SMK

CONSULTANTS

surveying – irrigation – environmental – planning
ABN 63 061 919 003

39 Frome Street
PO Box 774
Moree NSW 2400
Ph 02 6752 1021
Fax 02 6752 5070
admin@smk.com.au

www.smk.com.au





Test of Significance & Koala Habitat Assessment

Glencairn Quarry

Glencairn Quarry Supplies Pty Ltd
746 Mellburra Road, Narrabri, NSW 2390

August 2020

The publication of this document has been developed by SMK Consultants Pty Ltd.

SMK

CONSULTANTS

surveying – irrigation – environmental – planning

ABN 63 061 919 003

DOCUMENT CONTROL

Project Name	Test of Significance
Proponent	Glencairn Quarry Supplies Pty Ltd
Project Reference	20-260
Report Number	20-260 – Test of Significance & Koala Habitat Assessment
Prepared for	Martin Dunlop 746 Mellburra Road Narrabri NSW 2390 E: rodney.eams@outlook.com Ph: 0427 864 783
Prepared by	SMK Consultants PO Box 774 39 Frome Street Moree NSW 2400
Contact	Marie Duffy Ph: (02) 6752 1021 E: marie@smk.com.au

Author	
	Marie Duffy
Name	Marie Duffy BSc. MSc.
Position	Environment & Resource Consultant
Company	SMK Consultants

Reviewed By	
	Hayley Bouliopoulos
Name	Hayley Bouliopoulos BB. BSc.
Position	Environment & Resource Consultant
Company	SMK Consultants

Revision History			
Version Number	Date	Authority	Details
0	August 2020	Marie Duffy (SMK Consultants)	Initial Issue

TABLE OF CONTENTS

1 Introduction

1.1 The Proposal

SMK Consultants Pty Limited (trading as SMK Consultants) was engaged by Glencairn Quarry Supplies Pty Ltd (the Applicant) to prepare a Test of Significance and an assessment of the subject site per the *SEPP Koala Habitat Protection 2019* (KHP SEPP) as requested by Narrabri Shire Council in relation to the development application (DA2020/73). It is noted that the main body of this document, Appendix 1 and Appendix 2 constitute the Test of Significance for the proposed development, while Appendix 3 constitutes the assessment of the site as per the KHP SEPP.

The proposed development involves the establishment of a small gravel quarry on Lot 24 in Deposited Plan 753920, within the property of 'Glencairn'. There is an existing quarry on the site, and the proposed development entails the 'redevelopment' of the site, incorporating the northernmost section of the existing development and extending northwards. The footprint of the proposed quarry development is approximately 1.9 Ha.

This report addresses the following points, listed under Section 7.2 of the Biodiversity Conservation Act 2016 (BC Act), in order to determine whether the development is likely to significantly affect threatened species:

1) Whether the development is likely to significantly affect threatened species or ecological communities, or their habitats;
2) Whether the development exceeds the biodiversity offsets scheme threshold if the biodiversity offsets scheme applies to the impacts of the development on biodiversity value; and
3) Whether the development is to be carried out in a declared area of outstanding biodiversity value.

The relevant determining authority is the Narrabri Shire Council.

1.2 Legislative Context

Section 7.2 of the *Biodiversity Conservation Act 2016* (BC Act) requires that the significance of the impact of a development on threatened species and endangered ecological communities is assessed using a five-part test known as a Test of Significance. Where a significant impact is likely to occur, a Species Impact Statement (SIS) must be prepared in accordance with the Director-General's requirements or a Biodiversity Development Assessment Report (BDAR) must be prepared by an accredited assessor in accordance with the Biodiversity Assessment Method (BAM).

The Test of Significance in this report has been prepared in accordance with requirements under Section 7.3 of the BC Act. It includes an assessment of the development against five

parameters to determine whether there is likely to be a significant effect on the threatened species, ecological communities, or their habitats, which are recorded at or likely to occur at the site. The assessment has been conducted in accordance with the Threatened Species Test of Significance Guidelines (OEH 2018). It investigates the effects of the development proposal on threatened species, populations and ecological communities, as listed under the BC Act, pursuant to Section 1.7 of the *Environmental Planning & Assessment Act 1979* (EPA Act).

Section 7.2. of the BC Act also requires the determination of whether the developments exceeds the Biodiversity Offsets Scheme (BOS) threshold, and whether the development is to be carried out in a declared area of outstanding biodiversity value.

1.3 Proposed Project Details

The proposal entails the establishment of a gravel quarry over an area of approximately 1.9 Ha. The quarry is located on a ridge, which rises to 456m ASL at its highest point, within the property of Glencairn. Glencairn is located within the Narrabri Shire approximately 30 kilometres north-east of the township of Narrabri and 28 kilometres south-east of Bellata. The development will incorporate an existing sediment pond and the proposed works will likely involve the following activities:

- Relocation of existing overburden stockpiles within the footprint area to designated stockpiling areas;
- Stripping of vegetation, topsoil and overburden over the footprint area;
- Extraction of gravel materials using excavators;
- Crushing and screening the material using mobile plant;
- Stockpiling and loading of materials;
- Transporting of materials off site;
- Rehabilitating the site upon cessation of activities.

At a local and regional scale, significant swathes of forest and woodland associated with the Nandewar Range have been retained and are protected under the National Parks and Wildlife Act 1974. However, fertile alluvial plains in the region have been extensively been cleared to facilitate the development of land for agricultural production.

The majority of the proposed works will take place on land which was cleared of native vegetation in around 2015. The land has since been grazed intermittently and presently supports regrowth shrubby vegetation as well as existing overburden stockpiles which are associated with the existing quarry at Glencairn. The southernmost section of the proposed extraction area has previously been cleared of vegetation and topsoil and is adjacent the northern batter of the existing development. The existing sediment pond, which has a capacity of 2.9ML has, will be retained as a sediment and erosion control measure.

Land immediately to the north, east and west of the proposed development has all been historically cleared and presently supports regrowth vegetation, with the existing quarry to the south. In the wider area, open woodland and dry sclerophyll forest vegetation is present west of the proposed development, in the vicinity of the existing quarry and the access road. Much of the remainder of the property has been extensively cleared to facilitate the production of dryland crops such as wheat, with remnant vegetation having been retained on hilly terrain in the north and westernmost sections of the property.

The following definitions are used throughout this report to refer to locations in the proposal area:

- The 'subject site' describes all areas that would be directly impacted by the works. This includes the footprint of the development, including the proposed extraction area, the material processing area, stockpiles, the access road and the sediment dam, as well as a 10m buffer zone around the perimeter of the proposal;
- The 'study area' includes the site and the areas adjacent that may be indirectly impacted by the proposed works. This includes the area of vegetation in the vicinity of the proposed development, including on Lot 24 in DP 253920 and the adjacent Lot 15 in DP 753928.
- The 'search area' refers to a 10-kilometre area surrounding the proposal for the purpose of database searches.

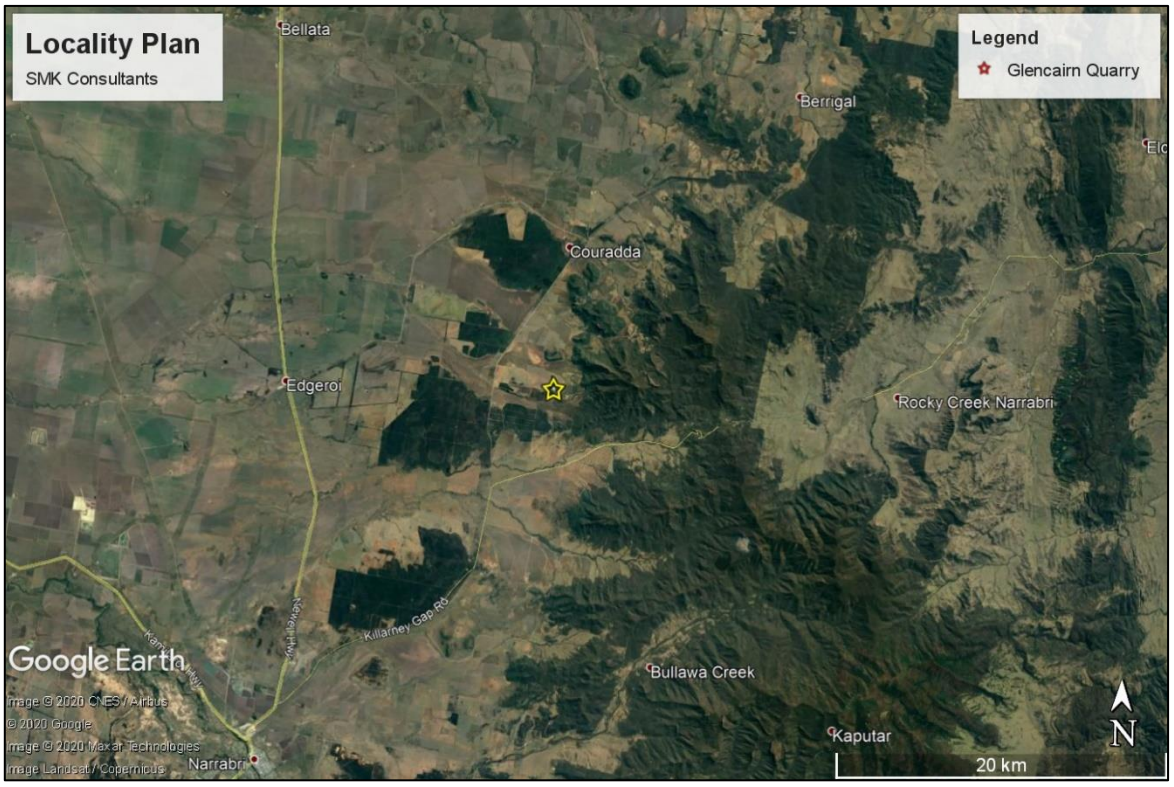

Figure 1: Locality Plan

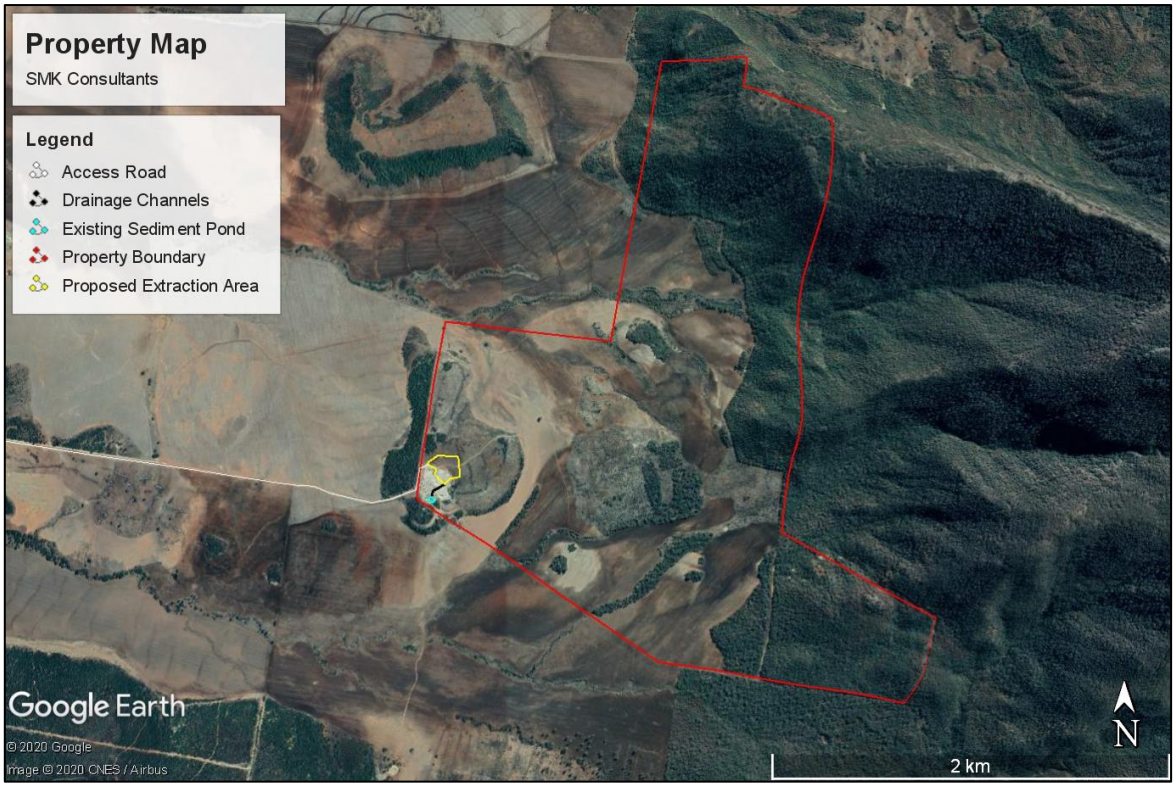

Figure 2: Proposed Development relative to Property Boundary

1.4 Biodiversity Offset Scheme Thresholds

The Biodiversity Offsets Scheme (BOS) Threshold establishes a risk-based approach to identifying developments that are likely to have a significant impact on biodiversity. The *Biodiversity Conservation Regulation 2017* sets out threshold levels for when the BOS will be triggered.

Table 1: Results of the Biodiversity Offset Scheme (BOS) Entry Threshold Report

		BAM Required?
Project area	0 ha	
Minimum lot size Method	LEP	
Minimum Lot	100 ha	
Area threshold	1 ha	
Area of native vegetation to be disturbed	0 ha	No
Impact on Biodiversity Values Land Map	No	No

The proposed development is sited on land that was cleared of native vegetation between 1 January 1990 and 25 August 2017, therefore the regrowth in the subject site is not classified as native vegetation. Therefore, the BOS threshold is not exceeded, and the proposal does not require a BDAR. However, the proposed project is still required to be assessed to

determine whether the development is "likely to significantly affect threatened species" as determined under the test in Section 7.3 of the Biodiversity Conservation Act 2016. This assessment has been provided in Section 5 of this report.

2 Site Context

2.1 IBRA Bioregions and Subregions

The current version of IBRA (Version 7, 2012) classifies Australia's landscapes into 89 large geographically distinct bioregions and 419 subregions based on common climate, geology, landform, native vegetation and species information. The proposal area is located within the Nandewar bioregion and the Kaputar IBRA Subregion.

2.2 NSW Landscape Regions (Mitchell Landscapes)

The proposal area is located within the Kaputar Slopes Mitchell Landscape.

2.3 Native Vegetation and Connectivity

The eastern section of Glencairn retains approximately 180 Hectares of quality native vegetation which is contiguous with that of Mount Kaputar and the greater Nandewar Range. The Nandewar Range encompasses an area of approximately 1100 square kilometres, with good quality and relatively intact vegetation over most of the area. The remainder of the Lot has been mostly cleared of native vegetation, with small islands remaining in the centre and south of the lot. The western section, in which the quarry is located, has been completely cleared of native vegetation. A riparian vegetation corridor is also present along the Nundi Creek, which flows in an east-west direction approximately 692m north of the proposed development.

At a regional level, the landscape retains significant areas of remnant vegetation, in particular over the Nandewar Range to the east of the proposed development and smaller swathes of forestry and woodland to the west along the Mellburra Road. Further west, land has been heavily cleared for agriculture development with narrow strips of riparian habitat persisting along waterways.

2.4 Rivers, Streams and Wetlands

The Nundi Creek enters the property in the north-west of Lot 24 DP753920, flowing west through the property and forming a confluence with Ten Mile Creek approximately 13 kilometres north west of the proposed development. Two unnamed creeks rise to the south of the proposed development and a third flows through the property in an east-west direction. All of these creeks merge downstream of Lot 24 in DP 753920, eventually merging with the Nundi Creek.

2.5 National Parks and Nature Reserves

There are several National Parks and State Conservation Areas in the region including Moema National Park, Mount Kaputar National Park, Bobbiwaa State Conservation Area and Killarney State Conservation Area. The closest to the site is Couradda National Park, located approximately 7.5 kilometres north-west of the site.

2.6 Areas of Outstanding Biodiversity Value

No declared area of outstanding biodiversity value occurs within the study area.

3 Methodology

3.1 Database Searches and Literature Review

A desktop assessment included searches of databases and a review of literature relevant to the site and local area, particularly:

- Office of Environment and Heritage (OEH) Atlas of NSW Wildlife database (licensed) for records of threatened species and endangered ecological communities which have been recorded within a 10-kilometre radius (locality) of the subject site (accessed June 2020);
- NSW Vegetation Information System (VIS) classification database (OEH, 2018).

3.2 Field Survey

A flora and fauna site assessment was conducted on the 29th July 2020. Vegetation within the Lot was assessed with a focus on the vegetation within the proposed development footprint and the remnant vegetation to the west of the proposal, which is also adjacent to the access road to the proposal. Assessment was carried out with a view to determining if any constraints are present within the site and in adjacent areas that may be subjected to direct or indirect impacts.

Field assessment included a random meander of the study area searching for threatened flora with the potential to occur, as per the 'Random Meander Technique' described by Cropper (1993) as well as opportunistic searches for fauna, and signs of mammal use. A search was also carried out for habitat trees (individuals with trees hollow openings which may be used by species such as microchiropteran bats, possums, parrots and owls), and an opportunistic survey of all fauna based on visual or aerial observations.

The availability of habitat on site was assessed using a number of factors including:

- Structural and floral diversity;
- Occurrence and extent of habitat types in the general vicinity;
- Continuity with similar habitat adjacent to the site, or connection with similar habitat off site by way of corridors;
- Key habitat features such as tree hollows, water bodies, crevices and rocky areas;
- Degree of disturbance and degradation; and
- Topographic features such as aspect and slope.

This information was used to evaluate the site as potential habitat for each of the threatened species considered and assign each species with a rating based on their likelihood to occur within the subject site. The 'likelihood of occurrence' categories are detailed in Table 3. The habitat assessment is provided in Appendix B. Species assigned

with a rating of 'Moderate' or higher and are considered potentially impacted by the proposed works have been considered further under relevant legislation within the assessment of significance provided in Section 6.

Table 2: Likelihood of Occurrence Criteria

Likelihood Rating	Criteria
Known	The species was recorded within the study area during site surveys.
High	It is likely that a species would inhabit or utilise habitat within the subject site. Criteria for this category may include: • Species recently and/or regularly recorded in contiguous or nearby habitat; • High quality habitat types or resources present within study area; • Species is known or likely to maintain a resident population surrounding the study area; and • Species is known or likely to visit during migration or seasonal availability of resources.
Moderate	Potential habitat for a species occurs within the subject site. Criteria for this category may include: • Species previously recorded in contiguous habitat albeit not recently (>10 years); • Poor quality, depauperate or modified habitat types and/or resources present within study area; • Species has potential to utilise habitat during migration or seasonal availability of resources; and • Cryptic flora species with potential habitat available within the subject site that have not been seasonally targeted by surveys.
Low	It is unlikely that the species inhabits the area and would likely be considered a transient visitor if ever encountered. Criteria for this category may include: • The subject site or study area lacks specific habitat types or resources required by the species; • The subject site is beyond the current distribution of the species or is isolated from known populations; • Non-cryptic flora species that were found to be absent during targeted surveys; and • The subject site only contains common habitat which would not be considered important for the local survival of a threatened species.
Unlikely	The habitat within subject site and study area is unsuitable for the species.

It is noted that the effectiveness of a survey detecting a given species is influenced by a range of factors such as seasonal migration and seasonal flowering periods. Additional limitations include weather conditions (some species may go through cycles of activity related to specific weather conditions, for example some microchiropteran bats, reptiles and frogs can be inactive during cold and very hot weather), the timing of the survey (nocturnal species would not have been identified) and species lifecycle. These limitations have been accounted for by applying the precautionary principle in all cases

where the survey methodology may have given a false negative result. All species have been assessed based on presence of habitat and the likely significance of that habitat to support a viable local population.

4 Survey Results

4.1 Flora Survey

Vegetation in the study area can be classified according to four broad vegetation types:

1) Regrowth vegetation in recently cleared areas
2) PCT 589 - PCT 589 – White Box – White Cypress Pine – Silver-leaved Ironbark grassy woodland on mainly clay loam soils hills mainly in the Nandewar Bioregion
3) PCT 592 - PCT 592 – Narrow-leaved Ironbark – cypress pine – White Box shrubby open forest in the Brigalow Belt South Bioregion and Nandewar Bioregion
4) Non- native vegetation

These vegetation types are described in more detail in Section 4.1.1 to Section 4.1.4 below. The vegetation map included as Figure 3 shows the distribution of vegetation in the vicinity of the subject site.

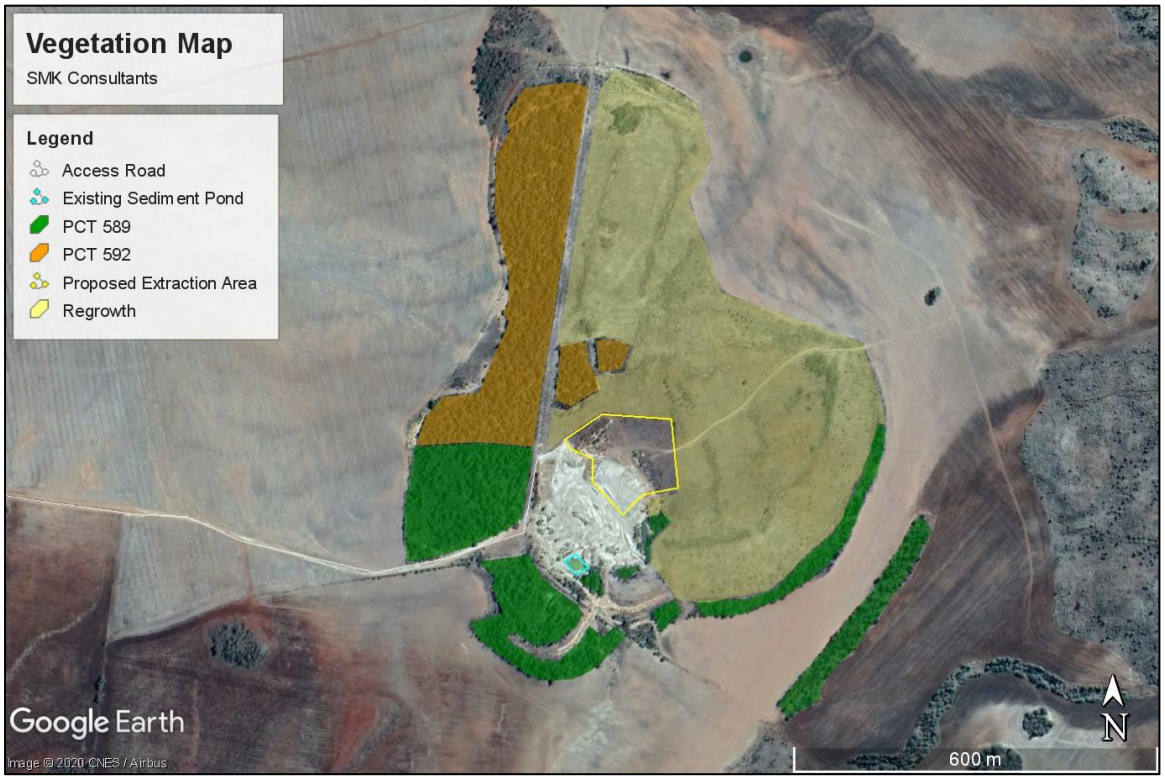

Figure 3: Distribution of Vegetation Types in the Vicinity of the Subject Site

4.1.1 Regrowth Vegetation

The proposal involves the clearing of shrubby regrowth vegetation, which extends over approximately 1 Ha within the northern section of the proposed development footprint. The remainder of the proposal footprint has already been stripped of soil and vegetation and consists of exposed rock. Native vegetation in the area of regrowth was cleared approximately five years ago, therefore no mature vegetation remains. A small number of immature Ironbark trees are present, growing on stockpiles within the subject site. The majority of these are dead or desiccated. The shrub layer is mid-dense and is dominated by several Wattle species (*Acacia* sp.) and Quinine (*Alstonia stricta*). Other species noted include Sticky Hopbush (*Dodonaea viscosa*), Rosemary Bush (*Cassinia laevis*) and Green Kangaroo Apple (*Solanum vescum*). A number of shrubs were observed as showing signs of damage resulting from spray drift. Immature Silver-leaved Ironbark (*Eucalyptus melanophloia*) are also present in the shrub layer. Forbs identified in the ground layer include Yellow Burr Daisy (*Calotis lappulacea*), Paddy Melon (*Cucumis myriocarpus*), Climbing Saltbush (*Einadia nutens*) and Smooth Catsear (*Hypochaeris glabra*). Grasses include Scented-top Grass (*Capillipedium spicigerum*), Stinkgrass (*Eragrostis cilianensis*) and Hairy Panic (*Panicum effusum*). Invasive species noted onsite include Common Prickly Pear (*Opuntia stricta*), which was recorded as rare throughout the site, and Silverleaf Nightshade (*Solanum elaeagnifolium*), which had a localised distribution in the western section of the subject site. Both of these species are listed as Weeds of National Significance (WoNS).

Regrowth extends beyond the boundary of the proposed development to the majority of the ridge on which the proposed development is located, being associated with previously cleared areas. It extends over a total of approximately 27 Ha in this area.

Figure 3: Sparsely distributed scrubby regrowth in the northern section of the proposed development footprint.

Figure 4: Looking south from the southern section of the proposed development towards the existing quarry. Note the existing sediment pond in the background.

4.1.2 PCT 589 – White Box – White Cypress Pine – Silver-leaved Ironbark grassy woodland on mainly clay loam soils hills mainly in the Nandewar Bioregion

Remnant vegetation present to the west, south and south-east of the proposed development is consistent with 'PCT 589 – White Box – White Cypress Pine – Silver-leaved Ironbark grassy woodland on mainly clay loam soils hills mainly in the Nandewar Bioregion'. The canopy layer is dominated by White Cypress Pine (*Callitris columellaris*), White Box (*Eucalyptus albens*) with occasional Silver-leaved Ironbark (*Eucalyptus melanophloia*) and Blakely's Red Gum (*Eucalyptus blakelyi*). The shrub layer is sparse and has been severely drought impacted, with numerous dead shrubs present. Shrub species present include Quinine, several Acacia species, Green Kangaroo Apple, Wilga (*Geijera parviflora*) and Sticky Wallaby Bush *(Beyeria viscosa)*. Rosemary Bush is locally dominant as a low shrub. The groundcover layer varies with some areas having low levels of cover and other being dominated by grasses including Kangaroo Grass, Spear Grass (*Austrostipa sp.*) and Purple Wiregrass (*Aristida ramosa*). Other groundcover species include New Zealand Spinach (*Tetragonia tetragonoides*) and Paddy Melon. Weeds include Common Prickly Pear (occasional) and Silverleaf Nightshade (common). Some trees within this community contain small and medium hollows (up to approximately 15 cm), which could be used by bat species, small mammals and birds. There is also abundant dead wood and leaf litter, which constitutes potential habitat for reptiles and invertebrates.

This woodland occurs on loamy/clayey soils and occurs at the following locations:

- To the south of the access road which leads to the quarry site (approximately 2.7 Ha);
- To the north of the access road (approximately 3.3 Ha);
- As a narrow strip over approximately 1.2 Ha to the south east of the proposed quarry area; and
- As several small fragments adjacent to and south east of the existing quarry boundary.

The patch to the south of the access road has been subject to human disturbance. A section has been cleared to form a cul-de-sac, thus fragmenting the habitat. This area of woodland is loosely contiguous with similar vegetation to the north and east, being fragmented by the access road to the quarry and a cleared area, with the separation distance varying between approximately 20-45 metres. The patch to the north of the access road is in relatively good condition and transitions to shrubby open forest towards the north, and the narrow strip present to the south east is considered to be in moderate condition due to its limited size, its isolation and a higher occurrence of weed and agricultural species such as Wild Turnip (*Brassica rapa* subs. *Sylvestris*), Noogoora Burr (*Xanthium occidentale*) and Common Mallow (*Malva neglecta*). The small

fragments bordering the existing quarry boundary are limited to a few trees and shrubs which are isolated.

The floristic composition of this open woodland may be consistent with the EEC 'White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland' listed under the *Biodiversity Conservation Act 2016*. The condition of the woodland has been adversely affected by its fragmented nature, relatively small size, and the infiltration of weed species. Other factors negatively impacting the condition and function of the EEC include its disturbance (grazing/trampling by livestock, the presence of a track) and the impacts of an ongoing drought. The patch of woodland occurs at the transition between extensive swathes of remnant vegetation (east) and cultivated land (west) in the landscape. In this context, it retains value as habitat for fauna (insectivorous bats, birds, etc) and as a seed source for surrounding cleared landscape. Overall, the overall condition of the woodland is considered 'moderate'.

The proposed works will not have a direct impact on the vegetation in this PCT, i.e. the open woodland will not be cleared or modified and therefore the extent of the woodland in the study area will not be altered.

Figure 5: PCT 589 located south-west of proposed development site and south of the access road to the proposed development.

PCT 589 also occurs as immature woodland on sandy soil associated with a dry creek bed, approximately 390m south-west of the quarry site. The community appears to

have been historically cleared at this location as very few mature trees are present. The floristic composition of the community is also different at this location, reflecting the different soil type and higher levels of disturbance.

The overstorey layer has limited species diversity, comprising Blakely's Red Gum and White Box. Species identified in the shrub layer were Wilga, Acacia species, Yellowberry Bush (*Maytenus cunninghamii*), *Solanum parviflorum* and Cooba (*Acacia salicina*). The herb layer has a relatively high incidence of common agricultural species and species which are indicators of disturbed ground, including Wild Turnip (*Brassica rapa* subs. *sylvestris*), Paddy Melon, Clover (*Trifolium* sp.), Pignut (*Portulaca oleracea*), Galvanised Burr (*Sclerolaena birchii*) and Variegated Thistle (*Silybium marianum*). Grasses include Stinkgrass and Threeawn Speargrass and weed species identified were Common Prickly Pear and Noogoora Burr (*Xanthium occidentale*).

The PCT extends in this form over approximately 2.1 Ha along a dry creek bed in a cultivated paddock to the south west of the proposed quarry. Its habitat value is considered low to moderate given that the woodland remains immature at present, has a limited distribution and is disjunct. The presence of weeds species in the ground layer further lowers the habitat values of this area of woodland. The proposed works will not have a direct impact on this habitat area.

Figure 7: Immature Woodland (PCT 589) along a Dry Creek Bed to the South-East of the Proposed Quarry Site.

4.1.3 PCT 592 – Narrow-leaved Ironbark – cypress pine – White Box shrubby open forest in the Brigalow Belt South Bioregion and Nandewar Bioregion

Vegetation to the north and north west of the proposed development area is consistent with PCT 592. The overstorey layer consists of Narrow-leaved Ironbark (*Eucalyptus crebra*), White Cypress Pine and White Box. Acacia species, Wilga (*Geijera parviflora)* There shrubby understorey is sparse and is comprised of Sticky Wallaby Bush, Velvet Mock Olive (*Notelaea microcarpa* var. *microcarpa*), Quinine, Kangaroo Apple, Yellowberry Bush and *Solanum parviflorum.* The ground layer has approximately 40% cover and includes grass species such as Threeawn speargrass (*Aristida vagans)* and *Austrodanthonia racemose var. obstutata*. The remainder of the groundlayer consists of bare earth, leaf litter and dead wood. The weed Common Prickly Pear is also occasional throughout this PCT.

The open forest has some small clearings throughout and is considered as being in moderate to good condition overall due to the limited presence of weeds and an overall lack of disturbance. This PCT extends in a narrow strip over approximately 7.2 Ha on Lot 15/DP753928, and as two small patches over a total of 0.75 Ha on Lot 24/DP 753920.

The shrubby open forest will not be directly impacted by the proposed works, such that the extent of this PCT in the study area will not be altered.

Figure 6: PCT 592 to the North/North-West of the Proposal

4.1.4 Non-native vegetation

The remainder of the land in the immediate vicinity of the proposed quarry site has been extensively cleared and currently consists of cleared, cultivated land on the flat paddocks surrounding the ridge on which the quarry is sited. At the time of the site inspection, the cultivation paddocks had been sown with wheat.

Both the regrowth vegetation and cultivated paddocks (when cropped) may offer a corridor for wildlife to travel between native remnants in the vicinity of the proposal.

It is noted that no threatened flora species listed under the BC Act or EPBC Act were recorded during the site assessment. A Test of Significance (refer to Section 5) was undertaken to assess if the proposed development would be likely to result in a significant impact on the vegetation described above.

4.2 Fauna Survey

Fauna species noted during the site inspection include Australian Raven (*Corvus coronoides*), White Cockatoo (*Cacatua alba*) and Australian Magpie (*Cracticus tibicen*). European Brown Hare (*Lepus europaeus*) was also observed as roadkill near the entrance to the property. Feral Pig (*Sus scrofa*) diggings were also noted throughout the study area. No threatened fauna species listed under the BC Act or EPBC Act were recorded and no migratory species listed under the EPBC Act were recorded.

5 Threatened Species Assessment

5.1 Assessment of Potential Presence of Threatened Species

A search of the National Parks and Wildlife Atlas of NSW Wildlife (BioNet) identified species with recorded sightings within a 10km radius of the proposed development site. A copy of the search results for listed species is presented in Appendix A.

A broader search for species, populations and communities that may occur within the locality of the development site was therefore conducted through investigating known and predicted species' distributions within the Nandewar Bioregion (Kaputar subregion). A copy of the search results for listed species is presented in Appendix B.

Species identified in each of these searches were considered with regards to their known distribution and habitat requirements, to assess whether the site is likely to serve as suitable habitat, and subsequently whether/how the development is likely to impact upon the species. Only species that have the potential to be present within the available habitat are listed in Table 4 and assessed in this test of significance.

The following species, populations and communities have the potential to occur within the local area and have been considered in this Test of Significance.

Table 3: Species Assessed in the Test of Significance

Scientific Name	Common Name	Legal Status	Records in IBRA subregion
Circus assimilis	Spotted Harrier	BC Act: V, P	K
Hieraaetus morphnoides	Little Eagle	BC Act: V, P	26
Lophoictinia isura	Square-tailed Kite	BC Act: V,P,3	1
Falco subniger	Black Falcon	BC Act: V, P	1
Neophema pulchella	Turquoise Parrot	BC Act: V,P,3	45
Chthonicola sagittata	Speckled Warbler	BC Act: V,P	38
Dasyurus maculatus	Spotted-tailed Quoll	BC Act: V,P EPBC Act: E	5
Phascolarctos cinereus	Koala	BC Act: V,P EPBC Act: V	18
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	BC Act: V,P	11
Nyctophilus corbeni	Corben's Long-eared Bat	BC Act: V,P EPBC Act: V	1
Dichanthium setosum	Bluegrass	BC Act: V EPBC Act: V	15
	White Box Yellow Box	BC Act: EEC	K

Scientific Name	Common Name	Legal Status	Records in IBRA subregion
	Blakely's Red Gum Woodland		

[1]Number of BioNet Atlas records in selected area. Status Abbreviations: Vulnerable (V), Endangered (E), Protected (P), Sensitivity Class 3 (Sensitive Species Data Policy) (3), CAMBA (C), JAMBA (J), ROKAMBA (K)

A suite of measures will be implemented at the subject site to minimise the potential impact of the quarry upon the surrounding environment. These measures include:

- Restricting vehicle movements and ground disturbance to the minimum areas that is safely practicable;
- Undertaking dust suppression through strategic watering as required;
- Temporary cessation of works during excessively dry and windy conditions;
- Re-establishing a groundcover vegetation on areas disturbed by construction but not needed during the operational phase of the quarry, as soon as practicable;
- Catch drains will direct any stormwater and/or run-off to the existing sediment pond, ensuring that no sediment-laden water is released into the surrounding environment;
- No hazardous and dangerous materials, or diesel/fuel will be stored on site;
- In the event of spills during re-fuelling operations, these will be managed according to standard spill management procedures;
- Weeds of National Significance currently present on site will be controlled prior to the commencement of earthworks;
- 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;
- Stabilisation measures must be planned to optimise establishment of a healthy groundcover devoid of weeds; and
- A regular program of herbicide use should be undertaken within the subject site throughout the life cycle of the proposed project.

Given the measures implemented to ensure that offsite impacts are minimised, potential impact of the quarry development is considered to be limited to the footprint of the quarry site.

5.2 Test of Significance - Assessment of Criteria and Discussion

The following is to be considered for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats:

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

A viable local population of a threatened terrestrial flora or fauna species in this assessment is defined as a population that occurs within the study area and the connected habitat to the north, east and west of the proposed development.

Flora Species

Bluegrass

Bluegrass grows on heavy basaltic black soils and red-brown loams with clay subsoil. Often found in moderately disturbed areas such as cleared woodland, grassy roadside remnants and highly disturbed pasture. (Often collected from disturbed open grassy woodlands on the northern tablelands, where the habitat has been variously grazed, nutrient-enriched and water-enriched). Species associated with Bluegrass include *Eucalyptus albens, Eucalyptus melanophloia, Eucalyptus melliodora, Eucalyptus viminalis*.

The site inspection did not reveal the presence of a local population of Bluegrass. The cryptic nature of some threatened species, however, is such that the species may not have been visible during the time of the site visit (Bluegrass flowers in summer), and therefore it must be assumed that viable populations of the species may be present within the region in accordance with the precautionary principle.

Potential habitat for the listed species is present on the site. The development involves clearing on a small scale (1 Ha) of cleared, degraded vegetation with shrubby regrowth. Extensive areas of similarly disturbed habitat are present directly adjacent to the subject site. Should the above-mentioned species be present within the development footprint, it may be displaced in the short-term. However, given that adjoining vegetation retains the potential to support these species, it considered that the risk of a viable population being placed at risk of extinction is minimal.

Bats

Microchiropteran Bats - Yellow-bellied Sheath-tail Bat, Little Pied Bat

Yellow-bellied Sheath-tail Bat roosts singly or in groups of up to six, in tree hollows and buildings. It forages in most habitats across its very wide range, with and without trees, and appears to defend an aerial territory. There are scattered records of this species across the New England Tablelands and North West Slopes.

Little Pied Bat occurs in dry open forest, open woodland, mulga woodlands, chenopod shrublands, Cypress pine forest and mallee and Bimble box woodlands. The species roosts in caves, rock outcrops, mine shafts, tunnels, tree hollows and buildings.

Both of these species may use woodland habitat in the study area for foraging, given that tree hollows were noted during the site inspection. It is therefore possible that these species would forage within the subject site. Given that no roosting habitat will be cleared, the species will not be directly impacted by the proposal.

Indirect impacts could occur due to loss of foraging habitat, dust and noise impacts. The foraging habitat present within the subject site is considered unlikely to be regularly utilised by the above-mentioned bat species given the presence of extensive areas of similar quality habitat and higher-quality native woodland/forest habitat in the locality.

With regards to noise and dust impacts, activities during the establishment of the quarry will be relative short-lived, and operational activities will also be short-term and intermittent in nature. Currently, several months sometimes pass between gravel extraction and haulage events. It is noted that there will be no significant change to noise or dust levels emitted onsite as a result of the proposed development, as an operational quarry is already present at the location and the proposal does not entail an intensification of activity. Furthermore, it is noted that dust suppression activities (such as the watering of haul roads) will be carried out as required to limit potential adverse impacts of dust. No other significant indirect impacts to the species are foreseen.

It is therefore considered that no viable local population of any threatened species will be placed at risk of extinction as a result of the proposed development.

Woodland Species

Turquoise Parrot, Speckled Warbler

Turquoise parrot lives on the edges of eucalypt woodland adjoining clearings, timbered ridges and creeks in farmland. It forages quietly and may be quite tolerant of disturbance. The species nests in tree hollows, logs or posts, from August to December. Speckled Warbler lives in a wide range of *Eucalyptus* dominated communities that have a grassy understorey, often on rocky ridges or in gullies. Typical habitat would include scattered native tussock grasses, a sparse shrub layer, some eucalypt regrowth and an open canopy. The rounded, domed, roughly built nest of dry grass and strips of bark is located in a slight hollow in the ground or the base of a low dense plant, often among fallen branches and other litter.

The above species have the potential to occur and forage in and on the edge of the open woodland present in the study area. There is also potential breeding habitat for

the remaining woodland species listed above in native vegetation occurring in the study area.

The most common and/or significant threats for woodland species are habitat loss and/or degradation as a result of clearing, increased weed invasion, under-shrubbing, and removal of dead timber. Many other threats arise from habitat loss, including predation by introduced cats and foxes and increased salinity. It is noted that woodland habitat will not be cleared or disturbed by the proposed development, thus the above-mentioned species are not at risk of any direct impact from the proposed quarry redevelopment.

The risk to these woodland species is therefore limited to indirect impacts such as noise disturbance, the deposition of dust and potential habitat modification resulting from spread of weed species.

It is recommended that Weeds of National Significance (WoNS) present onsite (Common Prickly Pear and Silverleaf Nightshade) be controlled (e.g. by spraying with a registered herbicide) prior to commencement of the works, as well as throughout the project duration, in order to prevent their spread as a result of soil stripping and earthworks. It is also recommended that weed control measures be implemented on an on-going basis within the site footprint to prevent the potential introduction and spread of weed species from the development to higher-quality habitat in adjoining areas.

It is noted that regular human activity already occurs in and around the proposed development footprint in association with the existing development. The proposal will therefore not result in a significant increase in noise levels emitted from the site; quarry establishment activities will be temporary in nature, and operation of the proposed quarry will not result in any new noise sources. The main noise sources during operation would be dominated by vehicle movements, including trucks moving to and from the site and some light vehicles. These vehicles already operate on site. However, a minimum buffer of 20m is available and will be maintained around the development footprint to reduce the potential effects of noise disturbance on fauna potentially utilising habitat in close proximity to the quarry. In addition, a number of mitigation measures including dust control and sediment and erosion control measures (listed in Section 5.1) will be implemented throughout the lifetime of the proposed project.

Provided the above listed measures are implemented, the proposal is considered unlikely to place a viable population of the above-listed woodland bird species at risk of extinction.

Birds of Prey

Spotted Harrier, Little Eagle, Square-tailed Kite, Black Falcon

Spotted Harrier occurs in grassy open woodland, inland riparian woodland, grassland and shrub steppe. It is most commonly found in native grassland, but also occurs in agricultural land, foraging over open habitats including edges of inland wetlands. It builds a stick nest in a tree and lays eggs in spring (or sometimes autumn), with young remaining in the nest for several months. The species preys on terrestrial mammals (eg bandicoots, bettongs, and rodents), birds and reptile, occasionally insects and rarely carrion.

Little Eagle occupies open eucalypt forest, woodland or open woodland, as well as riparian woodland. It nests in tall living trees within remnant patches, and preys on birds, reptiles and mammals.

Square-tailed Kite is found is a variety of timbered habitat but shows a preference for timbered watercourses. It is a specialist hunter of passerines, especially honeyeaters, and most particularly nestlings, and insects in the tree canopy, picking most prey items from the outer foliage and occupies large hunting ranges of more than 100km^2. When nesting, Square-tailed Kites prefer large, tall trees in uncleared areas, and often nest in riparian areas.

Black Falcon is typically found along-tree lined watercourses and isolated woodlands in arid/semi-arid areas. It roosts in trees at night and often on power poles during the day. Common prey items are birds, small mammals, insects and reptiles and sometimes carrion. Black Falcons do not build their own nests. They either re-use or take over nests of other species - either other raptors' or those of corvids (ravens or crows).

There is potential roosting and breeding habitat for Spotted Harrier and Little Eagle in the open woodland to the east of the proposed development. Square-tailed Kite and Black Falcon typically display a preference for tree-lined watercourses, and would therefore be more likely to nest/roost along the creeks to the north and south of the proposed development footprint, at a minimum distance of 500m from the subject site.

Woodland habitat will not be cleared, disturbed or modified by the proposed development. These raptor species are therefore not at risk of direct adverse impacts from the proposal.

Indirect impacts with the potential to have an adverse impact on these species are mainly increased noise and/ or dust levels. It is noted that the study area currently includes an existing quarry and cultivated land, therefore human activity and the operation of trucks, excavators and farm machinery already occur regularly in the vicinity of remnant habitat in the study area. The proposal will not result in significant

additional indirect impacts in the form of noise or dust pollution. A number of best practice management measures and mitigation measures, listed in Section 5.1, will also be implemented to reduce the potential adverse impacts resulting from increased noise and dust emissions.

Furthermore, all of these above-mentioned species are highly mobile species and have relatively large home ranges (typically >200 Ha). Should any displacement or disturbance be incurred, there would not be a significant impact to these species as sufficient alternative, similar-quality is present in the locality.

It is considered that the proposed development would not have significant adverse impacts on any of the above-listed species. The proposed development is therefore deemed not to pose a risk to viable local populations of the above-mentioned species. There is therefore no risk of a viable population being placed at risk of extinction.

Mammals

Spotted-tailed Quoll, Koala

Spotted-tailed Quoll is recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline. Individual animals use hollow-bearing trees, fallen logs, small caves, rock outcrops and rocky-cliff faces as den sites. Females occupy home ranges of 200-500 hectares, while males occupy very large home ranges from 500 to over 4000 hectares. The species may traverse the subject site while travelling from one location to the other, however no potential den sites were observed during the site assessment, such that the subject site is unlikely to constitute important habitat for the species. There are potential den sites in the woodland areas to the west of the subject site, however. As previously discussed, the proposal will not result in significant/additional adverse impacts to remnant vegetation in the study area due to the small-scale nature of the proposed works, the existing human activities in the area at present, and the mitigation measures to be implemented as part of the establishment and operation of the proposed development.

Koala is an arboreal marsupial with a fragmented distribution throughout eastern Australia. Habitat consists of preferred feed species, typically in eucalypt woodlands and forests. Suitable habitat for the Koala is determined by the presence of known feed tree species. Woodland in the study area contains some feed trees such as eucalypts, however the patches of woodland are disjunct and have a small area. The area is also in proximity to regular human disturbance (existing cropping and extractive activities, truck movements). It is therefore considered that the species is unlikely to occur in this area of woodland. There are extensive tracts of remnant vegetation in the wider locality, particularly to the south and east of the proposed development, which also

contain some suitable feed trees. Koala populations in the area would be more likely to utilise these larger, contiguous areas of vegetation in preference to that in the vicinity of the proposal site. The proposed development is unlikely to result in direct or indirect impacts to the species in these areas due to the available separation distances (>1km) and the management measures which will be implemented to minimise offsite impacts arising from the proposal.

It is therefore considered that there is no risk of a viable population of Spotted-tailed Quoll or Koala being placed at risk of extinction.

No population of listed threatened species was identified within the subject site and minimal indirect impacts are expected to occur off site. It is therefore considered that no viable local population of any threatened species will be placed at risk of extinction as a result of the proposed development. Additionally, as the locality contains areas of similar and/or higher-quality native vegetation, local populations of mobile fauna species may have the ability to access or preference these surrounding areas. Therefore, it is considered unlikely that any local population of threatened species within the study area will be placed at risk of extinction.

b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to 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 patches of woodland to the west and south-west of the proposed quarry have a species composition which may be consistent with the EEC 'White Box - Yellow Box - Blakely's Red Gum Woodland'.

This area of open woodland will not be cleared, modified or disturbed by the proposed development. The extent of this woodland will therefore not be impacted by the proposal.

The woodland may be subject to indirect impacts from the proposal. The species composition could be altered through changes in soil composition and/or soil hydrology, as a result of sediment-laden surface run-off from the subject site. The woodland community could also be adversely impacted by the introduction or spread of exotic/invasive species arising from earthworks and the movement of construction machinery and haul trucks throughout the site. However, a suite of measures will be

implemented throughout the duration of the project which will minimise the indirect impacts associated with the quarry. These mitigation and best practice measures are listed in Section 5.1 of this report. Provided these measures are implemented, the development proposal is therefore considered unlikely to impact on the extent or composition of any potentially occurring EEC in the vicinity of the proposed project footprint.

c) 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 proposed development or activity, and

Remnant vegetation in the vicinity of the subject site, in particular the woodland/forest habitat to the west of the subject site, may constitute habitat for a threatened species, population or ecological community. As detailed in (a) and (b), the proposal will not result in the loss, disturbance or modification of remnant vegetation, provided the recommended management measures are implemented. The development has been preferentially sited on a cleared landscape, which currently supports regrowth.

(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

The subject site has been entirely cleared of native vegetation, and currently consists of shrubby regrowth. Remnant vegetation occurs in the study area, however this is already isolated as it is surrounded by cropland and/or cleared areas. Aside from this area of remnant vegetation, the proposal site is surrounded by cropland and shrubby regrowth. It is therefore considered that the proposal would not result in the fragmentation or isolation of any habitat area of a threatened species, population or ecological community.

(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 subject site supports regrowth, with the remnant vegetation having been cleared around five years ago. Given the limited habitat value of this regrowth, the presence of similar and higher-quality vegetation in the locality, and the small-scale of the project (<2 Ha), the habitat to be removed is not considered important to the long-term survival of any species, population of ecological community in the locality.

Provided the recommended best practice management and mitigation measures outlined in Section 5.1 and elsewhere in this report are implemented throughout the lifetime of the project, the proposal is unlikely to result in the modification of any

important habitat for threatened species, populations or ecological communities in the locality.

The proposed project is therefore not considered to remove, modify, fragment or isolate habitat essential for the survival of a threatened species within the area.

d) whether the proposed development is likely to have an adverse effect on critical any declared area of outstanding biodiversity value (either directly or indirectly):

The development proposal is not located in or near an Area of Outstanding Biodiversity Value (AOBV). It is therefore unlikely to have any adverse impacts (direct or indirect) on any AOBV.

e) whether the proposed development or activity is or is part of a key threatening process or is likely or increase the impact of a key threatening process.

'Invasion of Native plant communities by exotic perennial grasses' is listed as a key threatening process. Exotic perennial grasses [e.g. Coolatai Grass (*Hyparrhenia hirta*), African Lovegrass (*Eragrostis curvula*), Phalaris (*Phalaris aquatica*), Buffel Grass (*Cenchrus ciliaris*), Rhodes Grass (*Chloris gayana*) and Kikuyu (*Pennisetum clandestinum*)] have the capacity to invade native plant communities, competing with an excluding native species. The invasion of these grasses also reduces the habitat value for many native fauna species.

Seeds of exotic perennial grasses and others weeds may be carried onto and distributed by vehicles entering and exiting the quarry. Construction machinery may also introduce and spread exotic species on the subject site.

Exotic species and weeds will be managed throughout the project lifecycle in accordance with the following principles:

- Weeds of National Significance currently present on site (Common Prickly Pear, Silverleaf Nightshade) will be controlled prior to the commencement of earthworks and throughout the duration of the project.
- 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.
- Stabilisation measures must be planned to optimise establishment of a healthy groundcover devoid of weeds.
- A regular program of herbicide use should be undertaken within the subject site throughout the project lifecycle.

Provided the above safeguards regarding weed management are implemented, the proposed works are unlikely to result in the invasion or spread of native exotic grasses. The proposed works are therefore considered unlikely to increase the impact of this key threatening process.

No other actions in the proposed establishment and operation of the quarry involve any actions that constitute or would contribute to a key threatening process.

6 Conclusion

The proposal is unlikely to significantly affect threatened species or ecological communities or their habitats, within the meaning of the *Biodiversity Conservation Act 2016*. The proposal may result in some environmental impacts. However, these would not result in a significant impact on any threatened species of communities and these impacts can be effectively managed through the implementation of the best practice management and mitigation measures listed in this report.

7 References

Atlas of NSW Wildlife, "NSW Government Department of Environment and Heritage Website". Accessed 2020. http://www.bionet.nsw.gov.au/

Office of Environment and Heritage (OEH) (2019), Atlas of NSW Wildlife Database. Licenced database accessed 2020.

Office of Environment and Heritage, "Threatened Species Profiles". Accessed 2020. https://www.environment.nsw.gov.au/threatenedSpeciesApp/

Office of Environment and Heritage, "NSW Scientific Committee – final determination: White Box – Yellow Box – Blakely's Red Gum Woodland". Accessed 2020. https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Scientific-Committee/Determinations/2020/white-box-yellow-box-final-determination-ceec.pdf?la=en&hash=DD6076E55435D715E7E90B1A901EEB83D488563B

Appendix 1: Bionet Threatened Species, Populations and Communities Search Results for a 10-kilometre radius from the Subject Site

Scientific Name	Common Name	BC Act 2016	EPBC Act 1999	Local Records[1]
Alectura lathami	Australian Brush-turkey population in the Nandewar and Brigalow Belt South Bioregions	E2,P		1
Neophema pulchella	Turquoise Parrot	V,P,3		1
Chthonicola sagittata	Speckled Warbler	V,P		4
Grantiella picta	Painted Honeyeater	V,P	V	1
Daphoenositta chrysoptera	Varied Sittella	V,P		1
Phascolarctos cinereus	Koala	V,P	V	1
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	V,P		1
Digitaria porrecta	Finger Panic Grass	E1		1

[1]Number of OEH Wildlife Atlas records within 10km of Subject Site.

Status Abbreviations: Vulnerable (V), Endangered (E, E1), Critically Endangered (CE) and Presumed Extinct (X).

Appendix 2: Bionet Threatened Species, Populations and Communities Search Results for Nandewar Bioregion (Kaputar IBRA Subregion)

Note:

The following definitions are used throughout the table below to refer to locations in the proposal area:

- The 'subject site' describes all areas that would be directly impacted by the works. This includes the access route and the footprint of the proposed Quarry as well as a 10 metre buffer zone around the proposed development footprint.
- The 'study area' includes the site and the areas adjacent that may be indirectly impacted by the proposed works;
- The 'search area' refers to a 10-kilometre area surrounding the proposal for the purpose of database searches.

Species Name	Status	Habitat Description and Locally Known Populations	Local Records	Potential to Occur and Importance of Habitat Present	Assessment of Significance
Aves					
Alectura lathami Australian Brush-turkey	BC Act - E	Largely coastal distribution from Cape York south as far as the Illawarra in NSW. Occurs in forested and wooded areas of tropical and warm-temperate districts, particularly above 300 m to at least 1200 m altitude. Usually prefers dry rainforest that is found within the Semi-evergreen Vine Thicket.	35	**Low** There is no suitable habitat for the species within the subject area; the subject site is therefore not considered important for the species.	No
Hirundapus caudacutus White-throated Needletail	Not Listed	Because they are aerial, it has been stated that conventional habitat descriptions are inapplicable, but there are, nevertheless, certain preferences exhibited by the species. Although they occur over most types of habitat, they are recorded most often above wooded areas, including open forest and rainforest, and may also fly between trees or in clearings, below the canopy, but they are less commonly recorded flying above woodland. They also commonly occur over heathland but less often over treeless areas, such as grassland or swamps. When flying above farmland, they are more often recorded above partly	8	**Low** The species is not included in this assessment due to a paucity of suitable habitat. Habitat preference displayed by the species lead to the conclusion that the species is unlikely to forage above the habitat within the subject site.	No

Species Name	Status	Habitat Description and Locally Known Populations	Local Records	Potential to Occur and Importance of Habitat Present	Assessment of Significance
		cleared pasture, plantations or remnant vegetation at the edge of paddocks The White-throated Needletail feeds on flying insects, such as termites, ants, beetles and flies. They catch the insects in flight in their wide gaping beaks. White-throated Needletails are non-breeding migrants in Australia.			
Botaurus poiciloptilus Australasian Bittern	BC Act - E	Australasian Bitterns are widespread but uncommon over south-eastern Australia. In NSW they may be found over most of the state except for the far north-west. The species favours permanent freshwater wetlands with tall, dense vegetation, particularly bullrushes (*Typha* spp.) and spikerushes (*Eleocharis* spp.).	P	**Unlikely** There is no suitable habitat for the species in the subject site.	No
Circus assimilis Spotted Harrier	BC Act - V	In New South Wales, this species is widespread from coast to inland, including the western slopes of the Great Dividing Range and farther west. It is sparsely scattered in, or largely absent from, much of the Upper Western region. Primarily inhabits woodlands and dry open sclerophyll forests, usually dominated by eucalypts, including mallee associations. It has also been recorded in shrublands and heathlands and various modified habitats, including regenerating forests; very occasionally in moist forests or rainforests. Generally, the understorey is open with sparse eucalypt saplings, acacias and other shrubs, including heath.	K	**Moderate** This species may hunt within regrowth in the subject site.	Yes
Hieraaetus morphnoides Little Eagle	BC Act - V	The Little Eagle is found throughout the Australian mainland. Occupies open eucalypt forest, woodland or open woodland. Sheoak or Acacia woodlands and riparian woodlands of interior NSW are also used. Nests in tall living trees within a remnant patch, where pairs build a large stick nest in winter.	6	**Moderate** This species may hunt in habitat within the subject site.	Yes
Lophoictinia isura Square-tailed Kite	BC Act - V	In NSW, the species is a regular resident in the north, north-	1	**Moderate** This species may hunt within the	Yes

Species Name	Status	Habitat Description and Locally Known Populations	Local Records	Potential to Occur and Importance of Habitat Present	Assessment of Significance
		east and along the major west-flowing river systems. Found in a variety of timbered habitats including dry woodlands and open forests. Is a specialist hunter of passerines, especially honeyeaters, and most particularly nestlings, and insects in the tree canopy, picking most prey items from the outer foliage. Appears to occupy large hunting ranges of more than 100km.		subject site, given its large home range.	
Falco subniger Black Falcon	BC Act - V	The Black Falcon is widely, but sparsely, distributed in New South Wales, mostly occurring in inland regions. In New South Wales there is assumed to be a single population that is continuous with a broader continental population, given that falcons are highly mobile, commonly travelling hundreds of kilometres.	1	**Moderate** Given its large home range, this species may hunt in regrowth on the subject site.	Yes
Burhinus grallarius Bush Stone-curlew	BC Act - E	The Bush Stone-curlew is found throughout Australia except for the central southern coast and inland, the far south-east corner, and Tasmania. Inhabits open forests and woodlands with a sparse grassy ground layer and fallen timber. The species feeds on insects and small vertebrates, such as frogs, lizards and snakes.	P	**Low** The species is not recorded within the Kaputar IBRA sub-region. Furthermore there is no suitable habitat for this species within the subject site and it is therefore not considered important for the species.	No
Limosa limosa Black-tailed Godwit	BC Act - V	This species is primarily a coastal species. In NSW, the species is most frequently recorded at Kooragang Island (Hunter River estuary), with occasional records elsewhere along the coast and inland. Inland, the species is typically found on mudflats and in water less than 10 cm deep, around muddy lakes and swamps.	P	**Low** Black-tailed Godwit is primarily a coastal species. There is no habitat which the species could utilise inland (mudflats, swamps, lakes) within the subject site, such that it is not considered in this assessment.	No
Calyptorhynchus lathami Glossy Black-Cockatoo	BC Act - V	Inhabits open forest and woodlands of the coast and the Great Dividing Range where stands of sheoak occur. Black Sheoak and Forest Sheoak are important foods. Inland populations feed on a wide range of sheoak. Belah is also utilised and may be a critical food source for some	P	**Low** There is no Belah or Sheoak in the subject site. It is therefore unlikely that the site is of particular importance for Glossy-Black Cockatoo.	No

Species Name	Status	Habitat Description and Locally Known Populations	Local Records	Potential to Occur and Importance of Habitat Present	Assessment of Significance
		populations. Feeds almost exclusively on the seeds of several species of she-oak (Casuarina and Allocasuarina species), shredding the cones with the massive bill. Dependent on large hollow-bearing eucalypts for nest sites.			
Glossopsitta pusilla Little Lorikeet	BC Act - V	NSW provides a large portion of the species' core habitat, with lorikeets found westward as far as Dubbo and Albury. Nomadic movements are common, influenced by season and food availability, although some areas retain residents for much of the year and 'locally nomadic' movements are suspected of breeding pairs. Forages primarily in the canopy of open Eucalyptus forest and woodland, yet also finds food in Angophora, Melaleuca and other tree species. Riparian habitats are particularly used, due to higher soil fertility and hence greater productivity. Isolated flowering trees in open country, e.g. paddocks, roadside remnants and urban trees also help sustain viable populations of the species.	23	**Low** The species dependant on arboreal habitat for foraging and breeding. Given that there is no such habitat within the proposed development footprint, the species is not considered in this assessment.	No
Lathamus discolor Swift Parrot	BC Act - E	In NSW the species mostly occurs on the coast and south west slopes. On the mainland they occur in areas where eucalypts are flowering profusely or where there is abundant lerp (from sap-sucking bugs) infestations. Favoured feed trees include winter flowering species such as Swamp Mahogany *Eucalyptus robusta*, Spotted Gum *Corymbia maculata*, Red Bloodwood *C. gummifera*, Forest Red Gum *E. tereticornis*, Mugga Ironbark E. *sideroxylon*, and White Box *E. albens*.	1	**Low** Favoured feed trees/conditions for this species were not observed within the subject site and it is therefore not considered important for the species. Furthermore there are very few records of the species in the Kaputar IBRA subregion.	No
Neophema pulchella Turquoise Parrot	BC Act - V	Lives on the edges of eucalypt woodland adjoining clearings, timbered ridges and creeks in farmland. Prefers to feed in the shade of a tree and spends most of the day on the ground searching for the seeds or grasses and herbaceous plants or browsing on vegetable matter. Nests	45	**Moderate** The subject site is in the vicinity of woodland habitat. The species may utilise shrubland habitat within the subject site and therefore Turquoise	Yes

Species Name	Status	Habitat Description and Locally Known Populations	Local Records	Potential to Occur and Importance of Habitat Present	Assessment of Significance
		in tree hollows, logs or posts, from August to December.		Parrot is considered in this assessment.	
Ninox connivens Barking Owl	BC Act - V	This species occurs in a wide but sparse distribution in NSW. Core populations exist on the western slopes and plains and in some northeast coastal and escarpment forests. Many populations crashed as woodland on fertile soils was cleared over the past century, leaving linear riparian strips of remnant trees as the last inhabitable areas. It also inhabits woodland and open forest, including fragmented remnants and partly cleared farmland.	P	**Low** There is no suitable habitat for the species within the subject site. The subject site has been entirely cleared of trees and shrubs. Furthermore, there are no records of the species ion the Kaputar IBRA subregion.	No
Ninox strenua Masked Owl	BC Act - V	The distribution of this species extends from the coast where it is most abundant to the western plains. Overall records for this species fall within approximately 90% of NSW, excluding the most arid north-western corner. Its habitat consists of dry eucalypt forests and woodlands from sea level to 1100m. While it is a forest owl, it often hunts along the edges of forests, including roadsides.	P	**Low** The species is known to hunt along the edge of forestry along roads, and could therefore be present along the access road. However the species is nocturnal and traffic generated by the quarry development would no coincide the Masked Owls periods of activity. The species is therefore not considered in this assessment.	No
Climacteris picumnus victoriae Brown Treecreeper (eastern subspecies)	BC Act - V	The Brown Treecreeper is endemic to eastern Australia and occurs in eucalypt forests and woodlands of inland plains and slopes of the Great Dividing Range. Found in eucalypt woodlands (including Box-Gum Woodland) and dry open forest of the inland slopes and plains inland of the Great Dividing Range; mainly inhabits woodlands dominated by stringybarks or other rough-barked eucalypts, usually with an open grassy understorey, sometimes with one or more shrub species. When foraging in trees and on the ground, they peck and probe for insects, mostly ants, amongst the litter, tussocks and fallen timber, and along trunks and lateral branches. Hollows in standing dead or live trees and	33	**Low** There is no suitable habitat for the species, which is a woodland and forest resident. The site is therefore not considered important habitat for Brown Treecreeper.	No

Species Name	Status	Habitat Description and Locally Known Populations	Local Records	Potential to Occur and Importance of Habitat Present	Assessment of Significance
		tree stumps are essential for nesting.			
Chthonicola sagittata Speckled Warbler	BC Act - V	The Speckled Warbler has a patchy distribution throughout the eastern half of NSW. There has been a decline in population density throughout its range, with the decline exceeding 40% where no vegetation remnants larger than 100ha survive. Typical habitat would include scattered native tussock grasses, a sparse shrub layer, some eucalypt regrowth and an open canopy. The diet consists of seeds and insects, with most foraging taking place on the ground around tussocks and under bushes and trees. The rounded, domed, roughly built nest of dry grass and strips of bark is located in a slight hollow in the ground or the base of a low dense plant, often among fallen branches and other litter.	38	**Moderate** The subject site has potentially suitable habitat for the species (such as the presence of native tussock grasses, a sparse shrub layer). Given that key habitat characteristics required by the species are present in the subject site, it is considered in this assessment.	Yes
Anthochaera phrygia Regent Honeyeater	BC Act - E	The Regent Honeyeater mainly inhabits temperate woodlands and open forests of the inland slopes of south-east Australia. There are only three known key breeding regions remaining: north-east Victoria (Chiltern-Albury), and in NSW at Capertee Valley and the Bundarra-Barraba region. In NSW the distribution is very patchy and mainly confined to the two main breeding areas and surrounding fragmented woodlands. The species inhabits dry open forest and woodland, particularly Box-Ironbark woodland, and riparian forests of River Sheoak. Regent Honeyeaters inhabit woodlands that support a significantly high abundance and species richness of bird species.	1	**Unlikely** There is no woodland or forest habitat within the subject site; it is therefore unlikely that Regent Honeyeater would utilise the subject site.	No
Grantiella picta Painted Honeyeater	BC Act - V	The Painted Honeyeater is nomadic and occurs at low densities throughout its range. The greatest concentrations of the bird and almost all breeding occurs on the inland slopes of the Great Dividing Range in NSW, Victoria and southern Queensland. Inhabits Boree/ Weeping Myall (*Acacia pendula*), Brigalow (*A. harpophylla*) and Box-Gum Woodlands and Box-Ironbark Forests. A specialist feeder on	1	**Low** Mistletoe was only noted on one tree within the study area. Given the rarity of the species' primary food source adjacent to and in the subject site, the subject site is not considered important habitat for the species.	No

Species Name	Status	Habitat Description and Locally Known Populations	Local Records	Potential to Occur and Importance of Habitat Present	Assessment of Significance
		the fruits of mistletoes growing on woodland eucalypts and acacias. Prefers mistletoes of the genus *Amyema*.			
Melithreptus gularis gularis Black-chinned Honeyeater (eastern subspecies)	BC Act - V	The Black-chinned Honeyeater has two subspecies, with only the nominate (*gularis*) occurring in NSW where it is widespread, with records from the tablelands and western slopes of the Great Dividing Range to the north-west and central-west plains and the Riverina. Occupies mostly upper levels of drier open forests or woodlands dominated by box and ironbark eucalypts. Feeding territories are large making the species locally nomadic. Recent studies have found that the Black-chinned Honeyeater tends to occur in the largest woodland patches in the landscape as birds forage over large home ranges of at least 5 hectares.	2	**Low** The subject site does not have any woodland or forest habitat, however there are both small and large patches of woodland/forest habitat in the locality. The subject site is therefore not considered important habitat for the species.	No
Pomatostomus temporalis temporalis Grey-crowned Babbler (eastern subspecies)	BC Act - V	In NSW, the eastern sub-species occurs on the western slopes of the Great Dividing Range, and on the western plains reaching as far as Louth and Balranald. Inhabits open Box-Gum Woodlands on the slopes, and Box-Cypress-pine and open Box Woodlands on alluvial plains. Woodlands on fertile soils in coastal regions. Feed on invertebrates, either by foraging on the trunks and branches of eucalypts and other woodland trees or on the ground, digging and probing amongst litter and tussock grasses.	4	**Low** The species is a woodland species and there is no such habitat in the subject site. The species is therefore not considered in this assessment.	No
Daphoenositta chrysoptera Varied Sittella	BC Act - V	Inhabits eucalypt forests and woodlands, especially rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland. Feeds on arthropods gleaned from crevices in rough or decorticating bark, dead branches, standing dead trees, and from small branches and twigs in the tree canopy.	13	**Low** The species is dependent on woodland/forest habitat. The subject site has no suitable habitat and is therefore not considered important habitat for the species.	No
Artamus cyanopterus cyanopterus Dusky Woodswallow	BC Act - V	Primarily inhabit dry, open eucalypt forests and woodlands, including mallee associations, with an open or sparse understorey of eucalypt saplings, acacias and other shrubs, and ground-cover of grasses or sedges and fallen woody	10	**Low** The subject site does not contain woodland habitat or suitable foraging habitat required to support this species	No

Species Name	Status	Habitat Description and Locally Known Populations	Local Records	Potential to Occur and Importance of Habitat Present	Assessment of Significance
		debris. Primarily eats invertebrates, mainly insects, which are captured whilst hovering or sallying above the canopy or over water. Most breeding activity occurs on the western slopes of the Great Dividing Range.		and is therefore not considered important habitat for the species.	
Melanodryas cucullata cucullata Hooded Robin (south-eastern form)	BC Act - V	The south-eastern form (subspecies *cucullata*) is found from Brisbane to Adelaide and throughout much of inland NSW, with the exception of the extreme north-west, where it is replaced by subspecies *picata*. Two other subspecies occur outside NSW. Requires structurally diverse habitats featuring mature eucalypts, saplings, some small shrubs and a ground layer of moderately tall native grasses.	P	**Low** The subject site is not considered important habitat due to the limited structural diversity and the highly modified nature of the habitat within the subject site.	No
Petroica boodang Scarlet Robin	BC Act - V	In NSW, it occurs from the coast to the inland slopes. The Scarlet Robin lives in dry eucalypt forests and woodlands. The understorey is usually open and grassy with few scattered shrubs. This species lives in both mature and regrowth vegetation. Scarlet Robin habitat usually contains abundant logs and fallen timber: these are important components of its habitat.	16	**Low** There is no woodland vegetation (either mature or regrowth) within the subject site. The species is therefore not considered in this assessment.	No
Petroica phoenicea Flame Robin	BC Act - V	In NSW, the Flame Robin breeds in upland areas and in winter, many birds move to the inland slopes and plains to drier, more open habitats. It is likely that there are two separate populations in NSW, one in the Northern Tablelands, and another ranging from the Central to Southern Tablelands. The species breeds in upland tall moist eucalypt forests and woodlands, often on ridges and slopes. It prefers clearings or areas with open understoreys, with a ground layer dominated by native grasses.	1	**Low** The subject site is not considered important habitat for this species as the habitat type is not compatible with the species' ecological requirements.	No
Stagonopleura guttata Diamond Firetail	BC Act - V	Found in grassy eucalypt woodlands, including Box-Gum Woodlands. Also occurs in open forest, mallee, Natural Temperate Grassland, and in secondary grassland derived from other communities. Prefers clearings or areas with open understoreys. Feeds exclusively on the ground, on	7	**Low** The subject site is not considered important habitat due to a paucity of suitable habitat.	No

Species Name	Status	Habitat Description and Locally Known Populations	Local Records	Potential to Occur and Importance of Habitat Present	Assessment of Significance
		ripe and partly-ripe grass and herb seeds and green leaves, and on insects. Nests are globular structures built either in the shrubby understorey, or higher up, especially under hawk's or raven's nests. Birds roost in dense shrubs or in smaller nests built especially for roosting.			
Mammalia					
Spotted-tailed Quoll	BC Act - V	Recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline. Individual animals use hollow-bearing trees, fallen logs, small caves, rock outcrops and rocky-cliff faces as den sites. Females occupy home ranges of 200-500 hectares, while males occupy very large home ranges from 500 to over 4000 hectares.	5	**Moderate** The species may travel through or rest within the subject site given its very large home range. The species is therefore considered in this assessment as a precautionary measure.	Yes
Phascolarctos cinereus Koala	BC Act - V	Inhabit eucalypt woodlands and forests. Feed on the foliage of more than 70 eucalypt species and 30 non-eucalypt species, but in any one area will select preferred browse species. Home range size varies with quality of habitat, ranging from less than two ha to several hundred hectares in size.	18	**Moderate** The species has been sighted by the Applicant in the locality (along Mellburra road) and there are feed trees (White Box, White Cypress Pine) in the vicinity of the subject site. The species may therefore travel through the subject site as it moves form one patch of habitat to another.	Yes
Cercartetus nanus Eastern Pygmy-possum	BC Act - V	In NSW the species range extends from the coast inland as far as the Pilliga, Dubbo, Parkes and Wagga Wagga on the western slopes. Found in a broad range of habitats from rainforest through sclerophyll (including Box-Ironbark) forest and woodland to heath, but in most areas woodlands and heath appear to be preferred, except in north-eastern NSW where they are most frequently encountered in rainforest.	P	**Low** The species has not been recorded in the Kaputar IBNRA subregion. Furthermore the subject site does not contain suitable habitat. It is therefore unlikely that the subject site would be utilised by Eastern Pygmy-possum.	No

Species Name	Status	Habitat Description and Locally Known Populations	Local Records	Potential to Occur and Importance of Habitat Present	Assessment of Significance
Petaurus norfolcensis Squirrel Glider	BC Act - V	Squirrel Gliders inhabit mature or old growth Box, Box-Ironbark woodlands and River Red Gum forest west of the Great Dividing Range and Blackbutt-Bloodwood forest with heath understorey in coastal areas. They prefer mixed species stands with a shrub or Acacia midstorey.	15	**Unlikely** The species is not considered in this assessment due to a paucity of suitable habitat in the subject site.	No
Petauroides volans Greater Glider	BC Act – Not listed	The distribution of the Greater Glider includes the ranges and coastal plain of eastern Australia, where it inhabits a variety of eucalypt forests and woodlands. Adult Greater Gliders occupy a relatively small home range with an average size of 1 to 3 ha from which they rarely disperse.	128	**Unlikely** The species is not considered in this assessment due to a paucity of suitable habitat in the subject site.	No
Aepyprymnus rufescens Rufous Bettong	BC Act - V	In NSW, Rufous Bettong has largely vanished from inland areas but there are sporadic, unconfirmed records from the Pilliga and Torrington districts.	P	**Low** The species is not known to occur in the locality of the subject site. The subject site is therefore not considered to provide important habitat for the species.	No
Petrogale penicillata Brush-tailed Rock-wallaby	BC Act - E	In NSW, the species occurs from the Queensland border in the north to the Shoalhaven in the south, with the population in the Warrumbungle Ranges being the western limit. Brush-tailed Rock-wallaby occupy rocky escarpments, outcrops and cliffs with a preference for complex structures with fissures, caves and ledges, often facing north.	3	**Unlikely** There is no suitable habitat for the species within the subject site.	No
Pteropus poliocephalus Grey-headed Flying-fox	BC Act - V	Occur in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops. Roosting camps are generally located within 20 km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy.	1	**Unlikely** There is no suitable habitat, including foraging and roosting habitat, for the species on the subject site. Therefore, the subject site is not considered important habitat for the species.	No
Saccolaimus flaviventris	BC Act - V	Roosts singly or in groups of up to six, in tree hollows and buildings; in treeless areas they are known to utilise	11	**Moderate** This species forages in most habitats,	Yes

Species Name	Status	Habitat Description and Locally Known Populations	Local Records	Potential to Occur and Importance of Habitat Present	Assessment of Significance
Yellow-bellied Sheathtail-bat		mammal burrows. When foraging for insects, flies high and fast over the forest canopy, but lower in more open country. Forages in most habitats across its very wide range, with and without trees; appears to defend an aerial territory.		and therefore may forage within open habitat on the subject site, given the availability of roosting habitat in the site vicinity.	
Micronomus norfolkensis Eastern Coastal Free-tailed Bat	BC Act - V	The Eastern Freetail-bat is found along the east coast from south Queensland to southern NSW. The species occurs in dry sclerophyll forest, woodland, swamp forests and mangrove forests east of the Great Dividing Range.	1	**Low** The subject site is outside of the species' known range.	No
Chalinolobus dwyeri Large-eared Pied Bat	BC Act - V	It is generally rare with a very patchy distribution in NSW. There are scattered records from the New England Tablelands and North West Slopes. Roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin (*Petrochelidon ariel*), frequenting low to mid-elevation dry open forest and woodland close to these features.	9	**Low** The site is not considered important habitat for the species. No suitable roosting habitat was observed in the vicinity of the subject site.	No
Nyctophilus corbeni Corben's Long-eared Bat	BC Act - V	Inhabits a variety of vegetation types, including mallee, bulloak and box eucalypt dominated communities, but it is distinctly more common in box/ironbark/cypress-pine vegetation. Roosts in tree hollows, crevices, and under loose bark. Slow flying agile bat, utilising the understorey to hunt non-flying prey - especially caterpillars and beetles - and will even hunt on the ground.	1	**Moderate** This species' preferred habitat is in the vicinity of the subject site, and it may therefore forage within the subject site if present in the vicinity.	Yes
Scoteanax rueppellii Greater Broad-nosed Bat	BC Act - V	In NSW it is widespread on the New England Tablelands, however, does not occur at altitudes above 500 m. The species utilises a variety of habitats from woodland through to moist and dry eucalypt forest and rainforest, though it is most commonly found in tall wet forest. Although this species usually roosts in tree hollows, it has also been found in buildings.	1	**Unlikely** The preferred habitat for this species (tall, wet forest), is not present in the subject site or in its surrounds. Furthermore there is only one records for the species in the Kaputar IBRA. The species is therefore not considered in this assessment.	No

Species Name	Status	Habitat Description and Locally Known Populations	Local Records	Potential to Occur and Importance of Habitat Present	Assessment of Significance
Vespadelus troughtoni Eastern Cave Bat	BC Act - V	The Eastern Cave Bat is found in a broad band on both sides of the Great Dividing Range from Cape York to Kempsey, with records from the New England Tablelands and the upper north coast of NSW. A cave-roosting species that is usually found in dry open forest and woodland, near cliffs or rocky overhangs; has been recorded roosting in disused mine workings, occasionally in colonies of up to 500 individuals.	P	**Low** The species has not been recorded in the Kaputar IBRA subregion. Furthermore, there is no known roosting habitat in the vicinity of the subject site.	No
Miniopterus australis Little Bent-winged Bat	BC Act - V	The species is found along the east coast and ranges of Australia from Cape York in Queensland to Wollongong in NSW. Habitat includes moist eucalypt forest, rainforest, vine thicket, wet and dry sclerophyll forest, Melaleuca swamps, dense coastal forests and banksia scrub.	1	**Low** The subject site is outside of the known distribution for this species. Little Bent-winged Bat is therefore not considered in this assessment.	No
Miniopterus orianae oceanensis Large Bent-winged Bat	BC Act - V	Caves are the primary roosting habitat for this species, but they also use derelict mines, storm-water tunnels, buildings and other man-made structures. Form discrete populations centred on a maternity cave that is used annually in spring and summer for the birth and rearing of young. At other times of the year, populations disperse within about 300 km range of maternity caves. The species forages in grassland and timbered forest.	10	**Low** There is no suitable foraging or roosting habitat for the species within the subject site.	No
Reptilia					
Uvidicolus sphyrurus Border Thick-tailed Gecko	BC Act - V	Found only on the tablelands and slopes of northern NSW and southern Queensland, reaching south to Tamworth and west to Moree. As implied by another of its common names (Granite Thick-tailed Gecko), this species often occurs on steep rocky or scree slopes, especially granite. Recent records from basalt and metasediment slopes and flats indicate its habitat selection is broader than formerly thought and may have extended into areas that were cleared for agriculture. Favours forest and woodland areas	2	**Unlikely** The subject site does not contain habitat characteristics and features favoured by this species. It is therefore not considered in this assessment.	No

Species Name	Status	Habitat Description and Locally Known Populations	Local Records	Potential to Occur and Importance of Habitat Present	Assessment of Significance
		with boulders, rock slabs, fallen timber and deep leaf litter. Occupied sites often have a dense tree canopy that helps create a sparse understorey.			
Hoplocephalus bitorquatus Pale-headed Snake	BC Act - V	A patchy distribution from north-east Queensland to the north-eastern quarter of NSW. In NSW it has historically been recorded from as far west as Mungindi and Quambone on the Darling Riverine Plains, across the north west slopes, and from the north coast from Queensland to Sydney. Found mainly in dry eucalypt forests and woodlands, cypress forest and occasionally in rainforest or moist eucalypt forest. In drier environments, it appears to favour habitats close to riparian areas.	P	**Unlikely** The species is not considered likely to occur within the subject site due to a paucity of suitable habitat. Furthermore there are no records of the species within the Kaputar IBRA subregion. It is therefore not considered in this assessment.	No
Amphibia					
Adelotus brevis Tusked Frog population in the Nandewar and New England Tableland Bioregions	BC Act – E	Tusked Frogs were once found west to the New England Tableland and North West Slopes (Nandewar bioregion) but are now very rare there, and the population in these regions has been listed as an Endangered Population under the Threatened Species Conservation Act. They remain more common in lower elevation coastal areas. The species occurs in rainforests, wet forests and flooded grassland and pasture. They are usually found near creeks, ditches and ponds, and call while hidden amongst vegetation or debris.	P	**Unlikely** The species has not been recorded in the Kaputar IBRA subregion. Furthermore, the site does not contain habitat utilised by the species. The sediment pond which forms part of the existing development is common, low-quality habitat with high levels of sediment and is not considered suitable for amphibians. Tusked Frog is therefore not considered in this assessment.	No
Litoria booroolongensis Booroolong Frog	BC Act – E	The Booroolong Frog is restricted to NSW and north-eastern Victoria, predominantly along the western-flowing streams of the Great Dividing Range. It has disappeared from much of the Northern Tablelands; however, several populations have recently been recorded in the Namoi catchment. The species is rare throughout most of the remainder of its range. It lives along permanent streams	2	**Unlikely** There are no permanent streams within the subject site.	No

Species Name	Status	Habitat Description and Locally Known Populations	Local Records	Potential to Occur and Importance of Habitat Present	Assessment of Significance
		with some fringing vegetation cover such as ferns, sedges or grasses.			
Flora					
Tylophora linearis	BC Act – V	Grows in dry scrubland that may have a eucalypt, *Callitris glaucophylla* and/or *Allocasuarina luehmannii* overtopping the scrub, in the Barraba, Mendooran, Temora and West Wyalong districts.	P	**Unlikely** The species is known to occur in three districts. These are all at distance from the subject site. The species is therefore not considered in this assessment.	No
Cyperus conicus	BC Act – E	The species is recorded from Callitris forest in the Pilliga area, growing in sandy soil with Cyperus gracilis, C. squarrosus and C. fulvus. It is also found across the tropics in in Qld, WA and the NT, including central deserts north of Alice Springs. Grows in open woodland on sandy soil.	P	**Low** In the region surrounding the subject site, the species has been recorded in the Pilliga forest. It is unlikely that the species would occur within the subject site, and the species is therefore not included in this assessment.	No
Commersonia procumbens		Endemic to NSW, mainly confined to the Dubbo-Mendooran-Gilgandra region, but also in the Pilliga and Nymagee areas. *Commersonia procumbens* grows in sandy sites, often along roadsides.	4	**Low** The subject site is not considered important habitat for the species due to a paucity of suitable habitat.	No
Dichanthium setosum Bluegrass	BC Act – V	Bluegrass occurs on the New England Tablelands, North West Slopes and Plains and the Central Western Slopes of NSW, extending to northern Queensland. Associated with heavy basaltic black soils and red-brown loams with clay subsoil. Often found in moderately disturbed areas such as cleared woodland, grassy roadside remnants and highly disturbed pasture.	15	**Moderate** This species was not observed during the site assessment. However, it is known to occur in moderately disturbed areas and loam soils and the subject site has potential habitat for the species. The species is therefore included in this assessment.	Yes
Digitaria porrecta Finger Panic Grass	BC Act – E	In NSW, the most frequently recorded associated tree species are *Eucalyptus albens* and *Acacia pendula*. Common associated grasses and forbs in NSW sites	1	**Low** The species is unlikely to occur within the subject site. The subject site has	No

Species Name	Status	Habitat Description and Locally Known Populations	Local Records	Potential to Occur and Importance of Habitat Present	Assessment of Significance
		include *Austrostipa aristiglumis, Enteropogon acicularis, Cyperus bifax*, *Hibiscus trionum* and *Neptunia gracilis*. Found in native grassland, woodlands or open forest with a grassy understorey, on richer soils.		been modified and does not contain suitable habitat for the species.	
Homopholis belsonii Belson's Panic	BC Act – E	Occurs on the northwest slopes and plains of NSW, mostly between Wee Waa, Goondiwindi and Glen Innes. It also occurs in Queensland, mainly in the Brigalow Belt South bioregion. Grows in dry woodland (e.g. Belah) often on poor soils, although sometimes found in basalt-enriched sites north of Warialda and in alluvial clay soils.	2	**Unlikely** The subject site is not considered suitable habitat for the species due to a paucity of suitable habitat.	No
Polygala linariifolia Native Milkwort	BC Act – E	North from Copeton Dam and the Warialda area to southern Queensland. The species has been recorded from the Inverell and Torrington districts growing in dark sandy loam on granite in shrubby forest of *Eucalyptus caleyi, Eucalyptus dealbata* and *Callitris*, and in yellow podzolic soil on granite in layered open forest.	P	**Unlikely** The subject site is not considered suitable habitat for the species due to a paucity of suitable habitat.	No
Muehlenbeckia costata Scrambling Lignum	BC Act – V	Records on the New England Tablelands and North West Slopes include Bald Rock north of Tenterfield, Warra and Butterleaf National Parks near Glen Innes and Mt Kaputar. The species grows in coarse sandy soils and peat in heath, mallee and open eucalypt woodland on granite or acid volcanic outcrops at higher altitudes.	2	**Unlikely** The subject site is not considered suitable habitat for the species due to a paucity of suitable substrate.	No
Zieria odorifera subsp. *copelandii*	BC Act – E	Widely scattered but not common in north-east NSW and in Queensland. It is known from several locations on the NSW north coast and a few locations on the New England Tablelands and North West Slopes, including near Torrington and Coolatai. Found in moist eucalypt forest or sheltered woodlands with a shrubby understorey, and occasionally along creeks.	16	**Unlikely** There is no suitable habitat for the species within the subject site. Furthermore, the subject site has been heavily modified and is considered unlikely to support threatened species. The species is therefore not considered in this assessment.	No
Thesium australe Austral Toadflax	BC Act – V	Austral Toadflax is found in very small populations scattered across eastern NSW, along the coast, and from	66	**Low** The species is unlikely to occur within	No

Species Name	Status	Habitat Description and Locally Known Populations	Local Records	Potential to Occur and Importance of Habitat Present	Assessment of Significance
		the Northern to Southern Tablelands. Occurs in grassland on coastal headlands or grassland and grassy woodland away from the coast. It is often found in association with Kangaroo Grass (*Themeda australis*).		the subject site. There is no grassland/grassy woodland habitat within the subject site. It is therefore not considered important habitat for the species.	
Cadellia pentastylis Ooline	BC Act – V	Occurs along the western edge of the North West Slopes from north of Gunnedah to west of Tenterfield. Ooline typically forms a closed or open canopy mixing with eucalypt and cypress pine species. The total area occupied by Ooline is only about 1200 hectares, with remaining populations in NSW still threatened to various degrees by clearing for agriculture and grazing pressures.	9	**Unlikely** Ooline was not observed during the site assessment. There is no potential habitat for the species within the proposed development site and the species with which Ooline is commonly associated are also absent from the subject site. The species is therefore not considered in this assessment.	No
Communities					
Brigalow within the Brigalow Belt South, Nandewar and Darling Riverine Plains Bioregions	BC Act – EEC	The Brigalow community is a low woodland or forest community dominated by Brigalow (*Acacia harpophylla*), with pockets of Belah (*Casuarina* cristata) and Poplar Box (*Eucalyptus populnea* subsp. *bimbil*). The canopy tends to be quite dense and the understorey and ground cover are only sparse.	K	**Low** This EEC does not occur on the site, and the site is thus not considered important habitat.	No
Cadellia pentastylis (Ooline) community in the Nandewar and Brigalow Belt South Bioregions	BC Act – EEC	The Ooline community is an unusual and distinctive forest community with the canopy dominated by the tree Ooline (*Cadellia pentastylis*). The understorey is made up of a range of shrubs, such as Wattles (*Acacia* spp.), and grasses. This community has been extensively cleared and now known from only seven main locations on the North West Slopes in NSW, between Narrabri and the Queensland border, and also in Queensland.	K	**Low** This EEC does not occur on the site, and the site is thus not considered important habitat.	No
Mount Kaputar high elevation and dry rainforest land snail	BC Act – EEC	The Mount Kaputar snail and slug Endangered Ecological Community (EEC) is an assemblage of at least 20 species of native land snail fauna known from high elevation and dry	K	**Low** There is no suitable habitat for this EEC onsite. It is therefore not considered in	No

Species Name	Status	Habitat Description and Locally Known Populations	Local Records	Potential to Occur and Importance of Habitat Present	Assessment of Significance
and slug community in the Nandewar and Brigalow Belt South Bioregions		rainforests of the Mount Kaputar region. Known from the Mount Kaputar National Park the EEC may also occur elsewhere in the region where suitable habitats exist. The EEC is restricted to higher altitudes (above about 1000 m) and dry rainforest (including semi-evergreen vine thicket) areas at lower elevations (above 500 m) in and around Mount Kaputar.		this assessment.	
Semi-evergreen Vine Thicket in the Brigalow Belt South and Nandewar Bioregions	BC Act – EEC	A low, dense form of dry rainforest generally less than 10 m high, made up of vines and rainforest trees as well as some shrubs. This community often occurs on rocky hills, in deep, loam, high nutrient soils derived from basalt or other volcanic rocks, in areas which are sheltered from frequent fire.	K	**Low** This EEC does not occur on the site, and the site is thus not considered important habitat.	No
White Box Yellow Box Blakely's Red Gum Woodland	BC Act – EEC	White Box Yellow Box Blakely's Red Gum Woodland is an open woodland, in which the most obvious species are one or more of the following: White *Box Eucalyptus albens*, Yellow Box *E. melliodora* and Blakely's Red *Gum E. blakelyi*. Intact sites contain a high diversity of plant species, including the main tree species, additional tree species, some shrub species, several climbing plant species, many grasses and a very high diversity of herbs. Characterised by the presence or prior occurrence of White Box, Yellow Box and/or Blakely's Red Gum. Shrubs are generally sparse or absent, though they may be locally common. Remnants generally occur on fertile lower parts of the landscape where resources such as water and nutrients are abundant.	K	**Moderate** This EEC occurs in the vicinity of the subject site and adjacent to the access road to the proposed development. This EEC is therefore considered in this assessment.	Yes

Appendix 3: Koala Habitat Assessment

1 Introduction

SMK Consultants Pty Limited (trading as SMK Consultants) was engaged by Glencairn Quarry Supplies (the Applicant) to prepare a Koala Habitat Assessment in relation to the proposed development of a 29,000 tonne Quarry at 746 Mellburra Road, Narrabri (Lot 24 in Deposited Plan 753920). This report aims to address the assessment requirements as outlined in the *State Environmental Planning Policy (Koala Habitat Protection 2019)* and in accordance with the *Koala Habitat Protection Guideline*.

1.1 Proposed Development

The proposed development involves the establishment of a small gravel quarry on Lot 24 in Deposited Plan 753920, within the property of 'Glencairn'. There is an existing quarry on the site, and the proposed development entails the 'redevelopment' of the site, incorporating the northernmost section of the existing development and extending northwards. The footprint of the proposed quarry development is approximately 1.9 Ha. No native vegetation clearing is proposed as part of the development proposal.

The following definitions are used throughout this report to refer to locations in the proposal area:

- **'Development Footprint'** means the area directly affected by the proposal. The subject site includes the footprint of the development and any ancillary works and accesses that support the construction or operation of the development or activity. In this report, the subject site describes all areas that would be directly impacted by the works. This includes the access route and the footprint of the proposed quarry as well as catch drains and the sediment pond.
- **'Site Area'** is defined in the SEPP Guidelines as including both the development footprint and the broader area of land on which the development is proposed (i.e. the subject lot). The controls within the SEPP apply to both direct and indirect impacts and all potential habitat on the site area therefore needs to be considered even if no vegetation is to be cleared. In this report the site area has been determined as the land within a 500m radius of the proposed development, as there is remnant native vegetation in close proximity (50m) to the subject site on the adjacent Lot, whereas the majority of the remnant vegetation within the subject lot, is situated over 1 kilometre away from the subject site and it is unlikely that this would be adversely impacted by the proposed development, given the available separation distance and the small-scale nature of the proposed development;
- **'Search Area'** refers to a 10-kilometre area surrounding the proposal for the purpose of database searches.
- **'Core Koala Habitat'** is defined in the SEPP Guidelines as meaning:

- An area of land where koalas are present, **or**
- An area of land –
  - Which has been assessed by a suitably qualified and experienced person in accordance with the Guideline as being highly suitable koala habitat, **and**
  - Where koalas have been recorded as being present in the previous 18 years

1.2 State Environmental Planning Policy (Koala Habitat Protection) 2019

The *State Environmental Planning Policy (Koala Habitat Protection) 2019* was introduced on March 1, 2020. It replaces the *State Environmental Planning Policy 44 – Koala Habitat Protection 1995* and has been updated and improved to increase the level of protection of koala habitat within NSW. SEPP (Koala Habitat Protection) 2019 seeks to address the declining status of koalas in NSW through better conservation and management of koala habitat as part of the planning and assessment process. The overarching aim of the SEPP is to:

"… encourage the conservation and management of areas of natural vegetation that provide habitat for koalas to support a permanent free-living population over their present range and reverse the current trend of koala population decline."

The development control provisions of the SEPP apply to development applications relating to land within a council area listed in Schedule 1 of the SEPP:

1. Where there is an approved Koala Plan of Management for the land
   a. the development application must be consistent with the approved koala plan of management that applies to the land.
2. Where there is no approved Koala Plan of Management for the land, if the land
   a. is identified on the Koala Development Application Map, and
   b. has an area of more than 1 hectare, or
   c. has, together with any adjoining land in the same ownership, an area of more than 1 hectare, whether or not the development application applies to the whole, or only part, of the land.

However, the SEPP does not apply to land dedicated, reserved or acquired under the *National Parks and Wildlife Act 1974* or to land dedicated under the *Forestry Act 1916* as a State forest or flora reserve.

The SEPP applies to the site area (Lot 24 in DP 753920) as the site is located within the Narrabri Shire which is listed under Schedule 1 of the SEPP. There is no approved Koala Plan of Management for the land. However, the site has been identified on the Koala

Development Application Map and covers an area of more than 1 hectare. Therefore the SEPP is applicable to the proposed development.

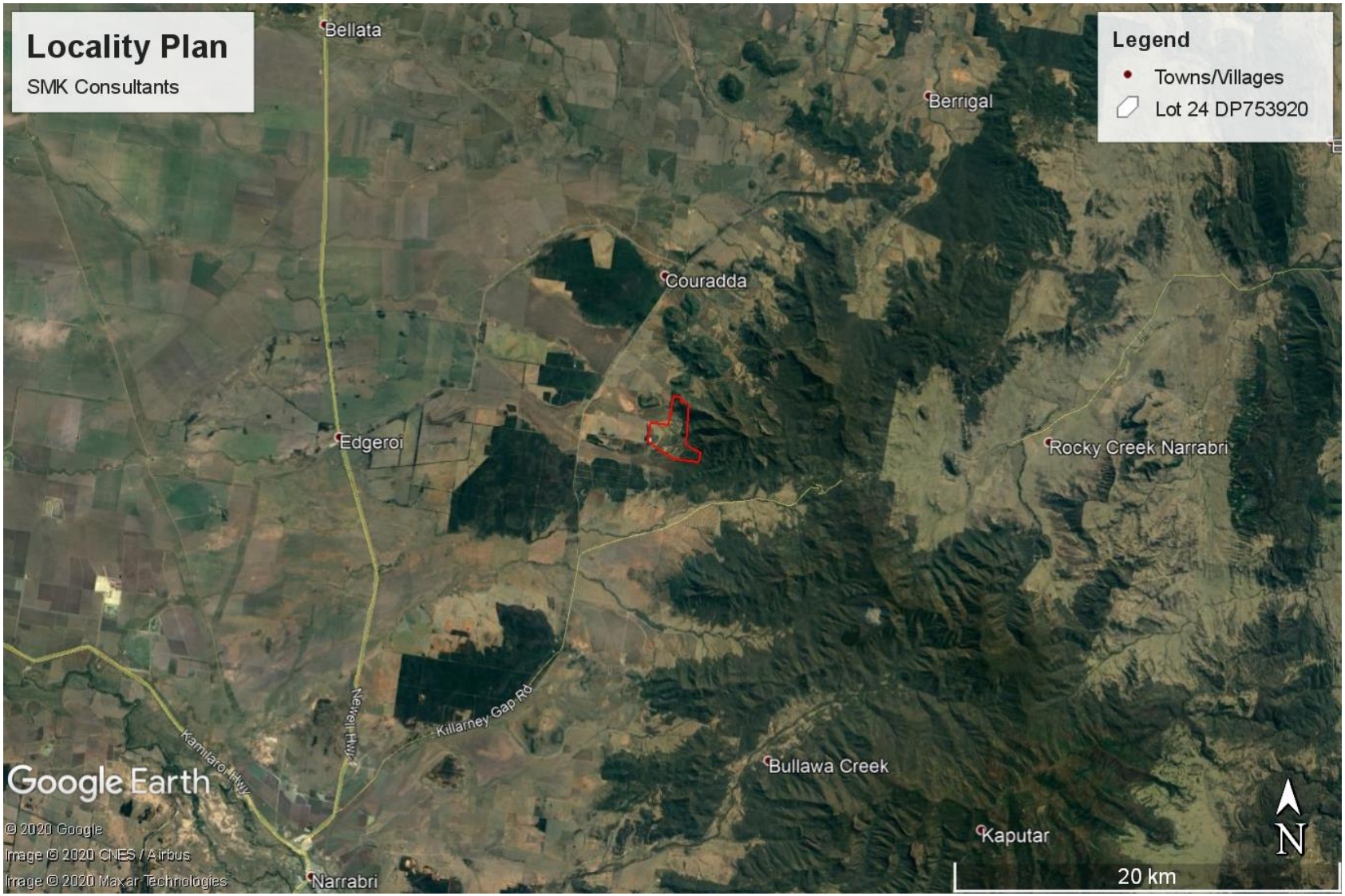

Figure 3: Locality Plan

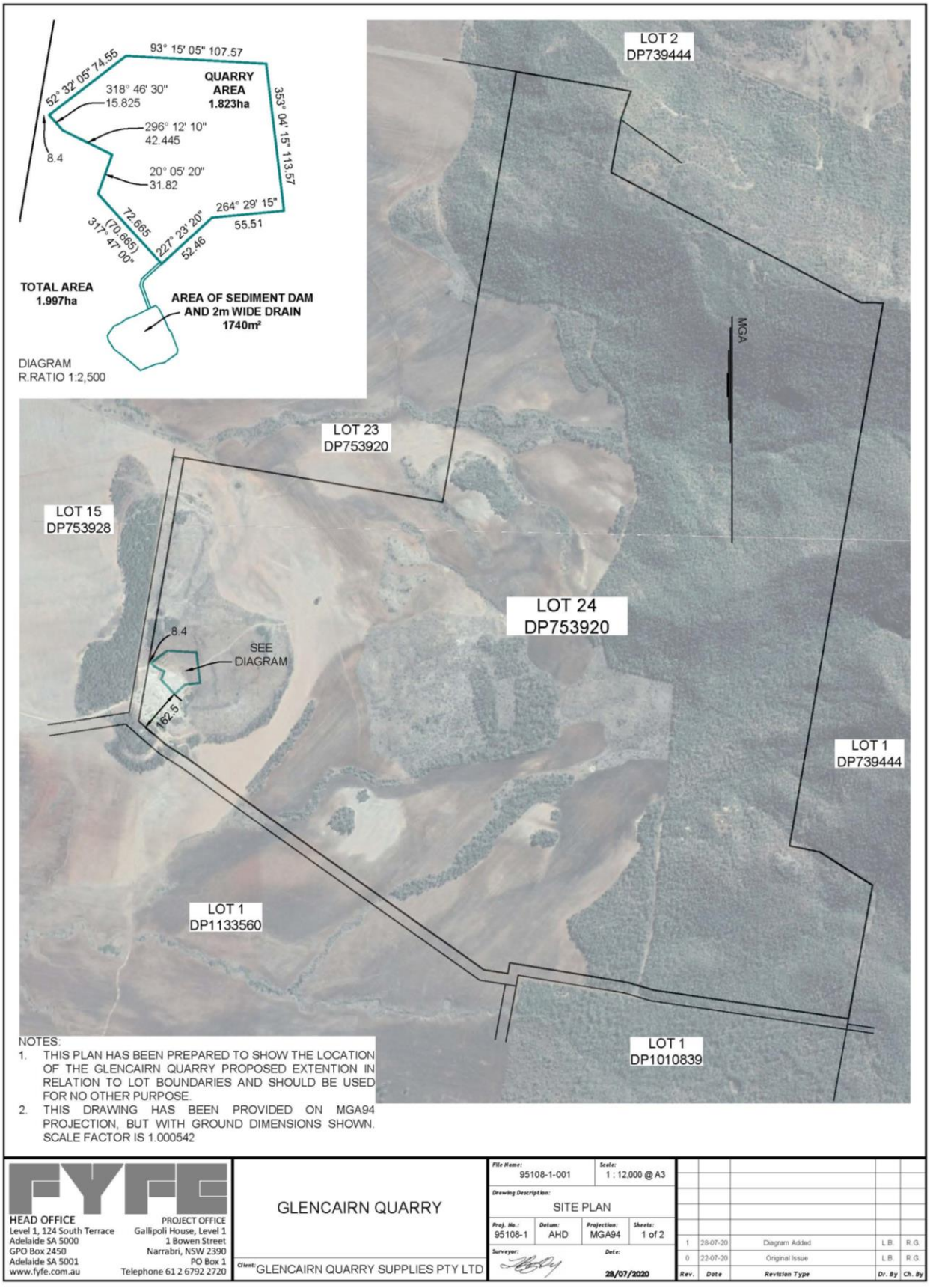

Figure 2: Proposed Development Site within Property Boundary

2 Koala Habitat Values

2.1 Site Area

The SEPP introduced two new maps:

1. **The Koala Development Application Map** – this identifies areas that have highly suitable koala habitat and are likely to be occupied by koalas. On land where there is no approved Koala Plan of Management, this map is used to identify land where Council needs to consider the development application requirements in the Guideline.
2. **The Site Investigation Area of Koala Plans of Management Map** – This identifies land that council are to focus their survey efforts on, particularly when identifying core koala habitat.

The NSW Department of Planning, Industry and the Environment's online mapping tool was searched to determine if the site area contained areas identified as koala habitat. The subject site and surrounding area are shown in relation to the Koala Development Application Map layer, in Figure 3. The subject site also contains area identified as Site Investigation Areas for Koala Plans of Management. Koala Plans of Management are the responsibility of local Councils.

Whilst the development footprint of the proposed dwelling is to be located on previously cleared land, the mapping identified areas of the site area (Lot 24 DP 753920) which are considered to be highly suitable koala habitat that are likely to be occupied by koalas. The site area is therefore required to address the development assessment requirements as outlined in the Koala Habitat Protection Guideline (Implementing State Environmental Planning Policy (Koala Habitat Protection) 2019.

The Narrabri Shire Council have requested a Koala assessment be prepared to determine the potential impact of the proposed development on the areas identified as core koala habitat.

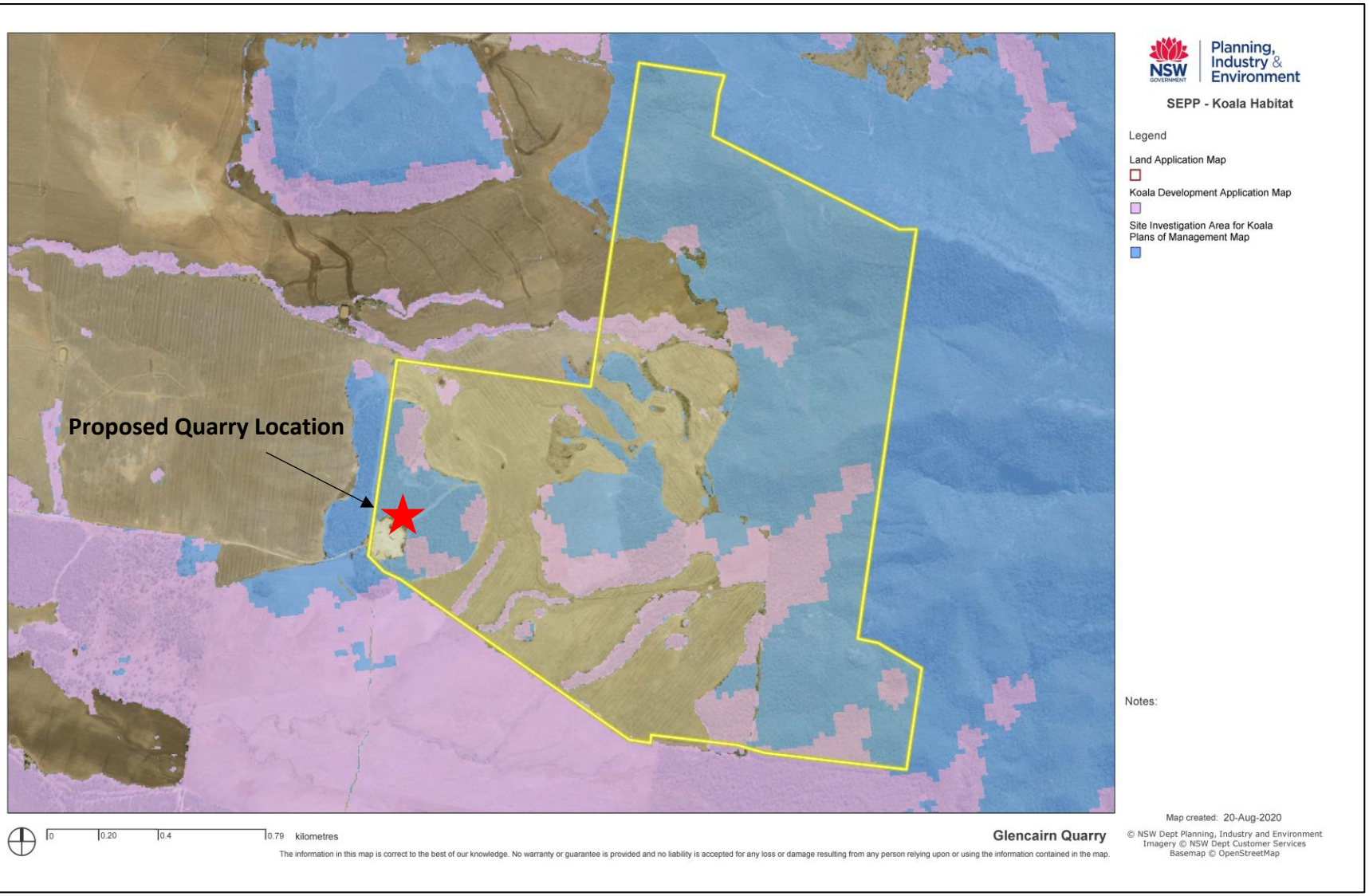

Figure 4: Koala Development Application Map

2.2 Site Description

A detailed site description is provided in Section 2 of the main body of this report 'Glencairn Quarry – Test of Significance and Koala Habitat Assessment.

2.3 Biodiversity Offset Scheme Thresholds

The Biodiversity Offsets Scheme (BOS) Threshold establishes a risk-based approach to identifying developments that are likely to have a significant impact on biodiversity. The *Biodiversity Conservation Regulation 2017* sets out threshold levels for when the BOS will be triggered.

Table 4: Results of the Biodiversity Offset Scheme (BOS) Entry Threshold Report

		BAM Required?
Project area	0 ha	
Minimum lot size Method	LEP	
Minimum Lot	100 ha	
Area threshold	1 ha	
Area of native vegetation to be disturbed	0 ha	No
Impact on Biodiversity Values Land Map	No	No

The proposed development is sited on land that was cleared of native vegetation between 1 January 1990 and 25 August 2017, therefore the regrowth in the subject site is not classified as native vegetation. Therefore, the BOS threshold is not exceeded, and the proposal does not require a BDAR. However, the proposed project is still required to be assessed to determine whether the development is "likely to significantly affect threatened species" as determined under the test in Section 7.3 of the Biodiversity Conservation Act 2016. This assessment has been provided in Section 5 of this report.

2.4 Site Survey

A field survey was conducted on the 29th July 2020. Vegetation within the study area was assessed to determine if any constraints are present within the development footprint and in adjacent areas that may be subjected to indirect impacts. Field assessment utilised the following methodology:

- A random meander of the study area searching for threatened flora with the potential to occur. This involved walking in a random meander throughout the site area, visiting the full range of habitats and recording every plant species observed (as per the 'Random Meander Technique' described by Cropper (1993)).
- Identification and mapping of vegetation to Plant Community Type (PCT) and threatened ecological communities (TEC) where applicable, by comparing the floristic structure and composition of the vegetation on site with vegetation profiles

described within the VIS database (OEH, 2018) and community descriptions of endangered ecological communities known to occur in the local area.

- Opportunistic searches for Koala scats and scratches in association with Koala food trees (as per DECC 2008).

2.5 Survey Results

2.5.1 Flora

The development footprint has been previously cleared and contains shrubby regrowth. However, the site area contains areas of remnant vegetation, particularly to the west of the proposed development site in the adjoining Lot (Lot 15 in DP 753928). The remnant vegetation is located approximately 40 metres from the proposed extraction area at its closest point.

Flora within the surrounding study area can be classified according to four broad vegetation zones:

- PCT 589 - White Box – White Cypress Pine – Silver-leaved Ironbark grassy woodland on mainly clay loam soils hills mainly in the Nandewar Bioregion. This occurs to the south and south-west of the proposed quarry area.
- PCT 592 – Narrow-leaved Ironbark – cypress pine – White Box shrubby open forest in the Brigalow Belt South Bioregion and Nandewar Bioregion. This occurs to the north and north-west of the proposed quarry as mature woodland, and to the south-east of the proposal area along a dry creek bed as immature, shrubby woodland.
- Non-native vegetation – Cleared and cultivated areas of the property. This occurs majority of the property Glencairn and the adjoining lot to the west.
- Regrowth vegetation in recently cleared areas.

Each of the above vegetation communities have been described in detail in Section 4.1.1 – 4.1.4 of the main body of this report.

2.5.2 Presence of Koala Habitat

The Narrabri Shire is located in the Northwest Slopes Koala Management Areas. A list of Koala tree species for this management area is provided in Schedule 2 of the SEPP. Koala tree species of this management area are listed in the following tables:

Table 5: Koala Tree Species listed in Northwest Slopes Koala Management Area

Scientific Name	Common Name(s)
Angophora floribunda	Rough-barked Apple
Callitris glaucophylla	White Cypress Pine
Casuarina cristata	Belah
Eucalyptus albens	White Box

Scientific Name	Common Name(s)
Eucalyptus blakelyi	Blakely's Red Gum
Eucalyptus bridgesiana	Apple Box
Eucalyptus caleyi	Drooping Ironbark
Eucalyptus caliginosa	Broad-leaved Stringybark
Eucalyptus camaldulensis	River Red Gum
Eucalyptus canaliculata	Large-fruited Grey Gum
Eucalyptus chloroclada	Dirty Gum
Eucalyptus conica	Fuzzy Box
Eucalyptus coolabah	Coolabah
Eucalyptus crebra	Narrow-leaved Ironbark
Eucalyptus dalrympleana	Mountain Gum
Eucalyptus dealbata	Tumbledown Red Gum
Eucalyptus dwyeri	Dwyer's Red Gum
Eucalyptus exserta	Peppermint
Eucalyptus fibrosa	Broad-leaved Red Ironbark
Eucalyptus goniocalyx	Bundy
Eucalyptus laevopinea	Silver-top Stringybark
Eucalyptus largiflorens	Black Box
Eucalyptus macrorhyncha	Red Stringybark
Eucalyptus mannifera	Brittle Gum
Eucalyptus melanophloia	Silver-leaved Ironbark
Eucalyptus melliodora	Yellow Box
Eucalyptus microcarpa	Western Grey Box
Eucalyptus moluccana	Grey Box
Eucalyptus nobilis	Forest Ribbon Gum
Eucalyptus parramattensis	Parramatta Red Gum
Eucalyptus pauciflora	White Sally / Snow Gum
Eucalyptus pilligaensis	Narrow-leaved Grey Box
Eucalyptus polyanthemos	Red Box
Eucalyptus populnea	Bimble Box / Poplar Box
Eucalyptus prava	Orange Gum
Eucalyptus punctata	Grey Gum
Eucalyptus quadrangulata	White-topped Box
Eucalyptus sideroxylon	Mugga Ironbark
Eucalyptus viminalis	Ribbon Gum

The proposed development footprint is identified as core Koala habitat in the Development Application Map (shown in Figure 3), however it is noted that remnant vegetation has been

cleared from this area, indicating that the map is dated. Given the lack of mature trees and woodland habitat in the development footprint, this area is not considered core Koala habitat.

Certain parts of the study area are also identified as core Koala habitat on this map. These areas were identified as 'PCT 589 – White Box – White Cypress Pine – Silver-leaved Ironbark grassy woodland on mainly clay loam soils on hills mainly in the Nandewar Bioregion' during the site assessment. This woodland contains the following Koala tree species, which occur as mature and immature individuals:

- White Cypress Pine *(Callitris glaucophylla*)
- Blakely's Red Gum (*Eucalyptus blakelyi*)
- White Box (*Eucalyptus albens*)
- Silver-leaved Ironbark *(Eucalyptus melanophloia*)

A survey of Koala tree species throughout the areas identified as core Koala habitat on the Development Application map did not identify the presence of scratch marks on these trees. Furthermore, no Koala scats were noted around the base of these trees.

2.5.3 Koala Records

A consideration of existing records spanning the previous 18 years (3 koala generations) is required to determine if any koala records exist for the area. A site area is considered to contain habitat that meets the definition of core koala habitat, provided the site contains highly suitable koala habitat and where a record or records exist within the last 18 years, within 5 kilometres of the site (for Darling Riverine Plains, Far West, North West Slopes, Riverina and Northern Tablelands KMA's). This distanced reflects the estimated median home range of koalas within inland locations.

The results of a BioNet Atlas search undertaken on the 20th of August, 2020 are included in Figure 13. Table 4 provides details of the record and the distance between the subject site and the record.

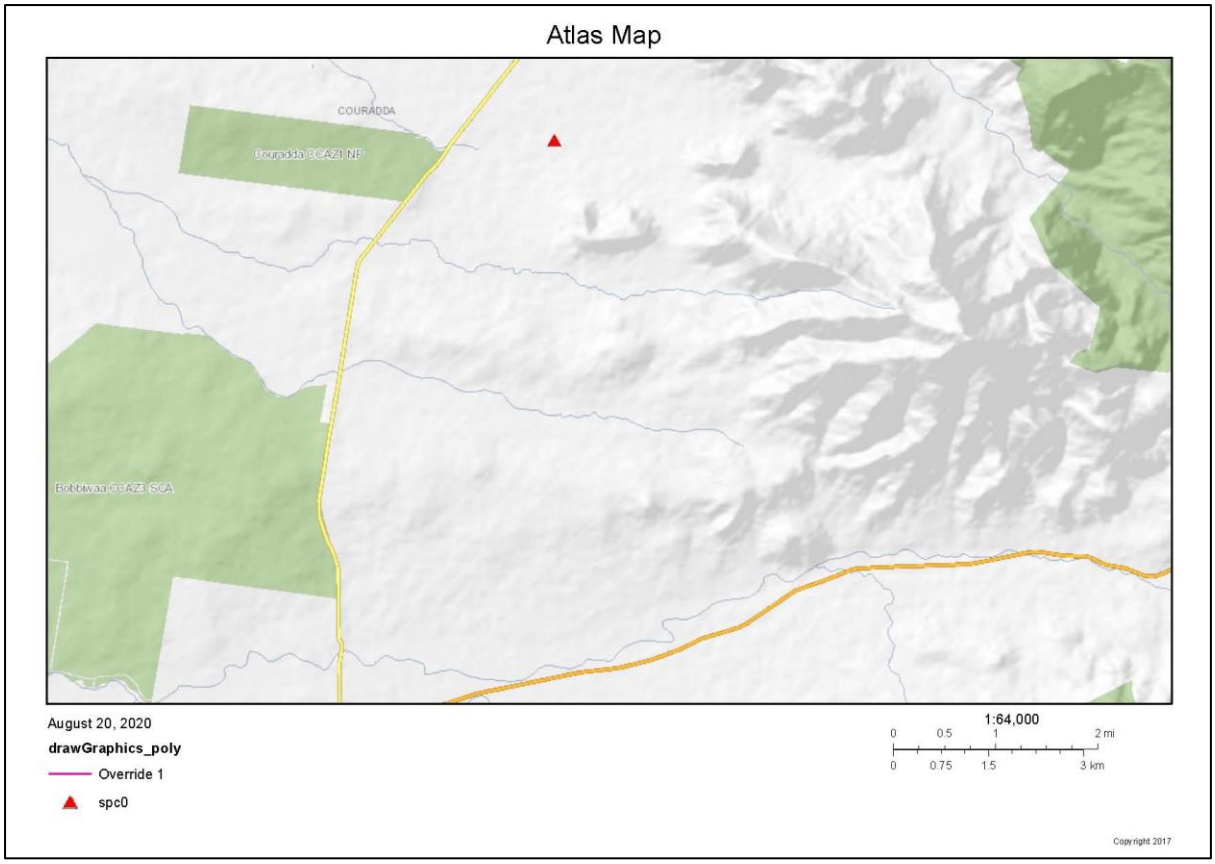

Figure 5: Koala Records within the Locality

Table 6: BioNet Atlas Records

Date	Accuracy	Observation Type	Location	Distance and Direction from Subject Site
12/06/2012	Valid and Accepted without Modification	Observed	Zone 55: 785517E, 6668002N	3.4 kilometres north-west of subject site

One recorded Koala sighting within the last 18 years occurred within 5 kilometres of the subject site. The areas of remnant vegetation within the site are therefore considered to contain core koala habitat. Figure 14 shows the identified areas within the site.

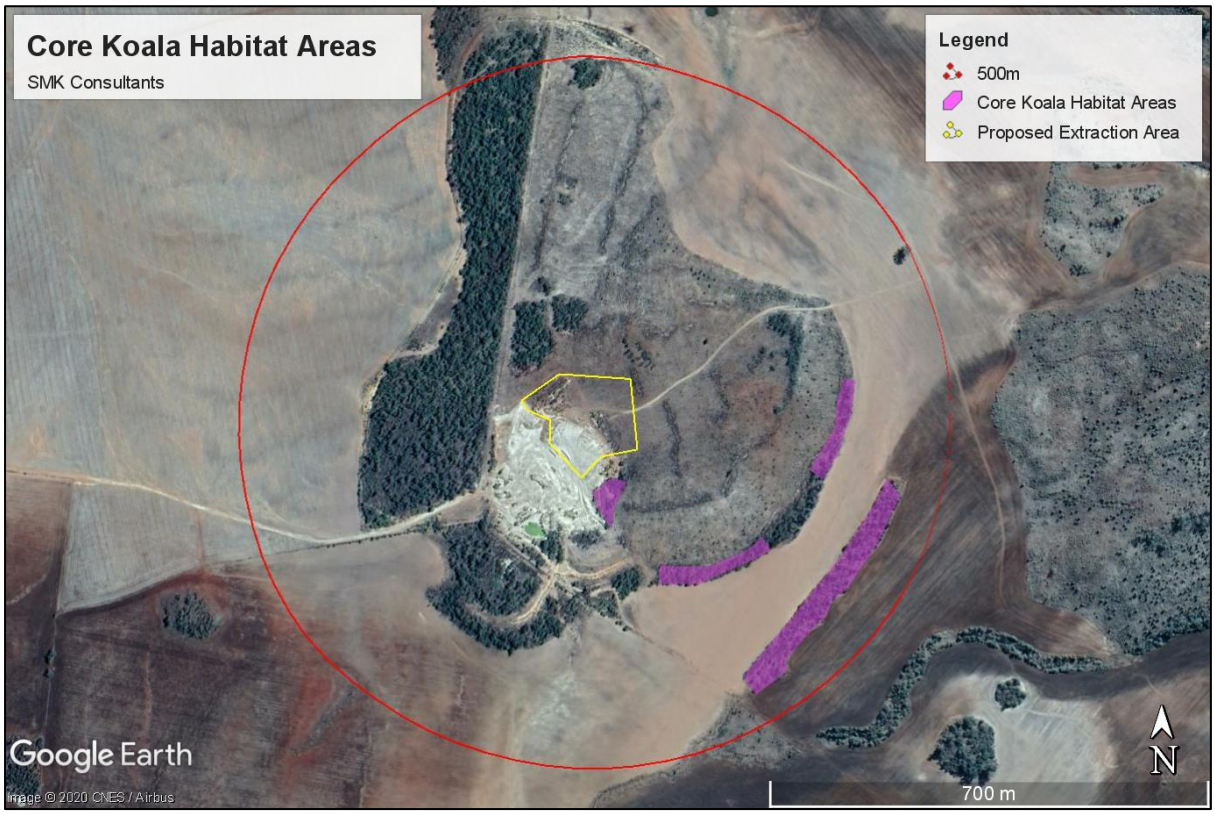

Figure 6: Core Koala Habitat Areas within 500m of the Proposed Extraction Area

3 Development Assessment

The development assessment requirements are structured in two parts, corresponding with the level of impact to koalas and their habitat arising from the development. If Tier 1 proponents are not able to demonstrate that the development has a low or no direct impact on koalas or koala habitat, they must proceed under Tier 2. If any native vegetation is to be removed, or the development footprint will impede movements between koala habitat the development automatically becomes Tier 2 development.

The proposal is for the development of a quarry on a historically cleared area of land and therefore has been assessed in relation to the criteria outlined for Tier 1 development.

3.1 Tier 1 – Low or No Direct Impact Development

The Tier 1 process is for development which can be demonstrated to have low or no direct impact on koalas or koala habitat as follows:

1. **indirect impacts that will not result in clearing of native vegetation within koala habitat**
   Comment: The proposal does not include any clearing of native vegetation within areas of the property identified as containing koala habitat. The development footprint is contained to a site which was previously cleared and currently supports regrowth.
2. **the development is below the Biodiversity Offsets Scheme threshold under the BC Act**
   Comment: As demonstrated in Section 2.3 of this Koala Habitat Assessment, the proposal does not exceed the BOS threshold.
3. **there is no native vegetation removal**
   Comment: The proposal does not include any clearing of native vegetation. The development footprint is contained to a site previously cleared which currently supports regrowth over part of the footprint area.
4. **the development footprint will not impede movement between koala habitat**
   Comment: The development footprint is not located within a vegetation corridor and is not considered to impeded movements between koala habitats.
5. **adequate mitigation measures such as those listed in Table 5 below are implemented as necessary**
   Comment: It is recommended the applicant adopts the recommended management and mitigation measures outlined in Section 5 of this report.

The proposal is considered to satisfy all the above listed criteria and is considered as a Tier 1 (low or no direct impact development). Therefore, no assessment under the Tier 2 process is triggered.

4 Proposed Mitigation Measures

The following includes the recommended mitigation measures to be implemented as part of the proposed development.

Table 7: Recommended Management Measures to Address Key Impacts

Impact	Management Measures
During Quarry Operation	Ensure that no vegetation is removed outside of the subject site, thereby ensuring that there is no net loss of core Koala Habitat.
	Retention of koala habitat corridors with the principle of minimising adverse impacts and retaining existing corridors.
During Quarry Operation	Use of biosecurity and hygiene procedures in instances where vegetation pathogens known to affect koala trees might be spread or introduced. For example, strict enforcement of vehicle wash-down points to avoid the introduction or spread of disease.
	Traffic speed limited to 40km/hour within the property and subject site.
	Should koalas be identified, temporary suspension of works that might disturb the koala and/or prevent it from moving to adjacent undisturbed habitat of its own volition.

5 Conclusion

SMK Consultants has prepared a Koala Habitat Assessment on behalf of Glencairn Quarry Supplies (the applicant) in relation to the proposed development of 29,000 tonne gravel quarry at 746 Mellburra Road on Lot 24 DP 753920 in the Narrabri Shire.

The report addressed the requirements as outlined in the *State Environmental Planning Policy (Koala Habitat Protection 2019)* and the assessment criteria provided in the *Koala Habitat Protection Guideline (Implementing State Environmental Planning Policy (Koala Habitat Protection) 2019*.

The assessment included a site survey to assess the potential for koala habitat on the property and determined that whilst the proposed development footprint was located in an area with no koala habitat value, areas of remnant vegetation within the property contained highly suitable koala habitat including koala feed tree species. Historical and recent records of koalas were identified within 5 kilometres of the site area which confirmed that the site should be identified as core koala habitat.

The development was assessed as a Tier 1 development, having low to no direct impact on koala habitat. The development proposal does not involve any native vegetation clearing and the development footprint is setback from areas identified as core koala habitat.

Provided the management and mitigation measures listed in Section 4 of this report are implemented, the potential for indirect impacts is minimal and the proposal is considered to adequately avoid, minimise and manage potential impacts to koalas and their habitat.

6 References

BioNet Atlas of NSW Wildlife, "NSW Government Department of Environment and Heritage Website". Accessed August 2020. http://www.bionet.nsw.gov.au/

Office of Environment and Heritage (OEH) (2020), Atlas of NSW Wildlife Database. Licenced database accessed August 2020.

State Environmental Planning Policy (Koala Habitat Protection) 2019. https://legislation.nsw.gov.au/EPIs/2019-658.pdf

Koala Habitat Protection Guideline (Implementing State Environmental Planning Policy (Koala Habitat Protection) 2019.

Koala Development Application Map. 2020. https://webmap.environment.nsw.gov.au/Html5Viewer291/index.html?viewer=KoalaSEPP.htm5

SEED, The Central Resource for Sharing and Enabling Environmental Data in NSW (2020). Accessed August 2020. https://www.seed.nsw.gov.au/