Level 2
11 London Circuit
Canberra ACT 2601
t: (02) 6103 2313

24/05/2019

Our ref: 12696

Schmidt Quarries
email: david@schmidtquarries.com.au

Attention: David Schmidt

Dear David,

Review of impacts to Grassland Earless Dragon and Striped Legless Lizard - proposed Rock Flat Quarry

The purpose of this letter report is to undertake a revised section 5a Assessment of Significance (seven-part test) pursuant to the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) and *Threatened Species Conservation Act 1995* (TSC Act) for Grassland Earless Dragon (*Tympanocryptis pinguicolla*) and Striped Legless Lizard (*Delma impar*) with respect to the proposed Rock Flat Quarry.

The revised Assessments of Significance has been informed by a large reduction of impacts to native vegetation and fauna habitat (by almost 35%; from 13.10 ha to 8.75 ha), review of previous documentation, recent site inspection, and new Grassland Earless Dragon record.

BACKGROUND

Schmidt Quarries submitted an Environmental Impact Statement (EIS - February 2018) to accompany a development application (DA) for a proposed hard rock quarry at 278 Springs Road, Rock Flat NSW (Lots 62, 76, 78, 106 & 120 DP 75054). The proposed quarry is considered 'Designated Development' and therefore requires approval from Snowy Monaro Regional Council (SMRC) under Part 4 of the NSW *Environment Planning and Assessment Act 1979* (EP&A Act). Whilst the EIS assesses environmental impacts more broadly, this letter relates to biodiversity impacts, specifically impacts on the Grassland Earless Dragon and Striped Legless Lizard.

In assessing impacts on biodiversity, SMRC sought input from NSW Office of Environment and Heritage (OEH), whom "*considered that there is likely to be a significant impact to the Grassland Earless Dragon and Striped Legless Lizard from this project, and that the proponent has not demonstrated that a significant impact to these species can be avoided*" (OEH 2018 – DOC18/161102-20). Accordingly, OEH considered that a Species Impact Statement was required, or alternatively, opting into the *Biodiversity Conservation Act 2016* (BC Act) to assess impacts using the Biodiversity Assessment Method (BAM).

Following the submission of the EIS, Schmidt Quarries referred the proposed quarry under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) to the Commonwealth Department of Environment and Energy (DoEE). Amongst other Matters of National Environmental Significance (MNES), the referral considered potential impacts to Grassland Earless Dragon, Striped Legless Lizard and Natural Temperate Grassland (NTG). The project was determined 'not a controlled action', and therefore further assessment and approval under the EPBC Act is not required.

Subsequent to review of the EIS by SMRC and OEH, further surveys and assessments were requested by OEH, and undertaken. The results of these surveys were provided back to SMRC in a separate report

(Lesryk 2018) and detailed in two response letters to SMRC (Outline Planning 26/09/2018 an Outline Planning 20/11/2018). It is noted that these additional surveys and response letters included information previously requested by OEH (albeit, not provided in an easy to read format).

On review of the documents, it appears that the basis for the significant impact conclusions (letter signed by OEH in May or August 2018 – noting, the date is difficult to read on the copies of the letter) is on the preliminary EIS work and may not include consideration of the extra information. Irrespective, work by Schmidt Quarries to reduce the impact area has been undertaken, along with a site inspection to ground-truth previous information and the inclusion of an additional Grassland Earless Dragon record.

RELEVANT LITERATURE

The following documents informed the revised Assessment of Significance, and should be read in consultation with this letter report:

- *Environmental Impact Statement* (Feb 2018) – prepared by Outline Planning Consultants
- *Ecological Issues & Assessment Report, Appendix E Section 5A Assessments of Significance* (Feb 2018) – prepared by Gunninah to support the EIS
- *Ecological Issues & Assessment Report, Appendix B Lesryk 2017 Lesryk Flora and Fauna Audit Report* (Feb 2018) – prepared by Gunninah to support the EIS
- *EPBC Act Referral* (Submission 3188, May 2018) – prepared by Outline Planning Consultants
- *OEH Response to development application* (May 2018 – Doc18/161102-20 2018.1211.1)
- *Supplementary Reptile Survey* (May 2018) – prepared by Lesryk Environmental
- *Response to Snowy Monaro Council* (26 Sept 2018) - prepared by Outline Planning Consultants
- *Response to Snowy Monaro Council* (20 Nov 2018) - prepared by Outline Planning Consultants

FIELD SURVEY

A site inspection of the refined impact area and study area was conducted by Dr Matthew Dowle (BAM Accreditation #17043) on 10 April 2019. The site inspection included a qualitative survey of the study area, ground-truthing of original vegetation and fauna habitat mapping, inspection of vegetation of an increased study area and six floristic BAM plots.

AIMS OF THIS LETTER REPORT

This letter summaries the information to date and presents an updated 7-part test for consideration by SMRC and OEH, based on:

- A reduced impact area following consultation with Eco Logical Australia (ELA), Council and OEH
- Re-alignment of the haul route to better to advantage of areas of improved pasture and to reduce impacts on NTG and Grassland Earless Dragon habitat
- Assessment of potential habitat outside of the original study area, including nearby species records and a recent record of the Grassland Earless Dragon by the landowner (April 2019).

Regards,

Matt Dowle
Senior Ecologist / Canberra Office Manager

SUMMARY OF VEGETATION MAPPING AND FAUNA HABITAT

Native Tussock Grassland occurs across the vast majority of the study area and has been mapped to conform with Plant Community Type (PCT) *PCT 1187 - Snow Grass - Wallaby Grass - Kangaroo Grass - Common Everlasting - Corkscrew-grass dry tussock grassland in the Monaro Region of the South Eastern Highlands Bioregion* (Table 1). PCT 1187 within the study area is in good condition (contrary to the description in the EIS), with a high diversity and cover of native grasses and forbs. Native Tussock Grassland within the study area represents habitat for GED and SLL.

Other areas in the study area have been mapped as either Rocky Outcrop or Improved Pasture. Areas mapped as Rocky Outcrop and Improved Pasture (Figure 1) do not represent habitat for the Grassland Earless Dragon (GED) or Striped Legless Lizard (SLL) due to their lack of native tussock grass cover, high cover of exotic species, or predominance of rock with no vegetation. See back pages for photos of vegetation types.

An inspection of a broader study area was undertaken as part of the site inspection. These additional areas were confirmed to be consistent with the Native Tussock Grassland vegetation in the originally mapped subject lots, based on the site observations and review of aerial imagery. The aerial imagery suggests the Native Tussock Grassland extends behind the study area, but has not been mapped for this report as the site inspection did not extend into these areas. In this respect, the areas of GED and SLL habitat below are likely to be less than in reality, and therefore represent a conservative estimate.

Table 1: Vegetation Mapping within Rock Flat Quarry, based on mapping in Figure 1

PCT#	PCT	Impact (ha)	Subject Lots (ha)	Study Area (ha)
1187	Snow Grass - Wallaby Grass - Kangaroo Grass - Common Everlasting - Corkscrew-grass dry tussock grassland in the Monaro Region of the South Eastern Highlands Bioregion	8.75	326.96	665.75
N/A	Rocky Outcrop / Improved Pasture	12.88		
	Total	**21.63**		

SUMMARY OF PROPOSED IMPACTS

Impacts from the proposed Rock Flat Quarry on the GED and SLL are summarised in Table 2. It is noted that habitat for the reptiles is based on a review of previous documentation, known records, general agreement on habitat available with Rod Pietsch on 6 March 2016 (meeting with the client, OEH and SMRC at Cooma Library), and ground-truthing by ELA during the site inspection in April 2019 (vegetation mapping in Figure 1 and Table 1). Potential habitat for the GED and SLL is presented in Figure 1 as 'Native Tussock Grassland' and predominantly aligns with the habitat mapping in the EIS.

Direct Impacts

Two sets of impact numbers are provided in Table 2. The first represents the direct impacts from the proposed quarry and haul road. However, following a meeting with Rod Pietsch of OEH (21 May 2019), a buffer was agreed to be required to account for indirect impacts. For example, impacts on the adjoining vegetation from establishing a haul road and the subsequent edge effects, changes in sedimentation and run-off and dust.

The second calculation therefore assumes a level of adverse effect that would occur on the mapped fauna habitat. A buffer of 20 metres either side of the haul road and 10 metres around the quarry has been incorporated, and has been used for the Assessments of Significance. Whilst the GED and SLL may still use habitat in these buffered areas during the operation of the quarry, it is acknowledged that this

habitat will be degraded. Therefore, the impacts used in the Assessment of Significance is likely to represent a conservative estimate on the clearing of GED and SLL habitat.

Table 2: Proposed direct impacts to GED and SLL

	GED and SLL Habitat	Impact	Subject Lots	Study Area	% Study Area
Direct Impact – No Buffer	Native Tussock Grassland – PCT 1187	3.97 ha	326.96 ha	665.75 ha	0.60
Direct Impact –Buffer	Native Tussock Grassland – PCT 1187	**8.75 ha**	**326.96 ha**	**665.75 ha**	**1.31**

Indirect Impacts

Traffic movements: The maximum daily truck movements is 128, with an average of 28. The maximum would occur only 1-5 times per year, and will be reduced to 90 return trips per day during the warmer months (Oct to Mar). On a daily basis there is a heavier demand in the mornings, with an estimated loading of 60% in the mornings and 40% in the afternoons (EIS p137).

It is noted that there are three GED records almost adjacent to the Monaro Highway. These records are closer than any other records are to the proposed haul route. The highway has up to 2,255 vehicles using it per day of which 250 are heavy trucks (Appendix EIS Traffic Assessment Report p6).

Blasting: Blasting is expected to occur on average ten times a year, or approximately every 6 weeks (max 19 blasts if output reaches 280,000 tpa). Each blasting event will last no more than five seconds.

Modelling in the EIS indicates that noise, blasting and vibration levels generated from the quarry will comply with the noise criteria required by the NSW EPA. Noising modelling was based on a conservative worst-case scenario.

Blasting is expected to be felt by the reptiles a few hundred metres beyond the blast point, with ground vibrations expected to be similar to a minor earth tremor. The proposed quarry is in a volcanic plug rather than a basalt flow, which means the "rock tube" that is subject to blasting is partially insulated by the surrounding soils. As a result, the ground vibration from blasting will not travel as far compared to a solid rock mass of a basalt flow.

It is noted that the blasting events will be few, and indirect impact from blasting or vibrations will be very short-term and not expected to adversely affect the GED or SLL beyond the blasting event.

AVOIDANCE OF POTENTIAL HABITAT

The proposed impacts to Native Tussock Grassland and potential GED and SLL habitat (including impacts from the haul route, quarry and associated infrastructure) has been reduced from 13.10 ha to 8.75 ha, a large reduction of almost 35% of the extent of habitat impacted by the original proposal (Table 1 & Figure 1).

The revised impact areas total 21.63 ha, including:

- Quarry, stock piling and processing– 12.49 ha
- Haul Road – 9.14 ha

The main reduction has come from reducing the stock piling and processing area, followed by the reduction of the quarry itself to align with the mapping of the revised Rocky Outcrop (and originally mapped sheep camp area – combined in this letter report). The haul road has also been re-aligned slightly to increase the portion of the road that traverses Improved Pasture. It is noted that there are

restrictions for entry to the site based on Roads and Maritime Service (RMS) approval for entry and exit of heavy vehicle along the Monaro Highway, and using the existing rail corridor crossing point.

NSW WILDLIFE ATLAS SEARCH

A search of the NSW Wildlife Atlas for previous GED and SLL records was conducted within a 10 km radius of the proposed development footprint (Figure 2). Previous observations for both GED and SLL have been recorded approximately 3 km west, 8 km west and 7km north of the development footprint. It is noted that habitat in these areas is likely to be similar to of the habitat within the study area, but populations are unlikely to be linked through connecting habitat due to the barriers created by the Monaro Highway, other roads or exotic vegetation.

Mitigation Measures

Detailed mitigation measures are provided in the EIS and have been summarised below (from Table 0.1 of the EIS).

- *Revegetation and rehabilitation* - The quarry will follow a closure and rehabilitation plan at the end of operations to minimise long-term erosion through effective revegetation. The project will also have active site rehabilitation and mitigation measures during the life of the quarry.
- *Noise* - placement of noise barriers around the crushing and screening plant will occur, with monitoring of all blasting events proposed.
- *Dust* – Regular watering of the internal haul route and quarry processing plant.
- *Stormwater* - Runoff from quarry areas (i.e. 'dirty' water) will be held in the quarry sediment basin system and then re-used within the quarry and on the haul route for dust suppression. 'Clean' water will be diverted from the site and there will be bunding for all fuel storage areas.
- *Biodiversity* – The impact area will be clearly marked to avoid impacts to native vegetation and fauna habitat outside of the development footprint. The acoustic bunds will be progressively rehabilitated with native (indigenous) tree and grass species.
- *Heritage* – General protocols will be adopted should a Heritage site be found.
- *Traffic and Transport* – A driver code of conduct, addressing transport of material to minimise traffic noise and improved traffic safety. Intersection of the Monaro Highway will be upgraded.
- *Land resources* - The method of revegetation of the overburden emplacement areas and acoustic bunds would be similar to that employed at the Applicant's Nimmitabel Quarry.
- *Waste* – Collection and storage of waste oil and grease will occur in bunded areas.
- *Hazards* – No dangerous goods proposed to be stored on site.
- *Visual* - Landscaping and bunding/mounding will be conducted with respect to the natural topography.
- *Rehabilitation* – Quarry areas will be carefully managed, with perimeter tree plantings and re-plantings of native grasses. Disturbed areas will be landscaped during the life of the quarry.

In addition, Schmidt quarries is committed to establishing a dialogue between Schmidt quarries, the land owner (Peter Devereux) and OEH to monitor the local GED population.

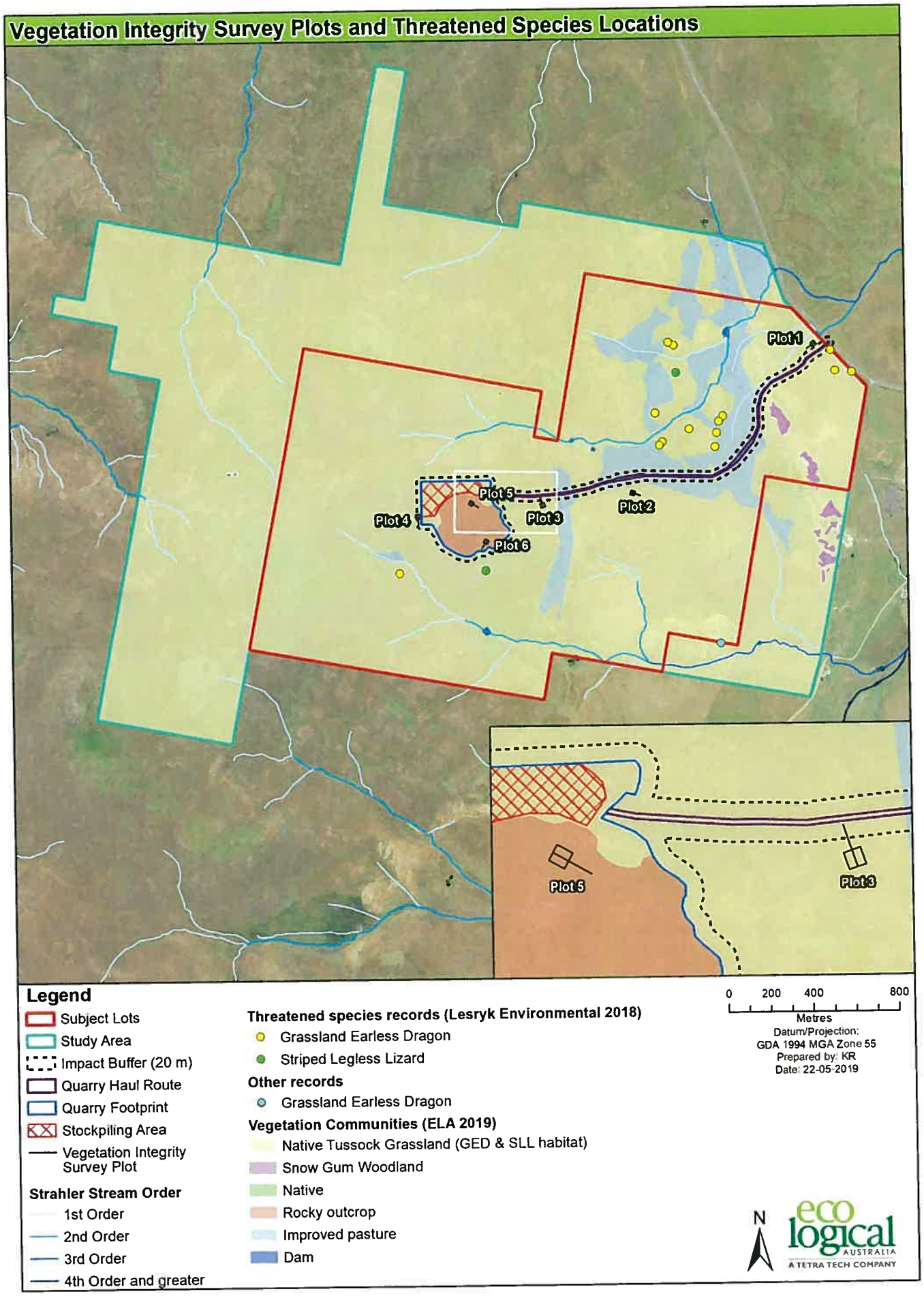

Figure 1: GED and SLL habitat mapping

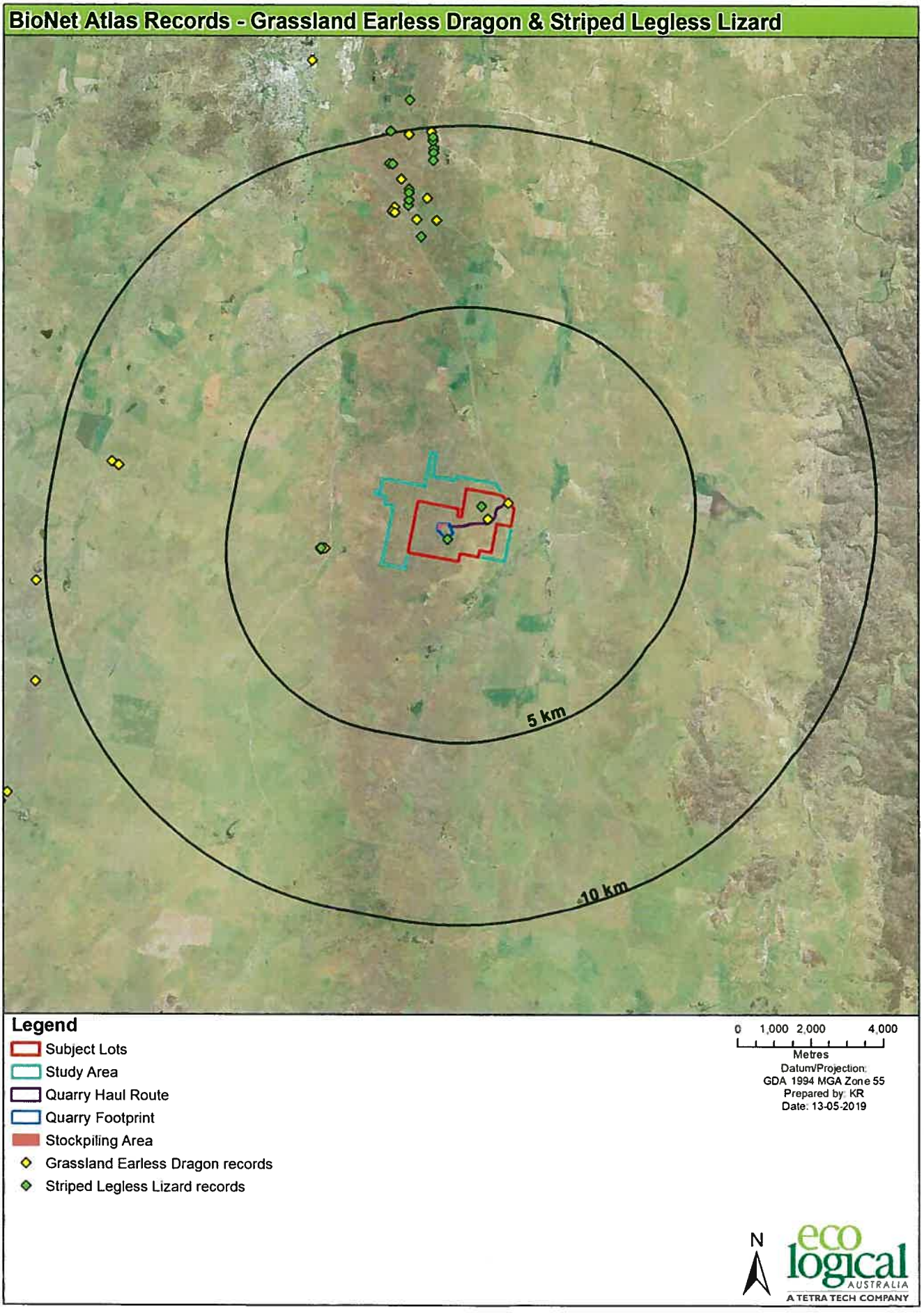

Figure 2: NSW Wildlife Atlas Search – 10 km radius of development footprint

ASSESSMENT OF SIGNIFICANCE - DEFINITIONS

Definitions are based on the NSW Threatened Species Assessment Guidelines (DECC 2007), mapping provided in Figure 1 and impacts areas in Table 2.

Development footprint: represents all areas directly impacted by the proposed quarry - the areas in Figure 1 depicted as the quarry haul route, quarry footprint and stockpiling area. This is consistent with the definition of subject site in DECC 2007 and development footprint under the BAM.

Subject lots: lots within which the proposed direct impacts will occur.

Study area: represents the development footprint and additional areas that may be indirectly impacted by the proposed quarry. In reality, the full extent of indirect impacts from the proposed quarry on the reptile species is unknown (such as extent of vibrations from blasting or movement of heavy vehicles), however, it is likely to be much less than the study area depicted in Figure 1.

Local population (fauna): comprises those individuals known or likely to occur in the study area, as well as any individuals occurring in adjoining areas (contiguous or otherwise) that are known or likely to utilise the habitats in the study area.

For the purposes of this report, the *local population* for GED and SLL represents all individuals residing within the study area. However, it likely based on the above definition that the local population for both species extends beyond the study area based on the connectivity of similar habitat (determined through inspection of aerial photography and discussions with landowner). Furthermore, there does not appear to be any barriers between habitats within and immediately contiguous with the study area. However, taking a conservative approach, the *study area* shown in Figure 1 was used as the extent of habitat of the local occurrence, as habitat and known records within this area have been confirmed (EIS and supporting document) and/or potential habitat ground-truthed by ELA.

7-PART TEST - GRASSLAND EARLESS DRAGON (*TYMPANOCRYPTIS PINGUICOLLA*)

Habitat information

The following information has been extracted and modified from the National Recovery Plan for the Grassland Earless Dragon *Tympanocryptis pinguicolla* (Robertson, P. and Evans, M. (2009/2012)).

> .....*Tympanocryptis pinguicolla* has been recorded from as far north in NSW as Bathurst, south through the ACT to the natural temperate grasslands of the Monaro region in the Southern Tablelands.....Little information has been available about the habitat of the Grassland Earless Dragon until recently. Observations in NSW and the ACT indicate that the species is found in natural temperate grasslands, dominated by Wallaby Grasses (*Rytidosperma* spp.), Spear Grasses (*Austrostipa* spp.), Tussock Grasses (*Poa* spp.) and possibly Kangaroo Grass (*Themeda triandra*).....
> .....Captures in artificial arthropod burrows suggest that the animals prefer well-drained natural temperate grasslands that are relatively undisturbed and with minimal pasture improvement. There appears to be a preference for shorter grassland with an open structure or with open areas, and some aspects of the structure of the grassland (such as distribution of tussocks and low, open grass) may be important. .....
> .....Because the Grassland Earless Dragon is now known from so few sites, and its former distribution has been so reduced, all remaining known occurrences are considered critical to the survival of the species.....
> .....No critical habitat, as defined under Part 3 of the TSC Act, has been declared for the species in NSW. At this stage it is not possible to refine this appreciation of the extent of habitat that is critical to the survival of the Grassland Earless Dragon.

The *local population* for GED represents all individuals residing within suitable habitat across the study area. Suitable habitat is represented by 665.75 ha (Figure 1 and Table 2) of Native Tussock Grassland (consistent with PCT 1187). There are no substantial barriers to the movement of GED within the study area and therefore a single local population is considered in the assessment.

A search of the NSW Wildlife Atlas for GED records was conducted within a 10 km radius of the development footprint, with multiple records west and north of the site (Figure 2). It is noted that habitat in these areas are likely to be similar to that of the development footprint, but populations are unlikely to be connected due to the barriers created by the Monaro Highway, other roads or exotic vegetation.

During the course of the EIS and subsequent surveys requested by OEH, the species was recorded at approximately 16 locations. A recent observation from the land owner of a GED in the south-east corner of the subject lots has increased the known range of the species in the study area. Furthermore, based on similar habitat, the species is likely to occur at other locations within the study area, particularly areas with partially embedded surface rocks. It was recognised by Rod Pietsch (6 March 2019) that all the Native Tussock Grassland within the study area is likely to represent potential habitat.

7- Part Test

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

Factors likely to adversely affect the life cycle of the species include, mortality from vehicle strike (reduce population numbers), barriers to reproduction such as isolating or fragmenting habitat (e.g. roads),

removal of large areas of suitable habitat, or degradation of suitable habitat from agricultural practices (e.g. ploughing or pasture improvement).

The proposed quarry will impact 8.75 ha of potential habitat, and an additional 12.88 ha not considered suitable (Rocky Outcrop and Improved Pasture). All Native Tussock Grassland areas in the study area are considered suitable to support individuals, based on the cover and diversity of native grasses (E.g. *Austrostipa* spp., *Poa* sp., *Elymus* sp. and *Rytidosperma* spp.).

Removal of habitat has been reduced from 13.10 ha (described in the EIS) to 8.75 ha, and now effects only 1.31% of potential habitat within the study area (Table 2). This impact is relatively minor when considering the extent of similar habitat in the study area (98.7%) and the mobility of the species.

Most records within the study area (ten) are north of the haul road and surrounded by Improved Pasture. Pasture improvements have been an agricultural practice on the property for many years. This suggests the local population has persisted in the long-term despite this disturbance, and can either exist in these small areas of Native Tussock Grassland, or reoccupy post disturbance through connected areas of habitat to the west and north.

It is noted that the haul road where it joins the Monaro Highway will potentially isolate a small area (approx. 7 ha) of suitable habitat to the immediate west of the junction (near Plot 1; Figure 1), or at the very least, reduce connectivity of this patch to other areas of habitat. However, no individuals have been recorded in this small patch, despite surveys (Lesryk 2018). Connectivity, albeit limited, may still persist along the disused rail line to suitable habitat north of the study area (whilst not mapped, areas north of the study area are dominated by native grasses). As a potential mitigation measure, the connectivity could be enhanced by a commitment from the landowner to prevent further pasture improvement along a selected corridor (or rehabilitating), such that connectivity to this patch is improved, and to join the area containing ten GED records (north of the haul road).

Three records of the species (Lesryk 2018) occur adjacent to the Monaro Highway, where on average 2,255 vehicles pass each day at up to 100km/hr, of which 250 are heavy trucks (EIS – Traffic Assessment Report). The closeness of these records to the highway suggest individuals can persist successfully with these levels of disturbance (indirect impacts associated with noise, vibrations and dust). In this context, the average 28 truck movements per day (maximum 128, one to five times per year) of slower moving vehicles is unlikely to adversely affect any GED individuals beyond the 20m buffer of the development footprint.

In consideration of the above, particularly that 98.7% of suitable habitat in the study area will remain, impacts from the proposed quarry are unlikely to adversely affect the life cycle of the species such that is places a viable local population at risk of extinction.

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

Not applicable – the Grassland Earless Dragon is not an endangered population.

c. *in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:*

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

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction

Not applicable – the Grassland Earless Dragon is not an endangered or critically endangered ecological community.

d. in relation to the habitat of a threatened species, population or ecological community:

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

The proposed quarry will directly impact 8.75 ha of suitable habitat. The removal of habitat represents only 1.31% of the available habitat within the study area (Table 2). This reduction is minor in the context of the 98.7% of similar habitat remaining in the study area.

(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 haul road where it joins the Monaro Highway will potentially isolate a small area (approx. 7 ha; or 1% of study area) of suitable habitat to the immediate west of the junction (near Plot 1; Figure 1), or at the very least, reduce connectivity of this patch to other areas of habitat. However, no individuals have been recorded in this small patch, despite surveys (Lesryk 2018). Connectivity, may still persist along the disused rail line to suitable habitat north of the study area (whilst not mapped, areas north of the study area are dominated by native grasses).

As a potential mitigation measure, the connectivity could be enhanced by a commitment from the landowner to prevent further pasture improvement (or rehabilitating) along a selected corridor, such that connectivity is improved, joining the area containing ten GED records (north of the haul road).

The rest of the haul road and quarry is not considered to fragment or further isolate areas of habitat. Although it is recognised that movement between individual may be slightly reduced, or made more difficult (areas of Improved Pasture presently provide a restriction on movement), flow of genetic material between individuals in the north and south of the study area will be maintained. There will still be connectivity around the western side of the quarry linking northern and southern areas, and also down the eastern side of the subject lots.

Furthermore, populations of GED across the landscape or broader locality already exist within a fragmented landscape by farm roads, paddocks of exotic pasture, or the Monaro Highway (Figure 2). The proposal will not exacerbate this fragmentation such that the local occurrence will be put at risk of extinction in the long-term.

(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 quarry will directly impact 8.75 ha of potential habitat for the GED (Table 2). This reduction is relatively minor in the context of the extent of similar habitat in the study area (98.7%). All areas of Native Tussock Grassland are considered suitable to support individuals, based on the cover and diversity of native grasses and forbs (E.g. *Austrostipa* spp., *Poa* sp., *Elymus* sp. and *Rytidosperma* spp.)

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

The National Recovery Plan for the Grassland Earless Dragon states that "*Because the Grassland Earless Dragon is now known from so few sites, and its former distribution has been so reduced, all remaining known occurrences are considered critical to the survival of the species.*

However, *"No critical habitat, as defined under Part 3 of the TSC Act, has been declared for the species in NSW".*

a. *whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan*

The primary objective stated in the National Recovery Plan *"is to ensure the ability of the Grassland Earless Dragon to survive, flourish and maintain its potential for evolutionary development in the wild, across its natural geographic range. Implicit in this is the immediate objective of ensuring the long-term survival of the species throughout its extant distribution".*

This assessment of significance concludes that the proposed quarry will not impact on individuals or potential habitat for the species such that the long-term survival of the species within the study area will be at risk. Therefore, the proposed action is considered to be consistent with the primary objective of the Grassland Earless Dragon National Recovery Plan.

b. *whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process*

A key threatening process is defined under the TSC Act as *"a process that threatens, or may have the capability to threaten, the survival or evolutionary development of species, populations or ecological communities*". One threatening process listed under Schedule 3 of the TSC Act is relevant to the current proposal, namely Clearing of Native Vegetation, which will result in the removal of 1.31% of potential habitat in the study area.

Conclusion:

In consideration of the above factors, the proposed quarry is unlikely to constitute a significant impact on the Grassland Earless Dragon, given that:

- The proposed works would require the clearing of only a relatively small area (8.75 ha, representing 1.31%) of the potential habitat within the study area.
- Large areas of potential habitat will remain in the study area (98.7%) and across the surrounding landscape.
- The proposal would not significantly exacerbate fragmentation of existing populations, or isolate connecting areas of habitat in terms of use by this species. Populations within the study area are restricted in movement by the Improved Pasture, and across the broader landscape by farm roads, the Monaro Highway and exotic pasture.
- Indirect impacts from truck movements (noise and vibrations) are unlikely to substantially adversely affect the species within the study area.

7 – PART TEST - STRIPED LEGLESS LIZARD (*DELMA IMPAR*)

Habitat information

The following distribution and habitat information has been extracted and modified from the Commonwealth Department of the Environment and Energy – Species Profile and Threats Database for *Delma impact* (Striped Legless Lizard).

> .....The Striped Legless Lizard was formerly distributed throughout temperate lowland grasslands in the Australian Capital Territory (ACT), the south-western slopes and southern tablelands of New South Wales (NSW), central and southern Victoria, and the south-eastern corner of South Australia (SA)..... In NSW, the species occurs at sites near Goulburn, Yass, Queanbeyan, Cooma and Tumut areas..... The extent of occurrence of the Striped Legless Lizard is approximately 81 870 km².....
>
> .....The Striped Legless Lizard is a grassland specialist. Potential habitat includes all areas which have, or once had, native grasslands or grassy woodlands (including derived grasslands) across their historical range, provided that area retains suitable tussock structure, the soil is of appropriate type and structure, and the site has not had major disturbance such as ploughing. All occupied sites have a grassy ground cover, often with a mixture of native and exotic perennial and annual species of tussock-forming grasses (often >20–50% cover). Until recently, it was thought to inhabit only areas dominated by species such as Spear Grass (*Austrostipa* sp.) and Kangaroo Grass (*Themeda triandra*). However, it is now known to occur in some areas dominated by the exotic species, *Phalaris aquatica*, and Serrated Tussock (*Nassella trichotoma*), and at sites with a history of grazing and pasture improvement. It is not known if grassland dominated by introduced species can support SLL populations in the long term, but there is evidence that they do reproduce in these habitats.....

The *local population* for SLL represents all individuals residing within suitable habitat across the study area. Suitable habitat is represented by 665.75 ha (Figure 1 and Table 2) of Native Tussock Grassland (consistent with PCT 1187 and Natural Temperate Grassland listed under the EPBC Act). There are no substantial barriers to the movement of GED within the study area and therefore a single local population is considered in the assessment.

A search of the NSW Wildlife Atlas for previous SLL records was conducted within a 10 km radius of the proposed development footprint, with multiple records west and north of the site (Figure 2). It is noted that habitat in these areas is likely to be similar to the habitats within the study area, but populations are unlikely to be connected due to barriers of the Monaro Highway, other roads or exotic vegetation.

During the course of the EIS and subsequent surveys requested by OEH, the species was recorded at two locations, with five shed skins also uncovered. Based on similar habitat, the species is likely to occur at other locations within the study area, particularly areas with good tussock grass cover, but have not been recorded to-date due to limitations preventing the surveying of all areas. It was recognised by Rod Pietsch (6 March 2019) that all Native Tussock Grassland represents potential habitat for the SLL.

7-Part Test

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

Factors likely to adversely affect the life cycle of the species include, mortality from vehicle strike (reduce population numbers), barriers to reproduction such as isolating or fragmenting habitat (e.g. roads),

removal of large areas of suitable habitat, or degradation of suitable habitat from agricultural practices (e.g. ploughing or pasture improvement).

The proposed quarry will directly impact 8.75 ha of potential breeding and foraging habitat, and an additional 12.88 ha not considered suitable (Rocky Outcrop and Improved Pasture). All Native Tussock Grassland areas in the study area are considered potential habitat, based on the cover and diversity of native grasses (E.g. *Austrostipa* spp., *Poa* sp., *Elymus* sp. and *Rytidosperma* spp.).

Removal of habitat has been reduced from 13.10 ha (described in the EIS), and now represents a clearing of only 1.31% of potential habitat within the study area (Table 2). This impact is relatively minor when considering the availability of habitat in the study area (98.7% remaining) and the mobility of the species.

One of the two records within the study area is north of the haul road and surrounded by Improved Pasture, and the other approximately 200m south of the quarry footprint.

It is noted that the haul road where it joins the Monaro Highway will potentially isolate a small area (approx. 7 ha) of suitable habitat to the immediate west of the junction (near Plot 1; Figure 1), or at the very least, reduce connectivity of this patch to other areas of habitat. However, no individuals have been recorded in this small patch, despite surveys (Lesryk 2018). Connectivity, albeit limited, may still persist along the disused rail line to suitable habitat north of the study area (whilst not mapped, areas north of the study area are dominated by native grasses). As a potential mitigation measure, the connectivity could be enhanced by a commitment from the landowner to prevent further pasture improvement along a selected corridor (or rehabilitating), such that connectivity to this patch is improved, and to join the area containing the northern SLL record.

The quarry will average 28 truck movements per day (maximum 128, one to five times per year) and blasting an average 10 times per year (maximum 19). Whilst the full extent of these indirect impacts is unknown, they are not considered to adversely impact the species within the study area. In particular, the nearest record of the SLL to the haul road is approximately 500m away (600m away from Monaro Highway), and therefore unlikely to be impacted by truck movements. The record south of the quarry is only 200m away and may be adversely impacted through minor ground vibration (e.g. minor earth tremor), but only in the very short-term for up to five second while the blast lasts.

In consideration of the above, particularly that 98.7% of suitable habitat in the study area will remain, impacts from the proposed quarry are unlikely to adversely affect the life cycle of the species such that is places a viable local population at risk of extinction.

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

Not applicable – the Striped Legless Lizard is not an endangered population.

c. *in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:*

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

   (ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction

Not applicable – the Striped Legless Lizard is not an endangered or critically endangered ecological community.

d. *in relation to the habitat of a threatened species, population or ecological community:*

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

The proposed quarry will directly impact 8.75 ha of suitable habitat. The removal of habitat represents only 1.31% of available habitat within the study area (Table 2). This reduction is relatively minor with 98.7% of the potential habitat within the study area remaining.

(ii) whether an area of habitat is likely to become fragmented or isolated from oth.er areas of habitat as a result of the proposed action, and

The haul road where it joins the Monaro Highway will potentially isolate a small area (approx. 7 ha; or 1% of study area) of suitable habitat to the immediate west of the junction (near Plot 1; Figure 1), or at the very least, reduce connectivity of this patch to other areas of habitat. However, no individuals have been recorded in this small patch, despite surveys (Lesryk 2018). Connectivity, may still persist along the disused rail line to suitable habitat north of the study area (whilst not mapped, areas north of the study area are dominated by native grasses).

As a potential mitigation measure, the connectivity could be enhanced by a commitment from the landowner to prevent further pasture improvement (or rehabilitating) along a selected corridor, such that connectivity is improved, joining the area containing the northern SLL record.

The rest of the haul road and quarry is not considered to fragment or further isolate areas of habitat. Although it is recognised that movement between individual may be slightly reduced, or made more difficult (areas of Improved Pasture presently provide a restriction on movement), flow of genetic material between individuals in the north and south of the study area will be maintained. There will still be connectivity around the western side of the quarry linking northern and southern areas, and also down the eastern side of the subject lots.

Furthermore, populations of SLL across the landscape exist within a fragmented landscape by farm roads, paddocks of exotic pasture, or the Monaro Highway (Figure 2). The proposal will not exacerbate this fragmentation such that the local occurrence will be put at risk of extinction in the long-term.

(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 quarry will directly impact 8.75 ha of suitable habitat (Table 2). This impact is relatively minor in the context of the extent potential habitat in the study area (98.7%). All areas of Native Tussock Grassland are considered suitable to support individuals, based on the cover and diversity of native grasses and forbs (E.g. *Austrostipa* spp., *Poa* sp., *Elymus* sp. and *Rytidosperma* spp.)

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

No critical habitat, as defined under Part 3 of the TSC Act, has been declared for the species in NSW.

a. *whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan*

No Recovery Plan for the Striped Legless Lizard is active. However, a Recovery Plan was previously prepared and dated 1999-2003. The primary objective conservation goal of the old Recovery Plan was *"to ensure the long-term survival of D. impar and maintain its potential for evolutionary development in the wild across its natural geographic range. Implicit is maintaining the species' ability to survive, flourish and maintain its potential for evolutionary development in the wild and throughout its natural geographic range".*

This assessment concludes that the proposal will not impact on individuals or potential habitat for the species, such that the long-term survival of the species within the study area will be at risk. Therefore, the proposed action is considered to be consistent with the primary objective of the old Recovery Plan.

b. *whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process*

A key threatening process is defined under the TSC Act as "*a process that threatens, or may have the capability to threaten, the survival or evolutionary development of species, populations or ecological communities*". One threatening process listed under Schedule 3 of the TSC Act is relevant to the current proposal, namely Clearing of Native Vegetation, which will result in the removal of 1.31% of the potential habitat for the SLL in the study area.

Conclusion:

In consideration of the above factors, the proposed quarry is unlikely to constitute a significant impact on the Striped Legless Lizard, given that:

- The proposal would require the clearing of only a relatively small area (8.75 ha, representing 1.31%) in context of suitable habitat within the study area.
- Large areas of potential habitat will remain in the study area (98.7%) and across the landscape.
- The proposal would not significantly exacerbate fragmentation of existing populations, or isolate connecting areas of habitat in terms of use by this species. Populations within the study area are restricted in movement by the Improved Pasture, and across the broader landscape by farm roads, the Monaro Highway and exotic pasture.
- Indirect impacts from truck movements and blasting (noise and vibrations) are unlikely to adversely affect the species within the study area.

Photo 1: *Native Tussock Grassland* – adjacent to Monaro Highway

Photos 2: *Native Tussock Grassland* – south of *Improved Pasture* and haul road

Photo 3: ***Improved Pasture***

Photo 4: ***Rocky Outcrop / Sheep Camp*** **– proposed quarry area**