

## REFERRAL OF A PROJECT FOR A DECISION ON THE NEED FOR ASSESSMENT UNDER THE *ENVIRONMENT EFFECTS ACT 1978*

### REFERRAL FORM

The *Environment Effects Act 1978* provides that where proposed works may have a significant effect on the environment, either a proponent or a decision-maker may refer these works (or project) to the Minister for Planning for advice as to whether an Environment Effects Statement (EES) is required.

This Referral Form is designed to assist in the provision of relevant information in accordance with the *Ministerial Guidelines for assessment of environmental effects under the Environment Effects Act 1978* (Eighth Edition, 2023). Where a decision-maker is referring a project, they should complete a Referral Form to the best of their ability, recognising that further information may need to be obtained from the proponent.

**It will generally be useful for a proponent to discuss the preparation of a Referral with the Impact Assessment Unit (IAU) at the Department of Transport and Planning (DTP) before submitting the Referral.**

If a proponent believes that effective measures to address environmental risks are available, sufficient information could be provided in the Referral to substantiate this view. In contrast, if a proponent considers that further detailed environmental studies will be needed as part of project investigations, a more general description of potential effects and possible mitigation measures in the Referral may suffice.

In completing a Referral Form, the following should occur:

- Mark relevant boxes by changing the font colour of the 'cross' to black and provide additional information and explanation where requested.
- As a minimum, a brief response should be provided for each item in the Referral Form, with a more detailed response provided where the item is of particular relevance. Cross-references to sections or pages in supporting documents should also be provided. Information need only be provided once in the Referral Form, although relevant cross-referencing should be included.
- Responses should honestly reflect the potential for adverse environmental effects. A Referral will only be accepted for processing once IAU is satisfied that it has been completed appropriately.
- Potentially significant effects should be described in sufficient detail for a reasonable conclusion to be drawn on whether the project could pose a significant risk to environmental assets. Responses should include:
  - a brief description of potential changes or risks to environmental assets resulting from the project;
  - available information on the likelihood and significance of such changes;
  - the sources and accuracy of this information, and associated uncertainties.
- Any attachments, maps and supporting reports should be provided in a secure folder with the Referral Form.
- A USB copy of all documents will be needed, especially if the size of electronic documents may cause email difficulties. **Individual documents should not exceed 10MB as they will be published on the Department's website.**
- A completed form would normally be between 15 and 30 pages in length. Responses should not be constrained by the size of the text boxes provided. Text boxes should be extended to allow for an appropriate level of detail.

- The form should be completed in MS Word and not handwritten.

The party referring a project should submit a covering letter to the Minister for Planning together with a completed Referral Form, attaching supporting reports and other information that may be relevant. This should be sent to:

Postal address

**Minister for Planning  
PO Box 500  
EAST MELBOURNE VIC 8002**

Couriers

**Minister for Planning  
Level 16, 8 Nicholson Street  
EAST MELBOURNE VIC 3002**

In addition to the submission of the hardcopy to the Minister, separate submission of an electronic copy of the Referral via email to [ees.referrals@delwp.vic.gov.au](mailto:ees.referrals@delwp.vic.gov.au) is required. This will assist the timely processing of a referral.

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## PART 1 PROPONENT DETAILS, PROJECT DESCRIPTION & LOCATION

### 1. Information on proponent and person making Referral

<b>Name of Proponent:</b>	Mountain View Quarries (a subsidiary of Barro Group Pty Ltd)
<b>Authorised person for proponent:</b>	Ann-Marie Farr
<b>Position:</b>	Quarry Development & Planning Manager
<b>Postal address:</b>	PO Box 663 Carlton South Vic 3053
<b>Email address:</b>	barro@barro.com.au
<b>Phone number:</b>	03) 8656 3900
<b>Facsimile number:</b>	-
<b>Person who prepared Referral:</b>	Mandy Elliott
<b>Position:</b>	Lead Consultant
<b>Organisation:</b>	EnviroME
<b>Postal address:</b>	
<b>Email address:</b>	<a href="mailto:admin@envirome.com.au">admin@envirome.com.au</a>
<b>Phone number:</b>	
<b>Facsimile number:</b>	
<b>Available industry &amp; environmental expertise:</b> (areas of 'in-house' expertise & consultancy firms engaged for project)	<p>Barro Group has extensive experience in the planning, construction, operation and environmental management of quarries throughout Australia.</p> <p>Barro Group receives technical advisory services from a range of consultants including BCA Consulting Earth Resources, whom are providing assistance with investigations and assessment of various matters to inform this referral.</p> <p>The following attachments are provided to assist with the assessment of the Little River Quarry Variation Project.</p> <ul style="list-style-type: none"> <li>• Attachment A: Native Vegetation Removal Report and Ecological Assessment (Norris &amp; Schoeffel, 29 May 2024)</li> <li>• Attachment B: Hydrogeological Assessment (Nolan Consulting Pty Ltd)</li> <li>• Attachment C: Surface Water Management Plan (BCA)</li> <li>• Attachment D: Blasting Impact Assessment (Terrock Consulting Engineers)</li> <li>• Attachment E: Preliminary Site Investigation (Sensversa)</li> <li>• Attachment F: Visual Impact Assessment</li> <li>• Attachment G: Figures</li> </ul>

## 2. Project – brief outline

<p><b>Project title: Little River Quarry Variation Project</b> (the Project)</p>
<p><b>Project location:</b> (describe location with AMG coordinates and attach A4/A3 map(s) showing project site or investigation area, as well as its regional and local context)</p> <p>The Barro Group Pty Ltd (Barro) Little River Quarry is located in Little River, Victoria. The existing quarry operation is located approximately 10km north of Lara, and 45 km west of Melbourne, see Figure 1 - Regional Plan in Attachment G - Figures.</p> <p>The site is located north of the You Yangs Regional Park, and has the Ford Proving Ground and Victorian Sporting Shooters Association Gun Club as neighbours to the north and an existing quarry – Boral Sandy Creek (WA437), as a neighbour to the south.</p> <p>The Project is proposed on the following land:</p> <ul style="list-style-type: none"> <li>• Crown Allotment 13 Section 11 Parish Wurdi-Youang, Lot 2 on PS 344713R.</li> </ul> <p>The approved Work Authority (WA453) is in the City of Greater Geelong, and is entirely private land owned by the Barro Group, see attached Figure 2 - Location Plan in Attachment G Figures.</p>
<p><b>Short project description</b> (few sentences):</p> <p>The Little River Quarry consists of a hard rock quarry, utilising standard extraction and processing techniques. In addition, suitable inert materials may be imported to site for processing and blending with quarry product or use in site rehabilitation. Crushed rock products are sold into the Melbourne market for use in the construction industry.</p> <p>The Little River Quarry proposes to vary its current quarry operations by expanding and deepening its current hard rock extraction area to approximately 62.3 hectares (ha). This is an increase of 46ha from the currently approved 16.3ha quarry extraction area. A Work Plan Variation is required under the <i>Minerals Resources (Sustainable Development) Act 1990</i>.</p> <p>The total site area, including the extraction area, site access road, soil stockpiles, office, weighbridge, amenities, and workshop is approximately 71ha. However, no increase in the site disturbance is proposed outside of the expanded extraction area.</p> <p>The total volume of the extraction, excluding topsoil, is approximately 38.5 million cubic metres over the life of the quarry.</p>

### 3. Project description

**Aim/objectives of the project** (what is its purpose / intended to achieve?):

To expand an existing quarry to allow for demand in concrete aggregate.

The Little River Quarry services the wider Melbourne and Geelong markets as well as local regional markets and currently delivers approximately 1 million tonne of resource into the construction industry per annum. It is a primary producer of Class A aggregate along with manufactured sands which meets all VicRoad high grade concrete specifications essential for use in major state infrastructure projects. Due to the nature of the resource the site is one of only a few resources within the western region capable of supplying aggregate with the required VicRoad shrinkage limit specification.

**Background/rationale of project** (describe the context / basis for the proposal, eg. for siting):

The Little River Quarry is located north of the You Yangs Regional Park, and between Sandy Creek Road and the Little River-Ripley Road. The site is wholly within freehold land owned by the Barro Group, with a total Work Authority area of approximately 287ha. The quarry is accessed from Sandy Creek Road.

Modern, conventional hard rock quarrying techniques are deployed on site, operating on multiple faces; including drilling and blasting, excavators and off-road haulage vehicles and related ancillary mobile equipment. Extracted material is processed on site through a series of crushing and sizing circuits.

The site is an important part of the broader Barro operations, and is in a prime position to supply manufactured sand and low shrinkage concrete aggregate. The rate of extraction at the site will be determined by market forces and is expected to be approximately 750,000 tonnes per annum.

The site has been worked for many decades supplying a variety of sands and gravels for construction use, and more recently crushed rock products. Known as the "Woolatta" property, the site was a supplier of road and construction sands since the early 1970's, when it was initially operated by Incitec Pivot Limited. Incitec Pivot also operated a fertiliser storage facility on a portion of the site. Transwest Haulage Pty Ltd purchased the site from Incitec Pivot in March 2003 and continued the sand and gravel supply activity and also the supply of unwashed concrete sand to other operators to process off site. The fertiliser storage facility operation ceased some time ago, with Transwest responsible for rehabilitating the site. The Barro Group purchased the land and acquired the Work Authority from Transwest in 2014.

There are significant areas outside the currently approved extraction area that have been extensively disturbed by earlier sand and gravel extraction.

**Main components of the project** (nature, siting & approx. dimensions; attach A4/A3 plan(s) of site layout if available):

The expansion of the Little River quarry extraction area will remain completely contained within the topographical 'basin' in which the existing quarry extraction area is located. A buffer of at least 100m will be maintained to the north-eastern Work Authority boundary, with a buffer to the southern Work Authority boundary of at least 165m. The extraction

depth is increasing from the previously approved 90m RL to 60m RL (with the base of the pit sump at approximately 55m RL) – refer to Figure 3 - Site Layout Plan in Attachment G (Figures). The increase in depth of the quarry floor from previous approvals is 30m.

Note that the plant and stockpiling area will be located within the extraction area and will be relocated over time to allow full extraction. Once extraction reaches the full extent of the 165m RL level, to the terminal pit limits, a fixed processing plant will be established at that level within the south-west part of the pit. The extent of the proposed extraction area is shown in the Site Layout Plan (Attachment G - Figure 3).

**Ancillary components of the project** (eg. upgraded access roads, new high-pressure gas pipeline; off-site resource processing):

The expanded Little River quarry will utilise the site access road and utilities as currently utilised. There is no increase in the site disturbance proposed outside of the expanded extraction area.

**Key construction activities:**

As the Little River quarry already exists and therefore 'constructed', with the addition of a fixed processing plant to be constructed within the expanded pit, this referral will concentrate on the operational activities.

**Key operational activities:**

The site will employ both traditional soft rock (excavator, dozer) techniques to remove overburden and highly weathered granite and hard rock (drill and blast) methods to extract the harder, fresher granite.

A brief description of the extraction process is presented below.

- Soil removed and used in progressive rehabilitation or potentially stored in temporary stockpiles within the disturbance area;
- Overburden removed and placed in storage mounds within the excavation area, or used directly in progressive rehabilitation where possible;
- Resource extracted and hauled to the processing plant;
- Cut off drains, mounds and other surface water management control features will be continually updated and modified to ensure dirty water is directed to the quarry sumps and clean water is directed away from the disturbance area.

The progress of works and any progressive rehabilitation will be reviewed on a regular basis to ensure the rehabilitation activities are effective in meeting the objectives whilst not compromising the ability to work the site.

Where present, topsoil will be stripped and initially stockpiled outside the active extraction area, but within the disturbance area, close to where it will be required for rehabilitation, then either hauled directly to prepared progressive rehabilitation areas or stockpiled within the broader extraction area for later use in rehabilitation. Soil stockpiles are shown schematically in Figure 3, Site Layout Plan (Attachment G: Figures).

*Depth of Extraction and Terminal Batters*

The completed extraction will be at two levels, with the terminal batters intersecting the undulating topography at variable depths, being partway up the slopes of the

surrounding hills – refer to Site Layout Plan (Attachment G – Figure 3). The depth of the excavation at the terminal batter will vary from zero to a maximum of 182m. The increase in depth of the quarry floor from previous approvals is 30m.

As shown on the Site Layout Plan ('Typical Terminal Face Treatment & Rehabilitation' inset), the pit crest is designed so that there will not be an immediate steep drop into the excavation. After a retained crest bund, the upper weathered material to the crest will be battered back to a low angle and planted with native vegetation, with a flat 5m bench below that and then the first rock face will be a short drop (approximately 2m) to reduce the falling risk. All the upper benches will be progressively spread with overburden and soil and planted with native vegetation to screen the exposed rock faces.

#### *Fixed Plant*

There is currently no fixed processing plant on the existing Work Authority. All processing is conducted through mobile crushing and screening plant located as shown on Figure 3 - Site Layout Plan (Attachment G). A new fixed plant and stockpiling area will be established at the 165mRL level, some 10m below the current stockpile area, with appropriate setbacks from extraction crests (at least 20m).

#### *Mobile Plant*

Mobile plant most frequently used for extraction will comprise an excavator and/or dozer for stripping to remove overburden and highly weathered rock, and a drill rig for drill and blast to extract the harder, fresher rock. Front-end loaders, excavators or haul trucks will be used for material cartage.

The site currently uses (self-powered) mobile crushing and screening units to produce various crushed stone products. This plant will be relocated during the first stage of quarry expansion, with appropriate setbacks from extraction crests (at least 20m), and then be replaced with fixed-plant following the establishment of the new plant and stockpiling area at 165mRL.

#### *Topsoil*

Stockpiling of soil and overburden will take place when the sequencing of stripping, extraction and progressive rehabilitation does not allow direct placement.

Soil stockpiles will be limited in height to not greater than 2m, to maintain soil biological activity, and will be located within the disturbance area, at a location close to extraction crests where they will be ultimately used in rehabilitation. Soil stockpiles will be contoured and grassed to manage erosion until they are required for use in rehabilitation.

The location of soil stockpiles is shown schematically on Figure 3 Site Layout Plan (Attachment G: Figures). Soil stockpiles will not be retained post closure.

#### *Overburden*

Overburden will initially be stockpiled to the south-east of the current extraction area during Stage 1 (see Figure 3, Site Layout Plan), while extraction expands to the north. Afterwards overburden will be stockpiled on the 165m RL level, north of the plant and stockpile area, in the upper benches of the extraction area. From this location overburden will be rehandled for use in rehabilitation and suitable materials used in surfacing the 165m RL level and forming hardstands for the fixed processing plant and stockpiling area. Overburden may also be blended with any plant material if saleable product can be made, although enough overburden will always be kept for rehabilitation purposes.

<p>The location of overburden stockpiles is shown schematically on Figure 3 Site Layout Plan (Attachment G).</p>
<p><b>Key decommissioning activities</b> (if applicable):</p> <p>Rather than decommissioning, the quarry will be rehabilitated in accordance with the site's approved Rehabilitation Plan as extraction areas are exhausted over the life of the quarry operations.</p> <p>As required by the <i>Minerals Resources (Sustainable Development) Act 1990</i>, and associated Regulations, the overall objective of the Rehabilitation Plan is to leave the site upon closure in a manner that is safe, stable and sustainable, and in a form suitable for the intended end land uses.</p> <p>Ultimately the Barro Group intend to retain some of the facilities in the infrastructure and stockpile areas and some of the hardstand areas for warehousing and a maintenance depot for the Barro Group's other quarrying operations into the future – including facilities such as site offices, weighbridge(s), workshop, mobile crushing plant, etc. These areas will not require any additional preparation or clearing for this purpose, but all fixed crushing plant will be dismantled. Otherwise, disturbed areas of the site outside these requirements will be returned to general farmland suitable for livestock grazing or be incorporated into the post-closure pit lake. Refer to the Figure 4, Rehabilitation Landform drawing (Attachment G Figures).</p>
<p><b>Is the project an element or stage in a larger project?</b></p> <p><input type="checkbox"/> No <input checked="" type="checkbox"/> Yes If yes, please describe: the overall project strategy for delivery of all stages and components; the concept design for the overall project; and the intended scheduling of the design and development of project stages).</p> <p>The Project is an expansion of an existing quarry. The progressive development of the extraction area is provided schematically in Figure 3 - Site Layout Plan (Attachment G).</p> <p>The quarry life will depend on market conditions and sales demand, but at current sales figures the life of the expanded quarry can be expected to be well in excess of 80 years.</p>
<p><b>Is the project related to any other past, current or mooted proposals in the region?</b></p> <p><input type="checkbox"/> No <input checked="" type="checkbox"/> Yes If yes, please identify related proposals.</p> <p>As stated above, the proposal is an expansion of an existing quarry.</p>
<p><b>What is the estimated capital expenditure for development of the project?</b></p> <p>Approximately \$30 million.</p>



#### 4. Project alternatives

**Brief description of key alternatives considered to date** (e.g. locational, scale or design alternatives. If relevant, attach A4/A3 plans):

The expansion of the Little River quarry extraction area is designed to remain completely contained within the topographical 'basin' in which the existing quarry extraction area is located. This ensures that the site remains well hidden from neighbouring views and does not cause any impacts outside of the immediate catchment area within the 'basin'. The location of the granite rock resource cannot be changed and approximately half of the proposed extraction area has already been subject to previous sand quarrying disturbance.

The original proposed expansion included extraction further to the north and this was pulled back, in accordance with Melbourne Water advice, to ensure that there would be no impact downstream of the existing approved quarry disturbance, which also significantly reduced the area of native vegetation removal required.

**Brief description of key alternatives to be further investigated** (if known):

As this is an existing operational quarry seeking expansion within its current Work Authority area there are limited alternatives available to access the granite rock resource. As above, a larger expansion was considered but investigations showed that the native vegetation removal and potential downstream impacts could be significantly reduced with a moderate reduction in extraction area.

#### 5. Proposed exclusions

**Statement of reasons for the proposed exclusion of any ancillary activities or further project stages from the scope of the project for assessment:**

Nil

## 6. Project implementation

**Implementing organisation** (ultimately responsible for project, i.e. not contractor):

Mountain View Quarries (a subsidiary of Barro Group Pty Ltd).

**Implementation timeframe:**

Subject to approvals, quarry expansion works are planned to commence in 2025 and the Project is proposed to occur in stages. The life of the expanded quarry is expected to be in excess of 80 years.

**Proposed staging** (if applicable):

Initially the development will concentrate on expanding the current extraction area to the north, before expanding southward to establish the full terminal pit limits. The new processing plant location in the south-west of the extraction area (on approximately 165m RL) will be developed as soon as possible, allowing the existing plant to be relocated and fixed plant commissioned. Upper terminal batters are rehabilitated as soon as practicable after they are established.

Subsequent development will involve deepening within the eastern half of the established extraction area.

The balance of land not used for quarrying and ancillary operations and any rehabilitated areas of the site consistent with requirements will continue to be managed for agricultural or other purposes in accordance with existing practices.

The specific extraction stages, with reference to the Site Layout Plan (Appendix G – Figures), are:

- Stage 1 - extraction progressing northeast to the proposed extraction limit, and southwest to level and widen the floor for future plant and stockpiles (165m RL).
- Stage 2 - extraction in all directions (excluding northeast) to the proposed extraction limit, completing upper-level blasting above 165m RL. Establishment of fixed plant at the 165m RL.
- Stage 3 - widening and deepening the pit area (to approximately 90m RL) in eastern two-thirds of the extraction area.
- Stage 4 - deepening and widening of quarry floor level of 60m AHD.

Stages 1 and 2 provide a well shielded area for the fixed processing plant.

Excavated material will be hauled to and processed at a crushing and screening plant. This will be mobile plant for Stages 1 and 2 and fixed plant for Stages 3 and 4. The fixed processing plant will be within a hardstand area.

## 7. Description of proposed site or area of investigation

<p><b>Has a preferred site for the project been selected?</b></p> <p><input type="checkbox"/> No <input checked="" type="checkbox"/> Yes If no, please describe area for investigation. If yes, please describe the preferred site in the next items (if practicable).</p> <p>Yes – extension of an existing quarry site with access to the granite rock resource.</p>
<p><b>General description of preferred site</b>, (including aspects such as topography/landform, soil types/degradation, drainage/ waterways, native/exotic vegetation cover, physical features, built structures, road frontages; attach ground-level photographs of site, as well as A4/A3 aerial/satellite image(s) and/or map(s) of site &amp; surrounds, showing project footprint):</p> <p>Refer to Site Layout Plan (Attachment G - Figure 3) which includes a good summary of the general description of the site.</p> <p>The existing and proposed expanded Little River quarry (WA 453) is located within the Werribee Plains, an extensive low-lying area located west south-west of Melbourne. The Werribee Plains make up the eastern part of the Newer Volcanic Group (<i>Neo</i>), which erupted between the Neogene and the Quaternary Periods. The site is within the Devonian You Yangs granite, which outcrops extensively on the higher areas and is covered with colluvial granitic sand outwash in the gullies and low-lying areas.</p> <p>The colluvial sand has been extracted over much of the Work Authority area in the past for processing into road making materials, as an additive for crushed rock and for processing off site into concrete sand. The thickness of the sands generally increases down slope in the drainage depressions; however, the underlying granite profile can be quite irregular causing the sand to rapidly thin out.</p> <p>The Little River Quarry is surrounded by:</p> <ul style="list-style-type: none"> <li>- private freehold land (to the immediate north and east)</li> <li>- You Yangs Regional Park (southeast)</li> <li>- the small Wurdi Youyang Bushland Reserve (northwest)</li> <li>- Work Authority 437 sand quarry (south and southwest)</li> <li>- Ford Proving Grounds (to the immediate northwest).</li> </ul> <p>There are no Heritage Victoria listings within 2000m of the Work Authority, the closest being the Mt Rothwell Homestead 2.4 km to the north.</p> <p>Native vegetation and drainage areas on the site are discussed further in the referral.</p>
<p><b>Site area</b> (if known):</p> <p>Approximately 71 hectares total disturbance area, including the proposed 46 hectare expansion of the extraction area, within a Work Authority of approximately 287 hectares.</p>
<p><b>Current land use and development:</b></p> <p>The site is currently used as a quarry and the proposed extension area is a mix of native and non-native vegetation, with the balance of the land used for agricultural purposes.</p>
<p><b>Description of local setting</b> (e.g. adjoining land uses, road access, infrastructure, proximity to residences &amp; urban centres):</p> <p>The minimum separation distances (i.e. buffers) from the proposed extraction limit to the boundaries of neighbouring land areas are;</p>

- private land (Sporting Shooters Association of Australia (SSAA) Eagle Park shooting range), north/northeast – 100m
- private land (zoned for farming), east – 550m
- You Yangs Regional Park, southeast - 200m
- Work Authority 437 (Boral Ltd), south – 380m
- Ford Proving Grounds, northwest - 25m (estimated to be 100-200m from closest potential blasts)
- Wurdi Youyang Bushland Reserve, northwest – this is a historically disturbed site adjacent to past approved extraction activities; the boundary will be a minimum 75m from the expanding extraction areas.

There are 7 residential properties identified within 2km of the Work Authority. The closest residence is located approximately 400m east of the Work Authority, but 900m from the proposed expanded extraction area. The You Yangs Regional Park's Drysdale Rd Carpark is approximately 130m east of the Work Authority, but 830m from the proposed expanded extraction area. Building and facilities associated with the SSAA Eagle Park shooting range are located approximately 500m north of the Work Authority and 600m from the proposed expanded extraction area.

The closest area to the quarry with public access is the northernmost section of You Yangs Regional Park with a minimum separation distance of 200m from the proposed extraction limit. This section of the park contains numerous mountain bike tracks known as the Stockyards Mountain Bike Area, with the nearest track being approximately 270m from the expanded extraction area. The area is accessed via Drysdale Road that terminates at the southeast corner of the Work Authority. The Stockyards Mountain Bike Area is serviced by a small carpark located 830m from the proposed extraction limit.

The SSAA Eagle Park shooting range is located northeast of the quarry at the western end of Gifkins Road. The site's activity areas (shooting ranges, clubhouses, etc.) are located a minimum 500m from the proposed extraction limit. The land between the SSAA facilities and quarry boundary is under ownership of SSAA and for safety reasons is not accessible to the public or general club members. The quarry and shooting range are separated by a steep range of hills with granite outcrops and there is no line-of-sight between the two properties.

The closest section of the Ford Proving Grounds is a remote area at the southeast corner of the property. A vehicle track passes through this area at a minimum 150m from the extraction limit though it is reported to be used infrequently. The site's main facilities are located more than 2km northwest of the quarry.

The land immediately south and southwest of the quarry is Work Authority 437, a sand quarry under ownership of Boral Ltd, but also used for agriculture. No major extractive operations are thought to have occurred on the neighbouring Work Authority and future use of the site is not known.

The main access point to WA 453 is from Sandy Creek Road to the west and is gated and locked when the site is unattended. There is a light vehicle (emergency only) access from Drysdale Road to the east that is locked and not in use. The distances from most of the publicly accessible property boundaries to the quarry is significant.

A former unused road reserve (Allotment 2026) that divided the Work Authority (north-south), which Barro have been leasing under licence and is closed to the public, has recently been purchased by Barro Group, and is to be incorporated into the surrounding Work Authority.

Refer to Figure 5 Site Context Plan in Attachment G: Figures.

**Planning context** (e.g. strategic planning, zoning & overlays, management plans):

The Work Authority is mostly covered by a Farming Zone, under the Greater Geelong Planning Scheme, with the western corner of the property covered by a Special Use Zone (Earth and Energy Resources Industry). The area subject to the expansion is only within the Farming Zone. The entire site is subject to a Significant Landscape Overlay (SLO1 - Foothills of the You Yangs) and a Bushfire Management Overlay.

The existing quarry (WA453) operates under 'existing use rights'. The continuation of this consent, and its applicability to the works proposed in the Work Plan variation, has been confirmed by the City of Greater Geelong.

**Local government area(s):**

City of Greater Geelong.

## 8. Existing environment

### **Overview of key environmental assets/sensitivities in project area and vicinity**

(cf. general description of project site/study area under section 7):

The general project site area is already being used as a quarry and the surrounding area includes a number of existing quarries under granted Work Authorities, with the area having a long history of sand quarrying, including land now within the You Yangs Regional Park.

The vegetation on site fits the description of EVC\_71: Hills Herb-rich Woodland, a 'Vulnerable' EVC within the Central Victorian Uplands Bioregion. The proposed quarry extension involves the removal of 8.636 hectares of 'Native Vegetation' as defined in the DELWP Guidelines (2017).

A number of Brittle Greenhood orchids (listed as critically endangered under the FFG Act) were recorded on site. However, the ecological assessment found that much of the existing native vegetation within the proposed disturbance areas of the site is of poor quality and dominated by exotic weeds (refer to Attachment A: Native Vegetation Removal Report and Ecological Assessment, May 2024).

There are mapped but unnamed waterways on the property, see Site Layout Plan Figure 3 (Attachment G), that ultimately flow either toward Little River within the Melbourne Water catchment area, or toward Hovells Creek within the Corangamite CMA area. Little River is some 3.5km to the east and Hovells Creek some 4km to the west. There are no mapped waterways within the expanded extraction area, which is located at the head of a drainage line that joins Little River.

The You Yangs Regional Park and surrounds is covered by a Significant Landscape Overlay (SLO1 - Foothills of the You Yangs) which states:

*This area is comprised of treeless foothills and plains at the base of the You Yangs. The You Yangs are the most prominent landscape feature in the northern area of the municipality, providing panoramic views of Geelong. The surrounding foothills and plains create an open view path to the You Yangs, visually exposing them when viewed from the surrounding basalt plains.*

*The key element of the landscape is its open character and contrast with the You Yangs.*

The entire Work Authority lies within a broader Significant Landscape Overlay (SLO1 - Foothills of the You Yangs) in the planning scheme, which primarily seeks to protect views of the You Yangs themselves. However, the location of quarry is well shielded from external views, except existing distant views from the northwest.

The assessments indicate that it is very unlikely the proposed operation will impact on groundwater.

## 9. Land availability and control

<p><b>Is the proposal on, or partly on, Crown land?</b>  <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If yes, please provide details.</p>
<p><b>Current land tenure</b> (provide plan, if practicable):</p> <p>The site is owned by Barro Group Pty Ltd. The existing Little River quarry has a granted Work Authority over the existing operations - WA453. No Work Authority extension is required for the proposed expansion of the extraction area, however a Work Authority variation is required to incorporate a recently purchased former road reserve.</p>
<p><b>Intended land tenure</b> (tenure over or access to project land):</p> <p>It is intended that the site remain in Barro's ownership.</p>
<p><b>Other interests in affected land</b> (e.g. easements, native title claims):</p> <p>At the western end of the Work Authority, furthest from the proposed extraction area, an easement for high voltage power lines crosses the property. No works are proposed within close proximity to these power lines.</p>

## 10. Required approvals

<p><b>State and Commonwealth approvals required for project components</b> (if known):</p> <p>Under the existing Work Authority, an approved Work Plan Variation is required for the Little River quarry extension under the <i>Mineral Resources (Sustainable Development) Act 1990</i>. The City of Greater Geelong has confirmed that a planning permit is not required.</p> <p><b>Have any applications for approval been lodged?</b>  <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes If yes, please provide details.</p> <p>The Work Plan Variation for Work Authority (WA453) was lodged with the Earth Resources Regulator within the Department of Energy, Environment and Climate Action on 16 June 2023.</p> <p><b>Approval agency consultation</b> (agencies with whom the proposal has been discussed):</p> <p>In developing the Work Plan Variation, Barro Group and its agents engaged with a number of regulatory agencies, including an initial meeting with the Earth Resources Regulator and other relevant agencies, which was followed up by site visits.</p> <p>Upon submission of the Work Plan Variation the Earth Resources Regulator sought advice from several agencies and their responses have been provided to Barro Group. These agencies include the EPA, AusNet, Corangamite CMA, DEECA (Planning and Approvals), Heritage Victoria, Melbourne Water and Southern Rural Water and responses were received by the Earth Resources Regulator in July and August 2023.</p> <p><b>Other agencies consulted:</b>  City of Greater Geelong Council to confirm whether a planning permit is required.</p>
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## PART 2 POTENTIAL ENVIRONMENTAL EFFECTS

### 11. Potentially significant environmental effects

**Overview of potentially significant environmental effects** (identify key potential effects and comment on their significance and likelihood, as well as key uncertainties):

The key potential environmental effect of the Little River Quarry expansion is the removal of 8.636 hectares of native vegetation (EVC\_71: Hills Herb-rich Woodland) including the Brittle Greenhood *Pterostylis truncata* (listed as critically endangered under the FFG Act Victorian Advisory List). However, it is noted in the ecological assessment that in general, the native vegetation found within the proposed extraction area is of poor quality: the understorey and ground layers are dominated by exotic 'weeds', including several proclaimed Noxious Weeds (for example Boneseed).

In regards to potential amenity effects (dust, blasting, noise), the closest residence is located approximately 400m east of the Work Authority, however 900m from the proposed expanded extraction area which is the subject of this referral. There are seven residential properties identified within 2km of the Work Authority.

In the context of extractive industries, processed water is defined as water containing natural solids from material rinsing/washing processes. However, there will be no washing of material on this site and no production of slimes, so no processed water produced. The incident rainfall collected within the excavated and disturbed areas will be directed to quarry sumps within the excavation.

The quarry extension is also in an area adjacent to the You Yangs Regional Park which has regional landscape values (SLO1). You Yangs Regional Park is reserved under the Forests (You Yang Regional Park) Regulations 2003.



## 12. Native vegetation, flora and fauna

### Native vegetation

**Is any native vegetation likely to be cleared or otherwise affected by the project?**

NYD  No  Yes If yes, answer the following questions and attach details.

Refer to Attachment G – Figure 6 that presents the assessable native vegetation patches and scattered large trees as well as the locations of Brittle Greenhood orchid records.

**What investigation of native vegetation in the project area has been done? (briefly describe)**

An ecological assessment of the site has been prepared, refer to Attachment A: Native Vegetation Removal and Ecological Assessment Report, version 4 (Norris & Schoeffel, 29 May 2024, also refer to Attachment G – Figure 6).

**What is the maximum area of native vegetation that may need to be cleared?**

NYD Estimated area .....approximately 8.636 hectares

The proposed expansion of the extraction area will result in some native vegetation being removed which comprises of 8.636 hectares of EVC\_71: Hills Herb-rich Woodland, four Large Scattered Trees and twenty-one (21) Large Trees overall.

**How much of this clearing would be authorised under a Forest Management Plan or Fire Protection Plan?**

N/A .....nil..... percent (if applicable)

**Which Ecological Vegetation Classes may be affected? (if not authorised as above)**

NYD  Preliminary/detailed assessment completed. If assessed, please list.

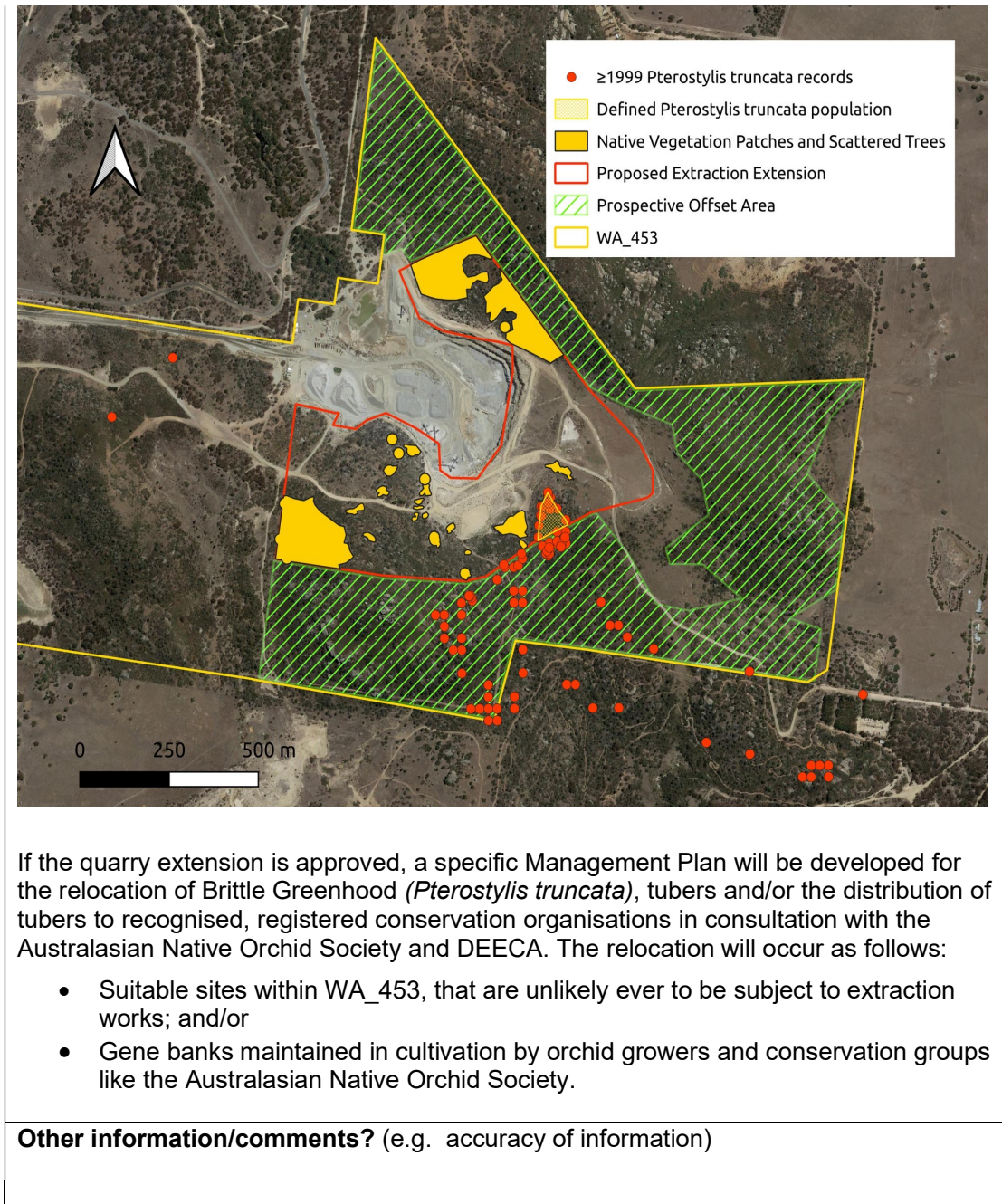
The vegetation on site fits the description of EVC\_71: Hills Herb-rich Woodland, a 'Vulnerable' EVC within the Central Victorian Uplands Bioregion.

**Have potential vegetation offsets been identified as yet?**

NYD  Yes If yes, please briefly describe.

An Offset requirement of 4.820 species habitat units for habitat of Brittle Greenhood (*Pterostylis truncata*) and the 21 large trees is required.

The Offsets will be provided within the Work Authority area (shown in the figure below), the properties of the Barro Group at Maude and/or through the market for Native Vegetation Offsets.



## Flora and fauna

### What investigations of flora and fauna in the project area have been done?

(provide overview here and attach details of method and results of any surveys for the project & describe their accuracy)

An ecological assessment of the site has been prepared by Norris & Schoeffel, refer to Attachment A.

An overview of the methodology is outlined below:

- Data and literature review

All records of 'Rare and Threatened' plants and animals in the Victorian database within 5km of the site were accessed from DELWP's Victorian Biodiversity Atlas database (<https://www.environment.vic.gov.au/biodiversity/victorian-biodiversity-atlas>).

Taxa and communities listed by the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) as present or possibly present were accessed using the Department of Environment and Heritage search tools.

(<https://www.environment.gov.au/epbc/protected-matters-search-tool>).

- Field survey

Field inspection and collection of observations/data occurred formally in four visits in May and October, 2019 and a fifth visit, in June 2021, to look throughout for the 'Critically Endangered' orchid, Brittle Greenhood (*Pterostylis truncata*). The first four visits comprised a thorough search through the proposed Extraction Extension for Patches of Native Vegetation that meet the qualifying criteria viz: 'plants that are indigenous to Victoria, including trees, shrubs, herbs and grasses' that have a minimum projected cover of 25% of total perennial vegetation and/or are three canopy trees with touching drip lines and/or are isolated Scattered Trees of specified minimum diameter. The Guidelines (DELWP 2017) provide the detailed definition for field identification and evaluation of Native Vegetation. The fifth visit targeted the area near the sites of records of *Pterostylis truncata* (recorded in 2004/5) in the first instance, but extended through the areas of Patches of Native Vegetation in the proposed Extraction Extension and into adjoining areas of WA453 with environmental characteristics similar to the record sites.

**Have any threatened or migratory species or listed communities been recorded from the local area?**

NYD  No  Yes If yes, please:

- List species/communities recorded in recent surveys and/or past observations.
- Indicate which of these have been recorded from the project site or nearby.

**Flora**

With the exception of Brittle Greenhood *Pterostylis truncata*, no listed taxon of flora recorded within 5km was recorded within the proposed Extraction Extension and none is likely, given the general poor quality of the supporting environment.

The ecological assessment found that the presence of Brittle Greenhood *Pterostylis truncata* (listed as critically endangered under the FFG Act Victorian Advisory List) within the proposed Extraction Area is confirmed, given the four site records (that include eight individual specimen records) from within the proposed Extraction Area and the observation of hundreds of *Pterostylis* leaf rosettes in the same vicinity from within and near the proposed extraction area during targeted field observations in June 2021.

The total proposed Extraction Extension is 46.0ha or 0.110% of the total modelled habitat of Brittle Greenhood in Victoria with a score of 0.60 or greater. The total area of Native Vegetation Patches in the Extraction Extension is 8.636ha or 0.021% of the total modelled habitat of Brittle Greenhood in Victoria with a Habitat Importance Score of 0.60 or greater. The actual, measured area of the Brittle Greenhood population (0.538ha) within the proposed Extraction Extension is 0.0013% of the total modelled habitat of Brittle Greenhood *Pterostylis truncata* in Victoria with a Habitat Importance Score of 0.60 or greater.

Table 1 (from Attachment A, page 10-11) below lists the potential threatened flora species that may be found within a 5 kilometres of the site.

**Table 1: Threatened flora species recorded within 5km of the site**

Scientific Name	Common Name	Status	Recs	Most recent	Comment
<i>Allocasuarina luehmanni</i>	Buloke	cr	1	08/04/2020	Usually growing in woodland with <i>Eucalyptus microcarpa</i> , on non-calcareous soils (Entwistle 1996). <b>WA is not the environment that would naturally support Buloke.</b>
<i>Amphibromus fuitans</i>	River Swamp Wallaby-grass	V			<b>Not present or likely in the environment of WA_453.</b>
<i>Calotis anthemoides</i>	Cut-leaf Burr-daisy	cr	1	01/01/1770	Scattered north and west of Melbourne (e.g. Sunshine, Camperdown, Moyston, Dunkeld, Numurkah regions) on heavy soils prone to waterlogging...(Walsh 1999). <b>Not an environment contained in WA_453.</b>
<i>Comesperma polygaloides</i>	Small Milkwort	cr	4	01/10/1980	Occasional on heavier soils (clays, alluvium) supporting grassland and grassy woodland communities in central and south-western areas (Walsh 1999). <b>Not the environment of WA_453.</b>
<i>Cullen parvum</i>	Small Scurf-pea	en	1	01/01/1770	...it grows mainly in grassland or grassy woodland, often on basalt-derived soils (Jeanes 1996). <b>Not the environment of WA_453.</b>
<i>Dodonaea procumbens</i>	Trailing Hop-bush	V	0		<b>Not present or likely in the environment of WA_453.</b>
<i>Eucalyptus leucocylon</i> subsp. <i>connata</i>	Melbourne Yellow-gum	vu	2	25/02/2005	<b>Not present or likely in the environment of WA_453.</b>
<i>Euphrasia collina</i> subsp. <i>muelleri</i>	Purple Eyebright	EN en	2	01/11/1853	Formerly widespread in lowland to montane central and western Victoria, but now exceedingly rare through habitat destruction, surviving in heathland and heathy woodland on the Mornington Peninsula and near Jamieson (Barker 1999). <b>Not present or likely.</b>
<i>Glycine latrobeana</i>	Glycine Clover	VU	0		<b>Not present or likely in the environment of WA_453.</b>
<i>Grevillea rosmarinifolia</i> subsp. <i>glabella</i>	Smooth Grevillea	en	1	01/10/1980	Grows in mallee, open woodland and shrub associations, usually on sandy soils (Makinson 2000). Some doubt rests on the taxonomic validity of this taxon. The 'Lara form' of <i>G. rosmarinifolia</i> is presumed extinct (Vicflora 2023). <b>Not relevant.</b>
<i>Grevillea steiglitziana</i>	Brisbane Range Grevillea	en	1	01/01/1770	Virtually restricted to the Brisbane Ranges area between c. Steiglitz and Anakie, and to the southern end of the Werribee Gorge area. A specimen possibly collected from Station (Flinders) Peak, within 5km of the WA (Makinson 1996). <b>Unlikely to be present.</b>
<i>Lepidium aschersonii</i>	Spiny Peppergrass	V	0		<b>Not present or likely in the environment of WA_453.</b>
<i>Lepidium hyssopifolium</i>	Basalt Peppergrass	EN en	0		Not recorded near the vicinity but known generally from the Basalt Plains. <b>Not relevant.</b>
<i>Leptorhynchus elongatus</i>	Lanky Buttons	en	1	01/01/1770	Collected once (possibly) at Station (Flinders) Peak in the 19th Century. Otherwise 'Largely confined in Victoria to eastern uplands (Benambra, Omeo, Wulgulmerang, Corryong areas) where occasional in grassy <i>Eucalyptus pauciflora</i> woodlands.' <b>Not likely on WA_453.</b>
<i>Leucochrysum albicans</i> subsp. <i>tricolor</i>	White Sunray	EN en	1	01/11/1853	Very rare in Victoria, the only recent collections from volcanic grassland remnants in the Wickliffe, Willaura, Streatham, Inverleigh and Creswick districts (Short 1999). <b>Not likely on WA_453.</b>
<i>Nicotiana suaveolens</i>	Austral Tobacco	en	14	17/05/2011	Widespread, particularly in drier inland areas, often in rocky places (Jeanes 1999). Possible presence, but not recorded. There remains some confusion over taxonomy.
<i>Pimelea spinescens</i> subsp. <i>spinescens</i>	Spiny Rice-flower	CR en	2	24/02/2020	Grows in grassland, open shrubland and occasionally woodland, often on basalt-derived soils (Entwistle 1996). <b>Not recorded or likely.</b>
<i>Prostanthera nivea</i> var. <i>nivea</i>	Snowy Mint-bush	vu #	13	06/08/2017	Largely confined naturally to shrubland and open woodland associated with granite outcrops (e.g. Mts Hope, Terrick Terrick, Kooyora and Pilot, and the You Yangs), also in Lerderderg Gorge, Barwon Heads and Anglesea areas. <b>Not recorded on site but possible.</b>
<i>Pterostylis cucullata</i>	Leafy Greenhood	VU	0		<b>Not present or likely in the environment of WA_453.</b>
<i>Pterostylis truncata</i>	Brittle Greenhood	cr	811	07/06/2021	Healthy population present in the southeastern part of the WA and the proposed Extraction Extension—see assessment below for Brittle Greenhood <i>Pterostylis truncata</i> .
<i>Rhagodia parabolica</i>	Fragrant Saltbush	vu #	2	05/06/2017	In Victoria occurs naturally on a few steep rocky slopes and broad ridges between Sunbury and Geelong (e.g. Jacksons Creek, Long Forest, Werribee Gorge, Steiglitz, Buckleys Falls on the Barwon River), but locally rather common.... (Walsh 1996). <b>Not likely on WA_453.</b>
<i>Ruidosis leptorhynchoides</i>	Button Wrinklewort	EN en	4	01/01/1874	In Victoria, confined to basaltic grasslands between Rokewood and Melbourne where endangered due to 'loss of habitat' (Walsh 2018). <b>No basaltic grasslands within WA_453.</b>
<i>Rytidosperma monticola</i>	Small-flower Wallaby-grass	en	1	25/02/2008	Mostly in dryish grassy woodland, chiefly through central and north-eastern Victoria (e.g. Ararat, Warby Range) (Walsh 2016). No confirmed specimen record from You Yangs, yet.
<i>Senecio macrocarpus</i>	Large-headed Fireweed	VU cr	1	01/01/1770	In Victoria, largely confined to remnant <i>Themeda</i> grasslands on loamy clay soils derived from basalt from near Melbourne west to Skipton area (Walsh 1999b). <b>Not the environment of WA_453.</b>
<i>Swainsona behriana</i>	Southern Swainson-pea	en	1	01/01/1770	Rare, widespread but sporadic in Victoria, mostly in lowlands west of Melbourne, but extending to montane areas in the east (e.g. Omeo, Cobungra, Gelantipy) (Jeanes 1996). <b>Possibly present but not recorded.</b>
<i>Xerochrysum palustre</i>	Swamp Everlasting	VU	0		<b>Not present or likely in the environment of WA_453.</b>

Abbreviations: EPBC Act CR—Critically endangered, EN—Endangered, VU—Vulnerable; FFG Act cr—critically endangered en—endangered vu—vulnerable # Native but some stands may be alien; WA\_453—Work Authority 453.

## Fauna

No threatened species of fauna were recorded on site. Observable ground fauna included the Eastern Grey Kangaroo (*Macropus giganteus*), feral Goat (*Capra hircus*) and European Rabbit (*Oryctolagus cuniculus*).

Hooded Robin, Speckled Warbler and Diamond Firetail are the nomadic species most likely to use the proposed Extraction Extension area but, given the general poor quality of Native Vegetation on site, any impact on their populations is likely to be slight.

With the exception of White-throated Needletail, the remaining fauna on the list can reasonably be attributed to: being usual residents of the surrounding basalt plains or wetlands, from which the records came; vagrancy; and misidentification.

White-throated Needletail, an intercontinental migrant, undoubtedly flies over the You Yangs, as it does all other terrestrial environments in Victoria, but the quarry site is unlikely to be an important environment for it.

Table 2 (from Attachment A, page 16-20) below lists 'Threatened' taxa of fauna recorded within about 5km of the quarry. The ecological assessment found that none of these species is likely to rely on the environment within the Work Authority for habitat although Diamond Firetail (*Stagonopleura guttata*) and Speckled Warbler (*Pyrrholaemus sagittatus*) are possible seasonal residents.

**Table 2: Threatened fauna species recorded within 5km of and including the Little River quarry WA\_453**

Scientific Name	Common Name	Status	Records	Latest	Comments
<i>Accipiter novaehollandiae</i>	Grey Goshawk	en	4	31/10/2018	Possible visitor but <b>the local environment of WA_453 is not consistent with habitat characteristics.</b>
<i>Acrodipsas brisbanensis</i>	Large Ant Blue Butterfly	en	1	1760	No longer present at site (Flinders Peak).
<i>Anseranas semipalmata</i>	Magpie Goose	vu		17/05/2018	Bird of wetlands. <b>Not impacted by proposed Extraction Extension.</b>
<i>Anthochaera phrygia</i>	Regent Honeyeater	CR, cr	2	01/05/1989	'Regent Honeyeaters occur mainly in box-ironbark open-forests and riparian stands of Casuarina on the inland slopes of the Great Dividing Range. At times significant numbers also occur in coastal forests in NSW and eastern Victoria.' (Menkhorst <i>et al.</i> 1999). Possibly an occasional visitor to the area however the environment of the proposed extraction area is not consistent with description of habitat given above. There are no records for the area registered in eBird. <b>The proposed Extraction Extension is unlikely to represent a threat to conservation.</b>
<i>Antigone rubicunda</i>	Brolga	en	1	01/08/1989	Bird predominantly of wetlands. <b>Not impacted by proposed Extraction Extension.</b>
<i>Aphelocephala leucopsis</i>	Southern Whiteface	VU	275	30/11/2016	<b>Possible/probable visitor to WA_453 but the general state of WA_453 does not offer a suitable environment for habitat. See assessment below.</b>
<i>Ardea alba modesta</i>	Eastern Great Egret	vu	8	01/01/1986	Bird predominantly of wetlands. <b>Not impacted by proposed Extraction Extension.</b>
<i>Aythya australis</i>	Hardhead	vu	9	17/04/2017	Bird of wetlands. <b>Not impacted by proposed Extraction Extension.</b>
<i>Biziura lobata</i>	Musk Duck	vu	2	01/01/1980	Bird of wetlands. <b>Not impacted by proposed Extraction Extension.</b>
<i>Botaurus poiciloptilus</i>	Australasian Bittern	EN cr	0		Bird of wetlands. <b>Not impacted by proposed Extraction Extension.</b>
<i>Barburus gallarius</i>	Bush Stone-curlew	cr	3	01/01/1960	Once scattered through open bushland remnants in Victoria but now rare and restricted to northern Victoria. Unlikely to be impacted by proposed Extraction Extension.
<i>Calidris canutus</i>	Red Knot	EN en	0		Bird of wetlands. <b>Not impacted by proposed Extraction Extension.</b>
<i>Calidris ferruginea</i>	Curlew Sandpiper	CR cr	0		Bird of wetlands. <b>Not impacted by proposed Extraction Extension.</b>
<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo	EN en	0		No records in vicinity but a possible visitor to Eucalypts in WA_453.
<i>Climacteris picummus victoriae</i>	Brown Treecreeper (south-eastern)	VU	0		No records in vicinity and unlikely to be a visitor.
<i>Dasyurus maculatus maculatus (SE mainland population)</i>	Spot-tailed Quoll (southeast mainland)	EN en	0		No records in vicinity and unlikely to be a visitor.
<i>Delma impar</i>	Striped Legless Lizard	VU en	0		No records in vicinity and unlikely to be a visitor. Resident of nearby volcanic plains grasslands.
<i>Egretta garzetta</i>	Little Egret	en	5	22/09/2017	Bird of wetlands, primarily coastal. <b>Not impacted by proposed Extraction Extension.</b>
<i>Falco hypoleucos</i>	Grey Falcon	VU vu	0		No records in vicinity but a possible visitor.
<i>Falco subniger</i>	Black Falcon	cr	21	12/01/2019	Possible occasional visitor but <b>the local environment of the WA is not consistent with habitat characteristics.</b> Dark phase Brown Falcons are regularly mistaken for Black Falcons.
<i>Grantiella picta</i>	Painted Honeyeater	VU vu	10	19/10/2015	Occasionally recorded in You Yangs area. The local environment might offer benefits to transitory species. <b>Therefore the proposed Extraction Extension is unlikely to represent a threat to conservation. See assessment below.</b>
<i>Hieraetus morphnoides</i>	Little Eagle	vu	149	27/08/2017	Apparently regular soaring visitor/resident of the area. <b>The proposed Extraction Extension does not represent a significant threat to conservation.</b>
<i>Hirundapus caudacutus</i>	White-throated Needletail	VU vu	9	06/02/2010	Regular aerial, migratory visitor of the area. <b>The proposed Extraction Extension does not represent a significant threat to conservation.</b>

<i>Lathamus discolor</i>	Swift Parrot	CR cr	55	03/04/2016	Recorded at sporadic times in the southern You Yangs area including a large flock of about 50 birds in the Winter of 2010 and up to 25 birds in Winter of 2021 (eBird data). The local environment of Eucalypt plantations in the south offers benefits to transitory/migratory species and Swift Parrots utilise them irregularly. There are no similar Eucalypt plantations in WA_453 and the remaining Eucalypts there are not prolific flowerers. <b>The proposed Extraction Extension does not represent a significant threat to conservation.</b>
<i>Lewinia pectoralis</i>	Lewin's Rail	vu	1	16/02/1990	Bird of wetlands. <b>Not impacted by proposed Extraction Extension.</b>
<i>Limosa lapponica baueri</i>	Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit	VU vu	0		Bird of wetlands. <b>Not impacted by proposed Extraction Extension.</b>
<i>Lissoteles coventryi</i>	Swamp Skink	EN en	0		Skink of swampy heathlands. <b>Not impacted by proposed Extraction Extension.</b>
<i>Litoria raniformis</i>	Growling Grass Frog	VU vu	23	17/10/2017	Frog of wetlands. <b>Not impacted by proposed Extraction Extension.</b>
<i>Lophochroa leadbeateri</i>	Major Mitchell's Cockatoo	cr	3	07/06/2005	<b>Rare visitor but the local environment of WA_453 is not consistent with habitat characteristics.</b>
<i>Lophoictinia isura</i>	Square-tailed Kite	vu	1	02/12/2018	Recorded once in You Yangs area (possibly); records often involve misidentified Black Kites. The local environment might offer benefits to transitory species but Square-tailed Kite is mainly a harrier of the tree-tops of forests. <b>Therefore the proposed Extraction Extension is unlikely to represent a threat to conservation.</b>
<i>Melanodryas cucullata</i>	Hooded Robin	EN vu	32	08/03/2007	Occasionally recorded in You Yangs area. The local environment might offer benefits to transitory species. <b>Therefore the proposed Extraction Extension is unlikely to represent a threat to conservation.</b>
<i>Nannoperca obscura</i>	Yarra Pigmy Perch	EN vu	0		Fish of streams. <b>Not impacted by proposed Extraction Extension.</b>
<i>Ninox connivens</i>	Barking Owl	cr	3	03/12/2006	Doubtfully present and then probably as a vagrant. The supposed call of the Barking Owl is regularly identified in error. <b>Therefore the proposed Extraction Extension is unlikely to represent a threat to conservation.</b>
<i>Numenius madagascariensis</i>	Eastern Curlew	CR cr	0		Bird of wetlands. <b>Not impacted by proposed Extraction Extension.</b>
<i>Pedionomus torquatus</i>	Plains-wanderer	CR cr	2	14/02/2013	Doubtfully present and then probably as a vagrant. A bird of grasslands and plains not consistent with the environment of WA_453. <b>Therefore the proposed Extraction Extension is unlikely to represent a threat to conservation.</b>
<i>Pomatostomus temporalis</i>	Grey-crowned Babbler	vu	1	01/01/1950	One record only. Doubtfully recorded in 1950 and if legitimate, probably as a vagrant. <b>Therefore the proposed Extraction Extension is unlikely to represent a threat to conservation.</b>
<i>Prototroctes maraena</i>	Australian Grayling	VU en	0		Fish of streams. <b>Not impacted by proposed Extraction Extension.</b>
<i>Pseudophryne bibronii</i>	Brown Toadlet	en	107	08/12/1989	Frog of wetlands subject to population decline due mainly to disease. <b>Not impacted by proposed Extraction Extension.</b>
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	VU vu	0		Unlikely vagrant. <b>Not impacted by proposed Extraction Extension.</b>
<i>Pyrholaemus sagittatus</i>	Speckled Warbler	en	72	10/12/2018	Often recorded in You Yangs area. The local environment clearly offers characteristic of habitat for the species. <b>However, the proposed Extraction Extension does not represent a significant threat to conservation. See assessment below.</b>
<i>Rostratula australis</i>	Australian Painted Snipe	EN cr	0		Bird of wetlands. <b>Not impacted by proposed Extraction Extension.</b>
<i>Sminthopsis crassicaudata</i>	Fat-tailed Dunnart	vu	5	19/05/2001	Occasionally recorded in You Yangs area and then probably on the surrounding basalt grasslands where the species is reasonably common. <b>Therefore the proposed Extraction Extension is unlikely to represent a threat to conservation.</b>
<i>Sminthopsis murina murina</i>	Common Dunnart	vu	1	08/12/1989	One possible, extremely unlikely record nearby. A species of the W and NW inland of Victoria. <b>Therefore the proposed Extraction Extension is unlikely to represent a threat to conservation.</b>
<i>Spatula rhynchois</i>	Australasian Shoveler	vu	9	22/12/2005	Bird of wetlands. <b>Not impacted by proposed Extraction Extension.</b>
<i>Stagonopleura guttata</i>	Diamond Firetail	VU vu	214	15/04/2018	Regularly recorded in You Yangs area and possibly within WA_453. <b>The proposed Extraction Extension is unlikely to represent a threat to conservation. See assessment below.</b>
<i>Sterna nereis nereis</i>	Australian Fairy Tern	VU cr	0		Bird of coastal wetlands. <b>Not impacted by proposed Extraction Extension.</b>
<i>Synemon plana</i>	Golden Sun Moth	VU vu	5	26/11/2018	Occasionally recorded in You Yangs area and then probably on the surrounding grasslands. <b>Therefore the proposed Extraction Extension is unlikely to represent a threat to conservation.</b>
<i>Tringa nebularia</i>	Common Greenshank	en	1	1975	Migratory bird of wetlands, chiefly coastal. <b>Not impacted by proposed Extraction Extension.</b>
<i>Tympanocryptis pingicollis</i>	Victorian Grassland Earless Dragon	CR cr	3	16/02/1990	Recorded on the rocky, volcanic grasslands to the east and southeast of WA_453. <b>The proposed Extraction Extension is unlikely to represent a threat to conservation. See assessment below.</b>
<i>Tyto novaehollandiae</i>	Masked Owl	cr	7	11/01/1985	Doubtfully present and then probably only as a vagrant. <b>Therefore the proposed Extraction Extension is unlikely to represent a threat to conservation.</b>

Abbreviations: EPBC Act CR—Critically endangered, VU—Vulnerable; FFG Act cr—critically endangered, en—endangered, vu—vulnerable; WA—Work Authority, WA\_453.

A summary is provided below of those fauna species that may occasionally visit (or have been recorded within 5 kms of the site - more detailed can be found in Attachment A).

### **Southern Whiteface *Aphelocephala leucopsis***

Southern Whiteface is not listed under the Victorian FFG Act and is defined as Vulnerable under the EPBC Act. The environment of WA\_453 does concur with the description of required habitat for this species i.e. it falls within the description of 'a wide range of open woodlands and shrublands'.

The ecological assessment suggests that the significance of the proposed extraction extension for the conservation of Southern Whiteface under the current circumstances is small to non-existent at a State, Regional and Local level and that extraction of the area is unlikely to affect conservation of the species at any of those levels.

#### **Painted Honeyeater *Grantiella picta***

The Painted Honeyeater is listed as vulnerable under the Victorian FFG Act. The Painted Honeyeater is highly nomadic/migratory, whose range is predominantly inland of the Great Dividing Range from Victoria to Queensland.

The ecological assessment found that the significance of the proposed extraction extension for the conservation of Painted Honeyeater under the current circumstances is small to non-existent at a State, Regional and Local level and the extraction of the area is unlikely to affect conservation of the species at any of those levels.

#### **Hooded Robin *Melanodryas cucullata***

The Hooded Robin is listed as endangered under both the FFG Act and EPBC Act. Some requisite habitat components are present within the proposed extraction extension but there are no records of presence or nesting there. Changing the environment from that which contains some plants, including some areas of native vegetation, to a quarry environment that lacks any vascular plants, will render the proposed extraction extension unsuitable for the Hooded Robin. But given the history of WA\_453 over the last 100 years, the proposed extraction extension area does not provide a meaningful collection of habitat characteristics.

The ecological assessment found that the significance of the site for the conservation of Hooded Robin under the current circumstances is small to non-existent at a State, Regional and local level and extraction of the area is unlikely to affect conservation of Hooded Robin at any of those levels.

#### **Speckled Warbler *Pyrholaemus sagittatus***

Speckled Warbler is listed as endangered under the FFG Act and it is possible that Speckled Warbler individuals, pairs or small groups might appear within or travel through WA\_453. Some requisite habitat components, like low shrubs for foraging and nesting, are present within the proposed extraction extension but there are no records of presence or nesting there.

The ecological assessment found that the significance of the site for the conservation of Speckled Warbler under the current circumstances is small to non-existent at a State, Regional and Local level and the extraction of the area is unlikely to affect conservation of Speckled Warbler at any of those levels.

#### **Diamond Firetail *Stagonopleura guttata***

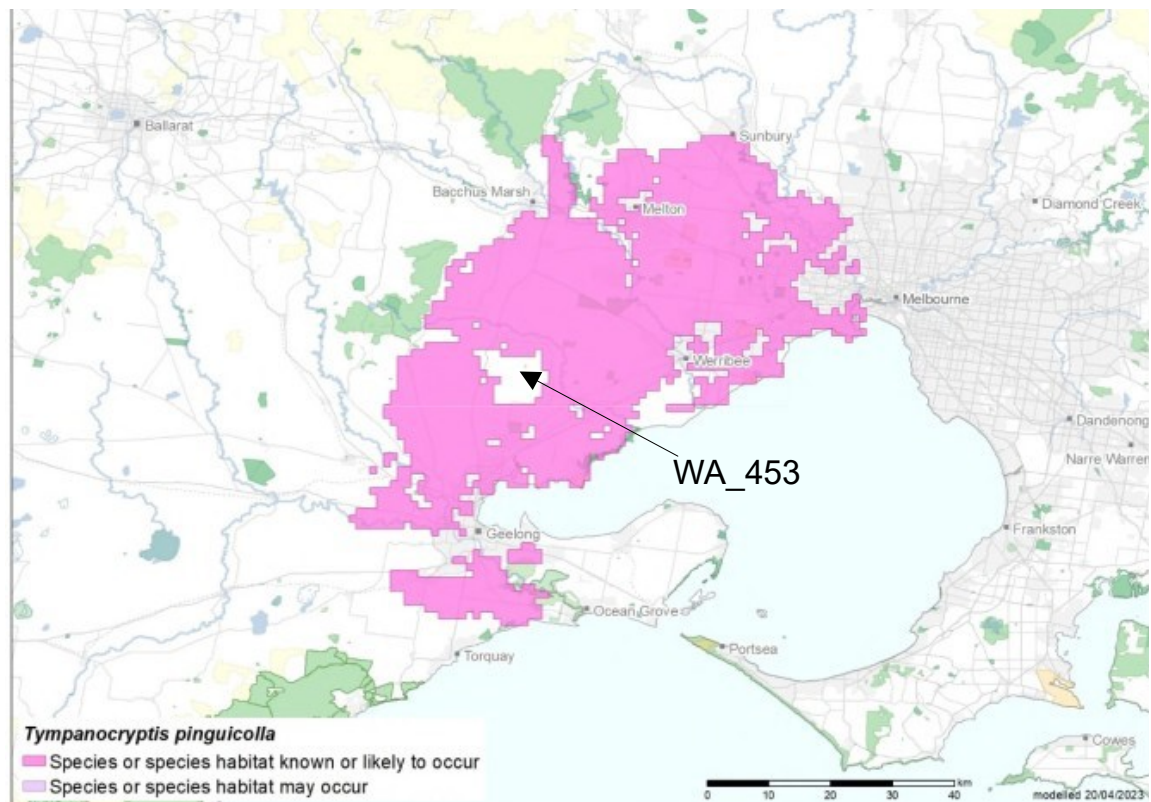
Diamond Firetail is listed as vulnerable under the FFG Act in 2001. The Diamond Firetail is, primarily, a granivorous species most commonly found in the grasslands and grassy woodlands and forests of western, northern and eastern Victoria.

The species appears to be highly mobile and will travel either in pairs or small groups, at least on a regional scale; it is possible that Diamond Firetail individuals, pairs or small groups might appear within or travel through WA\_453 from time to time.

The significance of the proposed extraction extension for the conservation of Diamond Firetail under the current circumstances is small to non-existent at a State, Regional and Local level; extraction of the area is unlikely to affect conservation of the species at any of those levels.

### Victorian Grassland Earless Dragon *Tympanocryptis pinguicolla*

The 2023 discovery of the Grassland Earless Dragon (*Tympanocryptis pinguicolla*) in Victoria precipitated a Draft National Recovery Plan for Four Grassland Earless Dragons (*Tympanocryptis* spp.) of Southeast Australia (Commonwealth of Australia, 2023 - refer to Attachment A), in which mapping data and habitat description predict that the area of WA\_453 is not included in areas of likely population discovery. The large white gap in the habitat likelihood map below (refer to page 31, Illustration 15 of Attachment A) is the greater You Yangs, which includes the work authority area.



Given these observations, the ecological assessment concludes that the proposed extraction extension within WA\_453 will not have a deleterious effect on the conservation prospects of the Grassland Earless Dragon.

**If known, what threatening processes affecting these species or communities may be exacerbated by the project?** (e.g. loss or fragmentation of habitats) Please describe briefly.

- Loss of habitat is the key threatening process as described above for the Brittle Greenhood.

**Are any threatened or migratory species, other species of conservation significance or listed communities potentially affected by the project?**

NYD  No  Yes If yes, please:

- List these species/communities:
- Indicate which species or communities could be subject to a major or extensive impact (including the loss of a genetically important population of a species listed or nominated for listing) Comment on likelihood of effects and associated uncertainties, if practicable.

discussed above



**Is mitigation of potential effects on indigenous flora and fauna proposed?**

NYD  No  Yes If yes, please briefly describe.

Offsets and translocation of the Brittle Greenhood is proposed (as described above).

**Other information/comments?** (e.g. accuracy of information)

There are some areas across the site that are mapped as having either a high or medium potential for terrestrial groundwater dependent ecosystems (GDEs).

**Aquatic groundwater dependent ecosystems**

Sandy Creek and Little River are shown as High Potential aquatic GDEs (via national assessment).

However adverse bore interference effects on these GDEs are not anticipated as these streams are beyond the estimated maximum cone of depression of 958 metre from the quarry pit floor.

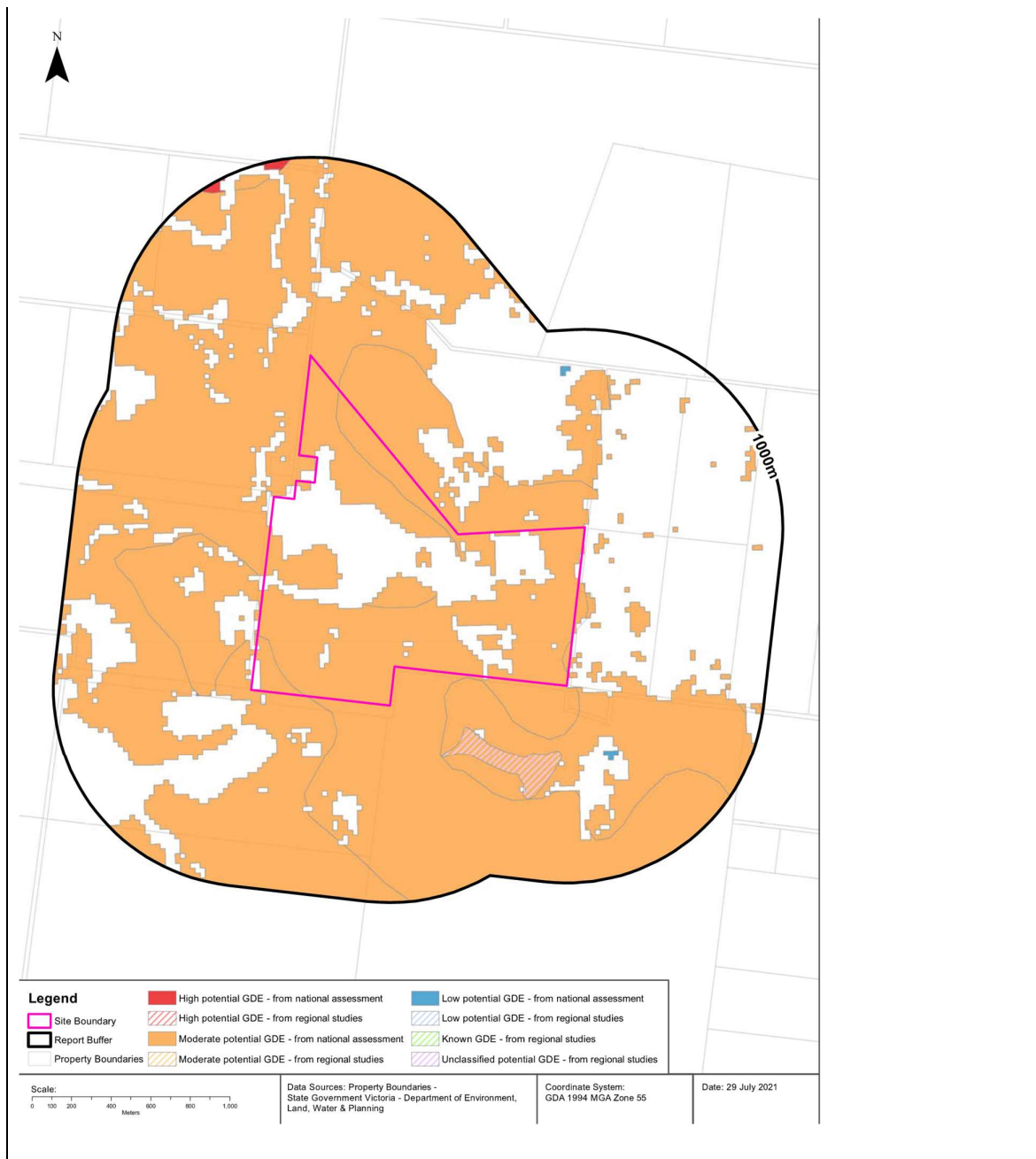
The former quarry to the south-east is shown as an unclassified potential aquatic GDE. It is about 1,300 m south east of the quarry pit floor at closure. Adverse bore interference effects on this GDE are not anticipated as this former quarry is beyond the estimated maximum cone of depression of 958 m from the quarry pit floor and the colluvium is likely to have been removed hence this former quarry is unlikely to be a GDE

The two swamps to the north of the quarry are high potential aquatic GDEs (national assessment). They are over 3 km from WA453 and outside the estimated maximum cone of depression.

**Terrestrial groundwater dependent ecosystems**

Moderate potential terrestrial groundwater dependent ecosystems (national assessment) have been identified outside of the current quarry activity areas and two small areas of high potential GDE has been identified about 1 km to the north of WA453 on Sandy Creek tributaries.

The moderate potential terrestrial GDEs (national assessment) within the site are unlikely to be impacted by this work plan variation as the potentiometric surface is below the ground surface at groundwater observation bore BH03 and hence is expected to be below the vegetation's root zone.



### 13. Water environments

**Will the project require significant volumes of fresh water (e.g. > 1 GI/yr)?**

NYD  No Yes If yes, indicate approximate volume and likely source.

Typical annual water usage for this site (as based on the predicted sales / operation) is in the order of 100 megalitres for crushing and screening, wetting of aggregate stockpiles and dust suppression. Current licensing allows for the usage of up to 74.7 ML/year of captured surface water (within dams and the pit) and up to 44 ML/year of groundwater from the pit.

There is no mains water supply to the quarry, with on-site requirements for potable water utilising rainwater tank collection.

The average water consumption from the site is about 100 ML/year. It is comprised of:

- dust suppression
  - haul roads 40%
  - around quarry 20%
  - crushing and screening 20%
- wetting of aggregate stockpiles (prior to sale) 20%

The total water consumptive demand for the proposed Little River Quarry expansion will not change from the current demand. For further details, a Hydrogeological assessment is attached at Attachment B.

#### *Water Usage and Supply Infrastructure*

Process water (which is clean water used in crushing and screening, wetting of aggregate stockpiles and dust suppression) will be used for dust suppression on the access road, hardstand and the quarry floor. There will be no washing of clayey sands or overburden on the site.

Process water will be obtained from the collected incident rainfall on disturbed areas, surface water collection in licenced dams outside the extraction area, and licenced groundwater extraction.

Details of water usage and supply sources, including licencing arrangements, are contained within the Hydrogeological Assessment conducted by Nolan Consulting (Attachment B).

The future water supply will be sourced from groundwater seepage into the quarry pit and Dam 1, Dam 3, Dam 4A and Dam 4B. Registration licence BEE030364 allows for harvesting of up to 74.7 ML/year. Take and use licence BEE0072352 allows for the take and use of 44 ML/year of groundwater from quarry pit sump.

Dam 1 will be relocated within the expanded extraction area and will act as the quarry pit sump.

The source of surface water inflows to Dam 1 will be the current inflows less most of the runoff from the slopes to the north which will be directed into the Sandy Creek tributary downstream of the quarry. Minor runoff from the slopes to the north-east immediately above the terminal crest will be directed to the relocated Dam 1 due to topographic constraints. These flows will be directed to rock-lined chutes and drains constructed in the upper benches.

Stormwater from the south-west slopes, away from the pit, will continue to be captured in Dam 3, as currently licenced, and will be a supplementary water supply. The catchment

area for this dam will be reduced from the existing catchment area due to the expanding quarry.

The Dam 1/quarry pit sump is expected to meet the consumptive use requirements throughout the life of the quarry given the average operational consumption of 100 ML/year, predicted groundwater inflows, and registered dam storage capacity. It is likely that the reliance of flows from Dam 3 and Dam 4A to Dam 1 will diminish as the depth of the quarry increases. Overflows from these dams will discharge into the catchments via constructed spillways.

Incident rainfall is directed to quarry sumps located in the base of the excavation. The exact location of sumps, pipes, drains and pumps is dynamic as excavation progresses. The overriding principal is to direct surface water to low points in the base of the excavation, the quarry sumps, which are designed to keep the pit floor dry and keep water away from the extraction faces. The Water Tank currently upslope of the processing area is supplied by truck, which then gravity feeds down to the processing plant. By the end of Stage 1 the Water Tank will be relocated westward, where it could be supplied directly by pumping from the licensed water storages.

**Will the project discharge waste water or runoff to water environments?**

NYD  No  Yes If yes, specify types of discharges and which environments.

*Natural runoff to Sandy Creek*

An exclusion zone to the north-east of the quarry provides protection of the waterways and drainage lines as per Melbourne Water's requirements. This exclusion zone does not include the slopes to the north-east immediately above the terminal crest as it is low lying.

Within the exclusion zone clean runoff outside the excavation will be directed to the Sandy Creek tributary downstream of the quarry, via grassed swale drains and other surface water management control features. Flow from this tributary will enter Little River. These works will be managed to ensure the water quality of flows into the Sandy Creek tributary will be consistent with the Victorian Government (2021) "*Environment Reference Standard*" surface water environmental values for inland waters.

The runoff from the slopes to the south-west, away from the pit, is collected in Dam 3 for use under Registration licence BEE030364.

*Water Management Infrastructure*

The pit is operated dry and dewatering will be required. Any collected rainfall on disturbed areas will be adequately contained within the extraction area.

The key infrastructure requirement for the surface water management strategy is to direct surface water flows across disturbed ground into the excavation, where it is directed to quarry sumps.

Equipment/infrastructure to move water around the site will comprise pumps, dams, tanks, pipelines and constructed features such as swale drains, bunds and sediment dams. The location of these features is stage-dependent and will move about the site as extraction progresses.

The quarry sumps, drains and other surface water management features will be part of the Surface Water Management Plan for the site (Attachment C).

### *Sediment-laden Water*

In the context of extractive industries, processed water is defined as water containing natural solids from material rinsing/washing processes. However, there will be no washing of material on this site and no production of slimes, so no processed water produced.

The incident rainfall collected within the excavated and disturbed areas will be directed to quarry sumps within the excavation.

There will be no discharge of dirty water from the site. The quarry sumps are well below the existing or rehabilitated ground level and the capacity of the quarry sumps/extraction area will be more than sufficient to accommodate storm events. The existing approved Dam 1 at the surface will be removed and backfilled during Stage 1 of the expansion, as its function will be superseded by a quarry sump at a deeper level.

The quarry sumps, drains and other surface water management features are shown in the attached adaptive Surface Water Management Plan for the initial stage of the operation and indicative locations are shown for subsequent stages. The Surface Water Management Plan proposes Trigger Action Response Plans (TARPs) for managing any risks that may be posed sediment-laden water collected on the site.

### *Storage of Slimes*

No slimes are produced on site and so there is no requirement for slimes storage.

### **Are any waterways, wetlands, estuaries or marine environments likely to be affected?**

NYD  No  Yes If yes, specify which water environments, answer the following questions and attach any relevant details.

There are mapped but unnamed waterways on the property, see Site Layout Plan (Attachment G - Figure 3), that ultimately flow either toward Little River within the Melbourne Water catchment area, or toward Hovells Creek. Little River is some 3.5km to the east and Hovells Creek some 4km to the west. There are no mapped waterways within the expanded extraction area, which is located at the head of a drainage line that joins Little River. All mapped natural waterways within the Melbourne Water catchment area are considered 'designated waterways' by Melbourne Water, whereas none of the mapped waterways on the site within the Melbourne Water catchment area are gazetted 'designated waterways'. Therefore, no works are proposed that would impact any designated waterways.

Given the location of the proposed extraction extension and the general low rainfall of the area, no adverse impact from changes to runoff from the site is likely to impact the health or biodiversity of aquatic, estuarine or marine ecosystems, over the long term.

### **Are any of these water environments likely to support threatened or migratory species?**

NYD  No  Yes If yes, specify which water environments.

WA453 has small holding dams for quarry operations or to contain runoff that do not comprise important 'habitat values' for migratory bird species.

### **Are any potentially affected wetlands listed under the Ramsar Convention or in 'A Directory of Important Wetlands in Australia'?**

NYD  No  Yes If yes, please specify.

The closest Ramsar wetland is the Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar Site which is approximately 12 kilometres to the south east of the site. Given the location of the proposed extraction extension and the general low rainfall of the area, no adverse impact from changes to runoff from the site to the Port Phillip Bay (Western Shoreline) and Bellarine Peninsula Ramsar areas is likely.

**Could the project affect streamflows?**

NYD  No  Yes If yes, briefly describe implications for streamflows.

The proposed expansion was reduced back in the north, in accordance with Melbourne Water advice, to ensure that there would be no impact downstream of the existing approved quarry disturbance.

The expansion of the Little River quarry extraction area is designed to remain completely contained within the topographical 'basin' in which the existing quarry extraction area is located, at the head of a drainage line. This ensures that the site does not cause any impacts outside of the immediate catchment area within the 'basin', whose surface runoff is already captured under licence within the existing quarry area under current approvals. As set out above, there will be no discharge of dirty water from the site.

**Could regional groundwater resources be affected by the project?**

NYD  No  Yes If yes, describe in what way.

Groundwater will be utilised from pit sumps under existing water extraction licences.

*Depth of Groundwater and Usage*

The deepening of the extraction area is expected to result in increased interception of groundwater. A Hydrogeological Assessment has been undertaken by Nolan Consulting Pty Ltd (Attachment B) and is in part based on a successful application made to Southern Rural Water for an increase in the site's Take and Use groundwater licence to 44ML/annum. As well as considering impacts on the groundwater as a result of deepening stone extraction, the Hydrogeological Assessment also considers the post closure groundwater and surface water inputs to the resultant pit lake.

The Visualising Victoria's Groundwater database suggests the depth to groundwater is between 20-100m below natural surface. The Hydrogeological Assessment found the groundwater in the four deep monitoring bores surrounding the proposed quarry pit to be approx. 6-13m below surface, and although the mean potentiometric surface level for the groundwater across those bores is 188.4m AHD, the very low hydraulic conductivity means that the natural groundwater level is a subdued reflection of the undulating topography.

The current pit is approximately 65m below surface, while the proposed terminal pit floor will be generally around 110-150m below ground level, and up to a maximum of 182m at the southern pit edge. Therefore, the existing pit is already well below the nominal groundwater level without any groundwater management issues, due to the very low hydraulic conductivity and ongoing use of the seepage water. The current groundwater seepage into the pit is estimated at about 21 ML/year, with site water usage well in excess of this amount (the difference being made up from the site's licensed catchment dams), and the groundwater inflow at the end of Stage 4 is estimated at about 42 ML/yr.

*Drawdown*

The very low hydraulic conductivity means that no draw-down is apparent in the four surrounding groundwater monitoring bores (as close as 270m from the current pit floor),

which means that there will be a very steep hydraulic gradient around the excavation, with the groundwater surfaces likely to be nearly parallel to the pit walls.

As the groundwater surface is found to closely reflect the undulating topography with a steep drawdown cone around the pit, being relatively close to the pit walls and varying with extraction depth, it is not possible to show a definitive groundwater level on the cross-sections of the Site Layout Plan (Attachment G – Figure 3). It is demonstrated that the groundwater level in this case, with appropriate licensing of any extracted groundwater that is utilised, is essentially immaterial to the operational / works phases of the quarry or any potential for offsite impacts. A groundwater management plan will be required as part of the Work Plan Variation.

On the basis that the extent of the cone of depression around the existing quarry is likely less than 270m, the Hydrogeological Assessment (Attachment B) determined that at the completion of quarrying the cone of depression will likely be less than 553m from the quarry floor. But conservatively, the cone of depression is unlikely to be greater than 958m from the quarry floor due to the limitations of recharge. The Hydrogeological Assessment concludes that adverse interference effects on groundwater bores in the region and groundwater dependent ecosystems is not anticipated as they are located beyond the maximum cone of depression of 958m from the quarry floor.

**Could environmental values (beneficial uses) of water environments be affected?**

NYD  No  Yes If yes, identify waterways/water bodies and beneficial uses (as recognised by State Environment Protection Policies)

As set out above, there will be no discharge of dirty water from the site. Given the location of the proposed extraction extension and the general low rainfall of the area, no adverse impact from changes to runoff from the site is likely to impact the health or biodiversity of aquatic, estuarine or marine ecosystems, over the long term.

As above, the Hydrogeological Assessment concludes that no adverse interference effects on groundwater bores in the region or groundwater dependent ecosystems is anticipated.

**Could aquatic, estuarine or marine ecosystems be affected by the project?**

NYD  No  Yes If yes, describe in what way.

Given the location of the proposed extraction extension and the general low rainfall of the area, no adverse impact from changes to runoff from the site is likely to impact the health or biodiversity of aquatic, estuarine or marine ecosystems, over the long term.

**Is there a potential for extensive or major effects on the health or biodiversity of aquatic, estuarine or marine ecosystems over the long-term?**

NYD  No  Yes If yes, please describe. Comment on likelihood of effects and associated uncertainties, if practicable.

**Is mitigation of potential effects on water environments proposed?**

NYD  No  Yes If yes, please briefly describe.

The Risk Management Plan component of the Work Plan Variation, with associated adaptive management plans, include a full range of control measures, monitoring and risk management to eliminate or minimise impacts to surface water and groundwater environments.

Surface water management includes cut-off drains/swale drains, diversion mounds and other surface water management control features that will be continually updated and

modified to ensure that dirty water is directed to the quarry sumps and clean water is directed away from the disturbance areas.

As set out above, there will be no discharge of dirty water from the site. There will be no need to discharge excess water collecting within the pit, as the operation's water requirements (approx. 100ML/year) exceed the maximum groundwater inflow expected at maximum extraction depth, and the capacity of the quarry sumps/extraction area will be more than sufficient to accommodate storm events.

The following groundwater quality controls to minimise the risk of unacceptable groundwater quality impacts will be undertaken:

- keep fuel and fuelling operations clear of the quarry pit as far as practicable
- keep a spill kit available for when mobile equipment is being refuelled or any minor
- servicing and/or simple maintenance tasks are undertaken
- conduct major servicing / repairs on a workshop hardstand fitted with an interceptor trap
- bund the oils and grease storage areas
- drain processing and stockpile areas through a sediment pit/trap
- contain domestic / non-industrial waste in bins and regularly remove from site
- utilise approved septic tank/toilet system.

An adaptive Surface Water Management Plan (Attachment C) and an adaptive Groundwater Management Plan (included as an appendix within Attachment B Hydrogeological assessment) have been prepared as part of the Work Authority Variation requirements.

**Other information/comments?** (e.g. accuracy of information)



## 14. Landscape and soils

### Landscape

#### Has a preliminary landscape assessment been prepared?

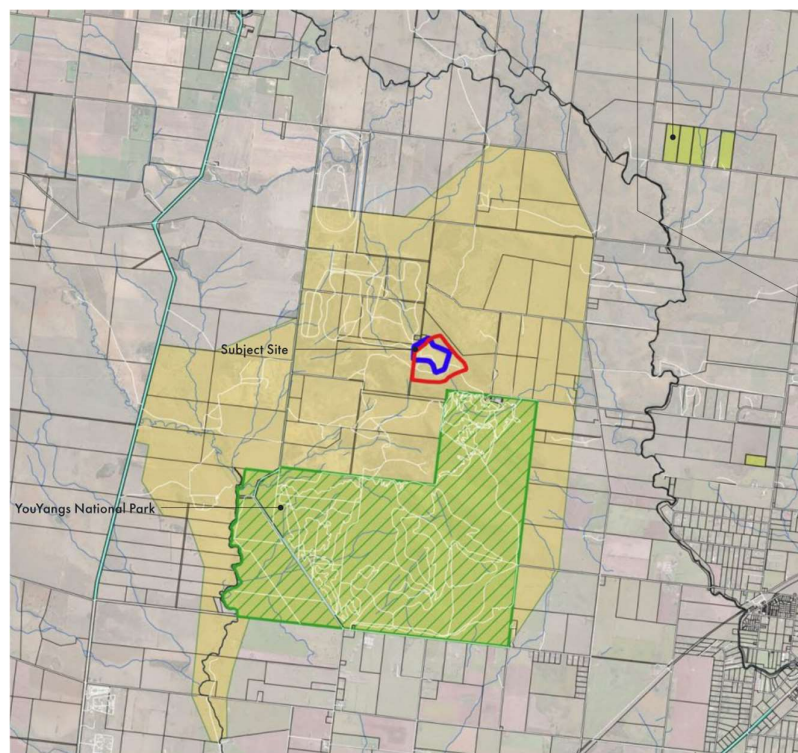
NYD  No  Yes If yes, please attach.

Tract has prepared a Visual Impact Assessment (VIA) for the Project (Attachment F). The VIA includes wireframes and photomontages for selected viewpoints.

#### Is the project to be located either within or near an area that is:

- **Subject to a Landscape Significance Overlay or Environmental Significance Overlay?**

NYD  No  Yes If yes, provide plan showing footprint relative to overlay.



#### LEGEND

- ROAD NETWORK
- PROPOSED EXTRACTION LIMIT
- EXISTING DISTURBANCE LIMIT
- YOUYANGS REGIONAL PARK
- CADASTRE BOUNDARY
- WATER COURSES

#### PLANNING OVERLAYS - LANDSCAPE SIGNIFICANCE

- SIGNIFICANT LANDSCAPE OVERLAY - SCHEDULE 1
- SIGNIFICANT LANDSCAPE OVERLAY - SCHEDULE 5
- VEGETATION PROTECTION OVERLAY - SCHEDULE 1
- PUBLIC OPEN SPACE REGIONAL/NATIONAL

- **Identified as of regional or State significance in a reputable study of landscape values?**

NYD  No  Yes If yes, please specify.

Greater Geelong Planning scheme – Significant Landscape Overlay (SLO1 - Foothills of the You Yangs).

• **Within or adjoining land reserved under the *National Parks Act 1975* ?**

NYD  No  Yes If yes, please specify.

The You Yangs Regional Park is adjacent to the quarry and is reserved under the Forests (You Yang Regional Park) Regulations 2003.

• **Within or adjoining other public land used for conservation or recreational purposes ?**

NYD  No  Yes If yes, please specify.

You Yangs Regional Park is adjacent and includes many recreational activities including walking tracks, BBQ areas and mountain bike riding facilities.

**Is any clearing vegetation or alteration of landforms likely to affect landscape values?**

NYD  No  Yes If yes, please briefly describe.

The expansion of the quarry will alter the landscape however the quarry is located within the foothills of the You Yangs and well screened by its surrounding topography, particularly in respect of views from the You Yangs Regional Park.

**Is there a potential for effects on landscape values of regional or State importance?**

NYD  No  Yes Please briefly explain response.

WA453 is an existing, operating extractive industry operation, with extraction and processing activities shielded from neighbouring viewsheds due to the size and remoteness of the Work Authority area, nearby land uses and the immediately surrounding topography. The proposed expansion of the extraction area will result in the removal of higher ground to the east and south of the existing pit, with the activities at higher elevations increasing the potential for visual amenity impacts.

The entire Work Authority lies within a broader Significant Landscape Overlay (SLO1 - Foothills of the You Yangs) in the planning scheme, which primarily seeks to protect views of the You Yangs themselves. However, the location of quarry is well shielded from external views, except existing distant views from the northwest.

An assessment to identify the potential impacts to visual amenity, line of sight, has been undertaken by Tract (see Attachment F - Visual Impact Assessment).

The assessment found that the zone of visual influence analysis determined:

- The greatest potential visibility is to the north west. This includes a section of the Geelong – Bacchus Marsh Road at a distance of 5.2km – 7km distance and three dwellings within the 4.7km – 5.3km distance. At this distance, and with the effects of intervening vegetation and farming infrastructure, it is unlikely that development would be discernible.
- There is a low level of potential visibility to the north over general farmland.
- There is minimal visibility to the west with one theoretical viewpoint over farmland.
- There is minimal visibility to the east (one visibility point). This area includes farmland, low level public roads and four rural residential properties at distances

ranging from 1.4km – 2.5km. One rural residential property at a distance of 2.1km may have visibility, although this is likely to be screened by vegetation located between the quarry edge and the receptor.

- There is potential visibility of one visibility point from one location (1.8km) within the You Yangs Stockyard mountain bike trail network and also from Flinders Peak (3.2km), both within the You Yangs Regional Park. The visual receptor area is larger with the new quarry configuration than the existing pit.

The assessment of potential visual impacts indicates that some parts of the uppermost benches of the expanded pit would be either temporarily, or in some cases permanently, visible from a small number of locations beyond the Work Authority boundary. Possible views of the quarry from the You Yangs Regional Park will be limited to small-scale changes due to exposure of the uppermost benches once the extraction limit is reached, as viewed from the highest point in the park, Flinders Peak, or the highest point in the nearer Stockyards Mountain Bike Area. The Visual Impact Assessment concluded that these impacts are minimal and maintain the existing nature of the views, particularly given early rehabilitation of the upper benches. Potential views from Flinders Peak of small parts of the uppermost benches of the proposed quarry also needs to be considered in the context that there are extensive views of other existing quarry operations in the same field of view.

The terminal crest batter and bench design has been modified to allow for maximum screening potential and the earliest possible rehabilitation of the upper terminal benches to mitigate this impact. Early rehabilitation of the terminal crest batter and upper berms is a key strategy that is incorporated into the site's Rehabilitation Plan. This will minimise the period for which the exposed uppermost faces will be obvious to the users of the You Yangs Regional Park as well as the few residences and road users that could potentially be impacted.

The overall conclusions from the VIA are:

- The You Yangs landform skyline will not be affected by the proposed quarrying operations.
- Over the long term, site rehabilitation of the (early) upper quarry faces is likely to eliminate or substantially mitigate the visual changes resulting from the quarry expansion from the five possible viewing points.
- Areas to the northwest will continue to provide limited views to the upper quarry face. The change is considered to provide a 'low adverse' impact on the view quality, but the significance of the change is considered to be low as a result of the viewing distance and existing mitigating factors.
- Views from the east (the closest viewpoints) will be unchanged as a result of blocking landforms as well as vegetation.
- Views from the Flinders Peak trail system will change marginally through the quarry extension, with the northern edge visible to a minor extent. While this change is likely to be seen as a minor landscape change that does not visually dominate the setting, the change is considered to be moderately significant, given the high status of the trail system. Impacts will be partially or fully mitigated in the medium to long term as a result of early site rehabilitation works and / or vegetation growth close to the view point
- Views from the south (Stockyards mountain bike area) will include a view to a very small area of the upper quarry face. The change in scenic quality is rated as Low, but this impact is not visually dominant and is likely to be substantially

reduced or eliminated through trail edge regrowth and early rehabilitation of the upper terminal pit batters.

- Overall, the locations that are subject to the greatest potential views are at the greatest distance from the site and are not considered to provide a dominant visual change to the landscape adjoining the You Yangs Regional Park.
- On the basis of the analysis, the proposed change is considered acceptable from a visual impact perspective.
- The Visual Impact Assessment findings conclude that the proposed development can be carried out without significant detriment to the scenic value of the area surrounding the You Yangs Regional Park landscape.
- Overall, the assessment suggests that the effects associated with the proposed works are of low level and compatible with the nature of the You Yangs setting Significant Landscape Overlay objectives. The proposal is considered to meet the objectives and decision guidelines of the Significant Landscape Overlay.

**Is mitigation of potential landscape effects proposed?**

NYD  No  Yes If yes, please briefly describe.

The expansion will be significantly shielded within the landscape due to its location with the topography relative to the adjacent You Yangs Regional Park and properties to the east.

The terminal crest batter and bench design has been modified to allow for maximum screening potential and the earliest possible rehabilitation of the upper terminal benches to mitigate this impact. Thus minimising the period for which the exposed uppermost faces will be obvious to the users of the You Yangs Regional Park as well as the few residences and road users that could potentially be impacted.

**Other information/comments?** (e.g. accuracy of information)

**Note:** A preliminary landscape assessment is a specific requirement for a referral of a wind energy facility. This should provide a description of:

- The landscape character of the site and surrounding areas including landform, vegetation types and coverage, water features, any other notable features and current land use;
- The location of nearby dwellings, townships, recreation areas, major roads, above-ground utilities, tourist routes and walking tracks;
- Views to the site and to the proposed location of wind turbines from key vantage points (including views showing existing nearby dwellings and views from major roads, walking tracks and tourist routes) sufficient to give a sense of the overall site in its setting.

## Soils

**Is there a potential for effects on land stability, acid sulphate soils or highly erodible soils?**

NYD  No  Yes If yes, please briefly describe.

The works associated with the expansion of the quarry will ensure measures are in place to limit the potential for land instability and erosion to occur. The detailed geotechnical assessment provides details of how the quarry will be designed to avoid such effects. There are no acid sulphate soils present in the vicinity.

The geotechnical assessment includes an assessment of the erosion potential of the terminal batters on the upper benches and it is concluded that the risks can be adequately managed through batter design, revegetation and, where necessary, additional short-term erosion control measures until vegetation is established. It is demonstrated that the steepest proposed batter design (1V:2H) can achieve the criteria of the Commonwealth of Australia (2016) guidelines within 3-4 years, with the short-term erosion control measures minimising the initial erosion within this period. Vegetated swale drains and/or diversion bunds will be established above all terminal crests to minimise surface water flows over the cut batters and, where necessary, these drains will be lined to minimise erosion, e.g. using geo-fabric or ~100-150mm rubble to ensure erosion criteria are met.

**Are there geotechnical hazards that may either affect the project or be affected by it?**

NYD  No  Yes If yes, please briefly describe.

The design of the extraction pit and its long-term stability (post-closure) are subject to detailed geotechnical assessment, demonstrating that stability is assured. This technical report can be provided on request. There are no known landslide hazards or other external geotechnical hazards in this area.

**Other information/comments? (e.g. accuracy of information)**

A Preliminary Site Investigation (Attachment E) was undertaken by Senversa in 2021 and identified a source of contaminants (elevated concentrations of zinc and measurable concentrations of metals, major ions and inorganics (forms of nitrogen and phosphorous)) associated with an area of the site that was previously used as a fertiliser storage area. The assessment states that historical photographs demonstrate that the site was used to store fertiliser products for a period of 20 years. It is unknown how the stockpiles were stored and if any bunding was present. This storage area was rehabilitated some time before Barro Group took ownership of the property.

There is a potential for contamination to be caused by disturbance of this former fertiliser storage area due to runoff from uncovered and un-bunded stockpiles. While the Preliminary Site Investigation ranks the risk as High, this is without consideration of the site management under the existing quarry approval or that proposed for the expanded quarry operation. All surface runoff within the existing quarry area, under current approvals, and under the expanded extraction area is designed to remain completely contained within the topographical 'basin' in which the site is located. This ensures that the site does not cause any impacts outside of the immediate catchment area within the 'basin', including any potential for contaminated runoff. As set out above, there will be no discharge of water from the site. Therefore, the likelihood of contaminated runoff leaving the site and impacting downstream environments is extremely unlikely.

The desktop review and site inspection did not identify any other significant potential sources of contamination other than the former use of the site by Pivot Fertiliser.

The soil consultant recommends a Soil Management Plan (SMP) be developed to manage disturbance of the contaminated material identified on-site that will necessarily need to be removed for the quarry extension works. This should include development of a suitable on-site management strategy.

The Work Plan Variation application proposes to initially isolate the contaminated site by capping with an overburden storage, with the material covered and sealed with clay overburden to prevent erosion, runoff or filtration – refer to Site Layout Plan (Attachment G – Figure 3). After Stage 1 it is proposed that the overburden stockpile will be relocated and the extracted soil material from the contaminated site will then be permanently encapsulated below the hardstand area to be constructed in association with the relocated processing plant, at the 165m RL level within the extraction area, where it will be sealed from above and below. All this activity will be in accordance with a specific Management Plan.

## 15. Social environments

<p><b>Is the project likely to generate significant volumes of road traffic, during construction or operation?</b>  <input type="checkbox"/> NYD <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If yes, provide estimate of traffic volume(s) if practicable.</p> <p>Traffic volumes will remain similar to the current quarry operations.</p>
<p><b>Is there a potential for significant effects on the amenity of residents, due to emissions of dust or odours or changes in visual, noise or traffic conditions?</b>  <input type="checkbox"/> NYD <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If yes, briefly describe the nature of the changes in amenity conditions and the possible areas affected.</p> <p><i>Dust emissions</i></p> <p>The closest resident is approximately 400 metres east of the Work Authority area but approximately 900m from the extraction boundary proposed by this variation.</p> <p>Dust impacts, as well as the potential to transport dust and sediment on to public roads, are quarrying and rehabilitation hazards that are common to nearly all extractive industry operations. These hazards are to be managed so that the risks posed to sensitive receptors in the vicinity are minimised as far as reasonably practicable.</p> <p>For this operation standard industry control measures are implemented for dust control and are more than sufficient given the distances to sensitive receptors, such as:</p> <ul style="list-style-type: none"> <li>- Minimising disturbance areas</li> <li>- Appropriate water spray and/or dust extraction on relevant plant.</li> <li>- Use of water cart on exposed areas, roads and hardstand areas</li> <li>- Minimise vehicle movements and limit vehicle speeds</li> <li>- Progressive establishment of vegetation on topsoil / overburden stockpiles</li> <li>- Cessation of works during hot, dry high wind conditions.</li> <li>- Continual visual monitoring by all staff for dust leaving the site, and notification to Quarry Manager promptly for remedial action.</li> </ul> <p><i>Blasting</i></p> <p>The site undertakes blasting to extract the granite rock. Standard drill and blast techniques are employed on the site and a Blast Management Plan is developed for each blast, as required by legislation. Blasting is a highly regulated activity with very prescriptive legislation and regulations.</p> <p>Blasting times are restricted to the approved period from 10:00 am to 4:00 pm Monday to Friday. The quarry currently fires a maximum of one blast per week (with timing dependant on the size of the blast). This frequency is expected to continue under the extension proposal, in line with other medium-large quarries that supply the Melbourne metropolitan market.</p> <p>The Earth Resources Regulator (ERR) branch of the Department of Energy, Environment and Climate Action imposes limits to blasting for ground vibration and airblast overpressure through Work Authority conditions.</p>

The limits are based on human comfort levels, not structural damage, and apply at sensitive sites such as occupied dwellings and are:

- **Ground Vibration:** 5 mm/s PPV (for 95% of blasts within a 12-month period) 10 mm/s PPV (all blasting)
- **Airblast:** 115 dBL Linear peak (95% of all blasts within a 12-month period) 120 dBL Linear Peak (all blasting)

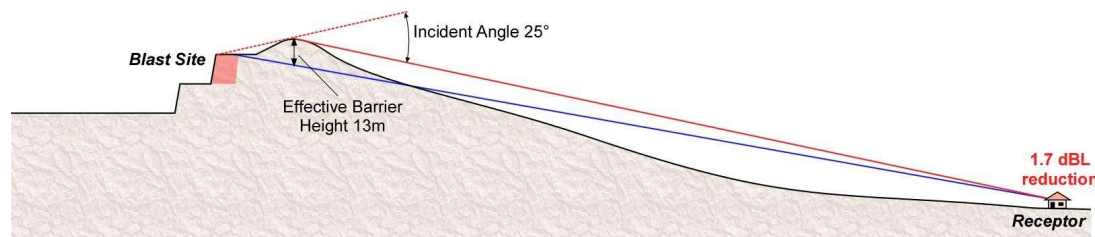
The blast impact assessment by Terrock (Attachment D) indicates that mandatory blasting standards (5mm/sec for ground vibration and 115 dBL for air blast) will continue to be met at the closest receptors (with maximum vibration levels of 1-2mm/sec at the nearest residence). A standard minimum blast clearance zone of 250m “behind” blasting events will be implemented to ensure the potential for flyrock to impact quarry personnel and the public is mitigated.

There are three sensitive sites (occupied dwellings) within 2km of the proposed extension area. The closest dwelling is located 900m east of the proposed extraction limit and another dwelling further east at approximately 1.2km. The third sensitive site is shown to be ~approximately 1.4km south-southwest of the extension area and is located within Work Authority 187. The minimum separation distances between the extension and closest houses are substantial and the absence of blast-related complaints from residents (being common at most quarries) indicates ground vibration and airblast levels and impacts at sensitive sites are low.

While ground vibration at the predicted levels may at times be perceptible to occupants of the closest dwellings, the predicted levels are well below the ERR limit of 5 mm/s and well below levels at which damage is known to occur to residential-type buildings. The threshold of perception is regarded to be 0.3-0.5 mm/s and ground vibration is unlikely to be felt at locations more than 2km of the quarry.

The airblast model shows a maximum dBL level of 107.2 dBL at the nearest residence to the east from the closest few blasts at the upper level of the eastern extraction limit. The maximum levels at the three closest houses are well below the ERR limit of 115 dBL regardless of face direction or the influence of topographic shielding. In terms of air pressure as measured in Pascals (Pa), 107.2 dBL (4.6 Pa) is less than half the ERR limit of 115 dBL (11.2 Pa).

Topographic shielding is a function of the incident angle and effective barrier height between a blast site and receptor location. For blasts on upper levels/benches, barrier heights and incident angles are reduced resulting in a smaller reduction of dBL levels as shown schematically in the diagram below.



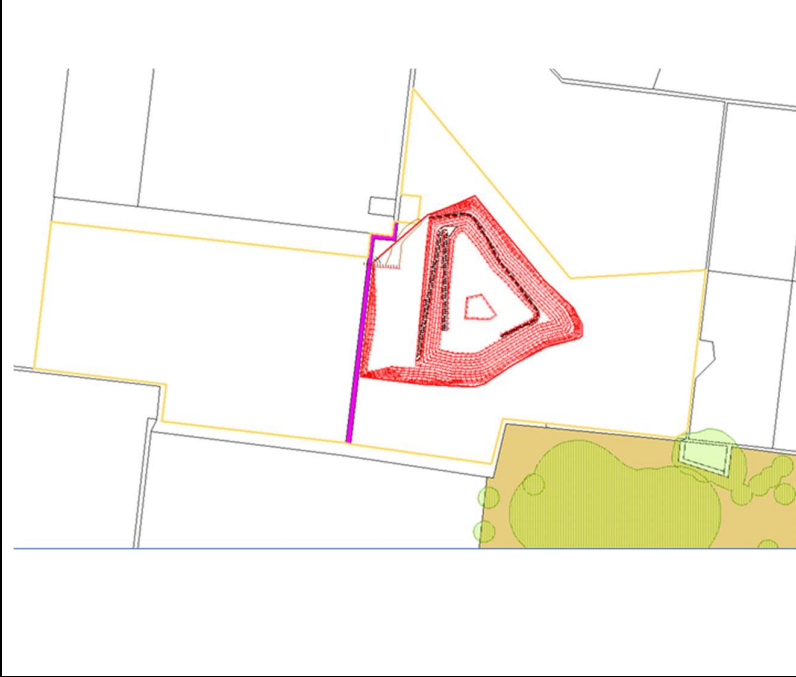
#### Topographic shielding from blasts at upper benches/levels

A limited number of blasts under the proposed expansion will be within 250m of potential public access areas, i.e. a small area of the adjoining You Yangs Regional Park (Stockyards Mountain Bike Area) to the south and the Ford Proving Grounds to the north-west. For these areas a modified blast design with increased blast hole stemming is to be implemented to ensure the blast clearance zone remains within the Work



<p>Authority area. A modified blast design was found to not be necessary for the private land to the north-east, where the 250m exclusion zone will extend up to 150m over the Work Authority boundary, because:</p> <ul style="list-style-type: none"> <li>• the 150m extends upslope to the top of a prominent ridge in rugged granite terrain, and the slopes will be clearly visible to Blast Guards / Sentries for the blasts within 150m of the extraction limit</li> <li>• this land is part of the SSAA Eagle Park shooting range and the area is off limits to SSAA members</li> <li>• the management of the SSAA Eagle Park shooting range will be notified prior to all blasts within 250m of the north-eastern Work Authority boundary (i.e any blast exclusion zone that may extend into the adjacent property).</li> </ul> <p>Mitigation will include a Blast Management Plan (BMP) that details the procedures and controls that must be observed for all blasting to ensure blasts are well controlled, compliance with standards and thresholds set out in regulations and guidelines is achieved, and a high degree of site personnel and public safety is provided at all stages of the blasting process.</p> <p>Refer to the Location Plan (Attachment G: Figures) for location of nearest sensitive receptors and the figures and appendices within the blast impact assessment (Attachment D) for ground vibration, airblast and flyrock assessment results.</p>
<p><b>Is there a potential for exposure of a human community to health or safety hazards, due to emissions to air or water or noise or chemical hazards or associated transport?</b></p> <p><input type="checkbox"/> NYD <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If yes, briefly describe the hazards and possible implications.</p> <p>See above descriptions.</p>
<p><b>Is there a potential for displacement of residences or severance of residential access to community resources due to the proposed development?</b></p> <p><input type="checkbox"/> NYD <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If yes, briefly describe potential effects.</p>
<p><b>Are non-residential land use activities likely to be displaced as a result of the project?</b></p> <p><input type="checkbox"/> NYD <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If yes, briefly describe the likely effects.</p> <p>The proposed extraction area is within an already approved Work Authority area so is designated for quarry purposes.</p>
<p><b>Do any expected changes in non-residential land use activities have a potential to cause adverse effects on local residents/communities, social groups or industries?</b></p> <p><input type="checkbox"/> NYD <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If yes, briefly describe the potential effects.</p>
<p><b>Is mitigation of potential social effects proposed?</b></p> <p><input type="checkbox"/> NYD <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If yes, please briefly describe.</p> <p>Not required</p>
<p><b>Other information/comments?</b> (e.g. accuracy of information)</p>

## Cultural heritage

<p><b>Have relevant Indigenous organisations been consulted on the occurrence of Aboriginal cultural heritage within the project area?</b></p> <p><input checked="" type="checkbox"/> No If no, list any organisations that it is proposed to consult.  <input type="checkbox"/> Yes If yes, list the organisations so far consulted.</p>	
<p><b>What investigations of cultural heritage in the project area have been done?</b>          (attach details of method and results of any surveys for the project &amp; describe their accuracy)</p> <p>Barro Group has completed a Self-Assessment which determined that an approved Cultural Heritage Management Plan (CHMP) is not required.</p> <p>The Work Authority area does not include any areas of Aboriginal Cultural Heritage Sensitivity (ACHS) and so does not trigger any requirement for a CHMP. The southeast corner of the property, adjacent to Drysdale Road, is marginally impacted by a small area (0.07 hectares) of ACHS, where no extraction has ever been proposed (and would not be allowed within the required boundary buffer). This area was not an area of ACHS at the time of Work Authority 453 being granted (which was in 1996). As above, much of the proposed extraction area has been subject to past significant ground disturbance through past sand quarrying.</p>	
	<p><b>Legend for map:</b></p> <p>Yellow – modified Work Authority boundary for WA453 (subject to current Work Plan Variation application)</p> <p>Black – parcel boundaries</p> <p>Purple – former unused road reserve recently purchased by Barro Group and to be incorporated into WA453</p> <p>Red – proposed extraction boundary and internal pit design</p> <p>Brown – You Yangs Regional Park</p> <p>Green – areas of mapped Aboriginal Cultural Heritage Sensitivity</p>
<p><b>Is any Aboriginal cultural heritage known from the project area?</b></p> <p><input type="checkbox"/> NYD <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If yes, briefly describe:</p> <ul style="list-style-type: none"> <li>• Any sites listed on the AAV Site Register</li> <li>• Sites or areas of sensitivity recorded in recent surveys from the project site or nearby</li> <li>• Sites or areas of sensitivity identified by representatives of Indigenous organisations</li> </ul> <p>As above, the Work Authority area does not include any areas of Aboriginal Cultural Heritage Sensitivity (ACHS) and therefore no registered cultural heritage places in the Victorian Aboriginal Heritage Register under the <i>Aboriginal Heritage Act 2006</i>. Refer to further comments above.</p>	

**Are there any cultural heritage places listed on the Heritage Register or the Archaeological Inventory under the *Heritage Act 1995* within the project area?**

NYD  No  Yes If yes, please list.

There are no Heritage Victoria listings within 2000m of the Work Authority, the closest being the Mt Rothwell Homestead 2.4 km to the north. There is no heritage overlay in the planning scheme.

**Is mitigation of potential cultural heritage effects proposed?**

NYD  No  Yes If yes, please briefly describe.

**Other information/comments?** (e.g. accuracy of information)

## 16. Energy, wastes & greenhouse gas emissions

### What are the main sources of energy that the project facility would consume/generate?

- Electricity network. If possible, estimate power requirement/output .....
- Natural gas network. If possible, estimate gas requirement/output .....
- Generated on-site. If possible, estimate power capacity/output .....

Based on an equivalent site/plant it's estimated that electricity consumption will be in the order of 6,500,000 kWh.

Other. Please describe.

Please add any relevant additional information.

### What are the main forms of waste that would be generated by the project facility?

- Wastewater. Describe briefly.
- Solid chemical wastes. Describe briefly.
- Excavated material. Describe briefly.
- Other. Describe briefly.

Please provide relevant further information, including proposed management of wastes.

Refer to previous sections on waste water and excavated materials. As above, there will be no discharge of dirty or contaminated water from the site.

As described within this referral, overburden materials, which are not saleable, and topsoil will be stockpiled within the approved extraction area for later use as a key resource to achieve site rehabilitation. There are no solid chemical wastes generated by the quarrying operation.

### What level of greenhouse gas emissions is expected to result directly from operation of the project facility?

- Less than 50,000 tonnes of CO<sub>2</sub> equivalent per annum
- Between 50,000 and 100,000 tonnes of CO<sub>2</sub> equivalent per annum
- Between 100,000 and 200,000 tonnes of CO<sub>2</sub> equivalent per annum
- More than 200,000 tonnes of CO<sub>2</sub> equivalent per annum

Please add any relevant additional information, including any identified mitigation options.

## 17. Other environmental issues

### Are there any other environmental issues arising from the proposed project?

- No  Yes If yes, briefly describe.

## 18. Environmental management

**What measures are currently proposed to avoid, minimise or manage the main potential adverse environmental effects?** (if not already described above)

Siting: Please describe briefly

The proposed quarry expansion has been designed to avoid and minimise environmental effects as far as practicable, given that the location of the granite rock resource on site to be extracted cannot be changed.

As stated in Section 4, Project Alternatives, there are limited alternatives available to access such granite resources. As also set out in Section 4, approximately half of the proposed extraction area has already been subject to previous sand quarrying disturbance and the expanded quarry is specifically designed to remain well hidden within a topographic 'basin', and therefore is not likely to cause any environmental effects outside of the immediate catchment area within that 'basin'.

In accordance with Melbourne Water advice, the original proposed quarry expansion was pulled back in the north to ensure that there would be no impact downstream of the existing approved quarry disturbance, which also significantly reduced the area of native vegetation removal required for the expansion. As noted in Section 3, Project Description, the plant and stockpiling area will be located within the expanded extraction area, with the fixed plant to be later constructed at a level below original ground surface, thus further minimising the potential for environmental effects.

### Context of risk management under an approved Work Plan

The Minerals Resources (Sustainable Development) Act and associated Regulations requires that an approved Work Plan, as varied, include a Risk Management Plan that identifies and assesses the applicable risks and ensures that those risks are eliminated or minimised as far as reasonably practicable. The applicable risks are those that may be posed by 'quarrying hazards' or 'rehabilitation hazards' to a defined set of 'sensitive receptors', being "the environment, any member of the public, or land, property or infrastructure in the vicinity of the proposed work". Consequently, the Risk Management Plan can include management of a slightly broader set of risks than that usually considered in an EE Act referral process, which is generally focussed on potential adverse effects to the broader environment (including amenity and Aboriginal cultural heritage values). Additionally, the Work Authority holder has an obligation under the MRSD Act to carry out the extractive industry in accordance with the approved Work Plan (as varied). The submitted Work Plan Variation, once approved, will be a compliance document (along with any Work Plan Specific Conditions applied to the approved Work Plan and the Work Authority conditions).

Along with the Risk Management Plan, the Work Plan Variation application is accompanied by adaptive management plans. As the statutory Risk Management Plan component of the Work Plan is an inflexible approval document under the MRSD Act, when it is necessary to have adaptable management of risks, particularly where there may be some uncertainty around that risk, then it is standard risk management practice to implement adaptive management plans. These adaptive management plans are each specifically referenced by the approved Risk Management Plan.

The adaptive management plans (such as the Ground Control Management Plan, Groundwater Management Plan, Surface Water Management Plan, Blast Management Plan, Dust Management Plan and Imported Materials Management Plan) are themselves

implemented in the Risk Management Plan, through the various Risk Treatment Plans, by reference in stated control measures and monitoring requirements. They are provided with the Work Plan application to demonstrate that the applicant understands the appropriate adaptive measures that need to be put in place to manage the risks effectively.

The Work Plan Variation application for the Little River Quarry includes an over-arching, adaptive Blast Management Plan, but Regulations also require that a specific Blast Management Plan be developed and documented before, during and after each blast. All blasting associated activities are undertaken by appropriately trained and, where required, licensed individuals or contractors. Blast Management Plans are continually updated, based on monitoring results, to meet the requirements of legislation and Work Authority conditions. Each blast-specific Blast Management Plan includes blast design, initiation sequence and the site-specific procedures for exclusion zones, notifying neighbours and any other protocols that are required, as well as any required monitoring locations (refer to additional information on blast impacts and management in section 15).

The draft application for a Work Plan Variation at WA453, Little River Quarry, includes the following risk management components:

- the statutory Risk Management Plan document, made up of Risk Treatment Plans for each applicable 'quarrying hazard' or 'rehabilitation hazard'
- associated adaptive management plans, each being specifically referenced by the relevant Risk Treatment Plans, including
  - Groundwater Management Plan
  - Surface Water Management Plan
  - Ground Control Management Plan
  - Blast Management Plan
  - Fire Response and Readiness Plan – a mandatory requirement under the Work Authority conditions (incorporated into the site's Emergency Response Plan)

An adaptive Ground Control Management Plan (GCMP) is currently implemented for the existing quarry and an updated version is included with the Work Plan Variation application for the Little River Quarry. The GCMP discusses and details the management and monitoring requirements which will be adopted at the site, and this document is periodically reviewed and adapted to site conditions based on advice from an appropriately qualified Geotechnical Engineer. This adaptive management plan includes identified triggers to initiate certain actions to be taken, to ensure that site stability is maintained throughout the quarry operation and in establishing the final rehabilitated landform.

Attached to this referral are copies of the adaptive Groundwater Management Plan (included as an appendix within Attachment B) and adaptive Surface Water Management Plan (Attachment C), as the included adaptive management measures relate directly to potential adverse environmental effects being addressed in this EES Referral (refer to Section 13, Water Environments). The Ground Control Management Plan and the Blast Management Plan are adaptive management plans primarily to manage risks associated with internal site operations.

The details of risk management under the Work Plan Variation in relation to particular potential environmental effects are also discussed in previous sections (Sections 11 to 15).

Design: Please describe briefly

The details in relation to particular activities is discussed in previous sections.

## 19. Other activities

**Are there any other activities in the vicinity of the proposed project that have a potential for cumulative effects?**

NYD  No  Yes If yes, briefly describe.

There are sand quarries already existing in the area and some that have larger Work Authority areas allowing for future expansion, but timing is unknown.

## 20. Investigation program

### Study program

**Have any environmental studies not referred to above been conducted for the project?**

No  Yes If yes, please list here and attach if relevant.

**Has a program for future environmental studies been developed?**

No  Yes If yes, briefly describe.

Various monitoring and adaptive management plans are implemented, as required as part of the Work Plan Variation approval.

### Consultation program

**Has a consultation program conducted to date for the project?**

No  Yes If yes, outline the consultation activities and the stakeholder groups or organisations consulted.

Engagement with stakeholders has previously taken place during the licensing and approvals processes, and the initial operating phase of the project.

Stakeholder	What was discussed	Why were they engaged	When did engagement take place	Outcome
ERR	MRSDA approvals	Work Authority and Work Plan approvals	Various	WA transfer and WPV submissions
City of Greater Geelong	Land use issues and offsite impacts	Planning approvals	Various	Various permits have been issued
EPA	SW4238 Discharge licence	Licence surrender	2012	Surrender of EPA licence held by previous operator
DELWP	Crown land occupancy	Various CL licences and leases held	Various	On-going engagement
Southern Rural Water	Water licencing	Various water entitlements held	Since 2014 on-going	Grant of entitlements
Melbourne Water	Waterway Protection	Pre-development advice	Since Oct 2021	Establishment of Exclusion Zones

Neighbouring residents, industries, and other stakeholders	Common interests	Through the You Yangs Extractive Industries Stakeholder Group	Founding member since inception in 2015	On-going engagement
<p><b>Has a program for future consultation been developed?</b>  <input type="checkbox"/> NYD <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes If yes, briefly describe.</p> <p>A Community and Stakeholder Engagement Plan has been developed which includes a stakeholders analysis and communication strategies that will be implement and periodically revised over the life of the quarry.</p>				

**Authorised person for proponent:**

I, Ann-Marie Farr full, Quarry Development & Planning Manager, confirm that the information contained in this form is, to my knowledge, true and not misleading.

Signature  \_\_\_\_\_

Date 2<sup>nd</sup> June 2024

**Person who prepared this referral:**

I, Mandy Elliott, Principal Consultant, confirm that the information contained in this form is, to my knowledge, true and not misleading.

Signature  \_\_\_\_\_

Date 2<sup>nd</sup> June 2024