

# 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* (Seventh Edition, 2006). 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 Department of Transport, Planning and Local Infrastructure (DTPLI) 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 DTPLI 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 CD or DVD copy of all documents will be needed, especially if the size of electronic documents may cause email difficulties. **Individual documents should not exceed 2MB.**

- 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  
GPO Box 2392  
MELBOURNE VIC 3001**

Couriers

**Minister for Planning  
Level 20, 1 Spring Street  
MELBOURNE VIC 3001**

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@dtpli.vic.gov.au](mailto:ees.referrals@dtpli.vic.gov.au) is encouraged. This will assist the timely processing of a referral.

---

## PART 1 PROPONENT DETAILS, PROJECT DESCRIPTION & LOCATION

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

<b>Name of Proponent:</b>	<b>Hanson Construction Materials Pty Ltd</b>
<b>Authorised person for proponent:</b>	Daniel Fyfe
<b>Position:</b>	Divisional Waste and SR Development Manager
<b>Postal address:</b>	Ground Floor, 601 Doncaster Road, Doncaster VIC 3108
<b>Email address:</b>	daniel.fyfe@hanson.com.au
<b>Phone number:</b>	03 9274 3741
<b>Facsimile number:</b>	N/A
<b>Person who prepared Referral:</b>	Phil Burn
<b>Position:</b>	Senior Consultant – Environment and Planning
<b>Organisation:</b>	Jacobs Group (Australia) Pty Ltd
<b>Postal address:</b>	PO BOX 312, Flinders Land, Melbourne VIC 8009
<b>Email address:</b>	<a href="mailto:phillip.burn@jacobs.com">phillip.burn@jacobs.com</a>
<b>Phone number:</b>	(03) 8668 3142
<b>Facsimile number:</b>	
<b>Available industry &amp; environmental expertise:</b> (areas of 'in-house' expertise & consultancy firms engaged for project)	<p><i>Hanson Construction Materials</i> (in-house)</p> <ul style="list-style-type: none"> <li>• Pit design</li> <li>• Processing plant layout</li> <li>• Internal access</li> </ul> <p><i>Jacobs</i></p> <ul style="list-style-type: none"> <li>• Project coordination</li> <li>• Land use and environmental planning</li> <li>• Agency consultation</li> <li>• Spatial</li> </ul> <p><i>Lyndel Hunter</i></p> <ul style="list-style-type: none"> <li>• Community engagement</li> </ul> <p><i>Ecology and heritage partners</i></p> <ul style="list-style-type: none"> <li>• Ecology.</li> </ul> <p><i>Cardno Lane Piper</i></p> <ul style="list-style-type: none"> <li>• Traffic and transport</li> </ul> <p><i>John Leonard Consulting</i></p> <ul style="list-style-type: none"> <li>• Hydrogeological Assessment</li> </ul> <p><i>Heritage Insight Pty Ltd</i></p> <ul style="list-style-type: none"> <li>• Cultural Heritage</li> </ul>

### 2. Project – brief outline

<b>Project title:</b>	Proposed Garfield North Quarry, Cardinia Shire
-----------------------	--

**Project location:**

The proposed site is approximately 80 kilometres south east of Melbourne in Victoria. The site is bound by Sanders Road, Garfield North to the north, private agricultural land to the south and east, and partially bound by private property and Wallaby Court, Garfield North to the west.

Table 1 Location points and Latitude Longitudes

Location Point ID	Latitude			Longitude		
	Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
1	-38	3	27	145	41	38
2	-38	2	55	145	42	29
3	-38	3	27	145	42	40
4	-38	3	27	145	42	50
5	-38	2	60	145	43	12
6	-38	2	43	145	42	58
7	-38	2	53	145	42	50
8	-38	2	53	145	42	32
9	-38	2	34	145	41	38
10	-38	2	35	145	42	43

**Short project description (few sentences):**

Development and operation of the proposed Garfield North Quarry will involve the :

- removal of vegetation, topsoil and overburden to enable stone extraction;
- removal of granite through controlled blasting and mechanical extraction;
- onsite processing of stone;
- mixing of aggregates on site;
- progressive rehabilitation of extracted areas;
- transportation of stone and aggregates from site; and
- final rehabilitation (post resource exhaustion).

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

Hanson aims to extract the site's granite reserve which is estimated at 70 to 100 million tonnes. The proposed quarry will be a long-term supply of hard rock aggregate to the Melbourne market.

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

Rationale: Hanson currently operates the Lysterfield Quarry, Lysterfield. The Lysterfield hard rock reserves are nearing depletion. The remaining resources at Lysterfield are of a quality which is not suitable for all products.

Siting: The site has been acquired by Hanson due to its significant granite reserve and location close to the Melbourne market. The site has an estimated reserve of 70 to 100 million tonnes, and has excellent access to the major road network. The site has limited environmental attributes. The risk to these attributes can be adequately managed.

**Strategic Importance:**

Melbourne has significant granite resources, most of which are significantly constrained by incompatible land uses. Planning constraints significantly restrict the amount of granite available for Melbourne (MSA 2003).

The proposed Garfield North site is of strategic importance. This is reflected by its inclusion within the Extractive Industry Interest Area (EIIA). The Garfield North EIIA was chosen due to favourable geology and limited planning restrictions with the granite resource occurring at depth and with minimal overburden and throughout the EIIA (MSA 2003). The strategic importance of the EIIA is reflected in the State and local planning policy framework.

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

Main components of the project are illustrated in the 'Indicative Layout - Proposed Garfield North Quarry' in Attachment A Figure 2.

**Extraction of stone.**

Stone is proposed to be extracted from approximately 134 ha of the 280 ha site. It is proposed to extract the resource in stages as indicated on the attachment the 'Indicative Layout - Proposed Garfield North Quarry' in Attachment A Figure 2.

Stage one will involve working up the centre valley of the site until a terminal face is reached to approximately RL 105. Stage two will extend to the western terminal boundary (approximately RL 105) and Stage three will work down further levels (approximately RL 90). Haul roads are attached to stages 1 and 3.

Future stages (shown as hatched area Proposed Extraction Limit in Attachment A Figure 2 – Proposal plan) will extend to the 100 metre buffer limit into the future.

Timing for these stages is outlined at Section 6.

**Boundary setback**

A 100m boundary setback is proposed. Stands of native vegetation will be maintained and enhanced within the boundary setback to:

- provide a landscape screen;
- maintain biodiversity on the site and contribute to native vegetation offsets; and
- provide part of the required separation distance between the proposed quarry and sensitive uses.

**Processing of material**

A processing plant will be established west of the equestrian centre. The processing plant is shown as detailed on the *Attachment A Figure 2 – Proposal Plan*.

The processing plant forms a footprint that will cover approximately 10ha, sited to accept raw product just east of the proposed quarry. Product will be distributed via a new internal road constructed to meet Bunyip-Tonimbuk Road approximately 1km to the south of the processing plant (see Attachment A Figure 2)

The processing of material will also allow for the mixing of aggregate on site to make road base and wet-mix products. For efficiency, the quarry will utilise a 'just in time' approach to supply to the market. The processing plant contains primary, secondary and tertiary processing legs, with stockpiling of material between stages.

**Site access**

A new site access road is to be constructed to intersect with the Bunyip-Tonimbuk Road, at the south of the site (see Attachment A Figure 2). The access road has been located to minimise the removal of native vegetation and to make use of a suitable gradient for cartage. This access road will avoid the need for haulage along Sanders Road.

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

There are no ancillary project components.

**Key construction activities:**

Key construction activities are described above.

**Key operational activities:**

Key operational activities involve:

Extraction

Stone will be progressively extracted from the site using mechanical excavation and blasting. A front end loader or excavator will be utilised to load material into haul trucks

Processing: Stone is processed in stages with primary, secondary and tertiary scalping occurring before material is screened and mixed to produce required product for market. Stockpiling occurs between processing stages. See attachment A Figure 2 for preliminary processing plant layout.

Stockpiling: Stockpiling of product will occur between processing stages and between final screening, mixing and distribution.

Transport: Transportation of raw material and final product will occur throughout the operation of the quarry. The proposal would initially involve the cartage of approximately 2000 tonnes per day, which equates to approximately about 80 truck movements per day. Ten years into the operation, cartage will increase to 4000 tonnes per day which is approximately at approximately 160 truck movements per day.

At peak production approximately 6,944 tonnes per day would be carted. This is projected to generate 422 truck movements per day and total 530 vehicle movements per day at its peak. This presents a 'worst-case scenario' as it is based on every truck being a tandem (unlikely). The average load size is expected to be higher, reducing the expected number of vehicle movements.

All of these estimates are subject to market demand.

Employment: 7-10 people will be required onsite when the site is fully operational.

Potential working hours:

6am to 6pm.

Saturdays 6am to 12 mid-day.

Saturday midday to Sunday plant maintenance.

**Key decommissioning activities** (if applicable):

The site will be progressively rehabilitated throughout the project's life as material is extracted.

Following extraction of the granite resource the site will be made safe and stable and rehabilitated in accordance with the rehabilitation plan that will be approved as part of the work plan.

Section 79 of the *Mineral Resources (Sustainable Development) Act 1990* requires the preparation of a rehabilitation plan that:

- responds to any special characteristics of the land and the surrounding environment;
- stabilises the land;
- seeks to return land to as close as is reasonably possible to its state before the extraction; and
- address the potential for the long term degradation.

The *Mineral Resources (Sustainable Development) Act 1990* requires a bond to be provided to ensure the site can be appropriately rehabilitated.

**Is the project an element or stage in a larger project?**

No  Yes If yes, please describe:

**Is the project related to any other past, current or mooted proposals in the region?**

No  Yes If yes, please identify related proposals.

However, the proposed quarry was first mooted in 2008.

**4. Project alternatives**

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

No alternative quarry sites have been considered.  
Minor changes to indicative layout and proposed staging may occur as project is developed.

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

No alternatives are to be investigated.

**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:**

There are no further ancillary activities or project stages.

**6. Project implementation**

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

- Hanson Construction Materials Pty Ltd

**Implementation timeframe:**

- Approvals process anticipated 2015-2017
- Preparatory works will be undertaken immediately post approval from 2017 to 2018
- Operation will commence from 2018 to the life of the resource. Staged rehabilitation and re-vegetation will occur on terminal faces throughout the life of the resource.
- Final rehabilitation – post resource depletion.

**Indicative staging** (if applicable):

- Site access, processing facilities and haul road prepared
- First stage initially to RL 105 (approx.) (see attachment A Figure 2) timing - 2017 to 2018
- Second stage to RL 105 extending west towards terminal face (see attachment A Figure 2) timing 2018 to 2022
- Third stage to RL 90 within the extent of current cut. Timing 2022 to 2025.
- Following stage three, likely resource extraction extends towards northern and southern extraction limit 2025 to between 80 to 120 years.

Please note. The staging timing above is market-dependent.

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

### Has a preferred site for the project been selected?

No  Yes If no, please describe area for investigation.

I

### General description of preferred site, (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 & surrounds, showing project footprint):

The site is located in the foothills of the Eastern Highlands (uplands) along the eastern margin of the Western Port Basin (sedimentary basin). The geology of the subject site is outcropping Tynong Granite. Quaternary alluvium overlies at least in part, Neerim Group (Older Volcanics) rocks to the east of the site along the Bunyip River system. Western Port Basin Tertiary rocks are about seven km from the quarry pit at its closest margins (Attachment D, p. 53).

The site is located on the eastern end of a general NW-SE aligned ridge of outcropping granite, surrounded by shallow valleys of Hamilton Creek (west), Cannibal Creek (south) and Two Mile Creek West (north). The main topographic features are two ridges. The main ridge is aligned approximately west-east and the secondary ridge trending north-south. The main ridge includes two local topographic high points, one on the western boundary and near the centre of the site which are 150 and 140 AHD respectively (Attachment D, p. 40).

Soils are sandy loams of the Jindivick Association, and are prone to mass movement and erosion. This association is part of Quaternary Alluvial deposits which generally overlie the bedrock of the Western Port basin. Permeability tests indicate that these alluvium would be of low permeability and function hydraulically as an aquitard.

Ten farm dams are scattered throughout the subject land. A large wetland exists directly south of the proposed quarry. The site inspection highlighted that the waterway downstream of this wetland has been significantly altered as a result of historic earthworks by previous landowners, probably to improve site drainage.

To the north of the subject land, a tributary of Two Mile Creek runs north of Sanders Road. A tributary of Cannibal Creek extends through the south-western portion of the site before joining Cannibal Creek. Further south of the proposed quarry site the Two Mile Creek and Cannibal Creek join to the Bunyip River.

Runoff to the north of the main ridge flows into a minor unnamed tributary of Two Mile Creek West. Runoff to the south of the main ridge and east of the secondary ridge flows either directly or via two gullies into a second unnamed tributary of Two Mile Creek West. Runoff from the south western corner of the site flows into Cannibal Creek.

As illustrated by the site maps in Attachment A, the site is predominantly cleared farmland which contains scattered native vegetation. Most of the scattered native trees are located to the south of the east-west ridgeline with dense stands of remnant native vegetation being located in the south west corner of the site. Based on field assessment, forest vegetation within the study area is consistent with Herb-rich Foothill Forest and Lowland Forest Ecological Vegetation Class (EVC). (see Attachment C).

The site contains a leased dwelling on the proposed extraction area and within 195 Bunyip-Tonimbuk Road. Part of the site, 195 Bunyip-Tonimbuk Road contains a large shed and outdoor horse jumps course and fencing. This land forms the Tonimbuk Equestrian Centre (Attachment A, Figure 2)

### Site area



The total site area is approximately 280 ha.

The maximum extraction footprint is approximately 134 ha.

**Route length NA and width NA**

**Current land use and development:**

Farmland (grazing), equestrian centre and vacant land.

**Description of local setting** (e.g. adjoining land uses, road access, infrastructure, proximity to residences & urban centres):

Adjoining land uses:

Farmland is located immediately to the north, east and south of the proposed quarry and is generally used for grazing. Mount Cannibal Flora and Fauna Reserve is located (approximately 400m from the two closest points) to the west of the subject land. The reserve contains self-guided walks and lookouts. The Tonimbuk Equestrian Centre is located on land owned by Hanson to the east of the proposed quarry site.

A cluster of three dwellings is located on Sanders Road near the north eastern corner of the proposed quarry site. One of these dwellings appears to have been excised from a larger parent lot which now contains a newer dwelling. A recently constructed dwelling also exists in this cluster. To the west, on the corner of Sanders Road and Wallaby Court, is a dwelling known as the 'Lamble Orchard House'.

The broader general area also contains:

- extractive industry, specifically;
  - WA182 to the west. Holcim (granite),
  - WA25 at Tynong to the south west. Fulton Hogan (Granite), and
  - WA476 to the north east. Forte (sand and gravel).
- Other land uses including:
  - grazing
  - orchards and intensive horticulture;
  - outdoor leisure park (Gumbuya Park); and
  - electricity transmission lines to the south.

According to the 2011 Census, Garfield North has a population of 219 people and contains 88 private dwellings.

Road access: The site is bounded by Sanders Road to the north and Bunyip-Tonimbuk Road to the east. Primary site access will be via Bunyip-Tonimbuk Road (sealed) then onto a northern running private road to the staging and processing facilities.

Infrastructure: A major 220Kv transmission line from the Yallourn and Hazelwood Power Stations to Rowville is located 2km south of site. Princes Freeway is approximately 2.5 km south of the site.

Proximity to residences & urban centres: A cluster of three dwellings is located on Sanders Road near the north eastern corner of the proposed quarry site.

Point to point, the nearest urban areas, within an urban zone, are Bunyip which is located 3.8km to the south and Garfield approximately 4km to the south west.

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

The following planning context is abbreviated below. Further details can be found in Attachment B  
Version 5: July 2013

– Victorian State Planning Context.

### **State Planning Policy Framework (SPPF)**

Relevant clauses of the SPPF include:

- 12.01 – Biodiversity
- 12.04 - Significant environments and landscapes
- 13.03-2 - Erosion and landslip
- 13.04-1 Noise abatement
- 13.04-2 Air quality
- 13.05 – Bushfire
- 14.02 – Water
- 14.03 - Resource exploration and extraction.

### **Local Planning Policy Framework**

Relevant clauses of the LPPF include:

- 21.03-3 Key Issues
- 21.01-4 Strategic Vision
- 21.02-1 Catchment and Coastal Management
- 21.02-2 Landscape
- 21.02-3 Biodiversity
- 21.02-7 Aboriginal cultural heritage
- 21.02-8 Resource conservation
- 21.04-2 Agriculture
- 21.04-4 Industry
- 21.04-6 Extractive industry
- 21.05-3 Local Roads.

### **Zones:**

The proposed Garfield North Quarry is located with the Green Wedge Zone 1.

The purpose of the Green Wedge Zone 1 is:

- To implement the State Planning Policy Framework and the Local Planning Policy Framework, including the Municipal Strategic Statement and local planning policies.
- To provide for the use of land for agriculture.
- To recognise, protect and conserve green wedge land for its agricultural, environmental, historic, landscape, recreational and tourism opportunities, and mineral and stone resources.
- To encourage use and development that is consistent with sustainable land management practices.
- To encourage sustainable farming activities and provide opportunity for a variety of productive agricultural uses.
- To protect, conserve and enhance the cultural heritage significance and the character of open rural and scenic non-urban landscapes.
- To protect and enhance the biodiversity of the area.

### **Overlays:**

The proposed Garfield North Quarry is located with the Environmental Significance Overlay 1.

The purpose of the Environmental Significance Overlay is:

- To implement the State Planning Policy Framework and the Local Planning Policy Framework, including the Municipal Strategic Statement and local planning policies.
- To identify areas where the development of land may be affected by environmental constraints.
- To ensure that development is compatible with identified environmental values.

**Particular Provisions:**

The following particular provisions are relevant to the proposal:

**Clause 52.08 - Earth and Energy Resource Industry**

The purpose of the Earth and Energy Resource Industry provision is to:

- To encourage land to be used and developed for exploration and extraction of earth and energy resources in accordance with acceptable environmental standards.
- To ensure that mineral extraction, geothermal energy extraction, greenhouse gas sequestration and petroleum extraction are not prohibited land uses.
- To ensure that planning controls for the use and development of land for the exploration and extraction of earth and energy resources are consistent with other legislation governing these land uses.

**Clause 52.09 - Stone Extraction and Extractive Industry Interest Areas**

The purpose of the Stone Extraction and Extractive Industry Interest Areas provision is to:

- To ensure that use and development of land for stone extraction does not adversely affect the environment or amenity of the area during or after extraction.
- To ensure that excavated areas can be appropriately rehabilitated.
- To ensure that sand and stone resources, which may be required by the community for future use, are protected from inappropriate development.

There are no specific management plans for the site.

**Local government area(s):**

The subject site is located within the Shire of Cardinia.

**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):

Native vegetation on site supports five broad vegetation and habitat types: forest, shrubland, scattered trees, artificial dams and introduced grasslands. Within these types, several remnant Ecological Vegetation Classes have been identified including Riparian Scrub (EVC 191), Herb-rich Foothill Forest (EVC 23), and Lowland Forest (EVC 16).

No species under the *Flora and Fauna Guarantee Act 1988* (FFG) or the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC) have been identified in the project area. However some habitats have been identified which potentially support nationally significant flora and fauna species. Additionally, several EPBC listed fauna species have been identified in 2009 south of the project area.

Establishing a quarry will result in the progressive removal of native vegetation across the extraction site – other than the proposed 100m boundary setback.

Further detail on the project site's environmental assets are discussed in Sections 11 and 12 and in the attachments.

Other sensitive assets in the area include:

- Mount Cannibal Flora and Fauna Reserve. The reserve is located (approximately 400m from the two closest points) to the west of the subject land. The reserve covers 53 hectares and is dominated by a hill with granitic outcrops. The reserve contains self-

guided walks and lookouts to the north and south. The reserve consists of remnant native vegetation.

- Ground and surface water. A large wetland exists directly south of the proposed quarry. This wetland contains a record of an EPBC Act listed Dwarf Galaxias (2009) (Heritage and Ecology Partners 2014). The waterway downstream of this wetland has been significantly altered as a result of historic earthworks by previous landowners, probably to improve site drainage. To the north of the subject land, a tributary of Two Mile Creek runs north of Sanders Road. A tributary of Cannibal Creek extends through the south-western portion of the study area before joining Cannibal Creek. Further south of the proposed quarry site the Two Mile Creek and Cannibal Creek join to the Bunyip River.
- The Tonimbuk Equestrian Centre. The equestrian centre has been identified as a key community asset. The centre is located on land owned by Hanson to the east of the proposed quarry site.
- Dwellings. Closest dwellings to the proposed quarry are a cluster of three dwellings are located on Sanders Road near the north eastern corner of the proposed quarry site. According the 2011 Census, Garfield North has a population of 219 people and contains 88 private dwellings.

## 9. Land availability and control

**Is the proposal on, or partly on, Crown land?**

No  Yes If yes, please provide details.

**Current land tenure** (provide plan, if practicable):

The land is owned by Hanson Construction Materials Pty Ltd.

**Intended land tenure** (tenure over or access to project land):

No change in tenure is proposed.

**Other interests in affected land** (e.g. easements, native title claims):

The land is within the boundaries of a proposed extractive industry Work Authority number WA1438.

There are no easements or claims which would affect the development of the proposal.

## 10. Required approvals

**State and Commonwealth approvals required for project components** (if known):

*Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)*. It is not currently known if approval is required under the EPBC Act, however a referral to DoE has been prepared and has been submitted concurrently.

*Mineral Resources (Sustainable Development) Act 1990*

A work plan and work authority pursuant to *Mineral Resources (Sustainable Development) Act 1990* is required for this project.

This approval requires:

- extensive technical detail about operation and design of the quarry to be provided;
- comprehensive community engagement plan;
- consultation with all agencies with an interest in the site (these agencies include those identified through the planning scheme);
- the work plan process to manage the removal of native vegetation, noise, dust, water

- quality and the rehabilitation of the site;
- work plan endorsement by the Earth Resources Regulation division of the Department of Economic Development, Jobs, Transport and Resources (DEDJTR) to ensure it is of an acceptable standard before a planning assessment process commences; and
- possible amendments to the work plan before it is approved by DEDJTR Earth Resources Regulation.

*Planning and Environment Act 1987*

If an EES is required and the Work Plan/Work Authority is considered with the EES, a planning permit is not required (Section 77T of the *Mineral Resources (Sustainable Development) Act 1990*).

If no EES is required a planning permit will be required (unless the planning scheme is amended to exempt the need for a planning permit). The assessment of a permit application will then align with the process under the *Mineral Resources (Sustainable Development) Act 1990*. Further information on this process can be found in Attachment B.

*Aboriginal Heritage Act 2006*

A Cultural Heritage Management Plan (CHMP) is required for the project as the proposal is a high impact activity (extractive industry) within an area of cultural heritage sensitivity. A draft CHMP has been prepared and is attached. The draft CHMP will be updated to include land at 195 Bunyip-Tonimbuk Road and to consider any changes to cultural heritage regulations.

*Water Act 1989*

Approval under this act may be required:

- to construct, alter, operate, remove or decommission a private dam;
- to as well as to take and use groundwater or surface water; and/or
- for works on a waterway.

**Have any applications for approval been lodged?**

No  Yes If yes, please provide details.

**Approval agency consultation** (agencies with whom the proposal has been discussed):

Discussions regarding the proposed quarry have been undertaken with:

- Department of Economic Development, Jobs, Transport and Resources (DEDJTR) – Earth Resources Regulation
- Cardinia Shire Council
- Department of Environment, Land, Water and Planning (DELWP) – Planning Services & Impact Assessment
- Department of Environment (Commonwealth).

**Other agencies consulted:**

- DEDJTR - Minerals Development Victoria
- DELWP - Planning Services & Impact Assessment

## 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):

**Flora:** The report by Ecology and Heritage Partners 2014 (Attachment C) did not identify any nationally significant flora species onsite. However, the report identified suitable habitat for the Green-striped Greenhood *Pterostylis chlorogramma* and the Strzelecki Gum *Eucalyptus strzeleckii*, nationally significant flora species. The proposed development has the potential to impact on these habitats via the removal of vegetation. The study recommends further targeted surveys for these species to be undertaken (Attachment C, p.47) to determine their presence on site.

**Fauna:** The report by Ecology and Heritage Partners 2014 (Attachment C) did not identify any nationally significant fauna species onsite. However, the report identified suitable habitat for the Southern Brown Bandicoot, Australasian Bittern, Latham's Snipe, Growling Grass Frog and Dwarf Galaxias nationally significant fauna species. The proposed development has the potential to impact on these habitats via the removal of vegetation and impact on catchment area. The study recommends further targeted surveys for these species to be undertaken (Attachment C, p.47) to determine their presence on site and any likely impacts.

**Aquatic habitat:** Hydrological and Flora and Fauna reporting (Attachments C and D) have identified potential impacts to aquatic habitats through changes in site hydrological conditions. These changes may be considered significant, however likely impact will be dependent on assessment of the presence of critical fauna dependent on aquatic habitat and monitoring of conditions that may affect aquatic habitat in the area.

**Surface water:** To the north of the subject land, a tributary of Two Mile Creek runs north of Sanders Road. A tributary of Cannibal Creek extends through the south-western portion of the site before joining Cannibal Creek. Further south of the proposed quarry site the Two Mile Creek and Cannibal Creek join to the Bunyip River.

**Groundwater:** The hydrological report (Attachment D) notes the proposed quarry will intercept groundwater and potentially impact on streambed infiltration. The hydrological report recommends monitoring of streamflow over the summer months to determine whether local streams are intermittent (flowing only due to surface water) or permanent (fed by groundwater) (Attachment D, p.73). If dewatering is to occur it is likely to be restricted to four bores located immediately north of the proposed quarry site. The hydrogeological report recommends the establishment of on-site and off-site monitoring bores to provide for more accurate groundwater mapping and assessment.

**Amenity:** The proposed quarry is likely to have some impact on local amenity. Potential impacts may result from dust and noise emissions from the operation of the quarry and blasting. Traffic and haulage may also have an impact on amenity.

**Landscape:** The proposed quarry will alter the landscape to some degree. Views into the site will change.

## 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.

**What investigation of native vegetation in the project area has been done?**

*Ecological assessment for a proposed quarry on Sanders Road Garfield* (Ecology and Heritage Partners 2014)

This report is the key ecological assessment for the site. The report established three remnant ecological vegetation classes (EVCs) and five broad vegetation and habitat types: Forest, shrubland, scattered trees, artificial dams and introduced grassland. The assessment found

potential habitat for two national (Green-striped Greenhood, Strzelecki Gum), and several State and regionally significant flora species. The report recommended additional targeted studies to determine the presence of these species within the suitable habitat found on site. This report will need to be amended to incorporate an assessment of the proposed processing plant area and the proposed site access road.

*Vegetation Assessment and Net Gain Analysis* (Ecology and Heritage Partners 2008)

This vegetation assessment estimated a total of 25.3 habitat hectares of native vegetation. At the time 273 Large Old Trees were established on site, with a further 27 scattered trees also present (Attachment J, p.7). The south western areas of the site were assessed to be of high regional significance, with all other areas of the site considered to be of regional or local significance.

*Offset Potential @ 195 Tonimbuk* (Ecology and Heritage Partners 2014)

This offset report established some 20 hectares of remnant vegetation of three remnant EVCs within the study area: Lowland Forest, Riparian Scrub and Swampy Riparian Woodland. The report considered the retention, management, maintenance and protection of this vegetation for the generation of vegetation credits.

*Offset Potential in Landscape Buffer* (Ecology and Heritage Partners 2014)

This offset report established some 20 hectares of remnant vegetation of three remnant EVCs within the study area: Lowland Forest, Riparian Scrub and Herb Rich Foothill Forest. The report considered the retention, management, maintenance and protection of this vegetation for the generation of vegetation credits.

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

NYD Estimated area approx. 46 ha -16% of total site

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

N/A (if applicable)

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

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

A preliminary assessment has been completed. The table below summarises the description of the EVCs from Attachment C. This report requires amendments to reflect an assessment of the proposed processing plant area and the proposed site access road.

The habitat score of these EVCs and the area in hectares proposed to be removed can be found in Table A2.3 for the report in Attachment C.

Ecological Vegetation Class	Description
-----------------------------	-------------

Riparian Scrub (EVC 191)	<p>A high quality remnant of Riparian Scrub occurs in the south-western portion of the study area. The patch is dominated by a dense cover of Prickly Tea-tree <i>Leptospermum continentale</i>. Burgan <i>Kunzea ericoides</i> and Prickly Moses <i>Acacia verticillata</i> and Swamp Paperbark <i>Melaleuca ericifolia</i> are also present. The northern portion of the Riparian Scrub patch is dominated by Swamp Paperbark and Burgan further upslope. The ground layer is dominated by mosses together with indigenous rushes and sedges such as Variable Sword-sedge <i>Lepidosperma laterale</i> and Thatch Saw-sedge <i>Gahnia radula</i>. Introduced species such as Gorse <i>Ulex europaeus</i> and Spanish Heath <i>Erica lusitanica</i> are also scattered throughout the Riparian Scrub.</p> <p>Conservation status – vulnerable.  Area to be removed – 3.21 hectares  Area to be retained – 6.4 hectares</p>
Herb-rich Foothill forest (EVC 23)	<p>Herb-rich Foothill Forest is the dominant EVC within the study area and generally occurs south of the ridge line on the south-facing slopes. Messmate Stringybark and Narrow-leaf Peppermint are present with the dominant over storey species being Mountain Grey-gum <i>E. cypellocarpa</i>. The understorey component ranges from dominance by shrubs, herbs and native grasses to introduced pasture grasses. Typical native species present in the understory include Austral Bracken <i>Pteridium esculentum</i>, HopGoodenia <i>Goodenia ovata</i>, Prickly Moses <i>Acacia verticillata</i>, Weeping Grass <i>Microlaena stipoides</i> var. <i>stipoides</i>, Wattle Mat Rush <i>Lomandra filiformis</i>, Common Heath <i>Epacris impressa</i>, Bog Sedge <i>Schoenus apogon</i>, and Dusty Miller <i>Spyridium parvifolium</i>.</p> <p>Conservation status – least concern  Area to be removed – 31.97 hectares  Area to be retained – 5.13 hectares</p>



<p>Lowland Forest (EVC 16)</p>	<p>Lowland Forest generally occurs within the drier areas on north and east-facing slopes within the far eastern and far western portion of the study area. It is generally dominated by Messmate Stringybark <i>Eucalyptus obliqua</i>, and Narrow-leaf Peppermint <i>Eucalyptus radiata</i>, however Lowland Forest areas to the west of the property also support Mountain Grey-gum and Manna Gum <i>E. viminalis subsp. Viminalis</i>. In most cases, areas containing Lowland Forest vegetation are contiguous with remnant vegetation in adjoining properties to the east and west of the study area.</p> <p>The understorey within Lowland Forest is generally of high quality, supporting a high cover of indigenous shrubs, sedges, herbs and grasses. A small area on the western boundary of the site comprises a modified patch of Lowland Forest with all overstorey species removed. A high cover of Kangaroo Grass <i>Themeda triandra</i> and Weeping Grass <i>Microlaena stipoides</i> is present in the understorey, along with a high diversity of groundcovers.</p> <p>Conservation status – least concern          Area to be removed – 12.34 hectares          Area to be retained – 14.70 hectares</p>
--------------------------------	---

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

NYD  Yes If yes, please briefly describe.

A number of potential offset sites have been identified. However, additional sites are likely to be required to provide the required offset.

Additional offset requirements may be need for the processing plant area and for the proposed site access track alignment.

Potential offset are identified in the following reports:  
*Vegetation Assessment and Net Gain Analysis* (Ecology and Heritage Partners 2008)

*Offset Potential @ 195 Tonimbuk* (Ecology and Heritage Partners 2014)

*Offset Potential @ 55 Wallaby Crt* (Ecology and Heritage Partners 2014)

*Offset Potential in Landscape Buffer* (Ecology and Heritage Partners 2014)

Impact	Measures to avoid or reduce impacts
--------	-------------------------------------

Vegetation Clearance	<p>Offset clearance through the protection and ongoing management of 20.269 Ha of remnant vegetation at 195 Bunyip-Tonimbuk Road, Garfield North. It is noted that as a condition of offsetting vegetation loss, current equestrian activities in certain areas identified as contributing towards the offset would need to cease.</p> <p>Offset clearance through the protection and ongoing management of 19.687 Ha of remnant vegetation at 310 Sanders Road, Garfield North.</p> <p>Offset clearance through the protection and ongoing management of 7.655 Ha of remnant high quality vegetation at 55 Wallaby Court, Garfield North. Due to high quality of remnant vegetation identified the 'gain' generated from its protection and ongoing management is less than would otherwise be generated. The vegetation however, may contribute towards offsetting for habitat loss for EPBC species.</p> <p>Maintenance involving retention of all remnant trees, with the removal of woody and herbaceous weeds and forgoing uses such as grazing and slashing.</p> <p>Improvement strategies including, control/eradication of noxious weeds, fencing to restrict public grazing/access, control of feral species and revegetation and/or supplement planting of local indigenous tree, shrub and understorey species.</p>
----------------------	---

**Other information/comments?** (eg. accuracy of information)

The offsets will not compromise the operation of the Equestrian Centre. External sites would be used to offset any clearance so as to maintain the viability of the Equestrian Centre which is considered an important asset for the Community.

NYD = not yet determined

**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)

A field assessment was undertaken on 27 October and 3 November 2014 (a total of four person days) to obtain information on terrestrial flora and fauna values within the study area. A habitat hectare assessment was undertaken in conjunction with the flora survey. Vegetation within the study area was assessed in accordance with the habitat hectare methodology. Attached to this referral is the full report *Ecological assessment for a proposed quarry on Sanders Road Garfield* (Attachment C).

This report will need to be amended to incorporate an assessment of the proposed processing plant area and the proposed site access road. This work has been commissioned.

**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.

The species listed below have been recorded in the local area. The species have not been identified from within the proposed quarry site. As suitable habitat exists for some of these species on the proposed quarry site, targeted studies are underway.

<b>Flora Species</b>	<b>Description</b>
Strezlecki Gum ( <i>Eucalyptus strzelecki</i> )	Last documented within 10km of site in 2008. Previous records of the species in local vicinity and the study area contains areas of high quality habitat
Green-Striped Greenhood ( <i>Pterostylis chlorogramma</i> )	Last documented within 10km of the site in 2009. Previous records of the species in local vicinity and the study area contains areas of high quality habitat.
<b>Fauna Species</b>	<b>Description</b>
Southern Brown Bandicoot ( <i>Isodon obesulus obesulus</i> )	Last documented in the area in 2011. Numerous records four km south of the site.
Growling Grass Frog ( <i>Litoria raniformis</i> )	Last recorded in 1982 approximately 400 metres from the study area.
Dwarf Galaxias ( <i>Galaxiella pusilla</i> )	Last recorded in 2009. Has been recorded locally in several locations. (Site 14, Attachment C, Figure 2b)
Australasian Bittern ( <i>Botaurus poiciloptilus</i> )	Last recorded in 2009, with other potential habitat within the study area. (Site 14, Attachment C, Figure 2b)
Latham's Snipe ( <i>Gallinago hardwickii</i> )	Last documented in 2009. (Site 14, Attachment C, Figure 2b)

<b>Flora Species</b>	<b>Description</b>
Green Scentbark ( <i>Eucalyptus fulgens</i> )	Considered to be suitable habitat within the study area for this species. Last documented in the area in 2011.
Long Pink-bells ( <i>Tetratheca stenocarpa</i> )	Considered to be suitable habitat within the study area for this species. Last documented in the area in 1982.
Marsh Sun-orchid ( <i>Thelymitra longiloba</i> )	Considered to be suitable habitat within the study area for this species. Last documented in the area in 1941.
Swamp Bush-pea ( <i>Pultenaea weindorferi</i> )	Considered to be suitable habitat within the study area for this species. Last documented in the area in 2004.
<b>Fauna Species</b>	<b>Description</b>
Black Bittern ( <i>Ixobrychus flavicollis Australis</i> )	Considered to be suitable habitat (Wetlands) within the study area for this species. Black Bittern last recorded in 2008.
Lewin's Rail ( <i>Rallus pectoralis</i> )	
Baillon's Crake ( <i>Porzana pusilla</i> )	
Masked Owl ( <i>Tyto novaehollandiae</i> )	Considered to be suitable habitat (Forested area supporting large hollow bearing trees) within the study area for this species. Species last records in the area: Masked Owl (1993), Barking Owl (1988), Powerful Owl (2009)
Powerful Owl ( <i>Ninox strenua</i> )	
Barking Owl ( <i>Ninox connivens</i> )	
Sooty Owl ( <i>Tyto tenebricosa</i> )	
White-footed Dunnart ( <i>Sminthopsis leucopus</i> )	Considered to be suitable habitat (Riparian Scrub and Herb-rich Foothill Forest). Last recorded in the area in 1990.
Greater Glider ( <i>Petauroides volans</i> )	Considered to be suitable habitat (forested area supporting large hollow bearing trees). Last recorded in the area in 2009.
Southern Toadlet ( <i>Pseudophryne Semimarmorata</i> )	Considered to be suitable habitat (Periodical inundation). Last recorded in the area in 1960.

Swamp Skink <i>(Egernia coventryi)</i>	Considered to be suitable habitat (Riparian Scrub and Herb-rich Foothill Forest). Last recorded in the area in 2001.
---	--

\* 30 State-significant flora species and 26 state-significant fauna species have been recorded within 10 kilometres of the study area. (see Attachment C pp. 71-91)

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

To date none of the above species have been identified on the project site.

**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.

To date no threatened or migratory species have been identified on the project site. However, given the presence of potentially suitable habitat for significant species as described above (i.e. EPBC Act-listed species), the ecological assessment recommends that targeted surveys be carried out to determine the presence or absence of these species within the project site (Attachment C, p.47).

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

NYD  No  Yes If yes, please briefly describe.

The ecological assessment identifies that the vegetation removal would be assessed using a Moderate Risk-based pathway. Mitigations have been developed in accordance with guidelines to ensure that impacts of the proposal on biodiversity and native vegetation loss have been minimised. The proposed mitigation measures are based on detailed recommendations in Attachment C, p.32, these include:

- Protection of native vegetation outside the works area such as within the boundary set backs
- Minimisation of impacts to native vegetation and habitats through micro-siting
- Mapping of habitat zones
- Mapping of tree retention zones
- Removal of habitat to reduce impact on fauna species (timed removals in line with non-breeding)
- Ensuring best practice sedimentation and pollution control measures
- Using indigenous landscaping of local provenance
- Development of a Significant Species Conservation Management Plan (CMP)
- Development of a Construction Environmental Management Plan (CEMP)

**Other information/comments?** (eg. accuracy of information)

**13. Water environments**

<p><b>Will the project require significant volumes of fresh water (eg. &gt; 1 GI/yr)?</b></p> <p><input type="checkbox"/> NYD <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If yes, indicate approximate volume and likely source.</p> <p>Surface run-off will be collected in water storage tanks for use around the site.</p>
<p><b>Will the project discharge waste water or runoff to water environments?</b></p> <p><input type="checkbox"/> NYD <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If yes, specify types of discharges and which environments.</p> <p>The work plan will require the provision of settling ponds and sediment retention systems for</p>

treatment of waste water and diversion of water from the site.
<p><b>Are any waterways, wetlands, estuaries or marine environments likely to be affected?</b>  <input checked="" type="checkbox"/> NYD <input type="checkbox"/> No <input type="checkbox"/> Yes If yes, specify which water environments, answer the following questions and attach any relevant details.</p> <p>No impact on estuaries or marine environments. Extraction will involve the progressive removal of onsite farm dams and ephemeral drainage lines. A large wetland is located immediately south of the proposed quarry site. Potential impacts on this wetland are yet to be determined.</p>
<p><b>Are any of these water environments likely to support threatened or migratory species?</b>  <input checked="" type="checkbox"/> NYD <input type="checkbox"/> No <input type="checkbox"/> Yes If yes, specify which water environments.</p> <p>No threatened species have been found on the proposed quarry site.</p> <p>Two fauna species listed under the EPBC Act (Dwarf Galaxias, Australasian Bittern) have been recorded to the south of the proposed quarry site (Attachment C, Figure 2b). Additional targeted species surveys are being undertaken.</p>
<p><b>Are any potentially affected wetlands listed under the Ramsar Convention or in 'A Directory of Important Wetlands in Australia'?</b>  <input type="checkbox"/> NYD <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If yes, please specify.</p>
<p><b>Could the project affect streamflows?</b>  <input checked="" type="checkbox"/> NYD <input type="checkbox"/> No <input type="checkbox"/> Yes If yes, briefly describe implications for streamflows.</p> <p>The hydrological report (Attachment D) notes the proposed quarry will intercept groundwater and potentially impact on streambed infiltration. The hydrological report recommends monitoring of streamflow over the summer months to determine whether local streams are intermittent (flowing only due to surface water) or permanent (fed by groundwater) (Attachment D, p.73).</p>
<p><b>Could regional groundwater resources be affected by the project?</b>  <input checked="" type="checkbox"/> NYD <input type="checkbox"/> No <input type="checkbox"/> Yes If yes, describe in what way.</p> <p>The proposed quarry site is not located within a groundwater management area.</p> <p>The proposed granite quarry will extend up to 100 metres below the water table. Groundwater will drain into the pit by gravity drainage. This dewatering is to occur it is likely to be restricted to four bores located immediately north of the proposed quarry site.</p> <p>It is considered that any impact on regional groundwater due to the proposed quarry would be minor. (Attachment D, p.72). However, the hydrogeological report recommends the establishment of on-site and off-site monitoring bores to provide for more accurate groundwater mapping and assessment.</p>
<p><b>Could environmental values (beneficial uses) of water environments be affected?</b>  <input checked="" type="checkbox"/> NYD <input type="checkbox"/> No <input type="checkbox"/> Yes If yes, identify waterways/water bodies and beneficial uses (as recognised by State Environment Protection Policies)</p> <p>As outlined above the impact to ground and surface water uses is likely to be minimal. However additional surface water and ground water monitoring is recommended by the hydrological report.</p>
<p><b>Could aquatic, estuarine or marine ecosystems be affected by the project?</b>  <input checked="" type="checkbox"/> NYD <input type="checkbox"/> No <input type="checkbox"/> Yes If yes, describe in what way.</p> <p>No impact to marine or estuarine ecosystems.</p> <p>It is not yet determined whether the proposal will affect local freshwater aquatic ecosystems. Additional fauna studies have been recommended to occur in the dam to the south of the proposed quarry site. Additional surface water and ground water monitoring has also been recommended.</p>

<p><b>Is there a potential for extensive or major effects on the health or biodiversity of aquatic, estuarine or marine ecosystems over the long-term?</b>  <input checked="" type="checkbox"/> NYD <input type="checkbox"/> No <input type="checkbox"/> Yes If yes, please describe. Comment on likelihood of effects and associated uncertainties, if practicable.</p>
<p><b>Is mitigation of potential effects on water environments proposed?</b>  <input type="checkbox"/> NYD <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes If yes, please briefly describe.</p> <p>Sediment ponds are proposed and will be required by the work plan. Additional surface water and ground water monitoring has also been recommended.</p>
<p><b>Other information/comments?</b> (eg. accuracy of information)</p>

#### 14. Landscape and soils

##### Landscape

<p><b>Has a preliminary landscape assessment been prepared?</b>  <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If yes, please attach.</p>
<p><b>Is the project to be located either within or near an area that is:</b></p> <ul style="list-style-type: none"> <li> <p><b>Subject to a Landscape Significance Overlay or Environmental Significance Overlay?</b>  <input type="checkbox"/> NYD <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes If yes, provide plan showing footprint relative to overlay.</p> <p>Site is covered by an Environmental Significance Overlay 1 under the Cardinia Planning Scheme. See Attachment B planning context.</p> </li> <li> <p><b>Identified as of regional or State significance in a reputable study of landscape values?</b>  <input type="checkbox"/> NYD <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If yes, please specify.</p> </li> <li> <p><b>Within or adjoining land reserved under the <i>National Parks Act 1975</i>?</b>  <input type="checkbox"/> NYD <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If yes, please specify.</p> <p>While not on land reserved under the <i>National Parks Act 1975</i>, The Mount Cannibal Flora and Fauna Reserve is located (approximately 400m from the two closest points) to the west of the subject land. The reserve contains self-guided walks and lookouts to the north and south. The reserve consists of remnant native vegetation.</p> </li> <li> <p><b>Within or adjoining other public land used for conservation or recreational purposes?</b>  <input type="checkbox"/> NYD <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If yes, please specify.</p> <p>The proposed quarry is to be located on private land owned by Hanson. Land used for conservation or recreational purposes in the vicinity of the proposed quarry site is the Mount Cannibal Flora and Fauna Reserve. While owned by Hanson, the Tonimbuk Equestrian Centre is occasionally used for recreational purposes.</p> </li> </ul>
<p><b>Is any clearing vegetation or alteration of landforms likely to affect landscape values?</b>  <input type="checkbox"/> NYD <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes If yes, please briefly describe.</p> <p>Vegetation will be removed to extract stone. Stone extraction will alter the landform within the site.</p>
<p><b>Is there a potential for effects on landscape values of regional or State importance?</b>  <input checked="" type="checkbox"/> NYD <input type="checkbox"/> No <input type="checkbox"/> Yes Please briefly explain response.</p> <p>It should be noted that the site is not within an area identified as being of regional or State importance. The proposed quarry site and area are covered by the Environment Significance Overlay 1 – Northern Hills. This overlay notes the following:</p>

- *The hills to the northern part of the municipality (generally to the north of the Princes Highway) is an area with significant landscape and environmental values. The area is characterised by a geology of Devonian Granitic and Sulrian Sediment origin, moderate to steep slopes, and areas of remnant vegetation. These characteristics contribute to environmental values including landscape quality, water quality, and habitat of botanical and zoological significance.*

The Mount Cannibal Flora a Fauna reserve has two major lookouts from the highpoint. One of the lookouts is to the north (slightly north west) overlooking the Bunyip State Forest and the other is to the south (slightly south east) overlooking the bays. Direct views from this reserve to the quarry site are yet to be determined.

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

NYD  No  Yes If yes, please briefly describe.

In addition to the natural topography that mitigates existing views towards quarry site, the following landscape mitigation measures are proposed (Attachment E):

- maintain and enhance vegetation within the 100m boundary setback;
- progressive rehabilitation of extracted areas;
- structured siting of new vegetation along the northern and north western site boundary; and
- ensuring early stages of the quarry extract up the central gully to limit direct views into the quarry.

**Other information/comments?** (eg. accuracy of information)

**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 site is not covered by an Erosion Management Overlay.

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

NYD  No  Yes If yes, please briefly describe.

No geotechnical hazards have been identified.

**Other information/comments?** (eg. accuracy of information)

**15. Social environments**

**Is the project likely to generate significant volumes of road traffic, during construction or operation?**

NYD  No  Yes If yes, provide estimate of traffic volume(s) if practicable.

There will be an increase in traffic. The preliminary traffic assessment estimates that the quarry will generate approximately 530 vehicle movements per day (60 movements for staff, 422 for haulage and 48 for services) (Attachment K p. 12). These figures should be considered as a worst-case scenario. Refer to Section 3.3.

However, the proposed quarry provides a direct route from the site to the Princes Freeway. The acquisition of 195 Bunyip-Tonimbuk Road significantly reduced the potential impact on local roads (such as Sanders Road) and residents.

**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?**

NYD  No  Yes If yes, briefly describe the nature of the changes in amenity conditions and the possible areas affected.

The location and number of dwellings at various distances from the proposed quarry is yet to be determined. However, the closest dwellings to the proposed quarry include the:

- five dwellings located on Sanders Road near the north eastern corner of the proposed quarry site;
- dwelling on Sanders Road opposite Wallaby Court; and
- eight dwellings to the west along Wallaby Court and Wollomdilly Road.

If not mitigated, dwellings in the vicinity of the quarry could be impacted by dust and noise emissions.

- Dust emissions – Dust emissions occur largely onsite as a result of extraction and transfer of material.
- Noise emissions - potential for noise to affect properties along Bunyip-Tonimbuk Road and Sanders Road. These include,
  - Airblast - Potential for air blast from rock blasting to affect properties within the immediate area.
  - Ground vibration – From blasting and vehicular movements.

Further from the proposed quarry site, approximately six dwellings have access ways to the Bunyip-Tonimbuk Road (the preferred haulage road to the Princes Freeway). Dwellings are also located on Michell Road, McConnell Road and Butler Road. These roads intersect with the Bunyip-Tonimbuk Road. Dwellings in these areas could be subject to an increase in traffic resulting from vehicle movements to and from the quarry. If not mitigated the increase in vehicle movement may also result in noise, vibration, dust and road damage.

There are likely to be some views into the project site that will be impacted by the quarry. The impact on views to the site from the Mount Cannibal Flora and Fauna Reserve are yet to be determined. Dwellings to the south of the quarry site fronting Michell Road may have views from the rear to the proposed quarry site which could also be impacted.

**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?**

NYD  No  Yes If yes, briefly describe the hazards and possible implications.

**Is there a potential for displacement of residences or severance of residential access to community resources due to the proposed development?**

NYD  No  Yes If yes, briefly describe potential effects.

**Are non-residential land use activities likely to be displaced as a result of the project?**

NYD  No  Yes If yes, briefly describe the likely effects.

**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?**

NYD  No  Yes If yes, briefly describe the potential effects.

The impact on views to the site from the Mount Cannibal Flora and Fauna Reserve is yet to be determined. The Tonimbuk Equestrian Centre has been identified as a key community asset. The centre is located on land owned by Hanson to the east of the proposed quarry site and is occasionally used for recreational purposes. Community use of this facility is expected to be continued.

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



NYD  No  Yes If yes, please briefly describe.

Precise mitigation measures associated with the development and operation of the quarry are yet to be determined. However, generic options to mitigate against social impacts include:

- Stone extraction will alter the landscape to some degree. Mitigated through maintaining the generous boundary setback, staged rehabilitation and final rehabilitation.
- Dust emissions mitigated through the requirements of a work plan. For example, measures may include: processing plant (location, enclosure, water sprays), vegetation cover, water truck on roads.
- Noise emissions mitigated through the requirements of the work plan. For example, measures may include: location of processing plant within the quarry, noise screening / bunding of processing plant, choice of processing plant, use of low frequency reversing beepers on vehicles, hours of operation, blasting frequency and timing.
- Air blast mitigated through the requirements of the work plan. For example, measures may include: community advice, blasting frequency and timing.
- Ground vibration mitigated through the requirements of the work plan. For example, measures may include: community advice, blasting frequency and timing.
- Road damage mitigated through use of sealed roads only, hours of operation, identification of appropriate haulage routes and a Traffic Management Plan.

**Other information/comments?** (eg. accuracy of information)

### Cultural heritage

**Have relevant Indigenous organisations been consulted on the occurrence of Aboriginal cultural heritage within the project area?**

- No If no, list any organisations that it is proposed to consult.  
 Yes If yes, list the organisations so far consulted.

The proposed activity involves the removal of sand and stone to a depth of up to 234m. With the exception of any land within the 100m buffer zone around the quarry, the entire land surface will be impacted by the activity at some point. Any Aboriginal cultural heritage within the Activity Area that is not within the boundary setback will be destroyed by the quarry. There is no opportunity for retention of archaeological sites which are outside the boundary setback and within the extraction area (Attachment F, p.18).

The proposed quarry will impact on Aboriginal cultural heritage progressively and over a long period of time. The impacts on any Aboriginal cultural heritage in further stages of the quarry may not occur for many years and, at a later date, may also be subject to a different statutory regime.

The area would have most likely been a route of movement for Bunurong/Woiworung traditional owners travelling between the alluvial plains east, north and south of the activity area and the ranges surrounding Cannibal Hill to the west. Archaeological sites identified are most likely to be remains associated with short-term or 'stopover' campsites. Most archaeological sites within the activity area are likely to have undergone some degree of disturbance due to soil erosion and land clearance.

The likelihood of impact is high. The sites are of cultural value and some scientific and archaeological value.

Consultation regarding the project was conducted with local Aboriginal communities, being:

- Wurundjeri Tribe Land Compensation and Cultural Heritage Council Inc;
- Bunurong Land Council Aboriginal Corporation;

<ul style="list-style-type: none"> <li>• Boon Wurrung Foundation;</li> <li>• Wandoon Estate; and</li> <li>• Wurundjeri and Bunurong Land Council.</li> </ul> <p>Aboriginal Affairs Victoria has also been consulted.</p> <p>Note: There are no Registered Aboriginal Parties (RAP's) appointed for the region in which the activity area is located.</p>
<p><b>What investigations of cultural heritage in the project area have been done?</b></p> <p>The standard assessment was carried out by David Rhodes and Kathleen Hislop (Heritage Insight Pty Ltd), Stephen Compton (Bunurong Land Council Aboriginal Corporation), Jamie Thomas (Boon Wurrung Foundation) and Susan Pfeffer and Ronald Terrick (Wurundjeri and Bunurong Land Council) between 10-11/2/2009. The assessment was field survey which involved desktop, standard and complex assessments. A full copy of this report is attached (Attachment F).</p>
<p><b>Is any Aboriginal cultural heritage known from the project area?</b></p> <p><input type="checkbox"/> NYD <input type="checkbox"/> No <input checked="" 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>A total of five Aboriginal archaeological sites were located during the field survey. All of these sites were isolated occurrences of stone artefacts and all were the product of secondary deposition. That is, the artefacts had eroded out of the soil profile from a higher point on a hillslope and been moved into their present position either as a result of soil erosion/water movement or possibly vehicle movement in some cases.</p>
<p><b>Are there any cultural heritage places listed on the Heritage Register or the Archaeological Inventory under the <i>Heritage Act 1995</i> within the project area?</b></p> <p><input type="checkbox"/> NYD <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If yes, please list.</p> <p><b>Is mitigation of potential cultural heritage effects proposed?</b></p> <p><input type="checkbox"/> NYD <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes If yes, please briefly describe.</p> <p>The draft CHMP (Attachment F) has recommended the following actions to apply across sites identified in the study. Where sites have been determined to be of value archaeological salvage will occur to:</p> <ul style="list-style-type: none"> <li>• obtain large sample of the stone artefacts present at the quarry site and examine evidence and hypothesis related to their origin and depositions;</li> <li>• provide a permanent historical record of the materials left behind in the area by the activities of the Aboriginal peoples;</li> <li>• provide information on the archaeological site formation processes;</li> <li>• obtain radiometric (radiocarbon) dating; and</li> <li>• develop options for providing interpretation of the archaeology of the area and the sites removed in the operation of the quarry.</li> </ul>
<p><b>Other information/comments?</b> (eg. accuracy of information)</p>

**16. Energy, wastes & greenhouse gas emissions**

<p><b>What are the main sources of energy that the project facility would consume/generate?</b></p> <p><input checked="" type="checkbox"/> Electricity network. If possible, estimate power requirement/output</p> <p><input type="checkbox"/> Natural gas network. If possible, estimate gas requirement/output .....</p>
--

- Generated on-site. If possible, estimate power capacity/output .....
- Other. Please describe.
- Please add any relevant additional information.

**Electricity Consumption** approximately 2 – 3 GWh per annum required from mains.

**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.

Predominant waste: waste oil, general waste. Waste is stored appropriately until it is collected by contractor for correct disposal.

**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.

Estimated 4000 to 5000 tonnes CO<sub>2</sub> equivalent per annum.

## 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
- Design: Please describe briefly
- Environmental management: Please describe briefly.
- Other: Please describe briefly.

Potentially adverse environmental effects will be mitigated through the development of a Work Plan under and a subsequent Work Authority under the *Mineral Resources (Sustainable Development) Act 1990*.

The work plan requires extensive technical detail about operation and design of the quarry to be provided, along with a comprehensive community engagement plan. In addition, in developing the work plan, the proponent is required to consult with all agencies with an interest in the site (these agencies include those identified through the planning scheme).

The removal of native vegetation, noise, dust, water quality, site drainage and the rehabilitation of the site are all managed through the work plan process. The work plan is endorsed by Earth Resources Unit of DEDJTR. Residual issues, such as traffic are preferably dealt with as part of the planning assessment. The work plan is finalised post planning assessment and approved before stone extraction can commence.

## 19. Other activities

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

No  No  Yes If yes, briefly describe.

Other stone quarries are operating in the general area.

## 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.

- Future targeted fauna assessments are proposed.
- Additional surface water and ground water monitoring have been recommended.
- Additional investigations, hydrological, flora and fauna and aboriginal heritage will be carried out to reflect the location of the processing plant and revised site access track.

### 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.

Significant consultation has already occurred for the project including;

<b>Consultations</b>	
<b>Who and how</b>	<b>When</b>
<b>Community Stakeholders</b>	
Mt Cannibal Preservation Society	24 June 2015
26 interviews conducted with local community. Using mixed methods of questionnaire and unstructured informal interviews.	6 <sup>th</sup> October – 12 <sup>th</sup> November 2008
<b>Indigenous Stakeholders (see Attachment F)</b>	
Wurundjeri Tribe Land Compensation and Cultural Heritage Council Inc. Formal meeting to discuss proposal further formal meeting to discuss outcomes of cultural heritage survey.	2 <sup>nd</sup> November 2008 and 26 <sup>th</sup> February 2010
Bunurong Land Council Aboriginal Corporation. Meeting and site walkover and further formal meeting to discuss outcomes of cultural heritage survey.	10 <sup>th</sup> October 2008 and 26 <sup>th</sup> February 2010
Boon Wurrung Foundation. Meeting and site walkover.	10th October 2008
Wandoon Estate. Meeting and site walkover.	10th October 2008
<b>Government and Agency Stakeholders:</b>	
Department of Economic Development Jobs Transport and Resources (DEDJTR) (Earth Resources Regulation) – Mines Inspection. Formal meeting to discuss proposal.	2 <sup>nd</sup> June 2015

DEDJTR Minerals Development Victoria (ERR). Formal meeting to discuss proposal.	5 <sup>th</sup> June 2015
Department of Environment, Land Water and Planning (DELWP). Formal meeting to discuss proposal.	9 <sup>th</sup> July 2015
DEDJTR Invest Assist. Formal meeting to discuss proposal.	4 <sup>th</sup> June 2015
Aboriginal Affairs Victoria. Informal meeting to discuss proposal and cultural heritage survey.	Early 2010
Cardinia Shire Council. Formal meeting to discuss proposal.	18 <sup>th</sup> June 2015
<p><b>Has a program for future consultation been developed?</b>  <input checked="" type="checkbox"/> NYD   <input type="checkbox"/> No   <input type="checkbox"/> Yes   If yes, briefly describe.</p> <p>A detailed engagement strategy will be prepared for the proposed quarry.</p> <p>The engagement strategy will align with the preparation of a draft work plan and the (yet to be determined) planning approval pathway, which is to be confirmed for the project.</p>	

**Authorised person for proponent:**

I, Daniel Fyfe, Divisional Landfill & Development Manager, Hanson Construction Materials, confirm that the information contained in this form is, to my knowledge, true and not misleading.

Signature



Date

29/9/2015

**Person who prepared this referral:**

I, Phillip Burn, Senior Consultant – Environment and Planning, Jacobs, confirm that the information contained in this form is, to my knowledge, true and not misleading.

Signature



Date

29/9/2015