructure. There is little new capital investment as existing plant have additional capacity to produce volumes proposed. It is anticipated that the proposed quarry will generate up to 5-6 full time equivalent jobs plus some part-time employment opportunities. It is not clear if this will be indirect employment of sub-contractors of full time employees. The economic benefits of the development and indirect multiplier effects will stimulate the local and regional economies.

(c) evaluate any measures proposed by the applicant to avoid or minimise any incompatibility, as referred to in paragraph a(iii)

The measures proposed by the applicant to avoid and minimise any potential incompatibility measures have been evaluated and where appropriate, have been imposed as conditions of consent.

Clause 13 Compatibility of proposed mine, petroleum production or extractive industry with other land uses:

The consent authority must also take into consideration Clause 13 of the SEPP if the subject land is:

(1) (a) in the vicinity of any existing mine, petroleum production facility or extractive industry
(b) identified on a map (being a map that is approved and signed by the Minister and copies of which are deposited in the head office of the Department and publicly available on the Department's website) as being the location of State or regionally significant resources of minerals, petroleum or extractive materials, or
(c) identified by an environmental planning instrument as being the location of significant resources of minerals, petroleum or extractive materials

The proposed development is not located in the near vicinity of competing extractive industry and is not identified by an environmental planning instrument as being the location of significant resource materials. The nearest development of this type is Runnymede Quarry which is located 30km south west of the proposed development.

Clause 14 Natural resource management and environmental management
Before granting consent for development for the purposes of an extractive industry, the consent authority must consider whether or not the development should be issued subject to the imposition of conditions aimed at ensuring that the development is undertaken in an environmentally responsible manner, including conditions to ensure the following:

a) that impacts on significant water resources, including surface and groundwater resources are avoided, or are minimised to the greatest extent practicable.

Impacts on water resources has been assessed and detailed in the EIS.

Surface water that is not captured onsite in the sediment dam will be directed around the proposed site to avoid contamination and slowed by the use of contours to avoid erosion. The nearest natural waterways are both ephemeral streams Mungle Creek lies approximately 1.7 km to the north of the proposed development site and Tackinbri Creek lies approximately 2.6km to the south. The quarry site is located at the top of the ridges and does not receive surface flows from upslope areas.

The quarry floor level is estimated to be greater than 5-10m above the artesian aquifer. The Primary Quarry site will be excavated to a maximum depth of 10-15m below existing ground level, ground water levels vary in the area by is typically >20m below the ground surface (note that the closest water bearing bore to the proposed development site is located 48.7m below the ground surface). As such, it is expected that the quarry extraction will not intercept groundwater. Due to the location of the quarry on top of a ridge, the rate of groundwater seepage into the quarry is expected to be low and it is considered that the 'removal' of this water from the groundwater system would have a negligible impact on the behaviour of the aquifer. Any groundwater entering the quarry will be diverted in the sediment dam.

The Office of Water has advised that they do not have any issues with groundwater in the quarry area, however if groundwater is intercepted at any time the proponent must contact the Office of Water.

The potential impacts from the quarry on water resources include contamination from erosion and sedimentation, increased surface water runoff from increased surface areas not covered by vegetation and groundwater contamination from spills of fuel or hazardous materials. The mitigating measures proposed ensure that no significant impacts result from the quarry operations. The quarry will be required to operate in accordance with its Environmental Management and Waste Management Plans.

b) that impacts on threatened species and biodiversity are avoided, or are minimized to the greatest extent practicable,

A Biodiversity Impact Assessment forming part of the EIS and Appendices to that report dated February 2018 assessed the impacts of the proposal on the threatened species and biodiversity.

No threatened flora species were identified during the surveys and none were identified as potentially or likely to occur on the property. No threatened fauna were identified during surveys however, 13 were considered to potentially occur on-site. One Endangered Ecological Community was identified during the survey, however, 2 were considered to potentially occur onsite.

The proposed development will remove 2.8 hectares of degraded Semi-evergreen Thicket (SEVT), which constitutes 3.7%(74.9 hectares) of the total community mapped on the property and 0.1% of the total community mapped in the Border Rivers – Gwydir Rivers region. The SEVT to be removed is small, isolated and degraded, it is considered that the impact will not significantly affect the remaining community or place it at risk of extinction.

c) that greenhouse gas emissions are minimised to the greatest extent possible

Overall, the greenhouse emissions generated from the development is considered to be minimal for both National and State emission levels. Notwithstanding this, there is a cumulative impact of GHG emissions over time. The applicant should adopt mitigating measures to ensure efficient use of fossil fuel on-site and in associated operations.

Clause 15 Resource recovery

Due to the type of material, being hard rock, to be extracted and the efficient extraction processing methods, minimal resource waste is anticipated.

Clause 16 Transport

It is intended that most haulage of materials will be undertaken within the boundaries of the "Tikitere" property using internal road between the quarry site and the rail line. However, several conditions of consent are proposed relating to transport. The preparation of a 'Traffic Impact Assessment' may be necessary if the haulage of materials is directed outside of the property boundaries. In addition a condition is proposed in the consent for the quarry operator/owner to pay an s94 contribution in accordance with Council's Traffic Generation Development Plan relating to the haulage route. A planning agreement will be negotiated when and if the haulage of materials uses public roads.

Clause 17 Rehabilitation

Rehabilitation works will be undertaken in accordance with the EIS and Rehabilitation Plan generally to be completed within 12 months of quarry operations closure.

It is considered that assessment under the SEPP has been satisfactorily complied with.

1.4.6 SEPP Rural Lands 2008

Proponents Submission

This development does not include the erection of any buildings or dwellings, or subdivision of land. The proposed quarry will be undertaken in a way that minimises land use conflicts in the area.

Staff Comment

As the subject site is located within the RU1 Primary Production zone the SEPP applies to the proposed development.

The Rural Planning Principles are:

> *"(a) the promotion and protection of opportunities for current and potential productive and sustainable economic activities in rural areas,*
> *(b) recognition of the importance of rural lands and agriculture and the changing nature of agriculture and of trends, demands and issues in agriculture in the area, region or State,*
> *(c) recognition of the significance of rural land uses to the State and rural communities, including the social and economic benefits of rural land use and development,*
> *(d) in planning for rural lands, to balance the social, economic and environmental interests of the community,*
> *(e) the identification and protection of natural resources, having regard to maintaining biodiversity, the protection of native vegetation, the importance of water resources and avoiding constrained land,*
> *(f) the provision of opportunities for rural lifestyle, settlement and housing that contribute to the social and economic welfare of rural communities,*
> *(g) the consideration of impacts on services and infrastructure and appropriate location when providing for rural housing,*
> *(h) ensuring consistency with any applicable regional strategy of the Department of Planning or any applicable local strategy endorsed by the Director-General.*
>
> ***Note.*** *Under section 117 of the Act, the Minister has directed that councils exercise their functions relating to local environmental plans in accordance with the Rural Planning Principles. Under section 55 of the Act, the Minister may also direct a council to prepare a local environmental plan."*

The proposed quarry does not appear to be inconsistent with the Rural Planning Principles of the SEPP.

1.4.7 SEPP State and Regional Development 2011

Proponents Submission

The application is classified as 'Regional Development' and will be assessed by the Gwydir Shire Council and determined by the relevant Joint Regional Planning Panel under the State Environmental Planning Policy (State and Regional Development) 2011.

Staff Comment

The proposed development is classified as regionally significant development under Schedule 4A of the *Environmental Planning and Assessment Act, 1979* (EP&A Act) and is subject to the provisions of Part 4 of the *State Environmental Planning Policy (State and Regional Development) 2011*.

Regional panels are authorised to exercise the consent authority functions of Councils to which Part 4 of the SEPP applies.

1.5 Commonwealth Legislation

1.5.1 Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act)

Proponents Submission

The proposed development was consider in accordance with the EPBC Act within the Biodiversity Impact Assessment prepared by Advitech Pty Ltd (included as Appendix 8) *(See Annexure 4)*. Five (5) threatened ecological communities and nineteen (19) threatened species were recorded on the Department of Environment and Energy (DoEE) online database and may have potential habitat available within 20 kilometres of the site.

The assessment determined that vegetation identified on site was consistent with 'Semi-evergreen vine thickets of the Brigalow Belt and Nandewar bioregions' (SEVT) listed under the EPBC Act. Whilst this vegetation will be impacted by the proposal, the assessment concluded that the impact was not significant, given the relatively small, degraded area to be impacted (2.8 hectares) and the potential to improve retained areas, which represents 72.1 hectares of SEVT through the implementation of a site Vegetation Management Plan.

No other Matters of National Environmental Significance (MNES) are considered likely to be impacted by the proposal and therefore no further assessment was required. It was concluded that the preproposal does not need to be referred to the Federal Minister for the Environment.

Staff Comment

The EPBC Act commenced on 16th July 2000. The EPBC Act includes the assessment and approvals system for actions that have a significant impact on:

- matters of National Environmental Significance (NES); and
- the environment on Commonwealth land.

Should an action be determined to likely have a significant impact, an approval from the Commonwealth Minister for the Environment and Heritage is required.

The EPBC identifies seven matters of national environmental significance being:

1. World Heritage properties;
2. National Heritage places

3. RAMSAR wetlands of international significance;
4. National listed threatened species and ecological communities;
5. listed migratory species;
6. Commonwealth marine areas; and
7. Nuclear actions

The Environmental Assessment identified that no NES or Commonwealth land are likely to be significantly impacted by the proposal and therefore an approval from the Commonwealth Minister is not required.

It is considered it is unlikely that a significant impact will be caused by the proposed development and that the Act has been complied with.

2. S.4.15 (1) (a) (ii) Any draft environmental planning instrument that is or has been placed on public exhibition and details of which have been notified to the consent authority

The proposal before Council is subject to the following relevant reviewed and draft State Environmental Planning Policies (SEPP):

- SEPP 44 – Koala Habitat Protection (Review);
- SEPP Infrastructure 2007 (Review);
- SEPP Primary Production and Rural Development (Draft).

2.1 Review – SEPP Koala Habitat Protection

Proponents Submission

The review is comprehensive, and will involve changes to:

- Definitions of koala habitat;
- List of trees species which are considered to be feed species for koalas;
- List of councils to which the Policy applies; and
- Development assessment processes.

At this stage, an updated list of feed tree species has been released, which significantly expands the number of tree species which may be considered to support koalas. The subject site does not include any of the updated listed feed tree species.

The remainder of the draft SEPP has not yet been released for public comment. Advice from the Department of Planning and Environment indicates that the draft SEPP 44 is unlikely to be released for public comment until early to mid-2018, and therefore is unlikely to be implemented prior to mid to late-2018. The draft SEPP 44 is therefore not considered to impact upon the proposed development.

Staff Comment

The proposed quarry does not appear to be inconsistent with the principles or requirements of the reviewed Koala Habitat Protection SEPP.

2.2 Review – SEPP Infrastructure 2007

Proponents Submission

The review has a strong focus on improving the delivery of social infrastructure. To this end, the draft SEPP includes new provisions for health services facilities, correctional centres, emergency and police services, public administration buildings and council services. No other significant alterations will occur to the existing Infrastructure SEPP as part of this review.

The proposed development is not associated with the delivery of social infrastructure. Subsequently, the draft Infrastructure SEPP will not significantly impact upon the proposed development.

Staff Comment

The proposed quarry does not appear to be inconsistent with the principles or requirements of the reviewed Infrastructure SEPP

2.3 Draft – SEPP Primary Production and Rural Development

Proponents Submission

Under current planning reforms, it is proposed that five existing policies and plans are consolidated into a new, single SEPP, known as the Primary Production and Rural Development SEPP. The policies and plans to be consolidated include:

- State Environmental Planning Policy (Rural Lands) 2008 (Rural Lands SEPP)
- State Environmental Planning Policy 30 – Intensive Agriculture (SEPP 30)
- State Environmental Planning Policy 52 – Farm Dams and Other Works in Land and Water Management Plan Areas (SEPP 52)
- State Environmental Planning Policy 62 – Sustainable Aquaculture (SEPP 62)
- Sydney Regional Environmental Plan 8 – Central Coast Plateau Areas (SREP 8)

The proposed development is located on land zoned RU1 under the Gwydir Local Environmental Plan, and therefore is considered to be rural land. The changes are therefore relevant to the proposed development.

The purpose of the consolidation is to improve efficiency of the planning process, whilst updating planning provisions outlined in the SEPP such that the SEPP reflects modern industry practices, challenges and land uses.

No changes to provisions relating to extractive industries will take place as part of the proposed reform; instead, existing provisions will be transferred from old planning documents into the new SEPP. Extractive industries will therefore remain as permissible land use within rural lands. Subsequently, changes associated with the proposed Primary Production and Rural Development SEPP are not expected to impact upon the proposed development.

Staff Comment

The proposed quarry does not appear to be inconsistent with the principles or requirements of the draft Primary Production and Rural Development SEPP

3. S.4.15 (1) (a) (iii) Any Development Control Plan (DCP)

3.1 Section 94 Development Contributions Plan No 1 - Traffic Generating Development (GDCP)

This plan was adopted in April 2011 and was developed to ensure the operation of Traffic Generating Development does not adversely impact on local roads and allow Council to assess the demand for road maintenance, repair and reconstruction arising from Traffic Generating Development.

The purpose of the plan is to:

i. Provide an administrative framework under which specific public facilities strategies may be implemented and coordinated;
ii. To ensure the operation of Traffic Generating Development does not adversely impact on local roads. Assess the demand for road maintenance, repair and reconstruction arising from traffic generating development;
iii. To authorize the Council to impose conditions under section 94 of the Environmental Planning and Assessment Act 1979 when granting consent to development on land to which this plan applies;
iv. Provide a comprehensive strategy for the assessment, collection, expenditure accounting and review of development contributions on an equitable basis;
v. To minimize any adverse environmental and social impacts in terms of noise and dust to residences, road users and other development in the vicinity;
vi. Enable Council to be both publicly and financially accountable in its assessment and administration of this plan;
vii. To ensure that the existing community is not burdened by the costs of road works resulting from damage caused by heavy vehicles associated with the Traffic Generating Development;
viii. Demonstrate that the contributions have been set after due assessment for the likely needs and demands of the Traffic Generating Development in terms of access roads and their on-going maintenance;
ix. Justify the application of a levy for road works for each tonne of extracted/processed/produced material.

This plan applies to all Traffic Generating development and related operations that:-

- Require the use of road haulage vehicles to support the operation of the enterprise;
- Generate additional traffic movements above levels of traditional agricultural activities;
- Development which includes the following enterprises:-

- Wool Scouring Plants
- Abattoirs
- Rendering Plants
- Saleyards
- Wood or timber milling or processing works including wood preservation works
- Wineries or associated works
- Warehouses
- Light industry
- Intensive Agricultural Enterprises
- feedlots
- poultry farms
- piggeries
- dairies
- Composting Works
- Transport Terminals
- Grain Storage Complex
- Feed mills
- **Extractive Industries**
- Mine
- Rural Industry

Proponents Submission

The proposed development is for construction and operation of an extractive industry. This type of development is typically considered a traffic generating development under the Gwydir Development Contributions Plan. Under the provisions of the Environmental Planning and Assessment Act, 1979 Council may include a condition of consent that details the following:

- Require land to be dedicated free of cost;
- Require money to be contributed for works and facilities to be provided in the future;
- Require money to be contributed towards the cost of works in kind, in satisfaction of Section 94 requirements; or
- Require or accept a combination of any of the above.

In applying Section 94 contributions the Council must be fair and reasonable, and as such the contributions levied on development with the Gwydir Shire are limited to essential or base-line works.

The primary purpose of the proposed Tikitere Quarry is to supply ballast materials to the Australian Rail Track Corporation to be used in the construction of the proposed Inland Rail Project. The alignment of the Inland Rail Project runs adjacent to the proposed Quarry site and as such delivery of materials would occur directly to the railway. It is therefore requested that this be considered in the determination of fair and reasonable payments to the Gwydir Shire Council for works and maintenance as a traffic generating development.

Staff Comment

It should be noted that the original intention of the proposed quarry development was that all haulage of quarried materials were to be between the quarry sites and the rail corridor running through Tikitere via internal property roads. As such no quarried materials would be hauled along Council or State roads. The only traffic movements would be up to 12 light vehicle movements per day which would not trigger the need for contributions to be levied under Council's s94 Contributions Plan – Traffic Generating Development.

However, since the lodgement of the development application and the preliminary notification period the proponent's has advised that it may be necessary for some haulage of quarried materials along private and public roads. The proponent has provided some information regarding the possible road routes to be used but cannot at this stage provide accurate information on when or if they will be used or the frequency of the usage or the total amount of quarried material to be hauled.

Gwydir Shire Council has agreed to enter into negotiations regarding a planning agreement once and if the quarry operation intends to haul materials outside of "Tikitere" or the existing rail corridor. However it may be necessary once road haulage routes are established for the proponent to prepare a Traffic Impact Statement and enter into an agreement with Road and Maritime Services. In addition, agreements may need to be brokered with the Moree Plain Shire Council and the owners of the private accesses for the use of those roads.

It is preferred that any quarried material be hauled, on-property, between the quarry site and the rail corridor and the proponent is encouraged to employ this method as this is the direction demonstrated by the proposed developments EIS. However, a condition will be included in the draft schedule of conditions applying the GDCP for the proposed development which shall cover all eventualities.

Further detail about the movement of vehicles is discussed later in the report.

4. **S.4.15 (1) (b) The likely impacts of the development, including environmental impacts on both the natural and built environments, and social and economic impacts on the locality**

   So as to comment on the likely impacts of the proposal, the following matters have been considered:

   - Meteorological and Climate
   - Topography, Soils and Geology
   - Land Capability
   - Land Use Conflict
   - Visual Amenity
   - Air Quality
   - Noise and Vibration
   - Water Supply
   - Biodiversity
   - Archaeological Heritage
   - Natural Hazards

- Access and Traffic
- Waste, Chemicals and Hazardous Material
- Biosecurity
- Land Contamination
- Rehabilitation
- Biophysical
- Social Impacts
- Economic Impacts
- Cumulative Impacts
- Ecologically Sustainable Development

4.1 Meteorology and Climate

Proponents Submission

Tikitere is situated in north-west NSW at an elevation of approximately 300m ADH. The climate is best described as warm temperate.

Rainfall statistics show a mean average rainfall at North Star of 644.8mm per annum with the majority of total rainfall occurring in the spring and summer months.

The long-term temperature figures show an average mid-summer highest temperature of approximately 33.9Cº and a mid-winter lowest temperature of approximately 4.5Cº. Relative humidity is generally low.

The average wind speed and direction for the area varies according to the season and time of day. The wind roses depicting the average wind speed and direction for each month at 9am and 3pm were procured from the Bureau of Meteorology which are predominantly North Easterlies, South Westerlies and Westerlies. This is show in Figure 9.

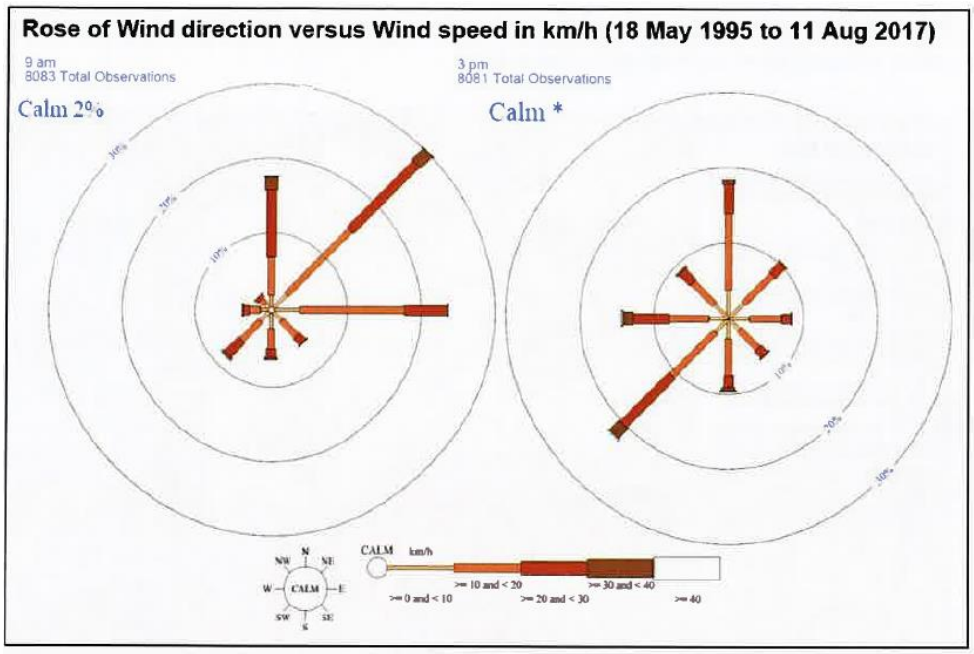


Figure 9: Wind Roses for Moree (Aero). Source: BoM Data 1995-2017

The New England North West Climate Change Snapshot (2014) projections indicate a warmer climate will result in altered rainfall patterns and more intense bushfire, droughts and floods.

Staff Comment

No further comment, generally satisfied with the assessment of the climate.

4.2 Topography, Soils and Geology

Proponents Submission

Tikitere is located in the north-west slopes and plains in an area described as the northern basalts characterised by undulating hills traversed by numerous ephemeral streams. Slopes generally range between 1-6%. Tackinbri Creek transverses the southern edge of the property. The proposed quarry site is located at approximately 310 AHD.

Available mapping indicates the site to be directly underlain by Cainozonic Mafic Volcanics surrounded by Jurassic Sedimentary Rocks. Mafic volcanic rocks are those that were erupted from widespread volcanic activity throughout the eastern part of the state over the last 65 million years. Basalt lava flows are typical examples. Whilst sedimentary sequences are typically dominated by sandstone with minor conglomerate units and claystones. Field investigations confirmed the geology of the area to be consistent with the desktop findings.

The proposed quarry development is located atop of a significant basalt intrusion which is oval in shape and rises approximately 20m above the surrounding landscape. The intrusion ranges from approximately 3 m to 30m depth. Sample testing of the basalt indicates that the intrusion is predicted to be of sound quality for the purpose of extraction and use. A detailed resource assessment is presented in Appendix 3. *(see Annexure 4)*

The primary risk to soil as a result of the proposed quarry operation is that of soil erosion. All reasonable and practicable measures will be undertaken to minimise erosion as a result of quarry activities (insitu ahead of stripping, in stockpile, and when reapplied as part of the rehabilitation). These include:

- Minimising the area of ground disturbance associated with the quarry site as far as is practically possible;
- Establish a controlled drainage area and sediment pond, to ensure surface runoff containing high sediment loads is captured and retained within the impact footprint of the development;
- The area stripped of soil at any one time would be minimised consistent with operational requirements. All areas to be stripped of topsoil would be clearly identified in advance and the depth of topsoils and subsoils available determined;
- Where stockpiling or windrowing is required, the topsoil and subsoil would be stripped and stockpiled separately within the nominated stockpile areas;
    - Stockpiles would be constructed in accordance with Standard Drawing (SD) 4-1 of “Managing Urban Stormwater – Soils and Construction” V1 (Landcom, 2004) (the “Blue Book”) and restricted to the nominated disturbance footprint.

- A coverage of 70% grass (or equivalent stabilization) would be established over the stockpiles within 60 days (C-Factor of 0.05);
- The topsoil and subsoil stockpiles would be isolated from upslope runoff by the construction of diversion embankment;
- Sediment fencing would be positioned downslope of stockpiles until an adequate level of stabilisation is achieved. The installation and maintenance of these features would comply with the recommendations provided by SD 6-8 of the Blue Book;
- Where stockpiles are to be retained for periods in excess of 6 months, the stockpiles would be seeded with a cover crop of non-persistent pasture species;

- Implementing a suite of management measures to minimise wind erosion (as outlined in Sec O, Table 10);
- Immediately stablishing worked sections, and undertaking progressive rehabilitation where possible to minimise the area of exposed soil at any given time: and
- Ensuring that erosion and sediment control measures are only removed from the site once the area is successfully rehabilitated following the conclusion of quarry activities.

The proposed works should not result in the pollution of land/waters so long as best management practices for erosion and sediment control are undertaken throughout the course of the development. Priority will be given to achieving a high standard of erosion and sediment control and general site housekeeping throughout the lifetime of quarry operations. Where possible soil will be directly transferred from the source to the final rehabilitation destination, limiting impacts to soil structure and biological activity.

Staff Comment

No further comment, generally satisfied with the assessment of the Topography, Soils and Geology.

4.3 Land Capability

Proponents Submission

The NSW Soil and Land Information Database eSPADE, managed by OEH, identifies the primary quarry site within the Land and Soil Capability (LSC) Class 5 (as defined by OEH, 2012). The existing (secondary) quarry site is classified as Class 3. The land capability classes for the subject site and surrounding land are shown in Figure 11.

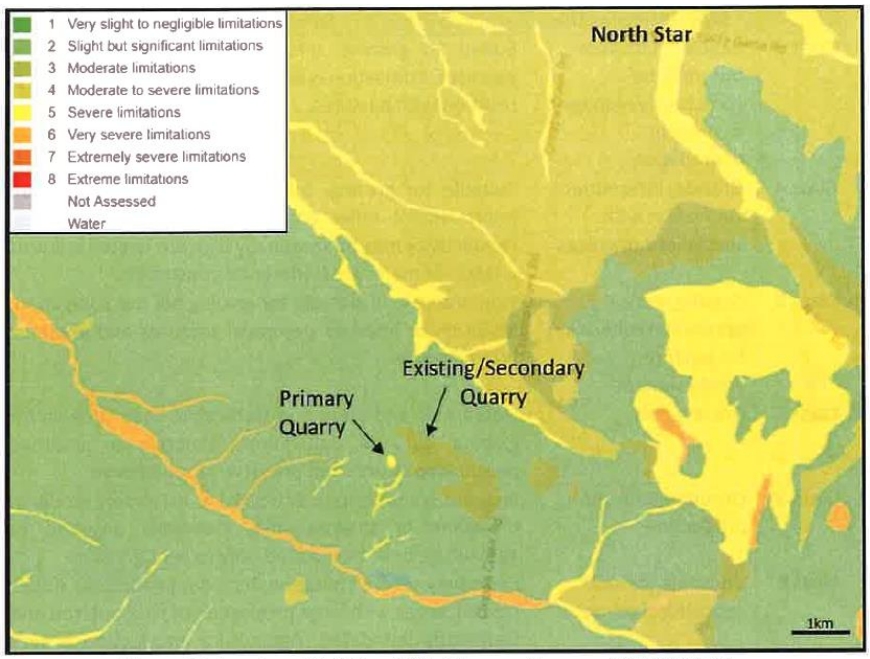


Figure 11: Land and Soil Capability Classes. Source: eSPADE (OEH).

Field inspection, and discussion with the land owner with respect to historical agricultural activities suggest the subject land for the primary quarry would be more accurately described as Class 8 land. This would reflect the limitations to agriculture presented by the steeper topography and shallow soils of the precipitous hills, abundant boulders and severe mass movement (rock falls) hazards associated with the site. The secondary quarry site is more reflective of Class 5 land given the previous extractive activities.

Factors which may effects the ability of the Applicant to return the final landform to the desired land and soil capability, and therefore requires assessment includes the following;

- Reduced capability of the final landform
- Erosion of the rehabilitated final landform

The objective of the proposal with respect to land capability is to return those areas of the final landform designated for future agricultural use to soil and land capability Class 6 or greater:

- The area designated as the primary quarry with existing slopes >15º would be rehabilitated to achieve LSC Class 5-6
- The area designated as the secondary quarry with slope 5º to 10º would be rehabilitated to achieve LSC Class 5.

Appendix 9 includes a rehabilitation plan with detail on the final landform based on the proposed final slope and vegetation. The following design features of the final landform are recommended to achieve the desired land capability objectives:

- The final batters of the extraction area would be safe, stable, non-eroding and non-polluting.
- Drainage of the final landform would be defined locations to prevent rilling and erosion caused by uncontrollable flow of surface water.

The proposed soil stripping, stockpiling and respreading measures and controls would also assist in maintaining the value of the soil for rehabilitation purposes and therefore maximise land capability. Soil replacement should occur in accordance with the following:

- Soil would be replaced in the reverse order to stripping, subsoil followed by topsoil.
- An alkaline (not acidifying) fertiliser would be added to the respreads soil to assist with any nitrogen or potassium deficiency.

The proposed management controls to be implemented would ensure that the final landform and potential for future agricultural activities is not compromised by excessive erosion, pollution or restricted availability of water.

It is assessed that implementation of the proposed soil management and rehabilitation methods would provide for LSC Class 6 (or better) on the moderately sloped areas and LSC Class 5 on the shallower slopes over the final landform.

Staff Comment

No further comment, generally satisfied with the assessment of the capability of the proposed sites to be restored to acceptable level.

4.4 Land Use Conflict

Proponents Submission

The land used in the local setting is dominated by agricultural land use. Sensitive receptors in the area include rural dwellings and small rural towns. The location of nearest sensitive receptors are outlined in Figure 12. The distance of each receptor from the proposed development, as calculated from the closest edge of the proposed Quarry footprint, have been included as Table 8.

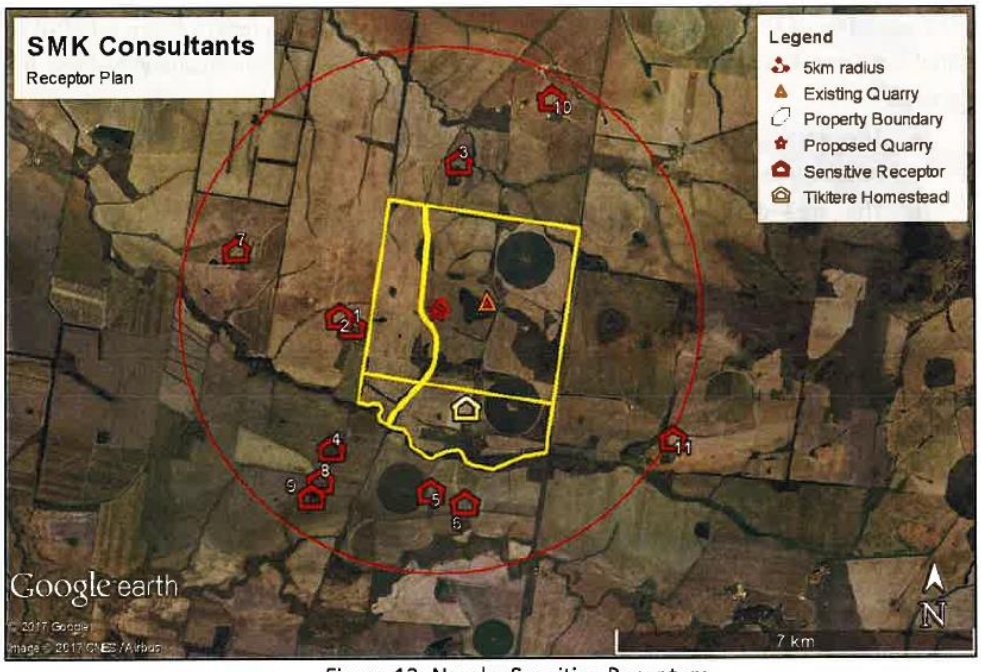


Figure 12: Nearby Sensitive Receptors

Table 8: Separation Distances from Sensitive Receptors

Receptor	Receptor Type	Direction from Proposed Quarry	Distance (m)
1	Rural Dwelling	West South-west	1,770
2	Rural Dwelling	West South-west	1,851
3	Rural Dwelling	North	2,783
4	Rural Dwelling	South South-west	3,537
5	Rural Dwelling	South	3,763
6	Rural Dwelling	South	3,907
7	Rural Dwelling	West North-west	4,019
8	Rural Dwelling	South South-west	4,225
9	Rural Dwelling	South South-west	4,430
10	Rural Dwelling	North North-east	4,673
11	Rural Dwelling	South-east	5,225
North Star	Small Rural Town	North-east	10,448
Croppa Creek	Small Rural Town	South South-west	12,578

Quarries should be separated from sensitive receptors by a sufficient distance to limit any adverse impacts resulting from dust, noise or aesthetic considerations to an acceptable level. The following minimum buffers are recommended for mining, petroleum production and extractive industries:

Table 9: Recommended Minimum Buffer Distances

Mining, Petroleum Production & Extractive Industries		
	Normal Operations (m)	Blasting (m)
Residential areas & urban development	500	1000
Rural dwellings	500	1000
Education facilities & pre-schools	500	1000
Rural tourist accommodation	500	1000
Watercourses & wetlands	SSD	SSD
Bores & wells	SSD	SSD
Potable water supply/catchment	SSD	SSD
Property boundary	SSD	SSD
Roads (public)	SSD	SSD

SSD: Site Specific Determination. Source: Department of Primary Industries (2007) Living and Working in Rural Areas Handbook

The closest homestead on an adjoining property is located approximately 1.8 kilometres to the west south west of the quarry site. The available separation distances therefore exceed minimum buffer distance requirements as outlined in Table 9. The siting of the proposed development is therefore considered sufficient to minimise the risk of land use conflict and adverse amenity impacts associated with the development.

The following management and mitigation measures would also be implemented avoid or reduce impacts on surrounding land uses:

- The development as proposed would not divert any surface water runoff away from existing agricultural enterprises.

- An erosion and sediment control plan has been provided to minimise the potential for impacts associated with siltation of waterway or dust deposition on crops or pasture (refer to Appendix 10). *(see Annexure 4)*
- Operations would be undertaken in a manner which minimises noise and dust emissions.

A Land Use Conflict Risk Assessment (LUCRA) was also undertaken to identify land use compatibility and potential conflicts between neighbouring land uses, and the identification of conflict avoidance or mitigation measures. The LUCRA identifies a comprehensive suite of management methods which will be implemented to minimise the risk of social impacts and subsequent land use conflict as a result of the quarry activities on site. A copy of the assessment has been included as Appendix 6. *(see Annexure 4)* The LUCRA risk assessment concludes that in the event of a conflict occurring, with appropriate mitigation measures in place, only minor to negligible consequences would be experienced.

The development is considered permissible within the current zoning, and complies with all recommended separation distances. Providing the proposed mitigation and management measures are implemented, the development will not introduce any new impacts, too such as extent as to unacceptably reduce the amenity of rural residents. Therefore, the proposed development is not considered to pose a significant risk of causing land use conflict within the locality.

Staff Comment

Noise and Vibration Impacts
The proposed development has the potential to generate increased noise levels on the subject site, subsequently impacting on surrounding properties.

It is considered that noise and vibration from the proposal will be satisfactorily managed and mitigated. Noise and Vibration impacts are addressed in greater detail in s 4.7 of this report

Dust Impacts

Dust will be generated during the construction and operation of the proposed development. The range of sources on site will include roads, stockpiles, crushing, screening, loading and unloading, excavation, handling of materials and truck movements.

It is considered that dust impacts from the proposal will be satisfactorily managed and mitigated. Dust impacts are addressed in greater detail s 4.6 of this report

4.5 Visual Amenity

Proponents Submission

The proposed quarry locations are ideally situated with setback distances of 4.5 kilometres and 1.5 kilometres from Croppa Creek – North Star Road, respectively. The quarries would not be visible from the Croppa Creek-North Star Road as a natural woodland corridor extends along the side of the highway. This established vegetation covers a width of approximately 40m, providing a natural screen for the site. The closet receptor is located approximately 1.7 kilometres to west south-west of the quarry site. The plant and

associated quarry equipment will be located on the eastern side of the primary quarry, hidden from view of the receptor.

In addition, the following measures are recommended to improve the visual amenity of the development:

- Retain and protect vegetation located outside of the identified extraction zone.
- Where possible, retaining and enhancing vegetation along riparian margins
- Revegetation of the site with appropriate species.

The available setback distances and proposed management measures are considered sufficient to ensure that no unreasonable adverse visual impacts occur as a result of the proposed development.

Staff Comment

Having viewed the proposed site staff agree with the applicant's assessment of visual impact and consider that there will be negligible visual impacts from the proposed development due to more an adequate separation distances from rural homesteads and roads along with the natural topography and vegetation screens.

4.6 Air Quality

Proponents Submission

Quarries can produce exhaust emissions from machinery and equipment utilised on site, and particulate matter in the form of dust generated during quarrying activities. Each has been considered below with regards to its potential impact upon community amenity, and associated management recommendations. An Air Quality Impact Assessment has also been included as Appendix 5. *(see Annexure 4)*

Diesel Exhaust

Exhaust emission are to be generated by diesel powered excavators during winning of raw material from the quarry site, a diesel-powered crushing/sieving plant, loaders to manage the materials within the pit and trucks to transport the resources from the quarry site to the rail corridor. Emission will be generated during hours of quarry operations.

Dust Generation

Dust from the site would result from a range of sources on site, including roads, stockpiles, crushing and screening plant, loading and handling of materials and truck movements.

The following management measures are recommended to ensure diesel exhaust emissions on site do not have a significant impact on air quality:

- Biodiesel for machinery and equipment will be used where possible
- All machines will be regularly maintained in accordance with the manufacturer's specifications.
- Ongoing driver education will be carried out to minimise greenhouse gas emissions arising from undesirable driver performance.

- Use modern, well-maintained machinery and vehicles were practicably possible.
- Diesel (Class C1) and lubricating oils and greases (Class C2) will not be stored adjacent to any other hazardous machinery.
- Waste lubricating oil removed from site.

A comprehensive suite of dust management controls will be implemented on site to limit dust generation from the quarry. Table 10 outlines sources of dust from the proposed quarry development, and associated mitigation measures.

Table 10: Dust Mitigation Methods to be Adopted at Tikitere Quarry

Potential Impact Site	Methods of Control Air Pollutions
Roads	• Dust Suppression by watering. • Covered loads when transporting and watering of haul roads. • Grading of roads. • Well-defined haul routes to minimise area of disturbance. • Speed limits (recommended 40km/h).
Wind Erosion of Exposed Materials and Stockpiles	• Dust suppression by watering. • Minimising areas of disturbance. • Progressive rehabilitation.
Crushing, Screening and Handling	• Ensure dust covers in place. • Ensure water sprays are activated from dust management.
Loading and Handling Materials	• Keep front-end loader bucket low when handling and transporting materials.
Trucks	• Dust suppression by watering. • Covered loads when transporting and watering of haul roads.
Monitoring and Proactive Management	• Monitor meteorological conditions. • Cease activity on dry windy days. • In the event of increased dust production, increase dust suppression management measures, including by increasing watering rates, decreasing processing rates, slowing truck speeds and ensuring that dust housing protections remain in place. • Initiate Shut Down procedures during periods of excessive dust generation or upon receipt of complaint and investigate and initiate additional controls.

Diesel exhaust emissions are not expected to have a significant impact on air quality in the locality due to the open nature of the quarry site and surrounding landscape. The dust management practices outlined in Table 10 are consistent with best management practices

for the prevention and/or mitigation of particulate matter from mining sites (as described in Donnelly *et al* 2011). It is considered that this suite of management methods will be sufficient to control excessive dust emissions from the quarry site.

Staff Comment

Emissions from diesel exhaust can be reduce by careful selection of equipment, effective maintenance and driver education. It is considered that the mitigation measures listed in the EIS and the location of the site are sufficient to ensure that exhaust emission do not have a significant impact on air quality.

Dust will be generated during the construction and operation of the proposed development. The range of sources on site will include roads, stockpiles, crushing, screening, loading and unloading, excavation, handling of materials and truck movements.

The EIS lists the mitigation measures that will be undertaken to minimise dust nuisance to the surrounding properties and road users. These measures include but are not limited to dust suppression by watering, the covering of loads, reduced speed limits and effective road maintenance.

Dust emissions are as associated with agricultural activities such as cropping, livestock and haulage of produce, all of which would normally occur on the property "Tikitere" and in the surrounding area.

The draft conditions of consent will enforce the mitigation measures listed in the EIS (see Annexure 3 and associated Land Use Conflict Risk Assessment (see Annexure 4).

4.7 Noise and Vibration

Proponents Submission

Advitech Pty Ltd (Advitech) were engaged to prepare a Noise Assessment (NIA) for the proposed Quarry. A copy of this report has been included as Appendix 4. *(see Annexure 4)*

The NIA provides an assessment of all potential acoustic and vibration impacts on the nearby sensitive receivers in accordance with the NSW Noise Policy for Industry (2017) (NPfI). The nearest of which, Receptor 1, is located approximately 1,770m west south-west of extractive operations.

Project Trigger Noise Levels (PNTL) were determined using ambient and background noise measurements for the site. The recommended PNTL are 40 dB(A) (day); 35dB(A) (evening); and 35dB(A) night. Noise generation above these levels may potentially result in adverse noise impacts to nearby sensitive receivers.

The NIA recommended establishing the crushing plant on the north eastern aspect of the hard rock quarry area to ensure the amenity of nearby receptors is not adversely impacted. This recommendation was adopted early in the planning phase and is reflected in the Site Plans included as Appendix 1. (see Annexure 4)

The following management measures are also recommended to ensure noise levels are consistently below the PTNL:

- Ensuring that equipment and the plant are operated in a quiet and efficient manner.
- Scheduling high noise generating activities for less sensitive times of the day (for example: scheduling maintenance or plant downtime to coincide with more sensitive periods during early morning and late afternoon).
- Operating only during approved operating hours
- Carefully check all plant and equipment to ensure that they are correctly tuned and well maintained to meet manufacturers specifications
- Conduct environmental noise awareness inductions for all contractor employees and subcontractors.
- Conduct ongoing on the job training for each specific job task.

The assessment included noise modelling which indicated that the proposed operations will generate offsite noise levels below the PTNL at all receivers, during all assessment periods. Contributions at the nearest receiver (R1) may approach the evening and night period PTNL but are expected to be well below the day period criteria level. In all cases the primary contribution to offsite noise levels is associated with operation of crushing plant at the proposed hard rock quarry.

The loading of quarried material into trains was identified as the activity with greatest potential to generate maximum noise level impacts. It is important to note that these impacts may only manifest where loading operations are required to take place during the night period. Notwithstanding, review of modelling results indicates that LAMax noise levels at adjacent sensitive receivers will be less than the assessment criteria, and no adverse impact may be expected.

Staff Comment

The proposed development has the potential to generate increased noise levels on the subject site, subsequently impacting on surrounding properties.

Activities likely to generate noise during the construction and establishment phase include:

- Traffic noise (likely to be heavy vehicles), as equipment is transported onto the site;
- Machinery such as excavators, bulldozers and trucks as they prepare internal roads, stormwater diversion banks, drains, stockpiling areas and the sediment pond; and
- Light Vehicle movements.

Activities likely to generate noise during the operation of the proposed quarry include:

- Drilling associated with blast preparation, blasting, excavation, ripping;
- Crushing plant, Screening, heavy vehicles to and from the rail line and quarry sites;
- Movement of water truck for dust suppression across the site;
- Loading of material onto trains and/or stockpiles;
- Light Vehicle movements.

The following minimum buffers area recommended for mining, petroleum production and extractive industries.

Recommended Minimum Buffer Distances

Mining, Petroleum Production and Extractive Industries		
	Normal Operations (m)	Blasting (m)
Residential areas & urban development	500	1000
Rural dwellings	500	1000
Education facilities & pre-schools	500	1000
Rural Tourist accommodation	500	1000
Watercourses & Wetlands	SSD	SSD
Bores & Wells	SSD	SSD
Potable water supply / catchment	SSD	SSD
Property boundary	SSD	SSD
Roads (public)	SSD	SSD

SSD: Site Specific Determination. Source: Department of Primary Industries (2007) Living and Working in Rural Areas Handbook

The nearest rural dwelling not associated with the proposed development is approximately 1,770 metres to the West South-west. The nearest residential area (being North Star) and associated school is approximately 10,000 metres to the north of the proposed development site. There are no rural tourist accommodation known within the 1,000 metre buffer area.

Distances in excess of 1,000 metres between the development proposal site and the surrounding residences, combined with the topography and natural vegetation screens will assist in mitigating potential noise level even further. However, climatic conditions can exacerbate noise level especially on windy days.

The proposed operating hours of 6:00am to 6:00pm Monday to Saturday, blasting during the hours of 9:00am to 5:00am Monday to Saturday with no operation or blasting on Sundays or Public Holidays could be further refined to include the restriction of all noise generating activities to between 8:00am and 5:00am Monday to Saturday with only relatively quiet operation such as vehicle and equipment maintenance being performed from 6:00am to 8:00am and 5:00pm to 6:00pm Monday to Saturday. The restriction of noise in the more sensitive hours early in the morning and in the afternoon will further mitigate any conflicts that may arise from noise without significantly disturbing production.

It is considered that noise and vibration from the proposal will be satisfactorily managed and mitigated, substantially by suitability of the site and the intelligent placement and maintenance of equipment. Draft conditions of consent will enforcing the operating hours and the mitigation measures listed within the EIS (see Annexure 3) and associate Noise Impact Assessment (see Annexure 4).

4.8 Water and Water Supply

Proponents Submission

Surface Water

Tikitere is located within the Murray Darling Basin as part of the Border Rivers Catchment (Figure 13). The closest surface water body to the development site is Tackinbri Creek, which forms the southern boundary of the property and is classed as an ephemeral stream. Tackinbri Creek starts near Tikitere at an elevation of 289m and ends at the elevation of 204m merging with the Whalan Creek. Whalan Creek eventually joins the Boomi River near Mungindi.

Potential impacts on surface water which may occur as a result of the construction and operation phases of the project include:

- Pollution of surface water through:
    - Increased turbidity of surface water due to sediment loss and erosion from stockpiles, haul roads and disturbed areas.
    - Impurities, incidental minerals or other leachates from the disturbed rocks and soil.
    - Stormwater runoff from plant and equipment areas, fuel storage areas, chemical spills and uncontrolled surface runoff.
- Increased risk of erosion on slopes through increased flow rates.

Good drainage and sediment capture systems prevent erosion and ensure runoff does not contaminate offsite areas or waterways. Erosion leads to instability of faces and slopes and also allows the movement of soil offsite which can negatively impact waterways.

To protect surface water quality within the Border Rivers Catchment during the course of the development, appropriate drainage and sediment capture systems will be installed to prevent erosion and ensure runoff does not contaminate offsite areas or waterways.

The following mitigation measures should be adopted onsite to ensure protection of surface water quality:

- Maintenance of vegetation buffer zones between the quarry site and watercourses within the region, to enable natural filtration of surface water prior to runoff entering waterways;
- Siting of the quarry site above the 1 in 100 average recurrence interval flood level, to minimise the risk of the quarry site being inundated in the event of a major flood;
- Minimising the disturbed area by working in sections to reduce the exposure area and stabilizing disturbed land as soon as possible to minimise erosion.
- Use drains, diversion banks and bund walls to direct clean stormwater away from disturbed areas, working areas and stockpiles;
- Use diversion drains, and contours drains to capture and slow down water in sloped areas, and use stones or vegetation to stabilize drains in these high velocity areas.
- Ensure that the storage and use of hazardous and dangerous materials occurs in accordance with relevant legislation, and maintain table drains.
- Minimise gradients of access tracks, and maintain table drains.
- Collect all runoff from working areas in sediment ponds, designed to contain and control water in a 1 in 10 year storm event.
- Capture sediment in erosion prone areas by placing hay bales, silt fences or other suitable control devices in drainage lines.

The implementation of the appropriate mitigation measures in accordance with the above recommendations and best practice management techniques are considered sufficient to avoid potential contamination of offsite surface water

Ground Water

The development is located within the Eastern Recharge Groundwater Source of the NSW Great Artesian Basin Groundwater Source Groundwater Management Area, as shown in Figure 14. The Water Sharing Plan for the area is the NSW Great Artesian Basin Groundwater Sources Water Sharing Plan 2008.

The average annual net recharge is estimated at 19,000 ML per year for the Eastern Recharge Groundwater Source. However, current extraction levels are considered to exceed recharge and therefor the area is classified as at high risk of over-extraction. Water will be used for dust mitigation measures, particularly along the haul road between the proposed Quarry and the railway loading area. This water will be sourced from an existing groundwater bore under licence 90CA811293 for an entitlement of 486 megalitres. The proposal does not involve any increase to the existing licensed entitlements.

The proposed quarry site involves excavation of a volcanic plug, which rises approximately 20m or more above the surrounding ground surface level. Analysis of the extent of the basalt resource at the proposed quarry site indicates that the proposed quarry depth is likely to extend to a maximum of 10-15m below the surrounding ground level (approximately 30-35m below the crest of the existing plug. Groundwater bore data in the region indicates groundwater varies in depth, yet is typically >20m below the ground surface (note that the water bearing zone of GW006090, the closest bore to the proposed quarry site, is located 48.7m below the ground surface). Subsequently, it is considered unlikely that excavation at the proposed quarry site would intercept groundwater.

The volcanic plug of the quarry site is underlain by a sandstone deposit. It is likely that the existing volcanic plug does not serve as a recharge zone for groundwater, as the basalt would not provide a suitable porous medium to enable deep drainage for surface water to groundwater reserves. However, upon completion of quarry activities, it is possible that sandstone deposits may be exposed at the soil surface as a result of the removal of the basalt. This may result in the establishment of a new groundwater recharge zone, as the sandstone is likely to be sufficiently porous such that deep drainage of surface water may occur. This effect may be further exacerbated by the final landform of the quarry, which will be consistent with that of localised depression, and which will therefore encourage ponding of water on the soil surface, increasing the risk of the occurrence of deep drainage.

Groundwater dependent ecosystems (GDE's) are defined as ecosystems which have their species composition and their natural ecological processes determined by groundwater (ARMCANZ & ANZECC, 1996). No Groundwater Dependent Ecosystems (GDE's) identified within the proposed development site. A search of the Atlas of Groundwater Dependent Ecosystems (GDE) (Australian Government Bureau of Meteorology) identified aquatic and terrestrial GDE's known to occur within the vicinity of the proposed development. The results of this search are outlined in Figure 16, Figure 17 and Figure 18.

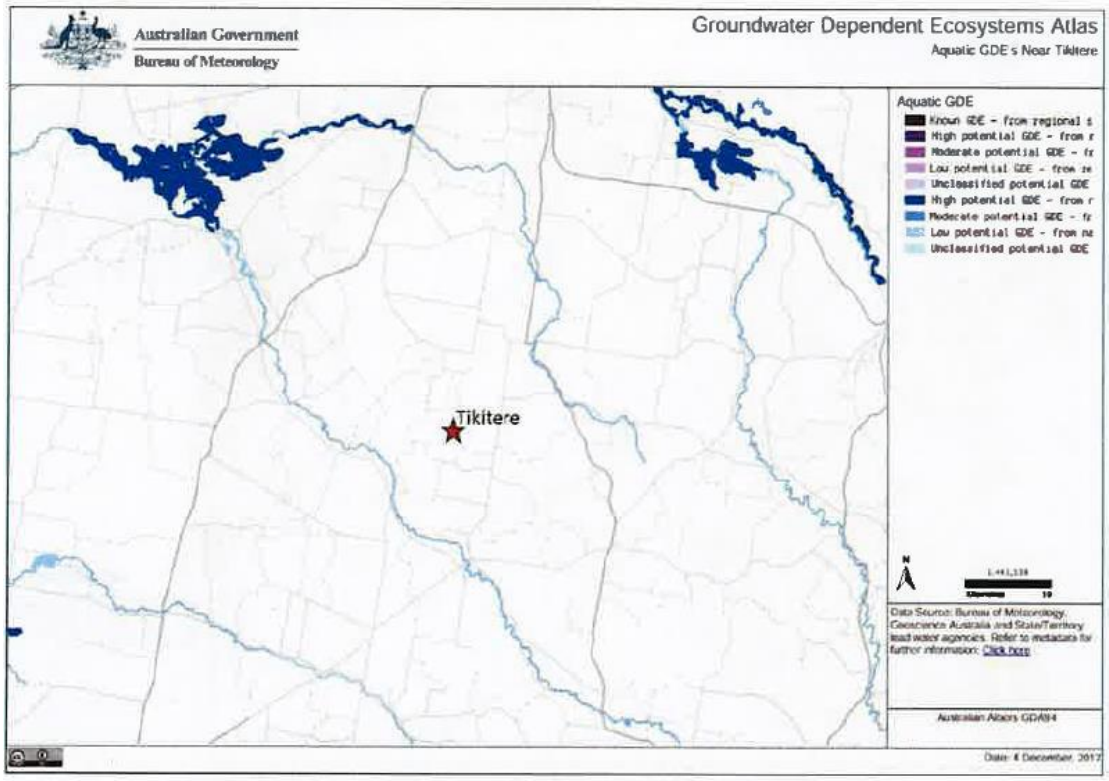


Figure 16: Aquatic Groundwater Dependent Ecosystems Near Tikitere Quarry

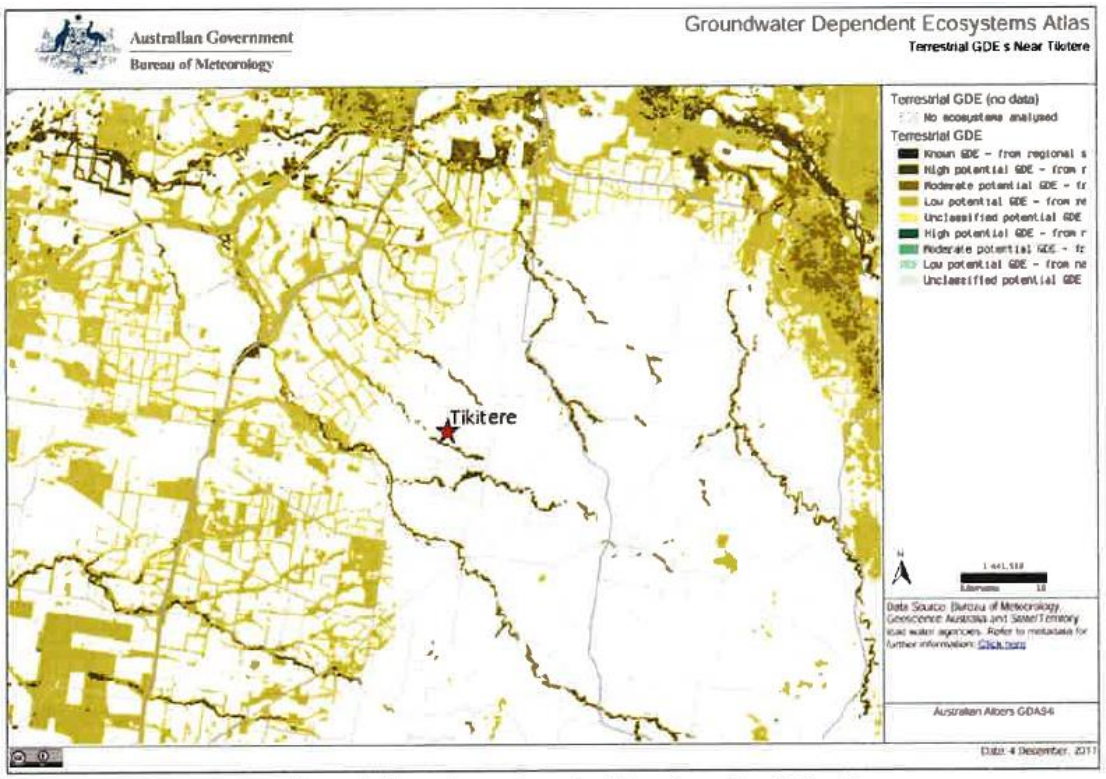


Figure 17: Terrestrial Groundwater Dependent Ecosystems Near Tikitere Quarry

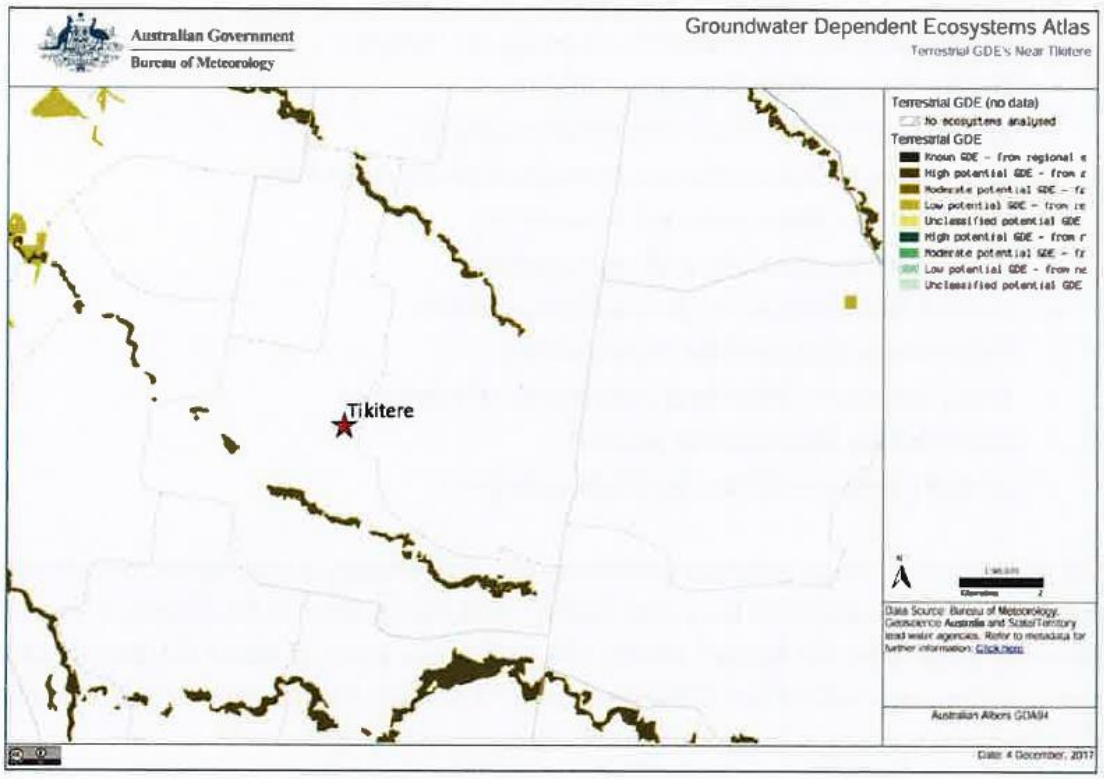


Figure 18: Terrestrial Groundwater Dependent Ecosystems Near Tikitere Quarry – Site Scale

Potential impacts on groundwater which may occur as a result of the construction and operational phases of the project include:

- Drawdown of groundwater from sourced aquifer(s) during operations for dust suppression.
- Drawdown of ground water in overlying and underlying units for sources aquifer(s).
- Reduction of piezometric head, within aquifers sourced for operational purposes, which could result in the reduction of landholder bore yields.
- The reduction in baseflow to surface water systems
- Impacts on GSE's in the context of groundwater quality, quantity and flow characteristics.
- Impacts on groundwater quality as a result of surficial impacts in the form of leaks, spills, surface runoff and seepage into shallow aquifers.

Once the operations are completed, and the site has been rehabilitated, a potential increase in groundwater recharge may occur. The primary risk of the proposed development to groundwater reserves in therefore associated with altered patterns of surface-groundwater connectivity at the conclusion of the development.

Based on the available information it is considered that using groundwater under an existing groundwater licence would be the most appropriate option for the dust mitigation measures throughout the operation of the quarry. There would be no increase in the existing licensed entitlements. No additional extraction will ensure that the Quarry does not adversely impact the drawdown of sourced and/or adjacent aquifer(s).

The available setback from surface water and potential GDE's is substantial providing a sufficient barrier between the Quarries. The provision of suitable drainage and sediment controls will prevent erosion and ensure runoff does not contaminate offsite areas, including waterways and GDE's.

The storage and/or use of hazardous material which on site will occur in accordance with National Code of Practice for the Storage and Handling of Workplace Dangerous Goods (2001). The appropriate storage and handling will ensure such materials do not pose an unacceptable risk in respect to the pollution of groundwater.

Staff Comment

It is proposed that groundwater will be used as the water source for the quarry. An existing, licensed volume of groundwater (486 ML) will be used, which does not represent a new allocation (or "new water") from the Eastern Recharge Groundwater Source of the NSW Great Artesian Basin. Groundwater quality is not vulnerable as the groundwater is quite deep and protected by medium-heavy clay soils. Generally, groundwater is encountered in sandstone deposits and range from 20m below ground to levels of over 100m below ground level.

The proposed Primary Quarry site will excavate a volcanic plug which rises approximately 20m above the surrounding landscape. It is expected that the basalt deposit will also be excavated below the surrounding ground level to a depth of 10-15m. Groundwater depths in this area vary in depths, however the closest water bearing bore to the proposed development site is located at a depth of 48.7m. It is not expected that the operation of the proposed development will interfere with groundwater

As a part of the proposed development and in response to the mitigation of erosion and contamination a sediment pond will be constructed at the Primary Quarry site. This pond will capture all runoff from the site. The Primary Quarry site is located on a low ridge and it is not expected that the sediment dam will capture large volumes of stormwater. Watercourses in the area will be protected through good design of diversion banks, but also through the provision of generous buffers.

Staff agrees with the proponent's submission. Conditions controlling the use of water across the proposed development will be included in the draft consent conditions.

No groundwater is expected to be intersected during the winning of quarry material

4.9 Biodiversity

Proponents Submission

Advitech Pty Ltd (Advitech) were engaged to prepare a Biodiversity Impact Assessment (BIA) for the proposed Quarry. A copy of this report has been included as Appendix 8. (see Annexure 4)

The assessment identified the following key Endangered Ecological Communities (ECC's) and threatened species that may be impacted by the proposal:

- Semi-evergreen Vine Thicket in the Brigalow Belt South and Nandewar Bioregions (Endangered Ecological Community, TSC Act and EPBC Act)
- Little Lorikee *(Glossopsitta pusilla)*
- Turquoise Parrot *(Neophema pulchella)*
- Brown Treecreeper *(Climacteris picumnus ssp.victoriae)*
- Speckled Warbler *(Chthonicola sagittata)*
- Black-chinned Honeyeater *(Melithreptus gularis)*
- Grey-crowned Babbler *(Pomatostomus temporalis temporalis)*
- Varied Sittella *(Daphoenositta chrysoptera)*
- Dusky Woodswallow *(artamus cyanopterus)*
- Hooded Robin *(Melanodryas cucullata cucullata)*
- Black-striped Wallaby *(Macropus dorsalis)*
- Yellow-bellied Sheathtail-bat *(Saccolaimus flaviventris)*
- Little Pied Bat *(Chalinolobus picatus)*
- Corden's Long-eared Bat *(Nyctophilus corbeni)*

The proposed extraction activities would result in the removal all vegetation present within the bounds of the proposed hard rock quarry, comprising about 2.8 hectares of degraded Semi-evergreen Vine Thicket EEC (SEVT). The represents a loss of about 3.7 percent of this community mapped within the Tikitere property (74.9 hectares) and about 0.1 percent of the 3070 hectares mapped in the Border Rivers – Gwydir Rivers region.

The removal of vegetation from the site would also result in the removal of nine habitat trees. The removal of such habitat has the potential to directly impact hollow dependent fauna that may inhabit the trees and reduce this habitat resource in the local area.

The establishment of a quarry site may provide the opportunity for invasion or spread of noxious weeds. A site should be managed so that:

- It does not become a source of noxious weeds, plant diseases and pest animals.
- To prevent their introduction throughout establishment, operation and rehabilitation phases of a quarry.

Key mitigation measures identified to minimise and avoid biodiversity impacts include but are not limited to:

- A Vegetation Management Plan to be prepared detailing the proposed mitigation measures and implemented as part of the site operations plan.
- Measures to further avoid and minimise the impact on native vegetation to be investigated during detailed design of the white rock quarry and implemented where practicable and feasible. The clearing of native vegetation must be minimised with the objective of reducing impacts to the adjacent ECC and threatened species habitat to the greatest extent practicable.
- The limit of quarry works and vegetation to be retained to be delineated using appropriate signage and barriers, identified on site construction drawings and during staff inductions. The extent of SEVT ECC located on the south of the proposed white rock quarry will be clearly marked and/or fenced to exclude access during construction.

- The SEVT community located on site is sensitive to fire and should be proactively managed to minimise the risk of fire. Fuel loads adjacent to retained vegetation should be kept to a minimum.
- Weeds and pests should be managed in accordance with the following recommended practices:
    - Stablisation measures must be planned to optimize establishment of healthy groundcover devoid of weeds.
    - An inventory of noxious or declared weed species occurring within the development site must be complied before works commence.
    - All machinery, equipment and vehicles brought onto a property must be free of soil, seed or plant material. All soil and organic matter should be removed, including under the vehicle and in the cabin or trays.
    - Heavy equipment entering or leaving the site should be cleaned down in a designated wash-down area.
    - Provide animal-proof bins for contractors and employees at location where they consume food and ensure bins are regularly emptied to an appropriate offsite facility.
- Revegetation of previously cleared areas and rehabilitation of areas disturbed by the proposed quarrying works should utilise local species consistent SEVT. Any revegetation works should target previously cleared areas between cropping land and remnant vegetation to help minimise edged effects of SEVT.
- Pre-clearing surveys should be undertaken by an ecologist prior to the commencement of any vegetation or tree removal to confirm presence of stick nests and nesting hollow dependent species. If threatened species are found to be utilizing hollows, those hollow bearing tress are not to be cleared until the species has ceased using the hollows.
- Suitable fauna protection protocols are to be utilised for any clearing works. This includes requirements for ecologist supervision, the undertaking of pre-clearance surveys, provision of compensatory nest boxes, procedures to safely fell habitat trees and release areas for any rescued fauna.

Given the limited extent of vegetation removal from the site, this assessment has determined that the proposed quarry works are unlikely to have a significant impact on SEVT or any of the above threatened species under State (TSC Act) or Federal (EPBC Act) legislation. Furthermore, it is likely, though the implementation of the site VMP that an improvement in condition could be achieved throughout the retained areas of SEVT on the Tikitere property.

Staff Comment

The following endangered, critically endangered or vulnerable species and/or ecological communities are likely to be found the area of the proposed development site:

Name	Level
Semi- Evergreen Vine Thicket in the Brigalow Belt South and Nandewar Bioregion	Endangered Ecological Community (TSC Act & EPBC Act)
Glossopsitta pusilla (Little Lorikeet)	Vulnerable species
Neophema pulchella (Turquoise Parrot)	Vulnerable species

Climacteric picumnus ssp victoriae (Brown Treecreeper)	Vulnerable species
Chthonicola sagittata (Speckled Warbler)	Vulnerable species
Meithreptus gularis (Black-chinned Honeyeater)	Vulnerable species
Pomatostomus temporalis temporalis (Grey-crowned Babbler)	Vulnerable species
Daphoenositta chrysoptera (Varied Sittella)	Vulnerable species
Artamus cyanopterus (Dusky Woodswallow)	Vulnerable species
Melanodryas cucullata cucullata (Hooded Robin)	Vulnerable species
Macropus dorsalis (Black-striped Wallaby)	Endangered species
Saccolaimus flaviventris (Yellow-bellied Sheathtail-bat)	Vulnerable species
Chalinolobus picatus (Little Pied Bat)	Vulnerable species
Nyctophilus corbeni (Corben's Long Eared Bat)	Vulnerable species

The proposed development will result in the removal of 2.8 hectares of isolated and degraded Semi-evergreen Vine Ticket, which represents 3.7 percent of this community located within the property "Tikitere" (and the clearing of 0.1 percent of this community mapped in the Border Rivers- Gwydir Rivers region), and the removal of 9 habitat trees, located at the primary quarry site.

Threatened species are protected under the following three Acts (two are now repealed) which operate in conjunction with each other:

- The *Threatened Species Conservation Act 1995* deals with the listing of species, the declaration of critical habitat, recovery plans, threat abatement plans, licencing, biodiversity certification and biobanking;
- The *National Parks and Wildlife Act 1974* contains additional licencing provisions, and provisions for criminal offences; and
- The *Environmental Planning and Assessment Act 1979* imposes obligations on developers and consent authorities to assess and consider the impacts of proposed development on threatened species during the development assessment process (e.g. by requiring a species impact statement in some circumstances).

In deciding whether there is likely to be a significant effect on threatened species, populations or ecological communities, the Council must take into account the following factors:

a) In the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

The majority of threatened species that may utilise the site are highly mobile and may forage within the remaining vegetation areas, which are substantial, should the proposed operation disturb foraging habits. The proposed quarry sites are small in size and are inhabited by a small number of trees which may be used as breeding sites for nesting species, the removal of which is not considered to have a significant effect on the overall viability of breeding cycles of those species and is unlikely to place them at risk of extinction. None of the threatened species list above were sited during site investigations.

b) In the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction.

The majority of endangered species that may utilise the site are highly mobile and may forage within the remaining vegetation areas, which are substantial, should the proposed operation disturb foraging habits. The proposed quarry sites are small in size considered unsuitable as breeding sites. It is unlikely that the overall viability of populations which may occur in the area will be placed at risk of extinction. None of the threatened species list above were sited during site investigations.

c) In the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:
    i. is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or
    ii. is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction.

The removal of 2.8 hectares of SEVT from the property due to the proposed operation forms 3.7% of the total SEVT located on the property, as such is not considered likely that its removal will adversely affect nor modify the extent of the local community so as to place it at risk of extinction.

d) in relation to the habitat of a threatened species, population or ecological community:
    i. the extent to which habitat is likely to be removed or modified as a result of the action proposed, and
    ii. whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and
    iii. the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality.

The proposed primary quarry site is a volcanic plug which is entirely surrounded by cultivated field and is considered already isolated from other remnant vegetation located on the property. The removal of the 2.8 hectares of SEVT at this site is considered to be small and will not result in any further fragmentation or isolation of the endangered ecological community (EEC). Additionally it is considered that area of SEVT is degraded and will have little or no effect on the long-term survival of the localised community. Further that the applicant commitment to the maintenance of the remaining community will only enhance the EEC's long-term survival and condition.

e) Whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly)

No areas of critically endangered habitat designated under the TSC are located within the proposed development area.

f) Whether the action proposed is consistent with the objectives or actions of the recovery plan or threat abatement plan

The proposed development is considered to be consistent with the objectives and actions for the recovery of threatened species and endangered communities

g) Whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Bush rock removal and clearing of native vegetation are listed as key threatening processes within the TSC Act and land clearance is listed as a key threatening process with the EPBC. The operation of the proposed quarry will result in the operation of key threatening processes. However, no species or ecological community is considered to be at risk should these processes by carried out on the proposed sites.

The assessment of threatened species and ecological communities, biodiversity and the impacts of the proposed development have been addressed as a part of the Biodiversity Impact Assessment (see Annexure 4).

It is considered that the removal of 2.8 hectares of SEVT and the proposed operation of the quarry would not significantly affect threatened species, population or ecological communities or their habitat. Council agrees with the proponent's submission. However, the NSW Office of Environment & Heritage has recommend that a requirement for offsets be included in the conditions of consent. Conditions controlling the operation of the proposed quarry will be included in the draft schedule of conditions.

4.10 Archaeological Heritage

Proponents Submission

Non-Indigenous Heritage

No non-indigenous heritage items have been found near the development site.

A search of heritage sites using the EPBC Act Protected Matters Report found no World Heritage or National Heritage listed sites on the property or surrounding properties.

A search of the NSW State Heritage Register found no heritage listed sites on the property or surrounding properties

The Gwydir Shire Council Local Environmental Plan showed no heritage sites on the property or surround properties.
Indigenous Heritage

Tikitere is within the area managed by the Moree Local Aboriginal Land Council. The area is also within the Land Claim region of the Gomeroi Nation which operates as a larger organisation relating to a large land claim application and group of representatives from Local Land Councils.

Little information is available about aboriginal history in the Tikitere area. No sites of significance have registered on the property. Some sites would be present along the

creek corridor. Such sites may include scar trees and artefact scatters. The potential to find sites or artefacts on the development area is negligible as the area has been subject to extensive cultivation for a period of 40 years or more. Artefact scatters would be buried or substantially deteriorated as a result of the cultivation. A search of the area has not identified any artefacts.

To follow legislative guidelines, a due diligence assessment process was undertaken. This is considered the first step of an archaeological impact assessment process to determine the required detail of the investigation and consultation requirement to meet statutory planning provisions.

The due diligence process involved the following steps:

- AHIMS Register search – a search of the AHIMS to ascertain if there are any known sites within or adjacent to the subject area
- Assessment of Landscape – assess the study area for the presence, nature and level of disturbance of landscape features that may contain heritage sites
- Desktop assessment and visual inspection – Physically inspect the proposed development site for artefacts or signs of aboriginal presence.
- If aboriginal artefacts are located, further assessment is required in conjunction with an archaeologist and the Local Aboriginal community representatives
- If disturbance to the area is not considerable and there is no presence of aboriginal artefacts or other signs, a standard summary of the work is to be prepared and the development can proceed subject to approvals.

A search of the NSW AHIMS register indicated that there are no recorded sites on the property. This is potentially a result from a lack of survey on the property more than a lack of aboriginal history on this land. The report is presented as Appendix 7. *(see Annexure 4)* Following on from the desk top searches, a site inspection was undertaken.

The method adopted for the site search involved a traverse around each quarry site on foot. Initial assessment involved an inspection of mature trees for scars or other markings. None were found. The search continued for grooves or other markings that may have resulted from sites used for sharpening of wooden implements. No grooves were found in the hard rock quarry site. It is predicted that the hard rock is possibly too hard for markings such as grooves. The traverses continued with the aim of identifying signs where rock may have been split or broken for the purpose of making stone tools such as spear heads, axe heads or simple cutting tools. The formation and natural weathering of the hard rock showed no signs of specific sites that may have been used for tool construction. The hard rock is severely hard and therefore difficult to splinter into rock tools. The white rock quarry site does not contain any hard rock materials. The white rock is not suitable for use as a colouring material or ochre product that may have been used in ceremonial purposes. The white rock pit was opened up by the current property owner in the 90's and therefore the excavation would not contain any historical sites. The area away from the quarry sites that would be impacted by roads or haul tracks, is currently cultivated and cropped. No additional signs of archaeological value were noted in surrounding fields during field inspections undertaken on foot.

No significant signs of archaeological value or indications were identified at the hard or soft quarry sites. Field work therefore extended to the due diligence assessment and did

not include a requirement of an archaeologist. The field work area was limited to the quarry site and adjacent fields.

The results of archaeological investigations therefore determined that the likelihood of disturbing sites or objects of aboriginal cultural significance are extremely low on the area identified for Quarry development. On this basis, the development may proceed with only limited constraints regarding Aboriginal heritage. This would involve ensuring that appropriated action is taken in the form of an "Unanticipated Finds Protocol". Appropriate actions would in the first instance involve notification on OEH and Local Aboriginal representatives. Specific protocols are presented by OEH for assessing such sites found during construction or site operations.

The following management and mitigation measures should be implemented to ensure that the proposal has minimal potential impacts to Aboriginal Cultural heritage:

- Restrict ground-disturbing activities to those present within the footprint area as identified within the site plan included as Appendix 1. (see Annexure 4)
- Ensure that project staff and contractors and their employees are advised of their legal responsibilities under the National Parks and Wildlife Act 1974 and the Heritage Act 1977.
- In the event that any Aboriginal artefacts, items or sites of cultural heritage are found during quarry operations, the following management procedures will be carried out:
    - Work will cease in the immediate area until OEH, Gwydir Shire Council and Moree LALC are advised and the site/artefact/relic is assessed.
    - A requirement to immediately stop all works if human remains are found during the quarry operations to prevent any further impacts to the remains. The NSW Police, the OEH and the Aboriginal Community will be notified.
    - Consultation will be carried out as appropriate in accordance with the following documents:
        - Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010;
        - The Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW 2010.

The proposal will not result in the disturbance of any identified Aboriginal objects. In the event that any Aboriginal objects are discovered as a result of construction or operations, all ground-disturbing activities would be postponed pending advice from OEH.

On the basis of the above, the potential impact of the proposal on Aboriginal cultural heritage is assessed to be minimal and mitigated to the greatest extent practical.

Staff Comment

The proposal is not in the vicinity of any heritage items in accordance with Council's Local Environmental Plan or under State or Federal Legislation. The consultants found no items of Archaeological or Heritage during the site inspection on the property. It is accepted that due to previous and current farm practices it is unlikely that artefacts now exist on the proposed site or in the surrounding areas.

4.11 Natural Hazards

Proponents Submission

Bushfire Hazard

The potential bushfire hazard of the subject site has been assessed through a desktop assessment of known areas of bushfire hazard, in association with a site visit to ground-truth results of the desktop survey and to provide a site-specific assessment of the subject site.

Bushfire Prone Land is land that has been identified by local council which can support a bushfire or is subject to bush fire attack. The NSW Rural Fire Service's Online Mapping Tool was accessed in December, 2017 to assess whether Tikitere is located in Bushfire Prone Land. Results of the search indicate that the site is not located in Bushfire Prone Land.

Quarry operations will include a suite of activities which may act as potential sources of ignition. To minimise the risk of fires being ignited as a result of quarry operations, the quarry site will be kept clear of vegetation and other potentially flammable materials. This will ensure that any potential sparks generated on site will not catch onto materials which may lead to fire spreading into the surrounding region.

The following safeguards and mitigation strategies will be implemented on site to minimise the bushfire hazard at Tikitere Quarry:

- Incorporating firebreaks, including a perimeter road, around the quarry site;
- Ensuring an buildings (including temporary buildings) are set back from any potential fuel sources (such as surrounding vegetation);
- Keeping the quarry site clear of potential fuel sources (such as vegetation), particularly in close proximity to quarry activities which may act as a source of ignition;
- Maintaining appropriate fire-fighting equipment at the site, ensuring fixed plant and mobile equipment are fitted with fire-fighting equipment including fire extinguishers, fire blankets, knapsack spray pumps and rake-hoes;
- Checking the underside of vehicles periodically to ensure they are kept free of vegetation debris that could dry out and ignite;
- Storing flammable materials such as waste hydrocarbons away from ignition sources;
- Refuelling only to occur in cleared areas of the project site;
- Engines in all vehicles to be turned off during refueling;
- No smoking policy to be enforced in designated areas of the project site; and
- Ensuring a water cart/truck is equipped with a hose to assist in extinguishing any fire ignited and that there is sufficient water availability to site for fire-fighting.

The primary water source will be via the existing groundwater bore (GW006090) located 465 metre north of the existing quarry and 1,004 metres North West of the proposed basalt quarry site. Water will also be captured in the sediment pond and available for fire-fighting purposes if required.

The proposed operations would increase the number and type of ignition sources in the local area. However, the proposed management and mitigation measures, in conjunction with general clearing activities associated with the proposal would ensure that an acceptable bushfire hazard is maintained within the project site.

(Note: RFS (2006) being the Rural Fire Service guideline "Planning for Bush Fire Protection")

Flood Hazard
The proposed development site is not located within a flood area. Further, the site is a volcanic plug that rises approximately 20m above the surrounding paddock. The proposed development will be enclosed within a series of diversion banks and controlled drainage lines to further minimise the potential impacts of stormwater runoff.

Geological Instability

The land is not naturally subject to geological hazards such as volcanism, earthquake, or soil instability such as subsidence slip or mass movement. However, there is a potential that geological instability may be induced on the quarry site as part of the quarry operations (such as through exposure of weak/erodible surfaces or creation of unstable quarry walls with steep slopes). This may lead to the occurrence of geological hazards on site (such as rock fall or failure of the quarry face).

To minimise the risk of geological hazards on site, the quarry site will be operated to a high standard, adopting best management practices to ensure that safety standards are maintained on site. Quarry operations will be guided by the overarching Mine Safety Management System, which will identify a series of site-specific Principle Hazards associated with the mine site, and will propose a suite of management methods to minimise the risk of each hazard. The Mine Safety Management System will be implemented by Mine Operator.

It is considered that implementation of a comprehensive Mine Safety Management System on site is sufficient to minimise the risks posed by geological instability at the proposed Tikitere quarry.

Staff Comment

According to Council's knowledge, the subject site is not subject to flooding, subsidence slip or bushfire risk. It is conceded that given the right conditions and fuel source availability any site can be subject to a fire, in particular sites which will store and use hazardous material such as diesel and oils. The applicant has offered extensive mitigation measure in order to minimise the risk and impact of a potential fire onsite.

It is considered that natural hazard that may affect the proposal should be adequately managed through the recommended conditions in the draft schedule of conditions.

4.12 Access and Traffic

Proponents Submission

The Croppa Creek-North Star Road provides the only access to Tikitere. This is bitumen sealed road maintained by Gwydir Shire Council. The road services the farming community

and several smaller arterial roads. The road is trafficable in all weather conditions apart from times of extreme flood events. The access to Tikitere is shown in Figure 19. The available site distance along Croppa Creek-North Star road (shown in Figures 20 and 21) are considered sufficient to provide for safe access to Tikitere.

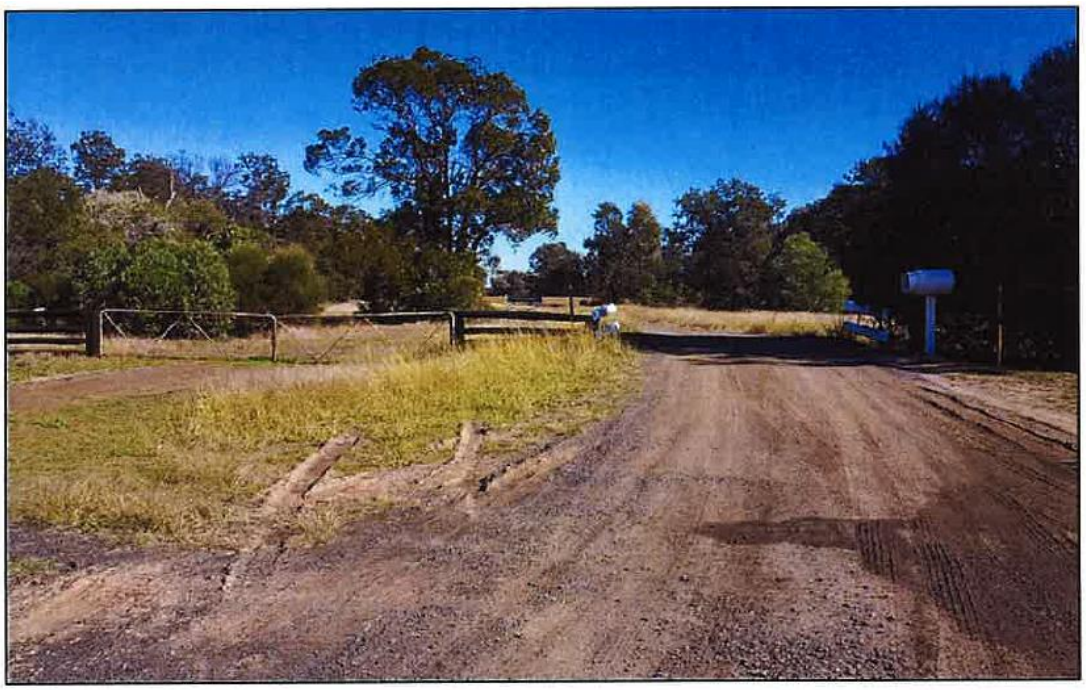


Figure 19: Site Access to Tikitere

Figure 19: Site Access to Tikitere

Figure 21: Sight Distance facing South along Croppa Creek Road

The establishment of the quarry sites will require minor earthworks to construct the sediment pond, catch drains and diversion banks. The mobile plant will be delivered to the site using up to 10 "low-loaders" truck movements

The operation will involve the loading of heavy vehicles and haulage between the primary Quarry site and rail loading point. While production is likely to be variable, allowance has been made for 12 heavy vehicle movements between the quarries and rail loading site (per hour) at peak production. No haulage will occur on public roads. The only traffic to utilise the public roads throughout the operation of the quarry will be up to (6) light vehicles, 12 movements a day for staff and serviced vehicles.

Once quarrying activities have concluded, the mobile plant will be removed from the site using up to 10 "low-loaders" truck movements. The potential impact on public roads from the proposed development is considered negligible.

The proposed development site is located adjacent to the railway and allows for direct rail loading of materials excavated from the quarries. This significantly reduces the potential traffic generation on public roads. While adverse impacts are not expected to public roads given the characteristics of the development, safety concerns should still be addressed on site. The following management and mitigation measures should therefore be adopted:

- Operating hours in accordance with the development consent conditions.
- Provide adequate traffic management, including temporary speed restrictions, precautionary signs, illuminated warning devices, manual traffic control and provision of temporary barriers and markers when necessary.

RMS requested that the EIS be supported by a Traffic Impact Assessment (TIA) prepared in accordance with the Austroads Guide to Traffic Management Part 12, the complementary Roads and Maritime Supplement and RTA Guide to Traffic Generating Developments.

The movement of material between the quarry and the rail loading site will take place completely within the proponent's property. No haulage of quarry material will occur on public roads.

Accordingly, as the expected traffic is negligible, a Traffic Impact Assessment (TIA) is not warranted.

The proposed mitigation measures are specific, easily understood, easily designed and relatively easy to implement. With these measures in place the potential for traffic impacts will be unlikely and of minimal consequence.

Staff Comment

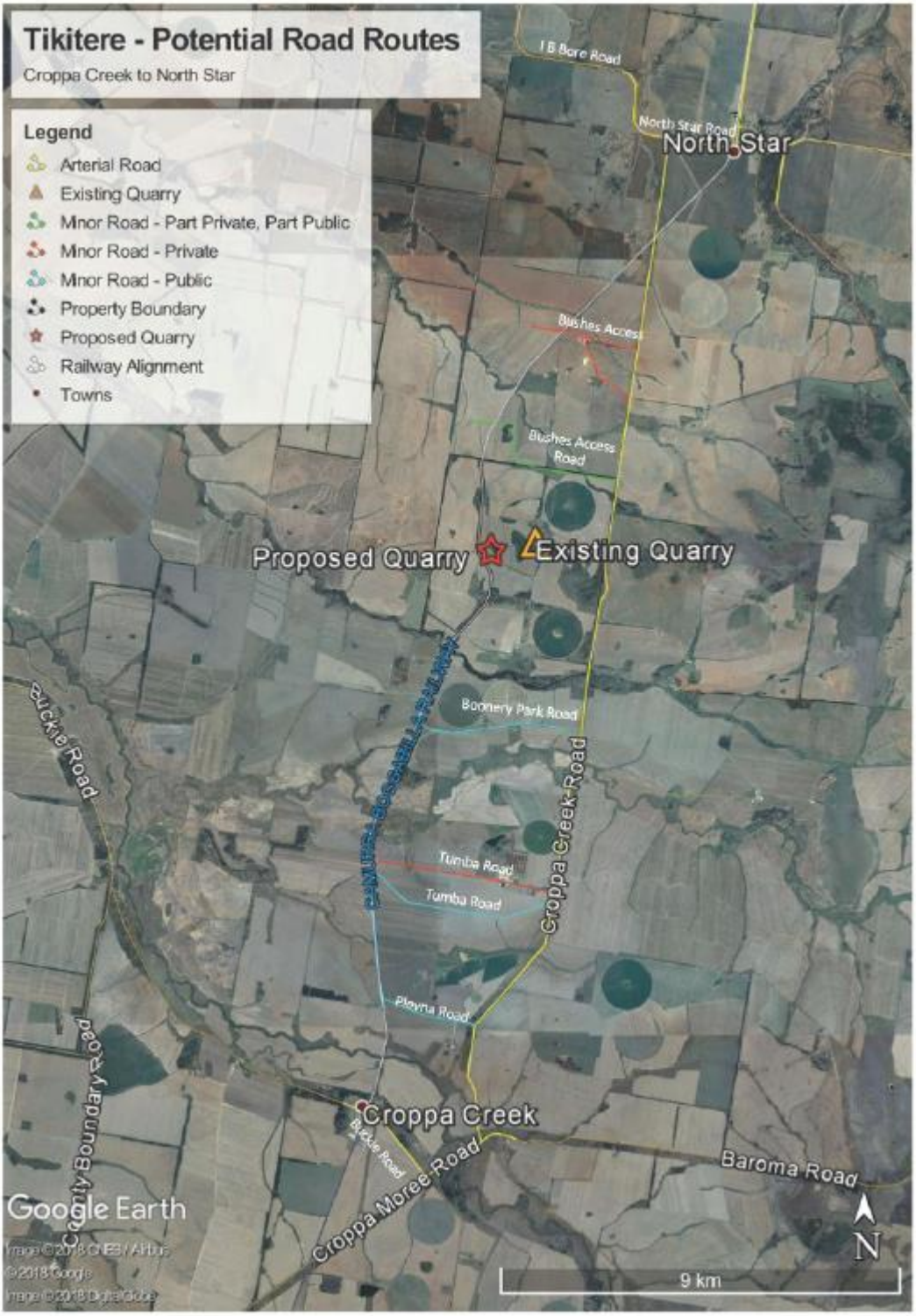
It should be noted that the original intention of the proposed quarry development was that all transportation of or haulage of quarried materials were to be between the quarry sites and the rail corridor running through Tikitere via internal property roads. As such no quarried materials would be hauled along Council or State roads. The only traffic movements would be up to 12 light vehicle movements per day which would not trigger the need for contributions to be levied under Council's s94 Contributions Plan – Traffic Generating Development.

However, since the lodgement of the development application and the preliminary notification period the proponent's has advised that it may be necessary for some haulage of quarried materials along private and public roads. The proponent has provided some information regarding the possible roads to be used but cannot at this stage provide accurate information on when or if they will be used or the frequency of the usage or the total amount of quarried material to be hauled. Below are two maps indicating the possible roads to be used outside of the "Tikitere" property.

The development proposal was renotified once the above maps were received to ensure that the community was apprised of the changes to transportation of the quarried materials.

As can be seen from the below maps some of the road earmarked for potential haulage use are not under the jurisdiction of the Gwydir Shire Council, in particular private access roads are privately maintained (eg Bushes Access Road), State roads (eg Bruxner Highway) and road under the jurisdiction of other Council's (eg the western part of Tucka Tucka Road is in the Moree Plain Shire Council).

Gwydir Shire Council has agreed to enter negotiation regarding a planning agreement once and if the quarry operation intend to haul materials outside of "Tikitere" or the existing rail corridor. However it may be necessary once road haul is established for the proponent to produce a Traffic Impact Statement and enter into an agreement with Road and Maritime Services. In addition, agreements may need to be brokered with the Moree Plain Shire Council and the owners of the private accesses for the use of those roads.



Tikitere Potential Road Routes – Croppa Creek to North Star

Tikitere Potential Road Routes – North Star to NSW-QLD Border

In discussions with the applicant, during the site inspection, it was mentioned that if external roads are to be utilised for haulage there may be a need for an additional access/egress point from Croppa Creek road. Discussions indicated that a possible second access/egress could be found along the northern boundary of the property at Bushes Access Road. However this is a private access road servicing the property "Bonny Ridge" and is possibly not to a standard that would cater for heavy vehicles, although site distances along Croppa

Creek Road are good. Negotiations between the property owner, Council and the applicant for road usage and maintenance will be required the use of this road should eventuate. The following map indicates the possible accesses requirement.

Proposed location of possible accesses along Croppa Creek Road

It is preferred that any quarried material be hauled, on-property, between the quarry site and the rail corridor and the proponent is encouraged to employ this method as this is the direction demonstrated by the proposed developments EIS. However, a condition will be included in the draft schedule of conditions applying the GDCP for the proposed development which shall cover all eventualities.

4.13 Waste, Chemicals and Hazardous Materials

Proponents Submission

Table 14 provides a summary of the waste types, controls and safeguards that would be applied to waste generated on the project site. Table 14 also identifies contingency management in the event of incidents which have the potential to result in pollution to the surrounding environment.

Table 14: Waste Control, Safeguards and Contingency Management

Waste Type	Storage	Disposal	Contingency
General solid waste (putrescible)	Covered bins will be located within the general area of the quarry office and amenities. Where bins would be located in open areas, they	Bins would be collected, and the contents disposed of at a licensed waste disposal facility.	In the event waste volumes exceed that able to be managed by local waste collection service, Quarry Management would arrange for private

	would be fitted with animal-proof lids.		delivery of waste to licensed landfill facility
General solid waste (recyclables)	Covered bins will be located within the general area of the quarry infrastructure for the collection of recyclable materials.	Bins would be collected, and transported to an appropriate recycling facility.	
General solid waste (non-putrescible)	Bin and designated adjoining area within general processing, stockpiling and office area.	Bins would be collected, and the contents disposed of at a licensed waste disposal facility.	
Waste oils and greases	Placed within bunded storage area.	Collected as required by a licensed waste contractor and transported to an appropriately licensed facility for recycling.	Any leakage, spillage or ground contamination would follow the spill management procedure included below.
Batteries	Used batteries would be placed within a covered and marked used battery storage area until removed from site.	Used batteries would be collected on a regular basis by an appropriate contractor and recycled.	The Quarry Management would arrange for private delivery if collection service unavailable.
Tyres	Tyres would be securely stored until removed from site.	Tyres would be removed from site for re-use elsewhere or recycling in accordance with the Resource Recovery Exemption (RRE) and Resource Recovery Order (RRO) for types issued under Part9 of POEO (Waste)j Regulation,	N/A
Scrap steel/metal	Stored in a specified area, as required.	Collected on a regular basis by a licensed scrap metal recycler.	The Quarry Management would arrange for private delivery if collection service unavailable.
Screened waste	Temporarily stockpiled within the extraction area.	As sufficient volumes stockpiled, these would be returned to the quarry as backfill and incorporated into the final landform.	In the event of runoff from these stockpiles creating a sedimentation hazard, additional bunds and other controls would be implemented in accordance with the Blue Book.

In the event of hydrocarbon leak or spill, the Quarry operator would implement the following spill management procedure:

1. Source Control: isolate the source of spill or leak and stop the leak by either maintenance or placing the item within or over the fuel/oil storage area.
2. Recovery: recover as much as possible at the source by pumping free hydrocarbon from the surface and excavating hydrocarbon-contaminated materials. Contaminated materials would be stockpiled on site under cover and on an impermeable surface eg. a high-density polyethylene sheet. This material would later be bio-remediated onsite and/or transported to an approved waste facility.
3. Remediation: transport the contaminated materials to a designated area within the project site (away from natural or created drainage) for onsite bioremediation or to a facility licensed to accept and treat hydrocarbon contaminated material.

It is recommended however, that a Waste Management Plan is prepared to further describe waste management procedures, protocols, monitoring and response to pollution incidents. The Waste Management Plan should be prepared in conjunction with a Pollution Incident Response Management Plan as required by the Environmental Protection Licence.

It is therefore assessed that the development as proposed, provides for appropriate waste management which reduces the risk of pollution or contamination to acceptably low levels.

Staff Comment

Staff agree with proponent's submission. A Waste Management Plan will be prepared and submitted prior to the operation of the proposed quarry. Conditions have been included in the draft schedule of conditions to manage and monitor the storage, application and disposal of waste materials.

4.14 Biosecurity

Proponents Submission

The primary source of biosecurity risk associated relates to the stockpiling or transportation of contaminants on vehicles, people, equipment and materials onto and off the Quarry site. The site specific risks, as relevant to plants, animals and community relate predominantly to the following:

- Introduction and spread of disease onto or from the Quarry site which could affect plant, animal or human health.
- Introduction, propagation and spread of weed species by vectors including vehicles and personnel moving on and off the Quarry site.
- Infestation of vermin and other pest species (and associated risk of disease associated with these vectors).
- Reduced air quality and potential for respiratory complaints.

For each of the sources of risk identified, Table 15 identifies specific risk associated with each of the risk sources and identifies the management measures proposed to eliminate or reduce these risks and assess the residual risk.

Table 15: Biosecurity Risk Ranking

Risk Source	Specific Risk	Risk Management Measures	Likelihood	Consequence	Risk
Transportation of contaminants on vehicles, people, equipment or materials onto and off the Quarry site.	Introduction of disease onto or from the Quarry Site	Implement "come clean – go clean" principles for all vehicles / personnel moving onto and off the Quarry site, including: - Changing / cleaning footwear - Maintaining personal hygiene - Cleaning of vehicle and equipment.	Rare	Moderate	Low
	Introduction, propagation and spread of weed species.	Weed spraying will be undertaken where there are signs of weeds.	Unlikely	Minor	Low
Dispersal of dust, organic matter or other particulate matter from stockpiles	Transfer of weed species propagules onto and beyond the Quarry site	Water would be used to suppress any dust / particulate matter dispersion.	Unlikely	Minor	Low
	Increase in respirable complaints of local land owners and other community members.		Rare	Minor	Negligible

On consideration of the sources of risk and proposed management and mitigation measures to be imposed by the Quarry management, the proposal presents a negligible to low risk of specific biosecurity related impacts on plants, animals and the community. These risks would be effectively managed by the proposed monitoring, management and contingency measures proposed. On the basis of this reduced risk level it is not necessary for a biosecurity management plan to be prepared.

Staff Comment

Council agrees with comments made. A condition has been included in the draft schedule of conditions referring to the management of weeds and pest.

4.15 Land Contamination

Proponents Submission

The subject land has been historically developed for agricultural purposes. Potentially contaminating activities have been limited to grazing, cultivation and other agriculturally related activities. Whilst some chemicals, including herbicides are typically utilised as part of normal farming practices, these chemicals are generally unstable, volatile products which biodegrade over time. If these chemicals are present, current concentrations of chemical residue would be negligible and would not impact the proposed material change of use. No visible contamination was present on the subject site in the form of old sheep dips, dump sites or spray races. Accordingly, it was determined that no further investigation into land contamination was required.

Post-Closure Rehabilitation

A site inspection by suitable qualified persons is to be undertaken as soon as practicable following the closure of quarry operations on site, to identify any potentially contaminated sites.

If the site assessment identifies potentially contaminated sites, the following steps will be undertaken:

- Detailed site assessment and testing to characterise the nature and extent of contamination; and
- Implementation of contamination remediation measures to isolate the impacts of and treat the contaminated site, such that the site is stable and does not pose a risk to human health or welfare, or to the surrounding environmental values.

Staff Comment

Council agrees with comments made and a site inspection by Council's Planning Officer concurs with the proponents findings.

4.16 Rehabilitation

Proponents Submission

Following completion of quarrying activities, rehabilitation of the site will be undertaken in accordance with the site's draft Rehabilitation Plan (included as Appendix 9). *(see Annexure 4)*

The following objective of the proposal with respect to land capability is to return those areas of the final landform designated for future agricultural use to soil and land capability Class 6 or greater:

- The area designated as the primary quarry with existing slopes >15º would be rehabilitated to achieve LSC Class 5-6
- The area designated as the secondary quarry with slope 5º to 10º would be rehabilitated to achieve LSC Class 5.

The proposed management controls to be implement would ensure that the final landform and potential for future agricultural activities is note compromised by excessive erosion, pollution or restricted availability to water.

The Primary Quarry Site

The final landform to be taken by the primary quarry is strongly dependent upon the quantity of material to be extracted. At the time of writing, the final quantity of material to be extracted from the primary quarry has not been finalised. It is considered that there are two likely possible final quarry landforms. These include:

- Flat Landscape; or
- Localised Depression

Flat Landscape

In the event that the primary quarry site is mostly flat/only sightly depressed following cessation of quarry operations, the site will be rehabilitated by replacing soil on site in a manner such that the final landform is largely flat. The site may subsequently be utilised for crop production as part of existing agricultural operations at Tikitere.

Localised Depression

If the landform of the quarry is significantly depressed below surrounding ground level, the site will be rehabilitated to ensure that the faces of the quarry should be no steeper than horizontal to vertical ration 3:1. This is because steep slopes have an increased risk of erosion and are difficult to revegetate.

Rehabilitating steep slopes to gentler slopes may be achieved by:

- Replacing soil on site to fill quarry voids; and/or
- Planned excavation of steep slopes to achieve gentler gradients.

If the site is a localised depression, the site will capture and hold surface water in situ. There is potential that the site be utilised as an on-farm water storage.

Secondary Quarry Site

The landform of the second quarry is anticipated to be that of a localised depression. Similarly, to the primary quarry site, the faces of the quarry should be no steeper than a horizontal to vertical ratio 3:1. Rehabilitation of steep slopes to gentler slopes may be achieved through means outlined above.

The landscape surrounding the quarry supports an endangered ecological community, is characterised by steep hills and overall in unsuitable for agricultural production. The secondary quarry will therefore be revegetated upon conclusion of quarry activities.

During the course of quarry operations, the site will be progressively rehabilitated as far as is practicable to minimise the extent of the disturbed quarry footprint at any given time. Progressive rehabilitation may either include immediate, temporary stabilisation of worked sections, or initiation of permanent rehabilitation procedures of completed quarry sections.

All noxious weed species, environmental weeds and Weeds of National Significance are to be manager across the site during the course of quarry operations. Proactive weed management strategies during the course of quarry operations will minimise the need for reactive weed management strategy following the closure and final rehabilitation of the quarry.

Post-Closure Rehabilitation Procedures

A site inspection by suitable qualified persons is to be undertaken as soon as practicable following the closure of quarry operations on site, to identify any potentially contaminated sites.

Existing fencing surrounding the quarry site is to remain in place during the rehabilitation process, to exclude domestic stock and minimise potential site disturbance during the revegetation process.

Only endemic soil is to be utilised for site rehabilitation. Endemic soil is taken to mean soil that was stripped from the site at the commencement of quarry operations, or soil sourced adjacent to the quarry site as required following the closure of quarry operations (which may be required to smooth the final landform). The use of endemic soil improves the likelihood of rehabilitation success, as is consistent with natural soil characteristics on site, and enables utilisation and propagation of endemic seed banks within the soil.

Soil replacement should occur in reverse order to stripping, ie subsoil should be replaced prior to topsoil.

An alkaline (non-acidifying) fertiliser should be added to the respread soil to assist in any nutrient deficiencies as required.

Revegetation

Primary Quarry Site - Flat Landscape

The site will be utilised for crop production following the conclusion of quarry operations. Replacement soil is to be seeded with a cover species during the course of revegetation works, to ensure stabilisation of the soil surface and protect the landscape from erosion, and to maintain the biota of the topsoil to preserve soil fertility. Replacement subsoil may be mix (as appropriate) with sands and gravels left over from quarry operations.

Primary Quarry Site - Localised Depression

The site will be utilised as an on-site storage. The depression is to be rehabilitated such that its surface is of low permeability, to minimise water loss via deep drainage. This may require lining the base of the depression with clay soils sourced from soil stockpiles.

The edges of the depression will be revegetated as appropriate with a mixture of native and introduced pasture species, with the potential to include native trees and shrubs where appropriate. Placement of trees and shrubs is to be managed such that the storage site is easily accessible.

Secondary Quarry

The secondary quarry site will be revegetated to support native vegetation upon conclusion of quarry activities. To this end, soil will be replaced on site and will be fertilised and watered as required to encourage propagation of the natural seed bank stored within the top soil that is replaced on site.

Additional planting of seeds/saplings (as appropriate) will be undertaken to complement natural germination of seeds within the soil. Species to be planted as part of the revegetation process are to be consistent with local species present in the adjacent SVET EEC. A list of appropriate species is present in Appendix A. *(see Annexure 4)*

Further information regarding revegetation procedures can be found in the associated Vegetation Management Plan. *(see Annexure 4)*

It is recognised that provision of adequate financial resources is critical to the success of this Rehabilitation Plan. To this end, the Proponent has committed to a minimum of $20,000 to be set aside over the course of the development process, to be contributed to supporting rehabilitation efforts. It is considered that the fund will be adequate to ensure that the quarry sites will be successfully rehabilitated at the conclusion of quarry activities.

The rehabilitation process will be considered to have succeeded when:

- A self-sustaining vegetation community has been established;
- The landform of the site is stable; and
- The site may be utilised safely for its intended post-rehabilitation purpose.

Staff Comment

The rehabilitation of the site to Class 5-6 final landform, in addition the commitment to the revegetation of the site with native vegetation consistent with the removed SEVT, is considered to be satisfactory. However, it should be noted that the budget set aside for the rehabilitation works of $20,000, would seem to be quiet conservative when considering the amount of work to be carried out including the initial landform establishment, revegetation and the ongoing maintenance of the site to ensure a self-sustaining outcome.

It is recommended that a condition be placed in the draft schedule of conditions that stresses the need for sufficient funds to be made available to achieve the outcomes stated in the EIS (see Annexure 3) and the associated Rehabilitation Plan (see Annexure 4).

4.17 Biophysical

Proponents Submission

The intention of the expansion of quarry operations at Tikitere is to supply materials required for the proposed Inland Rail Project, which will provide a link between Brisbane and

Melbourne ports through inland NSW. The upgrade works are to be undertaken by the Australian Rail Track Corporation (ARTC).

Initial quantities determined by the ARTC suggest a requirement for a minimum of 1,000,000 cubic metres of rail ballast material and potential up to 500,000 tonnes of manufactured dense graded base course (DGB) gravel for the reconstruction of the rail base beneath the ballast.

A resource assessment conducted at Tikitere (Appendix 3) *(see Annexure 4)* indicates that the proposed quarry has the potential to produce up to 480,000m^3 (1,445,280 tonnes) of ballast material. The quarry is therefore capable of satisfying the ARTC's request for material to support the reconstruction of the railway.

Tikitere is located approximately 200m from the railway line. The proximity of the quarry means that quarry materials would be able to be delivered directly from the quarry site to the railway for use in construction via internal property roads, with minimal use of the public road network. The proximity of the quarry to the railway development is suitable in that it minimises the potential impact of the proposed development on the surrounding locality, by minimising the impacts of the development on the public road network.

Tikitere is therefore suitable for the development of the proposed quarry on biophysical grounds, as the site is capable of producing ballast and material to satisfy construction requirements of the ARTC, and that the site is located in close proximity to the construction site.

Staff Comment

No further comments are offered. Staff agrees with assessment made on the suitability of the resource on the proposed site and the comments made in the EIS (see Annexure 3) and the associated Resource Assessment (see Annexure 4).

4.18 Social Impacts

Proponents Submission

Identification of the scope of the potential social impact of the proposed development has been undertaken with regards to scoping methodology outlined in the Social Impact Assessment Guideline (2017) (SIA Guideline), published by the Department of Planning and Environment.

The proposed development will produce significant benefits through increased employment. Employment produces a range of social benefits, including stabilisation of rural populations and prevention of the out-migration of younger demographics which are often required to leave rural areas in search of employment opportunities.

Increased employment provision will also increase the provision of industry training opportunities within the region. Operation of the quarry, in conjunction with construction of the railway corridor, will stimulate development in a range of ancillary industries, including construction, engineering, mechanics, transport and project management. Provision of industry experience opportunities will benefit local and

regional populations, by improving the knowledge and capability of local populations to enable future establishment and expansion of successful and specialist industries.

The social impact assessment checklist, and associated assessment with regards to the potential impact of the proposed development, are presented in Table 16.

Table 16: Checklist of Matters of Potential Social Impact Significance

Matters		Key Links to Social Impacts	Risk of Impact Without Mitigation	Nature of Impact	Explanation
Amenity	Acoustic	Way of life; Surroundings	Likely	Negative	Noise generated by machinery, heavy vehicle movements or quarry activities may impact on neighbouring properties, particularly rural residences.
	Visual		Unlikely	Negative	Quarry site will be visible from the rail corridor, yet will not be visible from public roads or surrounding residences. By the time that the rail line is operational, the site will be undergoing rehabilitation works, and will not significantly impact regional amenity for rail passengers.
	Odour		N/A		Development will not produce strong odour.
	Microclimate		N/A		Development will not significantly impact local microclimate.
Access	Access to property	Way of life; Access to infrastructure, services and facilities; Personal and property rights	N/A		Development will not impact access to neighbouring properties.
	Utilities and public transport		N/A		School bus routes operate in district which utilise public roads. School buses will not be impacted by development. No other public transport occurs within the region.
	Road		Unlikely	Negative	Traffic associated with the proposed development will involve transport of equipment on site at the commencement of the development. Once operational, the development will not generate traffic as quarry materials will be transported to the railway construction site via internal roads.
	Rail		Likely	Positive	The proposed development will support the construction of the Inland Rail project.
Built environment	Public domain	Community; Access to infrastructure, services and facilities; Surroundings; Personal and property rights	N/A		The development will be confined to private property.
	Public infrastructure		N/A		The development will not impact upon public infrastructure other than roads.
	Other built assets		N/A		The development will not impact upon public infrastructure.
Heritage	Natural	Way of life; Community; Culture; Surroundings	N/A		The subject site does not possess significant natural heritage values.
	Cultural		N/A		The subject site does not possess European cultural heritage values.
	Aboriginal cultural		Likely	Negative	The site has the potential to possess Aboriginal cultural heritage values.
	Built		N/A		The site does not possess built heritage values.
Community	Health		Likely	Negative	There is a potential for workers to be injured on site during quarry operations.
	Safety	Health and wellbeing; Surroundings; Way of life; Access to infrastructure, services and facilities; Community; Culture; Personal and property rights	Likely	Negative	There is a potential for workers to be injured on site during quarry operations.
	Services and facilities		N/A		The development does not offer or impact public services or facilities.
	Cohesion, capital and resilience		Likely	Positive	The development will provide employment and training opportunities for local communities, which will support the resilience and capability of the local workforce.
	Housing		N/A		The proposed development will not impact upon housing quality or supply.
Economic	Natural resource use	Way of life; Surroundings; Personal and property rights	Likely	Positive	The quarry will utilise available natural resources in a sustainable fashion to support improvements to regional infrastructure through construction of the Inland Rail Project.
	Livelihood		Likely	Positive	The quarry will provide employment and training opportunities for local populations.
	Opportunity cost		N/A		The development will not negatively impact upon the productivity of surrounding region.
Air	Particulate matter, gases, atmospheric emissions	Surroundings	Likely	Negative	Dust generated by machinery, heavy vehicle movements or quarry activities may impact on neighbouring properties, particularly rural residences.
Biodiversity	Native vegetation and fauna		Likely	Negative	Establishment of the quarry will require the removal of some existing vegetation on site.
Land	Stability/ structure, soil chemistry, land capability, topography		Likely	Negative	Quarry operations will disrupt the ground surface and have the potential to cause soil erosion.
Water	Quality, availability, hydrological flows		Likely	Negative	Erosion from site has the potential to result in sedimentation of waterways, thus decreasing water quality. Dust mitigation measures will also require use of water for dust suppression activities.

With implementation of appropriate mitigation measures, it is considered that the proposed development will not produce significant negative social impacts within the region. Any negative impacts which may occur are considered to be temporary and of minor consequence.

Staff Comment

The proposed development has the potential to generate a positive economic impact on the surrounding locality by providing additional employment opportunities. In addition, the proposal has the potential to increase economic activity in the long term by supporting the reconstruction of the rail line. The reactivation of the inland rail line will ultimately provide an alternative and more economic means of transporting goods and material between Melbourne and Brisbane than heavy vehicles and it is hope will relieve the local road network of at least some heavy vehicle traffic and road maintenance.

However, in the event that the facility is managed in a manner which does not minimise potential noise and dust nuisance, the proposal may have a social impact on residential dwelling-houses in the immediate locality.

Council is not in the position to determine whether the proposed development will have either a positive or detrimental effect on surrounding property values.

It is considered that any negative social impacts unable to be avoided or mitigated to an acceptable level will be temporary and minor in nature. The draft conditions of consent will contain provisions for complaint handling and recording.

4.19 Economic Impacts

Proponents Submission

Operation of the quarry would involve a capital investment in the order of $80,000. However, the costs associated with the extraction and processing of material are expected to cost up to 3.5 million. This level of expenditure within the region is significant. Upon approval, it is anticipated that quarry operations will commence immediately and continue for approximately 3 years, after which point the site will be rehabilitated in accordance with best practice rehabilitation management. During its period of operation, the quarry is anticipated to support 5-6 full time equivalent (FTE) positions on site. Where practicable, staff are to be sourced from the local area, increasing rural employment opportunities within the wider region. Increased employment will produce positive flow-on effects within the local area, through increased consumer confidence and spending throughout the regional economy.

Approval of the quarry will also assist in enabling completion of the Inland Rail Project. The Inland Rail Project is a significant project, aimed at connecting Brisbane and Melbourne ports through a 1,700km inland rail corridor. Construction of the rail corridor will produce significant economic benefits for the wider region. It is anticipated that the Inland Rail Project will:

- Cost $10bn over 10 years, and will produce a long-term economic benefit to cost ratio of 2.62;
- Increase Australia's GDP by $16bn during construction and first 50 years of operation;
- Create 26,000 new jobs at the peak of construction, and an average of 700 additional jobs per year over the entire period;
- Reduce inter-capital rail freight cost between Melbourne and Brisbane by $10/tonne; and

- Significantly improve the overall efficiency and safety of the freight network between Melbourne and Brisbane.

The close proximity of the subject site to the proposed rail corridor will contribute to reducing the construction costs of the Inland Rail Project, increasing the efficiency of the project and therefor improving the overall economic benefits of the project for the taxpayer.

The proposed quarry is there justifiable on economic grounds, as it will deliver significant economic benefit to the local region, in addition to improving the economic efficiency and benefits of the Inland Rail Project.

Staff Comment

As also stated in s 4.19 above the proposed development has the potential to generate a positive economic impact on the surrounding locality by providing additional employment opportunities and supporting the Inland Rail Project. In the long term, once the inland rail line is re-opened, the potential ripple effect in providing rail infrastructure may enhance the local agricultural industry by providing economical transportation of materials and greater accessibility to markets. Another economic saving is also anticipated in the long run as a result of the rail re-opening and that is less road maintenance and heavy vehicle traffic on local and state roads.

Council is not in the position to determine whether the proposed development will have either a positive or detrimental effect on surrounding property values.

4.20 Cumulative Impacts

Proponents Submission

Potential cumulative impacts are those which are generated by the combined impacts on the local environment as a consequence of the project, together with other developments of a similar nature (both existing and proposed). For the purposes of the EIS, the assessment of cumulative impacts considers the impacts of existing and proposed extractive industry development in the local area.

A small number of quarries currently exist within the wider region. The closest of these is Runnymede Quarry, which is located on Gil Gil Creek Road approximately 30km south west of the proposed development. Feedlot enterprises are also scattered throughout the region. The Myola Feedlot has a maximum capacity of 20,000 head of cattle and is located approximately 7km south of the proposed development site.

Given the minimal potential for cumulative impacts to occur, it was concluded that is no further assessment was required.

Staff Comment

The quarry proposal's cumulative impact will be negligible as the main issues have been identified by the applicant and the government agencies, assessed and mitigation and control measures proposed. These have been included as conditions of consent.

That being said if the operation of the quarry, including haulage activity, is in accordance with "good management practices" there still may be at times some minor loss of amenity for surrounding rural residential users in respect of noise, dust and vibration.

4.21 Ecologically Sustainable Development

Proponents Submission

Ecologically Sustainable Development (ESD) is defined as:

> *"Using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased (DPM 1990)."*

ESD is integrated into NSW environmental legislation and government policy. Schedule 2 of the EPA Regulation list four guiding principles to assist in achieving ESD.

Precautionary Principle

Schedule 2 of the EPA Regulation notes that application of the precautionary principle in public and private decision making processes should be guided by:

i. Careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment, and
ii. An assessment of the risk-weighted consequences of various options

The proposed Quarry will be developed in accordance with relevant Guidelines. Providing the Quarry is operated as described in this EIS, the development can operate as a sustainable short-term activity. No substantial threats of serious or irreversible environmental harm were identified. In addition, environmental monitoring will be used to confirm that the Quarry is operating in an environmentally sustainable way. Once the resource is extracted and/or the demand for material has concluded the Quarry will be shut-down and the site rehabilitated.

Intergenerational Equity

It is not expected that the quarry will have any significant adverse environment effects due to the suitability of the site and the proposed high standards of design, construction and management. Hence the proposed quarry provides for 'intergenerational equity'.

Biological Diversity and Ecological Integrity

The proposed development is to occur on areas of highly degraded habitat and areas currently used for cultivation. The required vegetation clearing will be undertaken to the minimum extent possible and adjoining areas of remnant vegetation will be preserved in their current condition. Biological diversity should therefore be maintained at the current level as the Quarries are considered to have minimal impact on the surrounding natural habitat.

Valuation and Pricing of Environmental Resources

Protection of amenity and natural resources has been considered throughout the quarry planning phase. The proposed environmental controls will add significant cost to the proposed development and they will provide an opportunity to enhance the existing environmental resources. The development has therefore been developed in accordance with the polluter pays principle, in that environmental management and mitigation measures associated with the development have been funded by the Proponent.

In conclusion, the proposed quarry can be justified on biophysical, economic, social grounds in compliance with the principles of ecologically sustainable development.

Staff Comment

Council agrees with comments made.

5. S.4.15 (1) (c) The suitability of the site for the development

The proposed quarry area is located within a highly altered landscape previously used for farming activity and the areas of vegetation to be removed are small, isolated and degraded. Potential impacts have been identified along with proposed mitigation measures will ensure that there will be as little environmental impact as possible.

It is predicted that proposed distances from the subject site to potentially impacted residents provide for an effective buffer for noise, vibration, dust and visibility impact.

According to Council's knowledge the property is not subject to local flooding, subsidence, slip or bush fire.

The development proposal before the Panel will not have an effect on conserving and using prime / productive agricultural land.

The site is considered suitable for the proposed development.

6. S.4.15 (1) (d) Any submission made in accordance with this Act or the Regulations.

The proposed development was advertised and notified in accordance with the Environmental Planning and Assessment Regulation 2000. Adjoining landowners within a 500 metre buffer of the proposed development were directly notified. The proposed development was also internally and externally referred to the following:

- Environmental Protection Authority
- NSW Office of Primary Industries
- Roads & Maritime Services
- Office of Environment & Heritage
- Technical Services Department (Internal Referral)

One public submission was received by Council in relation to this proposal, one internal referral response and five external referral responses including Department of Primary

Industries – Agriculture, Department of Industry – Water, NSW Department Environmental Protection Authority, Roads and Maritime Services and NSW Office of Environment and Heritage. Those that requested that their conditions be included with Council's conditions of approval have been included in Annexure 6.

The concerns of the public submission are discussed in section 5 of the report which also includes the applicant's response to those concerns. A copy of the submission and the applicant's response has been included at Annexure 5.

Where appropriate conditions have be included with Council's Schedule of Conditions, alleviating or mitigating the matters raised in the above submissions.

7. S.4.15 (1) (e) The public interest

Federal, State and Local Government Interests and Community Interests.

Proponents Submission

The proposed Quarry will be developed in accordance with relevant Guidelines. Providing the Quarry is operated as described in this EIS, the development can operate as a sustainable short-term activity. No substantial threats of serious or irreversible environmental harm were identified. In addition, environmental monitoring will be used to confirm that the Quarry is operating in an environmentally sustainable way. Once the resource is extracted and/or the demand for material has concluded the Quarry will be shut-down and the site rehabilitate.

Staff Comment

There are no submissions received by Council directly relating to public interest.

Submissions made by the public, state agencies and other groups/organisations have been assessed and addressed within the report and draft schedule of conditions. The approval of the proposed development will not be contrary to the public interest, subject to implementation of the recommended conditions of consent.