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Shallow Bay Quarry Ecological Assessment Report

Prepared for: Ironhide Enterprises Pty Ltd

April 2025

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Contents

1. Introduction

Ironhide Enterprises Pty Ltd engaged Leaf ERC to undertake an Ecological Assessment for the proposed establishment of a hard rock quarry and associated facilities located within lot 542 DP 531809 at 465 Shallow Bay Road. The purpose of this assessment is to identify any ecological constraints associated with the site and assess potential impacts to threatened flora and fauna.

2. Site Description

The Subject Site is located at approximately 10.5km south west of Forster, and 1km to the southwest of Shallow Bay water body. The site is positioned on a mid-slope landform, which has predominantly been cleared and is currently under cultivation for winter cattle fodder. The periphery of the site to the east, west and south is bounded by patches of dry sclerophyll forest, which have been moderately to highly under-scrubbed removing much of the shrub layer. Some basic infrastructure and materials storage is present, including an access road, machinery laydown and material stockpiles in the northern portion of the site. The Subject Site is surrounded by a large expanse of remnant forest within the encompassing property, which is connected to Wallingat National Park approximately 1km to the south.

3. Biodiversity Offsets Scheme Review

The Biodiversity Values Map (BV Map) was referenced in relation to the proposal to assess if any BV mapped land is present within the Subject Site, and to determine the area clearing threshold for application of the Biodiversity Offsets Scheme (BOS). No BV mapped land is present within the Subject Site, with the closest area of BV mapping located approximately 100m to the south as shown in **Figure 1.** As such the proposal does not trigger the BOS under this assessment pathway.

The Minimum Lot Size where the proposal is located is 40ha. As such any impact on native vegetation greater than 1 ha within the site would trigger the BOS. A detailed vegetation assessment is provided in Section 4.2, which determined the proposal would potentially impact on approximately 0.94ha of native vegetation. As such the proposal does not trigger the BOS and an Ecological Assessment Report can be prepared to assess potential impacts to biodiversity.

Further explanation of detailed vegetation mapping and area calculations is provided in **Section 4.2**.

Figure 1 shows the location of the study site in a regional context, and the extent native vegetation communities on site under regional SVTM mapping.

Figure 2 shows the proposed quarry layout.

Figure 1 – Site Location

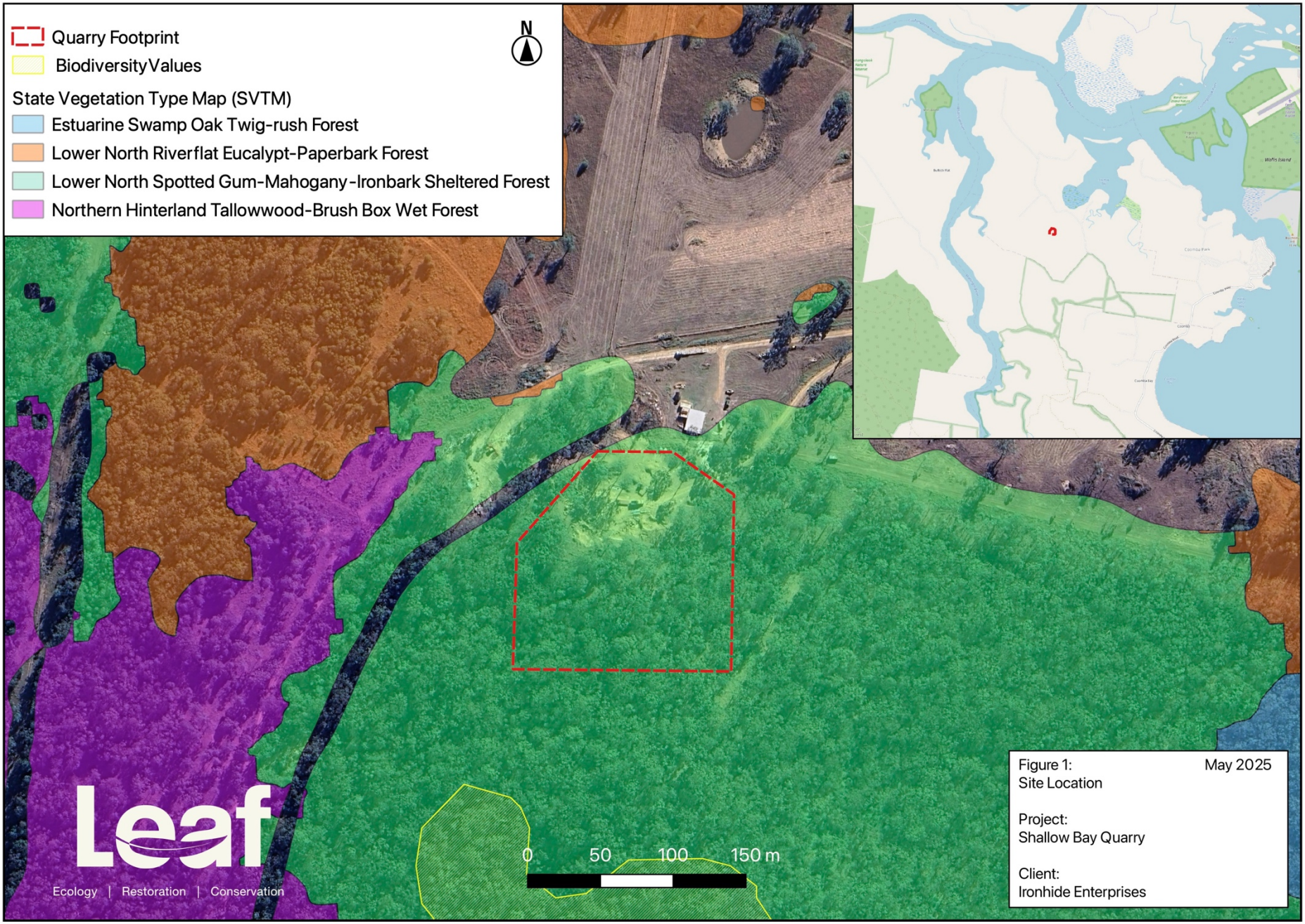
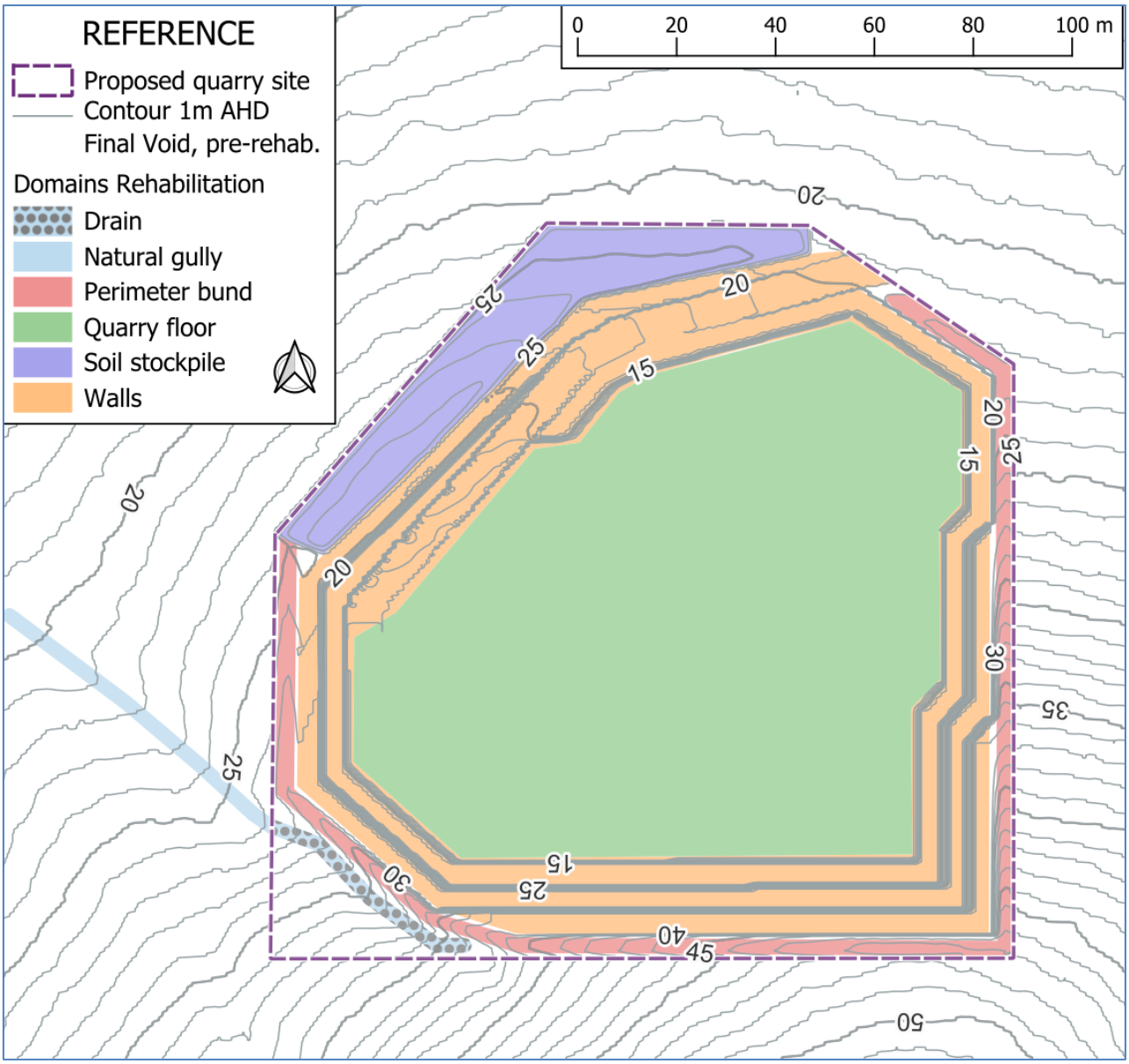


Figure 2 – Quarry Layout



4. Survey Methodology

Site surveys were conducted during early April 2025. Prior to undertaking the survey, background information sources were reviewed to inform the effort and type of survey required. These include:

- Search on the NSW OEH Bionet Atlas of all flora species likely to be found within a 10x10 km area surrounding the site, including state (BC Act) and federally listed (EPBC Act) threatened species.
- EPBC Protected Matters Search within 5km buffer of study site for matters of national environmental significance.
- Review of the NSW State Vegetation Type Map (SVTM) to determine potential Plant Community Types (PCTs) present on site.
- Reference to topographic and cadastral information relevant to the site.
- Review of relevant flora and fauna survey guidelines and literature.

All survey information was recorded using a Garmin hand held GPS and Avenza Maps on a smart phone. Results of threatened species database searches are provided in **Appendix A**.

3.1 Vegetation and Habitat Assessment

The native vegetation type and extent was ground-thruthed against SVTM mapping and current aerial imagery. Following the site survey vegetation mapping was then updated as required where changes to the SVTM were noted. Vegetation condition was also used to stratify areas according to disturbance levels. One vegetation plot was undertaken in accordance with the Biodiversity Assessment Methodology (BAM) within the remnant forest vegetation zone to assist with determination of the likely Plant Community Type (PCT) present on site. Rapid Data Point vegetation surveys were used to assess the remaining areas of vegetation, such as areas of native regrowth, by recording dominant species in each stratum and percentage cover estimates. The entirety of the site was also assessed for potential fauna habitat features such as hollows, nests and dens.

3.2 Threatened Flora

All areas of suitable habitat for potential threatened flora species were walked on foot. The parallel field traverse technique was utilised to survey for cryptic flora species at a width of 5m in forested areas and 10m in more open habitat such as areas of regrowth.

3.3 Threatened Fauna

Threatened fauna surveys involved a range of detection techniques. Diurnal surveys involved opportunistically recording fauna observed or heard within the site, and one Koala Spot Assessment Technique (SAT) survey was undertaken within forested areas of the site. Two nights of nocturnal surveys were undertaken including spotlighting and stag watching for fauna, and call playback broadcast for Koala and Forest Owls. One baited motion detection camera was also installed during April over a period of 14 days to target the presence of arboreal mammals.

5. Results & Discussion

4.1 Background Information Review

The OEH Bionet Atlas identified 35 threatened species potentially occurring within 10km of the site, however 7 of these were excluded from further consideration based on unsuitable habitat on site, such as marine and wetland species. Species recorded from the atlas formed the focus of the survey effort conducted and are further detailed in the likelihood of occurrence table below (**Table 1)** and database searches in **Appendix A**.

The State Vegetation Type Map (SVTM) identified the following communities as being present on site:

- PCT 3244 – Lower North Spotted Gum - Mahogany – Ironbark Sheltered Forest

4.2 Vegetation Assessment

Vegetation mapping was refined during field surveys based on the SVTM, taking into account present conditions on site including cleared areas, native regrowth and remnant forest. Areas of native vegetation present include under-scrubbed remnant forest and patches of native regrowth following disturbance (clearing/slashing). Species present within remnant forest patches are indicative of Wet Sclerophyll Forest vegetation formation. Common species within the canopy include *Corymbia maculata, Eucalyptus propinqua*, *Allocasuarina torulosa*, and *Eucalyptus siderophloia.* Less frequent eucalypts present on site include *Eucalyptus m*oluccana, *Eucalyptus tereticornis* and *Eucalyptus microcorys*. The shrub layer was relatively sparse due to under-scrubbing with scattered species present including *Breynia oblongifolia, Polyscias sambucifolia, Exocarpos cupressiformis, Glochidion ferdinandi,* and *Leucopogon juniperinus*. The ground layer contains a diverse assemblage of grasses and forbs, dominant species include *Imperata cylindrica, Lobelia purpurascens, Dichondra repens, Oplismenus aemulus, Cymbopogon refractus, Microlaena stipoides*, and *Digitaria parviflora.*

Areas of native regrowth adjacent to forest patches contain a high to moderate weed load. Common native species present in regrowth areas are similar to those described above in the forest ground layer. Dominant weed species present include *Setaria sphacelata, Phytolacca octandra, Crassocephalum crepidioides,* and S*enecio madagascariensis.*

Based on the native species present and their frequency of occurrence recorded from vegetation plot ad RDP data, the following vegetation community was determined to be present on site, which aligns with the SVTM:

- PCT 3244 – Lower North Spotted Gum - Mahogany – Ironbark Sheltered Forest

This vegetation type is not considered to form part of any Threatened Ecological Community.

Figure 3 shows the refined vegetation map, and proposed area of impact resulting from the proposal. The extent of clearing has been calculated from the mapping provided in this figure. The area of forest to be cleared equates to approximately 0.806 ha. The area of regrowth to be cleared equates to 0.248 ha. Given the regrowth is dominated by weeds the extent of native vegetation in this zone has been calculated according to Step 3 of the 'Reviewing area clearing threshold results from the BMAT tool' document. Rapid Data Point data shows that this zone contains approximately 45% exotic cover and 54% native cover. As such the native vegetation extent within the area of regrowth equates to 0.134 ha, and the total native vegetation extent (forest and regrowth) proposed to be cleared is 0.94 ha.

The photos below show the general condition of vegetation on site.

Photo 1: Forest (underscrubbed)

Photo 2: Native regrowth

Photo 3: Cleared / Cultivated

4.3 Habitat and Fauna Assessment

Forest vegetation present on site is relatively young and does not support many old growth trees containing hollows. Two (2) hollow bearing trees (HBTs) were observed on site, one tree containing one (1) small hollow in a lateral limb and the other tree a dead stag containing a moderate split. These features represent suitable habitat for small arboreal mammals and birds, however they are unlikely to represent significant habitat for larger mammals or birds such as Forest Owls, Cockatoos, or Yellow Belly Gliders that require large old growth hollows for nesting/roosting.

Nocturnal surveys were undertaken over two non-consecutive nights during April 2025 including spotlighting and call playback targeting Forest Owls and arboreal mammals. No fauna was observed within the Subject Site during nocturnal surveys. Three Sugar Gliders were observed via spotlight within and just outside the Subject Site approximately 30-40m to the east of the site. Results of camera trapping yielded one fauna species, most likely Brown Antechinus (*Antechinus stuartii*).

Suitable habitat is present on site for Koala given the presence of High Use Feed Trees including Tallowwood (*Eucalyptus microcorys*), Grey Gum (*Eucalyptus moluccana*), Forest Red Gum (*Eucalyptus tereticornis*) and Small-fruited Grey Gum (*Eucalyptus propinqua*). Nocturnal and SAT surveys did not reveal any evidence of resident Koalas on site, however there is potential for Koalas to intermittently move through or utilise the site given the large areas of undisturbed surrounding habitat.

Figure 4 shows the fauna survey effort undertaken.

Photo 4: Camera trap results – Brown Antechinus

Figure 3: Vegetation Mapping

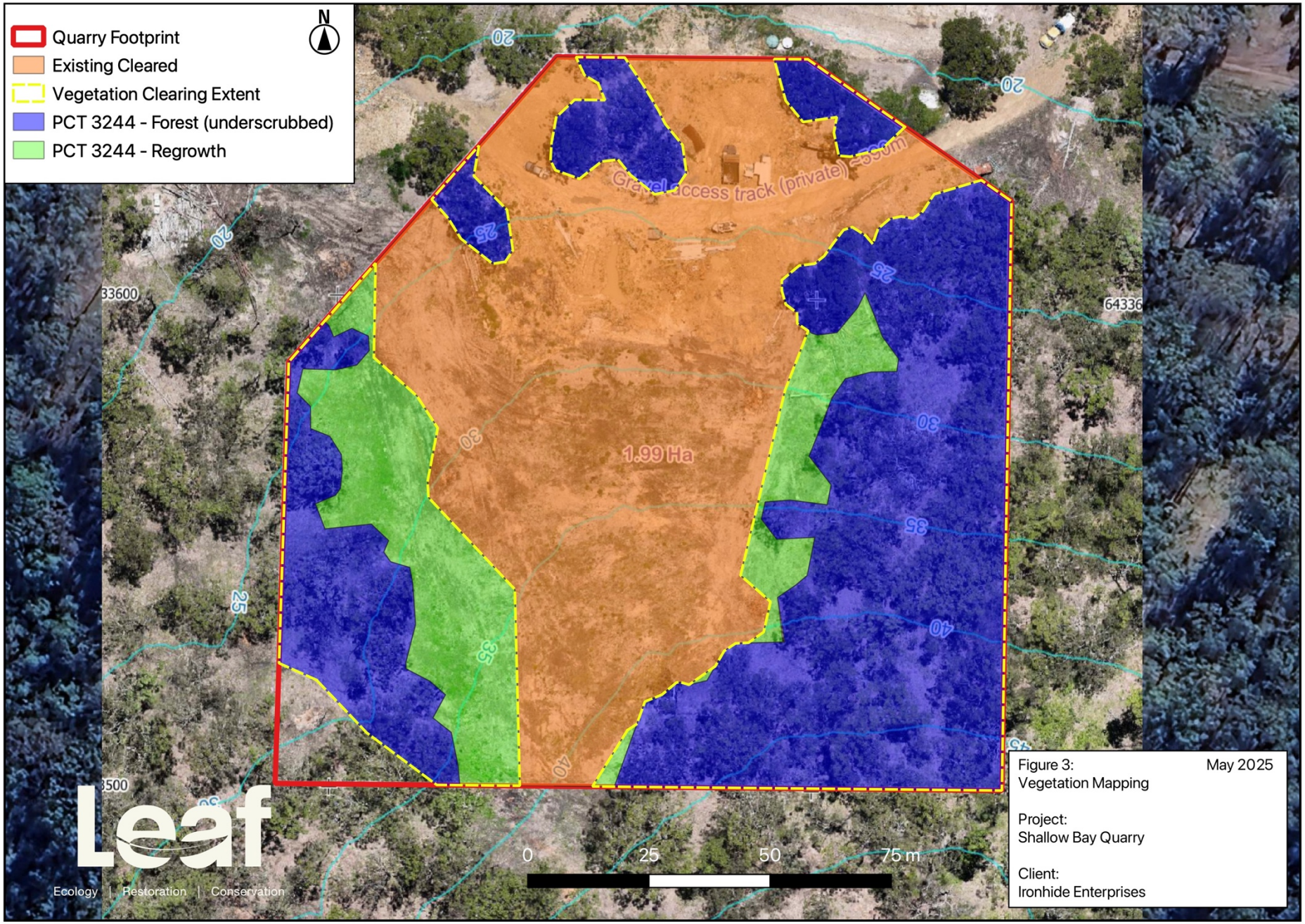
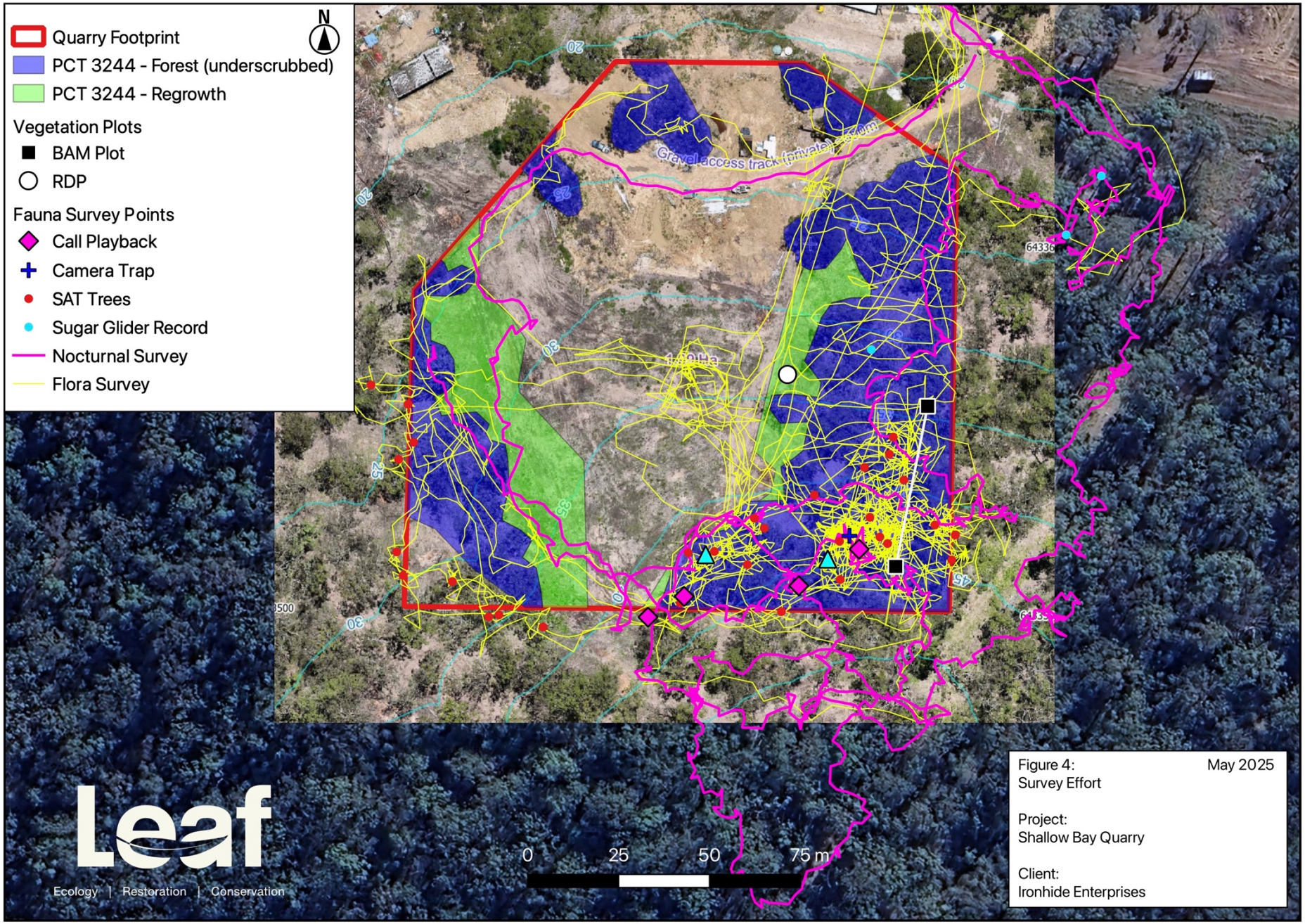


Figure 4: Survey Effort



4.5 Threatened Species Assessment

The following species were identified in the NSW Bionet Atlas as occurring within 10km of the project area. An assessment of habitat present on site is provided to assess the likelihood of species potentially utilising the site. Threatened species observed within the site or nearby surrounds are highlighted in bold.

Table 1 – Threatened species records within 10km of study site

Scientific Name	Common Name	NSW status	Comm. status	Habitat Assessment
Hirundapus caudacutus	White-throated Needletail		V	Species is migratory and predominantly aerial and known to feed in thermal currents targeting insect swarms. This species sometimes roosts in trees. Due to the highly mobile nature of this species and small area of potential habitat affected, this species is unlikely to utilise the site.
Ptilinopus regina	Rose-crowned Fruit-Dove	E		Occur mainly in sub-tropical and dry rainforest and occasionally in moist eucalypt forest and swamp forest, where fruit is plentiful. Suitable foraging resources are not present on site and this species was not recorded during surveys. Unlikely to utilise the site.
Haliaeetus leucogaster	White-bellied Sea-Eagle	V		Habitats are characterised by the presence of large areas of open water including larger rivers, swamps, lakes, and the sea. Breeding habitat consists of mature tall open forest, open forest, tall woodland, and swamp sclerophyll forest close to foraging habitat. Nest trees are typically large emergent eucalypts and nests are large structures built from sticks and lined with leaves or grass. Foraging habitat is present to the north-east, however no breeding habitat was observed on site (stick nests) and not recorded during surveys. Unlikely to utilise the site.
Lophoictinia isura	Square-tailed Kite	V		Found in a variety of timbered habitats including dry woodlands and open forests. Shows a particular preference for timbered watercourses Suitable foraging habitat on site, however not recorded during surveys and no breeding habitat observed (stick nests). Unlikely to utilise the site.
Pandion cristatus	Eastern Osprey	V		Habitats are characterised by the presence of large areas of open water including larger rivers, swamps, lakes, and the sea. Breeding habitat consists of mature tall open forest, open forest, tall woodland, and swamp sclerophyll forest close to foraging habitat. Nesting typically occurs in emergent trees or tall structures in view of waterbodies. Foraging habitat is present to the north-east, however no breeding habitat was observed on site (stick nests) and not recorded during surveys. Unlikely to utilise the site.
Calyptorhynchus lathami lathami	South-eastern Glossy Black-Cockatoo	V	V	Suitable foraging habitat is present on site (Allocasuarina sp.), however no evidence of use observed (chewed cones). Not recorded during surveys and no breeding habitat observed (large hollows). Unlikely to utilise the site.

Glossopsitta pusilla	Little Lorikeet	V		Forages primarily in the canopy of open *Eucalyptus* forest and woodland and nests in proximity to feeding areas if possible, typically selecting hollows in the limb or trunk of smooth-barked Eucalypts. Foraging habitat present however hollow resources on site are marginal and species was not observed. Unlikely to utilise the site.
Lathamus discolor	Swift Parrot	E	CE	The site is not mapped as important habitat for this species, unlikely to utilise the site.
Ninox connivens	Barking Owl	V		Inhabits woodland and open forest, including fragmented remnants and partly cleared farmland. Nests in hollows of large, old trees. No suitable large hollows present, unlikely to utilise the site.
Ninox strenua	Powerful Owl	V		inhabits a range of vegetation types, from woodland and open sclerophyll forest to tall open wet forest and rainforest. Nest in large tree hollows (at least 0.5 m deep). No suitable large hollows present, unlikely to utilise the site.
Tyto tenebricosa	Sooty Owl	V		Occurs in rainforest, including dry rainforest, subtropical and warm temperate rainforest, as well as moist eucalypt forests. Nests in very large tree-hollows. No suitable large hollows present, unlikely to utilise the site.
Tyto novaehollandiae	Masked Owl	V		Lives in dry eucalypt forests and woodlands from sea level to 1100 m. Roosts and breeds in moist eucalypt forested gullies, using large tree hollows or sometimes caves for nesting. No suitable large hollows present, unlikely to utilise the site.
Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	V		Occurs in eucalypt forests and woodlands of inland plains and slopes of the Great Dividing Range. It is less commonly found on coastal plains and ranges. The coastal forest present on site is marginal habitat for this species and only one record within 10km of the site. Not observed and unlikely to utilise the site.
Pomatostomus temporalis temporalis	Grey-crowned Babbler (eastern subspecies)	V		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. Wet sclerophyll forest present on site is marginal habitat for this species, and no individuals or breeding habitat (nests) were observed. Unlikely to utilise the site.
Daphoenositta chrysoptera	Varied Sittella	V		Inhabits eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee and *Acacia* woodland. Foraging habitat is present however this species was not observed and due to the small area of potential habitat affected, this species is unlikely to utilise the site.
Artamus cyanopterus cyanopterus	Dusky Woodswallow	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 debris. The coastal forest present on site is marginal habitat for this species as majority of breeding records occur on the western slopes. In addition there is only one record within 10km of the site and not observed on site. Unlikely to utilise the site.

Dasyurus maculatus	Spotted-tailed Quoll	V	E	Recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline. Quolls use hollow-bearing trees, fallen logs, other animal burrows, small caves and rock outcrops as den sites. Suitable foraging habitat is present on site, however no suitable breeding habitat observed (burrows/hollow logs). Due to the small area of potential habitat affected and lack of refuge habitat, this species is unlikely to utilise the site.
Planigale maculata	Common Planigale	V		Inhabit rainforest, eucalypt forest, heathland, marshland, grassland and rocky areas where there is surface cover, and usually close to water. Given there is only one record within 10km of the site and the lack of surface cover due to under scrubbing this species is unlikely to utilise the site.
Phascogale tapoatafa	Brush-tailed Phascogale	V		Prefer dry sclerophyll open forest with sparse groundcover of herbs, grasses, shrubs or leaf litter, and also inhabit heath, swamps, rainforest and wet sclerophyll forest. Nest and shelter in tree hollows with entrances 2.5 - 4 cm wide. Suitable foraging and breeding habitat (small hollows) are present on site. While this species was not recorded via nocturnal spotlighting or camera trapping it cannot reliably be discounted as this species occurs over a large home range and is difficult to detect. **Subject Species**
Phascolarctos cinereus	Koala	E	E	No evidence of this species was recorded on site during SAT and nocturnal surveys. However, given the presence of suitable foraging habitat and high use feed trees on site this species is considered a potential subject species as a precautionary measure. **Subject Species**
Petaurus australis	Yellow-bellied Glider	V	V	Occur in tall mature eucalypt forest generally in areas with high rainfall and nutrient rich soils. Den, often in family groups, in hollows of large trees. No suitable large hollows present, unlikely to utilise the site.
Petaurus norfolcensis	Squirrel Glider	V		Inhabits mature or old growth Box, Box-Ironbark woodlands and River Red Gum forest west of the Great Dividing Range and Blackbutt-Bloodwood forest with heath understorey in coastal areas. Foraging habitat is present as Sugar Gliders were observed foraging in proximity to the site, which have similar habitat preferences to Squirrel Gliders. Hollows are present on site however these would be considered marginal habitat given their small size and sub-optimal quality. While this species was not positively identified on site via spotlighting or camera trapping, given the presence of Sugar Gliders in the vicinity and large areas of adjacent connected habitat there is potential this species may utilise the site. **Subject Species**

Potorous tridactylus tridactylus	Northern long-nosed potoroo	V	V	Inhabits coastal heaths and dry and wet sclerophyll forests. Dense understorey with occasional open areas is an essential part of habitat. Habitat is not suitable on site given the absence of dense understorey, and no evidence of diggings/foraging were observed. Unlikely to utilise the site.
Pteropus poliocephalus	Grey-headed Flying-fox	V	V	Occur in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops. Foraging habitat is present however not recorded during surveys and no breeding habitat observed (camps). Unlikely to utilise the site.
Cynanchum elegans	White-flowered Wax Plant	E	E	Not observed on site.
Allocasuarina simulans	Nabiac Casuarina	V	V	Not observed on site.
Genoplesium littorale	Tuncurry Midge Orchid	CE	CE	Not observed on site.
Asperula asthenes	Trailing Woodruff	V	V	Not observed on site.

V – Vulnerable; E – Endangered, CE – Critically Endangered

Note that some species have been omitted from this table due to the obvious absence of suitable habitat on site i.e. marine species, wetland/shorebirds.

6. Assessment of Significance – 5-Part Test

The proposal will result in removal of potential habitat for threatened fauna as a result of remnant tree removal within the proposed quarry footprint. Therefore, an assessment for potential impacts has been undertaken in the form of a 5-Part Test of Significance for the following subject species.

<u>5-Part Test</u>
This 'Assessment of Significance' applies to the following threatened species:

Koala
Squirrel Glider
Brush-tailed Phascogale

(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,

Koala
There are a number of Koala records in the surrounding area. These predominantly occur within Wallingat National Park to the south, which directly adjoins the property and forms part of connected vegetation with the Subject Site. The Subject Site contains high-use tree species including Grey Gum (*Eucalyptus propinqua*), Tallowwood (*Eucalyptus microcorys*), Grey Box (*Eucalyptus moluccana*), and Forest Red Gum (*Eucalyptus tereticornis*). While no Koala were observed during targeted surveys, the Subject Site still represents potential foraging and refuge habitat for Koala as part of a broader movement corridor from Wallingat NP into Shallow Bay to the north.

The proposal will result in the removal of a small area of potential habitat (approx. 0.8ha) within a previously disturbed and fragmented part of the encompassing property, as shown in **Figure 3**. Surrounding areas within the encompassing property contain large areas remnant vegetation (approx. 125ha) to the south of the Subject Site, which will not be affected by the proposal and represents highly suitable habitat. In addition, this is directly connected to broader areas of suitable habitat conserved in the locality including Wallingat NP (over 6000ha). As such the removal of 0.8 of potential habitat is unlikely to result in an adverse effect in the life cycle of this species given the context of the large areas of surrounding habitat retained in the locality and the lack of evidence of usage recorded within the Subject Site.

Squirrel Glider

This species was not identified on site during targeted surveys and there are very few previous records from the locality, only 1 approximately 3.5km to the east, however suitable foraging habitat and marginal refuge habitat is present within the Subject Site. The proposal will result in the removal of a small area of potential habitat (approx. 0.8ha) including trees containing two (2) small hollows. It is proposed to mitigate the loss of this habitat by installing supplementary habitat (nest boxes) in surrounding retained habitat prior to clearing, and have an ecologist present during the removal of habitat trees to monitor for arboreal fauna and undertake relocation if required.

Large areas of high quality habitat are present in the immediate surrounding area (approx. 125ha) that will not be affected by the proposal and the encompassing property is connected to very large areas of conserved habitat within Wallingat NP (over 6000ha). These areas could potentially support a large population given the home range for an individual or family group is up to 9ha. As such in the context of habitat present in the wider locality between Shallow Bay and Wallingat and implementation of the proposed mitigation measures, the removal of 0.8ha of marginal habitat from the Subject Site is unlikely to result in an adverse effect on the life cycle of this species.

Brush-tailed Phascogale

This species was not identified on site during targeted surveys, however this species can be difficult to detect by conventional survey methods. Suitable foraging habitat and refuge habitat is present within the Subject Site and a relatively small number of records (7) are present in the locality, approx. 4-5km from the site. The proposal will result in the removal of a small area of potential habitat (approx. 0.8ha) including trees containing two (2) small hollows. It is proposed to mitigate the loss of this habitat by installing supplementary habitat (nest boxes) in surrounding retained habitat prior to clearing, and have an ecologist present during the removal of habitat trees to monitor for arboreal fauna and undertake relocation if required.

Large areas of high quality habitat are present in the immediate surrounding area (approx. 125ha) that will not be affected by the proposal and the encompassing property is connected to very large areas of conserved habitat within Wallingat NP (over 6000ha). These areas could potentially support a large population given the home range for males is up to 100ha. As such in the context of habitat present in the wider locality between Shallow Bay and Wallingat and implementation of the proposed mitigation measures, the removal of 0.8ha of habitat from the Subject Site is unlikely to result in an adverse effect on the life cycle of this species.

(b) in the case of an endangered ecological community (EEC) or critically endangered ecological community (CEEC), 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,

No Endangered Ecological Communities are present on site.

(c) in relation to the habitat of a threatened species or ecological community:

(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and

As stated above, the extent of habitat to be removed is approximately 0.8ha, which only represents approximately 0.6% of the available habitat present within the encompassing property. In addition, the Subject Site and encompassing property is connected to very large areas of potential habitat (over 6000ha) within Wallingat NP. As such the extent to be removed would not be considered significant in relation to the surrounding retained habitat.

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and

The majority of the proposed quarry footprint is located within a pre-exiting cleared area. The removal of 0.8ha of potential habitat on the periphery of this clearing would slightly reduce the extent of habitat within the property, however would not result in further fragmentation or isolation of habitat.

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,

The area of habitat to be removed (0.8ha) contains mature remnant trees, however this has been significantly underscrubbed resulting from ongoing agricultural management and fire hazard reduction. As such the small area of moderately disturbed habitat within the Subject Site would be considered of low importance in the context of the immediate and wider locality, which supports very large areas of important habitat within a conservation reserve. Therefore, the removal of this habitat will not affect the long term survival of the subject threatened species.

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

The proposed activity will not have an adverse effect on any declared area of outstanding biodiversity value as the proposed work zones are not located within or adjacent to any such areas.

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

The key threatening processes considered relevant to the proposed works include:

- Clearing of native vegetation
- Invasion of plant communities by perennial exotic grasses

- Loss of hollow bearing trees
- Removal of dead wood and dead trees
- Invasion, establishment and spread of Lantana, *Lantana camara;*

It is not expected that the proposed works would add significantly to any of the above threatening processes operating in the local area given the implementation of proposed mitigation measures.

Conclusion to Assessment of Significance

Based on the factors considered above, the proposal is unlikely to result in a significant impact on threatened species provided the works are undertaken in accordance with the mitigation measures provided below. Preparation of a Species Impact Statement or application of the Biodiversity Offsets Scheme is therefore not required.

7. EPBC Act Assessment

A search was conducted in September 2023 of Matters of National Environmental Significance (MNES) as relevant to the *Environment Protection & Biodiversity Conservation Act 1999* (EPBC Act). The following MNES are considered in this assessment.

World Heritage Properties:

The site is not a World Heritage area and is not in close proximity to any such area.

National Heritage Places:

The site is not a National Heritage Place and does not contain any matters of national heritage.

Wetlands of International Significance (declared Ramsar wetlands):

The Myall Lakes Ramsar site is located approximetly 17km to the south of the Subject Site. However, this will not be affected by the proposal.

Great Barrier Reef Marine Park:

The site is not part of, or within close proximity to, the Great Barrier Reef Marine Park.

Commonwealth Marine Areas:

The site is not part of, or within close proximity to, any Commonwealth Marine Area.

Threatened Ecological Communities:

Vegetation within the site does not form part of any threatened ecological community under the EPBC Act.

Threatened Species:

The site contains potential Koala habitat, however as determined in the test of significance above the proposal is unlikely to affect this species.

<u>EPBC Act Assessment Conclusion:</u>

Consideration of the EPBC Act revealed that it is unlikely that significant impacts on Matters of National Environmental Significance will occur as a result of the proposal given the implementation of the mitigation measures outlined below. As such a referral is not considered likely to be necessary.

8. State Environmental Planning Policy (Biodiversity and Conservation) 2021

State Environmental Planning Policy (Biodiversity and Conservation) 2021 contains provisions for protection of koala habitat throughout NSW within chapter 3 (Koala Habitat Protection 2021) and Chapter 4 (Koala Habitat Protection 2020). Chapter 3 - Koala Habitat Protection 2020 (Koala SEPP 2020) applies to koala habitat protection in rural areas. Given the Subject Site is zoned RU2 – Rural Landscape, Koala SEPP 2020 applies to the proposal.

Provisions of Koala SEPP 2020 require determination of 'Potential Koala Habitat' based on assessment of listed Koala feed trees within areas affected by the proposal. This involves assessing the tree species present on site, and calculating the proportion of feed trees listed under Schedule 2 of the SEPP. For example, Potential Koala Habitat is defined as "areas of native vegetation where the trees of types listed in Schedule 2 constitute at least 15% of the total number of trees in the upper or lower strata of the tree component".

Tree counts conducted throughout the Subject Site determined that 3 tree species listed under Schedule 2 of the SEPP are potentially impacted by the proposal, 2 x *Eucalyptus tereticornis* and 1 x *Eucalyptus microcorys.* A total of 165 trees were surveyed, predominantly *Eucalyptus propinqua, Corymbia maculata, Eucalyptus acmenoides* and *Eucalyptus moluccana.* The Koala Feed Trees represent approximately 2% of the total trees present, as such the site does not represent Potential Koala Habitat under the SEPP and no further assessment is required.

9. Management Recommendations

- Prior to works ensure the extent of vegetation clearing is clearly delineated to prevent potential impacts beyond the approved clearing limits.
- Ensure appropriate erosion and sediment controls are installed prior to vegetation clearing and topsoil stripping in accordance with 'Blue Book' principals.
- The loss of potential habitat for arboreal fauna is to be augmented with the installation of nest boxes within suitable adjacent habitat. The number of nest boxes to be installed should be at a 1:1 ratio to the number of hollows removed.
- The two trees containing potential habitat are to be clearly marked with flagging tape or similar prior to vegetation clearing commencing.
- Vegetation clearing is to be undertaken using a 2-phase process. Phase 1 involves clearing of non-habitat vegetation leaving habitat/hollow bearing trees in-situ for a period of 24hrs to allow any resident fauna the opportunity to vacate the hollows. Phase 2 involves the removal of habitat following the completion of Phase 1. An Ecologist is to be present on site during Phase 2 in the event fauna are present and require translocation off site. Prior to removal trees containing hollows are to be knocked by machinery under the observation of the Ecologist to encourage any remaining fauna to vacate. Habitat trees are then to be lowered slowly where possible then inspected by the Ecologist once on the ground. Felled habitat trees must be left in situ for one night before being removed, mulched or stockpiled, to allow any displaced fauna not observed during the post felling inspection to safely escape under the cover of darkness.
- In the case of any injured fauna the Ecologist is to contact the local wildlife carer or veterinarian for treatment.
- Following vegetation clearing any forest mulch and stripped topsoil generated is to retained for use in any ongoing rehabilitation, including construction and revegetation of the perimeter bund.

10. References

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11. Appendices

Appendix A – NSW Bionet and EPBC PMST Search Results

Appendix B – BAM Plot and RDP Flora Data

RDP

Lower stratum	Exotic	C	Ab
Digitaria parviflora		20	
Setaria sphacelata	*	15	
Phytolacca octandra	*	10	
Glycine tabacina		5	500
Oplismenus aemulus		3	300
Senecio madagascariensis	*	2	200
Dichondra repens		2	200
Sigesbeckia orientalis subsp. orientalis		2	80
Crassocephalum crepidioides	*	1	50
Panicum simile		1	50
Cyanthillium cinereum	*	1	50
Imperata cylindrica		1	100
Sonchus asper	*	0.5	20
Lobelia purpurascens		0.5	80
Fimbristylis dichotoma		0.5	50
Physalis peruviana	*	0.5	5
Solanum prinophyllum		0.2	5
Lomandra longifolia		0.2	5
Paspalidium distans		0.1	10
Polymeria calycina		0.1	20
Pseuderanthemum variabile		0.1	20
Solanum aviculare		0.1	1
Murdannia graminea		0.1	1

BAM Plot

Upper stratum	Exotic	C	Ab	Mid stratum	Exotic	C	Ab	Lower stratum	Exotic	C	Ab
Eucalyptus siderophloia		5	4	Breynia oblongifolia		2	15	Imperata cylindrica		10	
Eucalyptus crebra		2	2	Glochidion ferdinandi		0.1	1	Oplismenus aemulus		10	
Eucalyptus propinqua		10		Polyscias sambucifolia		2	10	Lobelia purpurascens		5	100
Eucalyptus acmenoides		2	1	Exocarpos cupressiformis		5	5	Dichondra repens		5	500
Allocasuarina torulosa		2	4	Lantana camara	*	5	20	Cymbopogon refractus		5	80
Corymbia maculata		20		Leucopogon juniperinus		0.1	1	Setaria sphacelata	*	2	20
								Sigesbeckia orientalis subsp. orientalis		1	80
								Lomandra longifolia		1	8
								Austrostipa spp.		1	30
								Microlaena stipoides		1	100
								Entolasia marginata		0.5	50
								Paspalum distichum		0.5	20
								Panicum simile		0.5	50
								Digitaria parviflora		0.5	25
								Dianella caerulea var. producta		0.5	8
								Glycine tabacina		0.5	50
								Cheilanthes sieberi		0.3	100
								Echinopogon caespitosus		0.3	30
								Goodenia spp.		0.2	5
								Bidens pilosa	*	0.1	10
								Cyanthillium cinereum	*	0.1	10

								Polymeria calycina		0.1	10
								Brunonia australis		0.1	10
								Eremophila debilis		0.1	1
								Billardiera scandens		0.1	5
								Eragrostis spp.		0.1	5
								Euchiton sphaericus		0.1	5
								Solenogyne bellioides	Photos	0.1	1
								Glycine clandestina		0.1	50
								Oxalis perennans		0.1	5
								Wahlenbergia spp.		0.1	5
								Cyperus gracilis		0.1	10
								Sida rhombifolia	*	0.1	15
								Andropogon virginicus	*	0.1	1
								Paspalum dilatatum	*	0.1	1