

Holcim (Australia) Pty Ltd

EES Referral Form for Leongatha Quarry Extension Project

Volume 1 – Main Text

April 2011



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 Planning and Community Development (DPCD) 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 DPCD 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
PO Box 500
EAST MELBOURNE VIC 3002**

Couriers

**Minister for Planning
Level 17, 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@dpcd.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

Name of Proponent:	Holcim Australia Pty Ltd (Holcim)
Authorised person for proponent:	Peter Lawlor
Position:	Planning and Approvals Manager – Victoria/South Australia
Postal address:	35 Cotham Road Kew, Victoria 3101
Email address:	peter.lawlor@holcim.com.au
Phone number:	03-9286 2515
Facsimile number:	03-9286 2645
Person who prepared Referral:	Tim Crosdale
Position:	Associate
Organisation:	Umwelt (Australia) Pty Ltd
Postal address:	2/20 The Boulevardde Toronto NSW 2283
Email address:	tcrosdale@umwelt.com.au
Phone number:	02-4950 5322
Facsimile number:	02-4950 5737
Available industry & environmental expertise: (areas of 'in-house' expertise & consultancy firms engaged for Project)	<p>Holcim Australia – Geological Support and Project Design Umwelt Australia – DPI Work Plan, Project Management, Visual Assessment Golder Associates – Geotechnical Assessment GHD – Air Quality Assessment Heggies Australia – Noise and Blasting Assessment and Greenhouse Gas Assessment Aquaterra – Water Resources Assessment Ecology Australia – Flora, Fauna and Net Gain Assessment Environmental Resources Management – Cultural Heritage Management Plan, Historic Archaeological Assessment Coakes Consulting – Socio-Economic Assessment, Community Engagement Plan Cardno Grogan Richards – Traffic Engineering Assessment</p>

2. Project – brief outline

Project title:	Leongatha Quarry Extension Project
Project location: (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>Leongatha Quarry operates under the approved Work Authority 167. Holcim is seeking a Work Authority Variation to extend the existing Work Authority boundary south-east to encompass the proposed Work Authority boundary which includes the existing Work Authority area, as shown on Attachments 1 and 2.</p> <p>The Leongatha Quarry Extension Project (the Project) is located approximately seven kilometres south-west of Leongatha in the South Gippsland region of Victoria (refer to Attachment 1). The proposed Work Authority area is located on the Leongatha Plains, which are characterised by flat to undulating terrain, with elevations ranging from more than 80m AHD around the basin margin to</p>

less than 10mAHD at the southern edge of the plains. The proposed Work Authority area is located on a hill formed around an outcrop of volcanic material and is generally elevated in relation to the surrounding terrain at a height of approximately 50mAHD (refer to **Attachment 2**). The AMG coordinates of the proposed Work Authority area are indicated on **Attachment 2**. The closest townships to the proposed Work Authority area are Leongatha and Koonwarra, approximately seven and four kilometres from the proposed Work Authority area respectively (refer to **Attachment 1**).

The Project is located in the catchment of the Tarwin River West Branch (refer to **Attachment 2**). The confluence of the Tarwin River West Branch and Tarwin River East Branch is located 10 kilometres south-south east of Leongatha near Meeniyan. Gwyther creek is a minor tributary of the Tarwin River West Branch. The creek has northern and southern branches which converge 1 kilometre to the south-east of the proposed Work Authority Area and then flow easterly 3 kilometres at which point it flows into the Tarwin River West Branch. The proposed Work Authority area is located in the catchment of the northern branch of Gwyther creek, which has a catchment area of 9.7 square kilometres. A minor creek that flows past the eastern boundary of the proposed Work Authority area has a catchment area of 1.1 square kilometres. The Gwyther Creek catchment is heavily modified comprising largely cleared farmland, farm dams and drains.

Short Project description (few sentences):

It is estimated that the existing Leongatha Quarry will be depleted of rock by around Quarter 2 2012. An exploration program undertaken in 2007 confirmed the existence of a significant basalt resource with a surface footprint of approximately 16 hectares, located approximately 300 metres to the south-east of the existing quarry area. To allow for the continuation of supply to local and regional markets of high quality construction materials and continuation of employment, Holcim is seeking approval to quarry the additional resource.

Holcim proposes to extend its current operations at the Leongatha Quarry, by relocating quarrying operations to an additional pit approximately 300 metres south-east of the existing quarry (refer to **Attachments 3 and 4**). It is proposed to increase production from an initial 300,000 tonnes per annum up to approximately 500,000 tonnes per annum. The Project is a proposed extension to an existing operation and as such current processing infrastructure would be upgraded and continue to be utilised as part of ongoing operations.

3. Project description

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

The objectives of the Project are to:

- provide a long-term secure supply of construction materials to the local and regional markets, by replacing supply from the existing quarry once the existing approved resource is exhausted;
- develop the Leongatha resource to maximise resource recovery and yield whilst maintaining economic viability;
- conduct operations in an environmentally responsible manner by understanding and effectively managing environmental impacts;
- maintain an ongoing relationship with the local community through maintenance of effective communication channels and ongoing involvement in the form of employment; and
- contribute to the local, regional and State economies through capital expenditure, employment and economic supply of construction materials.

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

Holcim currently operates the existing Leongatha Quarry at Leongatha South, approximately 7 kilometres south west of Leongatha. The existing quarry has been operating since the 1950s, during which time the quarry has produced over four million tonnes of high grade construction material for local and regional markets. The quarry has a reputation for the supply of consistently high grade products that have been used in a number of large scale public and private infrastructure Projects.

The Leongatha Quarry is the only hard rock quarry operated by Holcim in the general locality; the nearest Holcim owned hard rock quarry is Jeeralang approximately 82 kilometres to the north-east. The existing quarry pit is expected to reach the end of its economic life by Quarter 2 2012. The Project will maintain the supply of high grade construction materials for a range of infrastructure Projects including those undertaken by South Gippsland Shire Council and Vic Roads, and maintain employment for the local workforce.

The location of the Project is considered appropriate as it would progress into an adjacent area of pasture that has previously been cleared and utilised for agricultural activities, and as a result presents few environmental constraints. The extension of the existing quarry would also allow for improved environmental performance of the existing onsite infrastructure.

Holcim has completed extensive environmental studies to identify the potential impacts of the Project and appropriate mitigation measures have been incorporated into Project design to avoid, minimise and manage any identified potential environmental impacts. In addition, Holcim has undertaken an extensive consultation program, with a broad range of community and government stakeholders. The key community issues have been addressed through Project design and ongoing management strategies for the Project.

The Project will allow for the ongoing supply of construction and road building materials to local and regional markets for the next 40 years, providing a valuable and necessary resource to the local economy. The Project has been designed with consideration to environmental constraints and potential impacts of the Project have been minimised through appropriate site selection, quarry design, buffer distances, process plant design and appropriate control measures. The Project will provide significant economic benefit to the local area and region through employment, capital expenditure and ongoing operational expenditure.

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

The main components of the Project are shown on **Attachment 4** and will include the construction of the new quarry pit and associated haul road, the construction of new processing infrastructure and the relocation and upgrade of some existing processing infrastructure.

The proposed Work Authority area is approximately 67 hectares with the proven resource covering an area of approximately 16 hectares, which is indicated on **Attachment 3** as the Proposed Quarrying Area.

Major components of the Project are summarised below:

- reserve Volume Estimate: 20 million tonnes;
- production rate: up to 500,000 tonnes per annum;
- number of employees: 12-15 full time positions (up to 15 construction jobs);
- processing infrastructure: fixed primary, secondary, tertiary and quaternary processing plant, pug mill and pre-coat plant;
- quarry methods: blasting / loader and truck, up to two blasts per month;

- product transport: road haulage trucks with an average 70-80 trucks per day;
- stockpile areas: product will be conveyed from crushers and screens to overhead truck load out bins or product stockpiles via a series of conveyors and radial stackers;
- a haul road will be constructed between the new pit and the processing plant. This haul road would result in a disturbance area of approximately 4.3 hectares (refer to **Attachment 4**); and
- an additional water storage dam, approximately 3,500 cubic metres will be constructed within the proposed Work Authority area immediately south of the proposed haul road (refer to **Attachment 4**). This water storage dam would be a component of the onsite closed loop water management system.

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

The current ancillary facilities in the existing Work Authority area including administration buildings, amenities, weighbridge, and laboratory will remain in their current location, as part of ongoing operations (refer to **Attachment 4**).

The existing mains power is supplied at high voltage and is available for crushing and other ancillary services. The current substation would be upgraded in the same general locality of the existing substation (refer to **Attachment 4**). Upgrade works would be completed by the local service provider.

Substantial vegetation planting, along with the establishment of bunding around the quarrying area and haul road would be undertaken to facilitate visual screening and reduce potential noise and visual impacts of the Project. Screening would also be undertaken on overburden bunding at the top of the pit (refer to **Attachment 4**).

Access over the life of the Project will be maintained via Quarry Road, the existing access road off Whitelaw's Track (refer to **Attachment 4**).

Onsite closed loop water management system as presented on **Attachment 4**.

Key construction activities:

As the Project is an extension to the existing Leongatha Quarry, limited construction works will be required prior to the quarry extension becoming operational. The construction phase is expected to last approximately 18 to 36 months and will include the following key activities:

- replacement of the existing approved mobile processing plant with fixed, enclosed processing plant, including secondary, tertiary and quaternary crushers and screens, conveyors and stackers;
- preparation of stockpiling areas;
- relocation of the pre-coat plant and workshop;
- relocation and upgrading of onsite services;
- construction of a haul road linking the existing processing area to the new quarry pit;
- onsite establishment works within the proposed Work Authority area, including clearing and stockpiling of topsoil and removal of overburden;
- preparation of bunding for Stage 1 quarry operations; and
- installation of fencing around the proposed Work Authority area.

During the construction phase, quarrying within the existing pit will continue, until the remaining resources are exhausted.

Key operational activities:

The primary operational activity will be the recovery and processing of basalt material from the identified proposed quarrying area. It is expected that production will gradually ramp up to 500,000 tonnes per annum from existing production rates of approximately 300,000 tonnes per annum based on demand. At a production rate of 500,000 tonnes per annum the current stage plans provide for approximately 40 years of quarrying within the proposed quarrying area.

The conceptual extraction sequence is divided into seven indicative stages, with extraction to commence on the north-western boundary of the proposed quarrying area and generally expand north and southward as the quarry deepens (refer to **Attachment 5**). The maximum quarrying area of the pit is achieved by Stage 6 with further quarry development then achieved through deepening of the pit to a level of approximately -43 mAHD.

The quarrying process used at Leongatha Quarry consists of four principal stages:

- vegetation clearing and topsoil stripping and stockpiling;
- overburden removal and placement;
- blasting, loading and haulage of primary raw feed material;
- crushing, screening and stockpiling of product; and
- transport of product offsite for sale.

Further details regarding the operational activities of the Project are provided in **Attachment 6**.

Key decommissioning activities (if applicable):

As per the *Mineral Resources (Sustainable Development) Act 1990* (MRSD Act), a rehabilitation plan has been prepared for the Project. Rehabilitation of the existing quarry is proposed to be completed by Stage 2 of the Project (refer to **Attachment 7**). Rehabilitation will be consistent with the existing approved rehabilitation plan outlined in the current Work Plan, with the exception of a new emplacement area proposed for the southern half of the pit (refer to **Attachment 8** and **Attachment 9**). The rehabilitation profile for the northern half of the pit remains unchanged from the currently approved plan. Rehabilitation activities within the proposed quarry pit will be guided by rehabilitation criteria identified for the Project; namely, to establish areas for suitable grazing purposes, including the establishment of appropriate infrastructure (farm dams and fencing) where required in consultation with the landholder, commensurate with adjacent land use, establishment of a net offset area to compensate the loss of native vegetation associated with the Project (net gain offset strategy) and to provide a safe and stable landform compatible with the intended final land use (refer to **Attachment 8**).

Decommissioning will be undertaken as a two stage process, with Stage 1 occurring at the completion of quarrying and rehabilitation with the existing pit and Stage 2 occurring upon depletion of resources within the proposed Work Authority area in accordance with the conceptual decommissioning plan (refer to **Attachment 7**).

Holcim has also identified a number of secondary closure criteria to further assist rehabilitation activities. For further details regarding the preliminary rehabilitation plan, refer to **Attachments 7, 8** and **9**. Rehabilitation will be progressive over the life of the Project, and completed in accordance with the DPI requirements.

A summary of the general decommissioning activities that will be undertaken as part of the closure and rehabilitation of the proposed Work Authority area is outlined below.

- The plant and equipment will be decommissioned, transferred or sold, either for use at another quarry or industrial operation, or for scrap metal. All surface infrastructure including

the crushing and screening plant will be removed and the areas containing this infrastructure rehabilitated (refer to **Attachment 9**). However, some infrastructure (i.e. sheds) may possibly be retained for the post-quarrying land use following consultation with the landowner.

- It is envisaged that electricity services to any remaining infrastructure will be removed prior to the commencement of building demolition works. Other services such as telecommunication and water supply will also be disconnected and removed where practical.
- The haul road will be removed and water management controls either removed or modified to assist in stabilisation of the final landform and to capture any sediment runoff from the rehabilitated areas.
- Provided that it does not pose a constraint to the proposed final land use, there may be circumstances where structures such as footings, underground water pipelines and disconnected power cables are left in situ. Such circumstances may include where it is not practical to retrieve the structures or where their removal may lead to environmental damage (e.g. erosion or loss of vegetation through clearing). In such circumstances, the location of these remaining structures will be surveyed and recorded on a plan and provided to the landowner.

Where potential contamination may have occurred as a result of activities (e.g. re-fuelling areas, workshops, etc), appropriate investigations will be undertaken to determine the presence and extent of any contamination. Where it is identified, contaminated material will be managed in accordance with relevant legislative requirements. Further investigations involving sampling will be undertaken to validate that contamination has been remediated to acceptable levels.

Is the Project an element or stage in a larger Project?

No 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).

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

No Yes If yes, please identify related proposals.

The Project would result in the extension of the existing Leongatha Quarry which has been operational since the 1950's.

Holcim holds a current approved Work Plan, Work Authority (WA 167) and Planning Permits for the existing quarry. In November 2009, a variation to the previous Work Plan was approved, allowing access to additional resources adjacent to the western wall of the existing pit and use of mobile processing plant for the remainder of the existing quarry pit life, within the existing approved WA 167 area. Holcim is now seeking to vary Work Authority 167 to incorporate the Project. The previous variations to the Work Plan for Leongatha Quarry did not require referral for an Environmental Effects Statement (EES), to DPCD. A Work Plan has been prepared to support an application to the DPI for such a variation of WA167.

4. Project alternatives

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

Holcim considered sourcing materials from alternative existing Holcim owned quarries as part of the feasibility phase of the Project, however the nearest existing Holcim owned quarries are located at Jeeralang and Pakenham are in the order of 80 kilometres from Leongatha and economically unviable. In addition, this option would have significantly greater economic and environmental costs associated with the transportation of materials over these distances.

For instance, an assessment of potential greenhouse gas (GHG) emissions associated with

sourcing product from the nearest Holcim owned quarry at Jeeralang identified that Scope 1 and Scope 3 emissions from the transportation of product to markets currently serviced by Leongatha would be 2.4 times higher than if material was quarried at the Leongatha Quarry.

The conceptual design for the Project has evolved throughout the development of the Work Plan in light of ongoing exploration and geological modelling, environmental constraints and opportunities and in consideration of stakeholder consultation outcomes.

A number of key Project design alternatives were considered during the design phase of the Project. These alternatives included processing plant location and design, location of the maximum disturbance area for the proposed quarry pit and current operating times for extraction, blasting and processing activities. The Project design has been based on extensive environmental studies and identification of community issues. The consideration of these alternatives aimed to allow for the Project to minimise potential environmental impacts while still remaining a viable operation into the future. The outcomes of the Project design alternatives are described below:

Location of the processing plant: The processing plant proposed to be installed as part of the Project will be located down slope of the current processing plant (refer to **Attachment 4**). Maintaining processing plant at the currently approved location may result in additional off site impacts, including noise and air quality. Locating the plant down slope, within the existing product stockpile area, will maximise shielding provided by the surrounding terrain. The location of processing infrastructure down slope also reduces potential noise and visual impacts during operation. Additionally, the proposed processing infrastructure would be located within an area that has been previously disturbed for approved quarrying operations further reducing surface disturbance areas within the proposed Work Authority area.

Design of processing plant: The secondary, tertiary and quaternary crushers and screens will be enclosed. It is considered that enclosing these crushers and screens will reduce potential air quality (dust) and noise impacts on surrounding residences associated with processing activities. The Project will utilise and upgrade existing processing infrastructure, resulting in the following benefits:

- limiting the disturbance footprint of the Project;
- improving the efficiency of processing and stockpiling operations; and
- improving the environmental performance and visual amenity of the existing infrastructure.

Design of the proposed quarrying area: The quarry extraction area design has been refined throughout the Project design phase (refer to **Attachment 4**). Holcim has reduced the extraction area to minimise potential environmental impacts, namely the protection of two Strzelecki Gums and minimise disturbance of identified archaeological features. An earlier design would have resulted in the removal of two Strzelecki Gums (listed as vulnerable under the EPBC Act). The extraction area was subsequently redesigned to avoid direct impact to these two trees, with Holcim committing to the management of this area over the life of the Project.

Design of the proposed Haul Road: A number of archaeological sites were identified as being present within the proposed Work Authority Area during the preparation of the Cultural Heritage Management Plan (CHMP). Based on the identification of these archaeological sites, the proposed haul road was subsequently re-designed to avoid the greatest concentration of artefacts within one of the identified archaeological sites.

Alternative of not proceeding:

If the Project was not to proceed this would result in the current markets (SGSC, Vic Roads and others) to source material from alternative quarries within the region, which is likely to result in increased prices and impact on supply. This would also have the potential to result in the need for a quarry development to be undertaken at an alternate site to supply markets currently serviced by Leongatha Quarry. A quarry development at a green fields site would likely result in greater environmental and social impacts than the Project as it has been designed to utilise the existing processing area that has been subject to disturbance from previously approved quarrying

activities. Thus the Project would allow for the ongoing supply of high grade construction material to local markets.

Further, it is considered that the extension of an existing quarry is an efficient use of existing resources as some of the current infrastructure will be used for the Project and the infrastructure proposed to be installed can be done so within an already disturbed area, further reducing environmental impacts. In addition, a broad range of effective controls have been incorporated into the proposed design, which has further mitigated potential environmental and community impacts. The Project would also allow for the efficient extraction of a known high quality resource resulting in a continued supply to the local markets.

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

The Project design has been based on extensive environmental studies and identification of community issues.

Specialist studies have informed the design of the Project including; Air Quality, Noise and Blasting, Water Resources, Traffic, Cultural and Historic Heritage, Socio-Economic, Greenhouse Gas, Ecology (Flora and Fauna Net Gain Assessment) and Visual Amenity. The detailed environmental studies and community consultation have indicated that through the incorporation of effective controls over the life of the Project, there will be minimal environmental and community impact associated with the Project.

Based on the detailed review of alternatives for the Project, it is considered that the Project provides for the most efficient use of resources, whilst minimising potential environmental and community impacts. Accordingly, there are no other alternatives being considered for the Project.

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:

No exclusions are proposed for the Project.

6. Project implementation

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

Holcim (Australia) Pty Limited

Implementation timeframe:

Dependent on securing all relevant approvals, the construction phase is currently planned for commencement in the first quarter of 2012. It is anticipated that the construction phase would take approximately 18-36 months. Extraction within the proposed quarrying area will commence as soon as practicable during the construction phase. During the construction phase, quarrying within the existing pit will continue, utilising the mobile processing plant.

Proposed staging (if applicable):

The Project has been designed to produce up to approximately 500,000 tonnes per annum of saleable product at full production. It is expected that production will ramp up to this level from existing production rates of approximately 300,000 tonnes per annum based on demand. At a production rate of 500,000 tonnes per annum, the current stage plans provide for approximately 40 years of quarrying within the proposed Work Authority area.

The conceptual extraction sequence for the proposed extension area is shown on **Attachment 5**.

The conceptual extraction sequence is divided into seven indicative stages, with extraction to commence on the north-western boundary of the proposed quarrying area and generally expand north and southward as the quarry deepens. The maximum disturbance area of the pit is achieved by Stage 6 with further quarry development then achieved through deepening of the pit as shown in **Attachment 5** and indicated in **Table 1** below.

Table 1 - Approximate Depths and Quarrying Area Reached for each Stage of Quarry Development

Indicative Stage	Depth (mAHD)	Quarrying Area (ha)
1	30	5.79
2	15	10.34
3	0	12.55
4	0	12.55
5	0	12.55
6	0	15.64
7	-43	15.58

The amount of material extracted from the quarry during each year will vary depending on the ratio of overburden to primary raw feed (the rock which is delivered into the crushing and screening plant), the extent of weathered rock and market demand.

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.
If yes, please describe the preferred site in the next items (if practicable).

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 north-western portion of the proposed Work Authority area is leased to Holcim for the existing quarry and processing activities, with the remainder of the proposed Work Authority area currently used for grazing (refer to **Attachment 3**). Land adjoining the proposed Work Authority area is used for rural or rural residential purposes, with the primary land use being grazing.

A number of residential dwellings are located in the vicinity of the proposed Work Authority area along Soldiers Road, Whitelaw's Track and the Bass Highway. The closest privately owned residence is located approximately 360 metres south of the proposed Work Authority area, on Whitelaw's Track (refer to **Attachment 3**). Holcim have undertaken extensive consultation with surrounding landholders. As part of this consultation, Holcim have purchased, or reached agreement for the purchase of three private residences located adjacent to the proposed Work Authority Area.

The proposed Work Authority area is bound to the west by Whitelaw's Track, to the north by the existing quarry access road and the Bass Highway is located approximately 500 metres to the north of the existing proposed Work Authority area (refer to **Attachment 3**).

The proposed Work Authority area is located on the Leongatha Plains, characterised by flat to undulating terrain, with elevations ranging from more than 80mAHD around the basin margin to less than 10mAHD at the southern edge of the plains. The proposed Work Authority area is located on a hill formed around an outcrop of volcanic material and is generally elevated in relation to the surrounding terrain at a height of approximately 50mAHD (refer to **Attachment 3**).

The proposed Work Authority area lies within the catchment area of Gwyther Creek, an ephemeral water course which forms part of the Tarwin River catchment. There are no watercourses located within the proposed Work Authority area, however Gwyther Creek, is located approximately 90 metres to the south of the proposed Work Authority area (refer to **Attachment 3**).

Soils across the region are variable, depending on the nature of the underlying Tertiary deposits. Within the Gwyther Creek catchment, soils are dominated by clays on the western side of the Bass Highway. Soils to the east of the Highway appear weaker and more permeable due to the presence of weathered basalt. Soils within the proposed Work Authority area show a fairly standard weathering profile above the basalt deposit with red, pedic, clay rich soils giving way to clay bands and eventually the weathered basalt interface.

Annual average rainfall for the Leongatha area is 970 mm and is slightly spring dominant. Annual average evaporation at Pound Creek, 15kilometres south-west of the proposed Work Authority area, is approximately 990 millimetres per annum, slightly exceeding annual rainfall. Winds are dominated by westerlies and north-westerlies, with north-westerlies prevalent during winter and south to south-westerlies prevalent in summer as a result of afternoon sea breezes.

Vegetation within the proposed Work Authority area is almost wholly exotic pasture utilised for cattle grazing with some aquatic vegetation associated with farm dams and small plantations of exotic or native trees and shrubs acting as wind breaks and visual screens (refer to **Attachment 10**).

Two Strzelecki Gums (*Eucalyptus strzeleckii*), a listed threatened species, are located within the proposed Work Authority area, however, they are located outside the proposed disturbance area and will not be impacted by the Project (refer to **Attachment 11**). Two Southern Blue-Gums (*Eucalyptus globulus* ssp. *globulus*), considered rare in Victoria were recorded within the proposed Work Authority area (refer to **Attachment 11**).

No threatened fauna species were recorded within the proposed Work Authority Area.

Site area (if known): (hectares)

The area of the proposed Work Authority boundary is approximately 67 hectares located on Lot 5 of TP781226 (Volume 10693 Folio 510) and Lot 1 of TP611500 (Volume 07273 Folio 426). The maximum disturbance area is approximately 20 hectares incorporating approximately 16 hectares for the proposed quarrying area and approximately 4 hectares for the proposed haul road (refer to **Attachment 4**).

Route length (for linear infrastructure) N/A (km) **and width** N/A (m)

Current land use and development:

Extractive industry is the predominant land use within the existing Work Authority area. The north-western portion of the proposed Work Authority area is leased from the landholder to Holcim for the existing quarry and processing activities, with the remainder of the proposed Work Authority area currently used for cattle grazing.

Agriculture is the predominant land use surrounding the existing Work Authority area. The existing Work Authority area) is leased to Holcim for the existing quarry and processing activities (refer to **Attachment 2**), and the remainder of the proposed Work Authority area is currently used for cattle grazing. Land adjoining the proposed Work Authority area is used for rural or rural-residential purposes, with the primary land use being grazing. The proposed Work Authority area is bound to the west by Whitelaw's Track, to the north by the existing quarry access road with the Bass Highway located approximately 500 metres to the north of the existing Work Authority area (refer to **Attachment 2**).

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

Land adjoining the proposed Work Authority area is used for rural or rural residential purposes, with the primary land use being grazing.

A number of residential dwellings are located in the vicinity of the proposed Work Authority area along Soldiers Road, Whitelaw's Track and the Bass Highway. The closest privately owned residence is located approximately 360 metres south of the proposed Work Authority area, on Whitelaw's Track (refer to **Attachment 3**). Holcim have undertaken extensive consultation with surrounding landholders. As part of this consultation, Holcim have purchased, or reached agreement for the purchase of three private residences located adjacent to the proposed Work Authority Area.

The proposed Work Authority area is bound to the west by Whitelaw's Track, to the north by the existing quarry access road and the Bass Highway is located approximately 500 metres to the north of the existing proposed Work Authority area (refer to **Attachment 3**).

Access to the proposed Work Authority area will remain unchanged and the proposed quarrying area will be accessed off Whitelaw's Track, as per existing operations.

The closest townships to the proposed Work Authority area are Leongatha and Koonwarra, located approximately seven and four kilometres respectively from the proposed Work Authority area (refer to **Attachment 1**).

Planning context (eg. strategic planning, zoning & overlays, management plans):

The Local Planning Policy Framework (LPPF) sets out the Municipal Strategic Statement and the Local Planning Policies for a local government area and is prepared by the local council to accommodate local needs and values. The South Gippsland Planning Scheme identifies local policy positions regarding land use and development within the South Gippsland Shire Council (SGSC) and establishes matters to be considered by SGSC for the Project.

Zoning

The proposed Work Authority area is entirely zoned FZ- Farming Zone. Under the Farming Zone, a planning permit is required to use land for the extractive industry. A planning permit is also required for buildings and works where they are associated with extractive industry. Holcim will seek planning permit approval from SGSC subsequent to endorsement of the Work Plan by the Department of Primary Industries and the outcomes of this EES referral.

Overlays

The proposed Work Authority area is affected by Schedules 5 (land susceptible to erosion) and Schedule 6 (land susceptible to flooding) of the Environmental Significance Overlay under the SGSC Planning Scheme. Schedule 5 applies to the majority of the proposed Work Authority area while schedule 6 applies to the western extent of the proposed Work Authority area. **Attachment 12** details the environmental significance overlays of the proposed Work Authority area, which outlines the location and layout of the proposed buildings and works, and clearly identifies the areas mapped as susceptible to erosion (ESO5) and flooding (ESO6).

Particular Provisions of the South Gippsland Planning Scheme

Clause 52.09 Extractive Industry and Extractive Industry Interest Areas apply to the use and development of land for extractive industry and the development of land within a designated extractive industry interest area. This provision addresses issues such as permit conditions relating to cessation of use, boundary setbacks, screen planting and parking areas, and have been incorporated into Project design.

Clause 52.17 Native Vegetation aims to protect and conserve native vegetation to reduce the impact of land and water degradation and provide habitat for plants and animals. Under the provisions of this clause, a permit is not required for the removal of native vegetation for the

purpose of extractive industry if appropriate approvals are in place under the *Mineral Resources (Sustainable Development) Act 1990*. As outlined previously, Holcim are seeking approval for variation of the current Work Authority 167 from DPI.

Local government area(s):

The proposed Work Authority area is located wholly within the South Gippsland Shire LGA.

8. Existing environment

Overview of key environmental assets/sensitivities in site and vicinity

(cf.

general description of Project site/study area under section 7):

The key environmental assets/sensitivities of the proposed Work Authority area and surrounds includes:

- Native Flora Species - Two Strzelecki Gums (*Eucalyptus strzeleckii*), listed as vulnerable under the *Environment Protection and Biodiversity Conservation Act 1999*, and two Southern Blue Gums (*E. globulus* ssp. *globulus*) considered rare in Victoria, are located within the proposed Work Authority area. .
- Aboriginal Cultural Heritage - Five Aboriginal archaeological sites are located within the proposed Work Authority area, with a total of 319 artefacts within these five sites. The sites consisted primarily of low density artefact scatters and two isolated finds.
- Groundwater Resources - The groundwater profile in the region is generally a muted reflection of the topography and therefore the groundwater flow direction generally follows the surface drainage pattern. Sub regional groundwater flow around the proposed Work Authority area is generally north-west to south-east along the valley orientation. Given the proposed Work Authority area is located at a topographic high point; the main subregional groundwater flow is around the proposed Work Authority area. The movement of groundwater from the proposed Work Authority area is generally to the east and west to the surrounding Leongatha plains.
- There are a number of residential dwellings located within the general vicinity of the proposed Work Authority area (refer to **Attachment 3**). There is the potential for impacts on these residences associated with noise and blasting, air quality, visual impacts associated with the Project.
- The proposed Work Authority area is bound to the west by Whitelaw's Track, to the north by the existing quarry access road with the Bass Highway located approximately 500 metres to the north of the existing Work Authority area (refer to **Attachment 3**). The proposed increase production associated with the Project will result in additional truck movements on the existing road network

Each of the above environmental sensitivities have been comprehensively addressed through detailed assessment, Project design and appropriate mitigation measures as outlined further in the following sections.

9. Land availability and control

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

No Yes If yes, please provide details.

The current access to Leongatha Quarry is via Quarry Road, located to the north of the existing Work Authority area. Quarry Road is located on Crown Land (refer to **Attachment 3**). It is proposed that Quarry Road continue to be used as the primary access route for the proposed

quarry, in accordance with existing arrangements.

Current land tenure (provide plan, if practicable):

The proposed Work Authority area is located on private freehold land. Holcim currently lease the property on which the existing quarry is located (Lot 5 of TP781226; Volume 10693 Folio 510). The proposed quarry extension area will also incorporate the adjacent lot to the south, Lot 1 of TP611500 (Volume 07273 Folio 426). Refer to **Attachment 2**.

Intended land tenure (tenure over or access to Project land):

The land would remain private freehold land. Lease agreements have been made between Holcim and the two landholders for the Project.

Other interests in affected land (eg. easements, native title claims):

As the two properties are private freehold land native title has been extinguished. A native title search was completed for Quarry Road (a crown road) on 1 March 2010. At this time there were no relevant entries in any of the database searches by the National Native Title Tribunal.

There is a low voltage electricity easement that currently supplies to one residence. Holcim are currently in consultation with the energy supply company that is responsible for this easement to enable the management of proposed works within this easement.

10. Required approvals

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

Details of the approvals required, along with the responsible authority is provided below:

Commonwealth and State

- Work Authority approval – Department of Primary Industries
- Cultural Heritage Management Plan – Aboriginal Affairs Victoria (approval granted March 2010)
- Planning Permit – South Gippsland Shire Council

The matters listed under the EPBC Act were reviewed in relation to the Project and of these matters, the only potentially relevant trigger for assessment under the EPBC Act, specific to this proposal, is significant impact on listed threatened species or ecological communities. Two Strzelecki Gums (listed as vulnerable under the EPBC Act) are present within the Work Authority area. The initial Project design was revised to ensure that impacts to these two Strzelecki Gums would be avoided. No other threatened or migratory species listed under the EPBC Act were recorded within the Work Authority area during the detailed ecological survey program. The ecology study determined that species listed under the EPBC Act will not be significantly impacted by the Project. On this basis, it is considered that the Project would not be a controlled action under the EPBC Act. Holcim does not intend to refer the Project to the Department of Sustainability, Environment, Water, Population and Communities for consideration.

Have any applications for approval been lodged?

No Yes If yes, please provide details.

A Cultural Heritage Management Plan (CHMP) was submitted to Aboriginal Affairs Victoria (AAV) for approval in February 2010. Approval was subsequently received in March 2010. The Work Plan for the Project was submitted to the Department of Primary Industries for endorsement in November 2010. Once the Work Plan has been endorsed by the DPI, a planning permit application will be lodged with South Gippsland Shire Council (SGSC).

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

Holcim has undertaken a comprehensive agency consultation program throughout Project design and the development of the Work Plan approval process. Agencies consulted as part of the consultation program are listed in the table below.

Agency	Date	Purpose
Department of Primary Industries	6 November 2008	Introduction and overview of the proposed Project
	22 May 2009	Update on Project and progress of environmental studies
	30 October 2009	Agency Site meeting
	2009 - 2010	Ongoing discussions/updates in relation to status of the Project
	November 2010	Lodgement of the Draft Work Plan
	January – March 2011	Work Plan endorsement process
	21 April 2011	Pre-lodgement meeting/briefing.
South Gippsland Shire Council	January 2009	Introduction and overview of the proposed environmental studies. Introduction to proposed Community Consultation strategy.
	2 October 2009	Update on Project and progress of environmental studies
	30 October 2009	Agency Site meeting
Aboriginal Affairs Victoria	January – October 2009	Ongoing consultation regarding CHMP methodology
	30 October 2009	Agency Site meeting
	25 March 2010	CHMP Approval

Other agencies consulted:

Other agencies consulted as part of the Project include:

Agency	Date	Purpose
Department of Industry, Innovation and Regional Development	May 2008	Project overview and meeting
	2009 - 2010	Ongoing discussions / updates in relation to the status of the Project
Environmental Protection Authority	28 August 2009	Meeting with Environmental Strategies Unit to confirm air quality assessment methodology
	30 October 2009	Agency Site meeting
	30 October 2009	Air Quality assessment methodology
	17 Sept 2010	Outcomes of Air Quality assessment and additional monitoring
Southern Rural Water	30 October 2009	Agency Site meeting
	5 November 2009	Review of water resources assessment methodology and results
Department of Sustainability and Environment	16 October 2009	Information package providing a Project overview and progress of environmental studies

	21 February 2011	Meeting to discuss proposed offset strategy
West Gippsland Catchment Management Authority	30 October 2009	Agency Site meeting
Department of Planning and Community Development (DPCD)	21 February 2011	Present briefing and discussions relating to EES referral process
SP Ausnet	February – April 2011	Project briefing and electricity easement works approval
South Gippsland Water	30 October 2009	Agency Site meeting
Vic Roads	30 October 2009	Agency Site meeting

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):

As detailed in the Ministerial Guidelines for Assessment of Environmental Effects under the Environment Effects Act 1978 (the guidelines), the potential for a significant impact will reflect the following factors:

- significance of the environmental assets affected;
- potential magnitude, extent and duration of adverse effects; and
- potential for more extended adverse effects in space and time.

Furthermore, the guidelines identify criteria, either individual environmental effects or a combination of environmental effects that are considered to have the potential for a significant effect on the environment. Based on the extensive studies and incorporation of appropriate mitigation measures, it is considered that the Project does not meet any of the criteria identified within the guidelines and the preparation of an EES is not required for the Project.

Potential environmental constraints were identified early in the planning phase of the Project. As discussed, a number of comprehensive specialist studies have been completed for the Project to assess potential impacts associated with the Project in addition to identifying a range of mitigation measures to reduce potential impacts. Where appropriate, the specific study has been attached for the DPCD's review and consideration. Based on the specialist studies completed it is considered that the Project would not result in any significant environmental effects. The implementation of specific mitigation measures will allow for appropriate management of potential impacts associated with construction and operational activities.

Extensive community consultation was undertaken and key outcomes incorporated into the Project design. Additionally, an Environmental Management Plan has been developed and will be implemented throughout construction and operation to enable ongoing and effective environmental management for the Project. The assessment of potential impacts were completed by suitably qualified specialists (refer to Part 1 of this referral for further details). It is considered that potential uncertainty surrounding the identification of potential impacts and the effectiveness of prescribed mitigation measures has been minimised through the use of specialist consultants in their respective fields.

Further detail on specific matters is provided in the following sections.

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 site has been done? (briefly describe)

A Flora, Fauna and Net Gain Assessment was completed by Ecology Australia for the Project. The assessment included field surveys of the proposed Work Authority area, along with desktop review studies. The aim of the assessment was to document flora and fauna values, undertake a net gain assessment, identify potential threats to environmental values, provide recommendations for mitigation of predicted impacts and consider implications of proposed works in the context of local, state and federal biodiversity legislation and policy (refer to **Attachment 10**).

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

NYD Estimated area(hectares)

The proposed Work Authority area does not fulfil the criteria of 'native vegetation', as defined in the Native Vegetation Management Framework set by the Department of Natural Resources and Environment, which requires a minimum of 25 per cent cover of native species. Accordingly there will be no areas of native vegetation cleared as part of the Project. Vegetation to be cleared as part of the Project are scattered trees, that is, separated trees with no indigenous understorey.

Two Strzelecki Gums (listed as vulnerable under the EPBC Act) are present within the proposed Work Authority area. The initial Project design was amended to ensure that impacts to these two Strzelecki Gums would be avoided. Additionally, these two individuals will be managed for conservation throughout the life of the Project.

The Project will require the removal of some native species including approximately 20 hectares of derived pasture, 2 Southern Blue Gum, 1 Silver Wattle and approximately 47 Blackwood trees. The vegetation within the proposed Work Authority area is reasonably representative of the vegetation of the region, containing scattered vegetation communities that are commonly found in the highly fragmented grazing environment. Based on the detailed impact assessment undertaken as part of the ecological assessment (refer to **Attachment 10**), the impact of the Project on vegetation communities in a local or regional context is unlikely to be significant.

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

N/A approx. 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 Flora, Fauna and Net Gain Assessment identified that two pre-1750 Ecological Vegetation Classes (EVC) are modelled and mapped for the proposed Work Authority area; EVC 53 Swamp Scrub and EVC 1106 Damp Heathy Woodland/Lowland Forest mosaic. The latter was considered erroneous and should be mapped as EVC 29 Damp Forest. EVC 29 and EVC 53 are both listed as endangered in Victoria.

No dryland native vegetation persists in the proposed Work Authority area (EVC 29 or EVC 53) which supports wholly exotic pasture and therefore there are no ecological vegetation classes that would be affected.

Have potential vegetation offsets been identified as yet?

NYD Yes If yes, please briefly describe.

The net gain assessment identified the requirement for the offset of two Southern Blue Gums that will be removed as part of the Project. It is proposed that this offset would be achieved via the recruitment of 400 trees. This assessment was based on the requirements of the Victoria's Native Vegetation Framework. Holcim has identified a proposed location for the offset (refer to **Attachment 10**). It is proposed that these trees would be managed for conservation in perpetuity. The proposed offset strategy has been discussed with the DSE, and no key issues associated with the proposed offsetting approach for the Project were raised.

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

The information used to make this assessment is based on recognised survey and assessment methods by appropriately experienced and qualified specialists (refer to Part 1 of this referral form for further details). The Flora and Fauna Net Gain Assessment was undertaken in accordance with the Native Vegetation Management Framework set by the DSE.

NYD = not yet determined

Flora and fauna

What investigations of flora and fauna in the site have been done?

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

A comprehensive flora, fauna and net gain assessment was undertaken by Ecology Australia for the Project, including a detailed analysis of the potential impact of the Project on terrestrial and aquatic flora and fauna, targeted surveys for the Growling Grass Frog (*Litoria raniformis*) and the Giant Gippsland Earthworm (*Megascolides australis*) and includes a net gain assessment (refer to **Attachment 10**).

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.

Six significant flora species, listed under the EPBC Act, previously recorded or with a likelihood of occurrence within a 5 kilometre radius of the proposed Work Authority area were identified during background database searches. These included:

- River Swamp Wallaby-grass (*Amphibromus fluitans*)
- Cream Spider-orchid (*Caladenia fragrantissima* ssp. *orientalis*)
- Matted Flax-lily (*Dianella amoena*)
- Strzelecki Gum (*Eucalyptus strzelecki*)
- Maroon Leek-orchid (*Prasophyllum frenchii*)
- Dense Leek-orchid (*Prasophyllum spicatum*)

Two pre-1750 Ecological Vegetation Classes (EVCs) are modelled and mapped within the proposed Work Authority area. These are:

- EVC 53 Swamp Scrub
- EVC 1106 Damp Heathy Woodland/Lowland Forest mosaic

The Flora, Fauna and Net Gain Assessment indicated that EVC 1106 was considered erroneous and based on the site conditions and remnant indigenous vegetation it should be mapped as EVC 29 Damp Forest.

The Atlas of Victorian Wildlife (AVW) indicated that seven threatened fauna species (threatened under the FFG Act and/or classified as threatened in Victoria) have been previously recorded within 10 kilometres of the proposed Work Authority area. These species include:

- Blue-billed Duck (*Oxyura australis*)
- Swamp Skink (*Egernia coventryi*)
- Swamp Antechinus (*Antichenus minimus maritimus*)
- Koala (*Phascolarctos cinereus*)
- Glossy Ibis (*Plegadis falcinellus*)
- Brown Quail (*Coturnix ypsilophora*)
- Lace Monitor (*Varanus varius*)

Twelve species listed as threatened under the EPBC Act were identified as having the potential to occur within 10 kilometres of the proposed Work Authority area. A list of these species is presented in Appendix 5 and Appendix 7 of the Flora, Fauna and Net Gain Assessment (refer to **Attachment 10**).

Fifty one species listed under the Migratory and/or Marine overfly schedules have been previously recorded or are predicted to occur within a 10 kilometre radius of the proposed Work Authority area. Furthermore, sixteen migratory and/or marine overfly species were considered to have a moderate or higher likelihood of regular occurrence in the proposed Work Authority area due to the presence of suitable habitat. For further details of these species refer to Appendix 5 and

Appendix 7 of the Flora, Fauna and Net Gain Assessment (refer to **Attachment 10**).

Based on the extensive ecological survey undertaken, none of these species were found within the proposed Work Authority area. Ecological field surveys were carried out in accordance with all relevant guidelines, including *Victoria's Native Vegetation Management Framework*, and over representative seasons. This included targeted surveys for the Giant Gippsland Earthworm and the Growling Grass Frog. Further details on the extent of ecological survey effort is provided in **Attachment 10**.

No dryland native vegetation persists within the proposed Work Authority area (EVC 29 or EVC 53) which supports wholly exotic pasture.

No fauna species listed under the EPBC Act, the FFG Act, National Action Plan (NAP) or classified as threatened in Victoria were recorded within the proposed Work Authority area during field surveys.

Two threatened plant species, Southern Blue Gum (*Eucalyptus globulus ssp. globulus*) rare in Victoria and Strzelecki Gum (*E. strzelecki*) vulnerable under the EPBC Act were recorded within the proposed Work Authority area (refer to **Attachment 11**). The Project has been designed to avoid any potential impacts on the Strzelecki Gums and an offset package has been developed for the removal of two Southern Blue Gums. As outlined in the ecology assessment (refer to **Attachment 10**), based on the effective avoidance of impact and development of an appropriate offset package, it is unlikely to be any significant impacts on these listed species.

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.

Due to the disturbed nature of the proposed Work Authority area it is considered that no threatening processes listed under the EPBC Act or FFG Act would be exacerbated by the Project.

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.

Two Southern Blue Gums would be removed during the construction phase of the Project. To compensate for the loss of these two Southern Blue Gums, Holcim has committed to planting at least 400 trees as part of a net gain offset. To ensure the ongoing protection of the net gain offset, these plantings will occur within a designated offset area and be fenced during tree establishment to prevent stock or accidental damage (refer to **Attachment 10**). In accordance with the net gain principles, this area will be protected in perpetuity. Two Strzelecki Gums located outside the maximum disturbance area would not be impacted as part of the Project. No other threatened or migratory species listed under the EPBC Act were recorded within the proposed Work Authority area during the detailed ecological survey program.

The proposed Work Authority area contains potential habitat for the Growling Grass Frog and the Giant Gippsland Earthworm. Targeted surveys completed for both of these species determined that the likelihood of occurrence within the proposed Work Authority area is considered low.

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

NYD No Yes If yes, please briefly describe.

Impacts to the two Strzelecki Gums located within the proposed Work Authority area will be avoided. It is proposed that the two Strzelecki Gums will be fenced to avoid impact throughout the duration of the Project.

A net gain assessment was completed for the Project in accordance with the Victorian Native Vegetation

Management Framework and with appropriate offsets and management measures in place. The Project is not expected to have a significant impact on the flora and fauna of the region. As part of the net gain offset strategy, to compensate for the loss of two Southern Blue Gums, Holcim has committed to planting at least 400 trees. To ensure the ongoing protection of the net gain offset, these plantings will occur within a designated offset area and be fenced during tree establishment to prevent stock or accidental damage (refer to **Attachment 10**). In accordance with the net gain principles, this area will be protected in perpetuity. This net gain assessment details a range of measures to mitigate predicted impacts associated with the Project. Details of these measures are presented in Section 8 of the Flora, Fauna and Net Gain Assessment, (refer to **Attachment 10**).

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

The information used to determine this assessment is based on a detailed study completed by appropriately experienced and qualified specialists in accordance with all relevant guidelines (refer to Part 1 of this referral for further details).

13. Water environments

Will the Project require significant volumes of fresh water (eg. > 1 GI/yr)?

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

Holcim has made a commitment that the Project will maintain a balance between water availability, demand and disposal without having to source additional water or discharge water from the proposed Work Authority area.

In terms of water capture methods, runoff from the operational areas will be captured via diversion drains and stored onsite within the main pit dam for later reuse. The majority of site runoff within the existing and proposed quarry will be entirely contained within the site and does not pose a risk to surface water quality. There is an existing discharge that receives stormwater from the stockpile area and enters the Whitelaws Track road drainage system via a retention pond located at the corner of Whitelaws Track and Quarry Road (refer to **Attachment 4**). The existing discharge will be removed and incorporated into the water management system. To ensure there are no discharges offsite, a pump will be installed at this storage pond to pump excess water from the pond to the main pit dam.

The groundwater model predicts that most of the inflow into the quarry is from the upper weathered and semi-weathered layers. The groundwater inflow to the pit is predicted to range from approximately 2 cubic metres per day during Stage 1 to a maximum of approximately 10 cubic metres per day, or 3 ML per year, during Stage 3. Once this layer has been fully quarried out, there would be little additional water entering the quarry from the impermeable basalt itself as the quarrying depth progresses.

Will the Project discharge waste water or runoff to water environments?

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

The Project will operate a predominately closed loop water management system, (i.e. capture, store and reuse). The water assessment undertaken by Aquaterra (refer to **Attachment 13**) determined there would be no significant impacts to groundwater or surface water from the Project. The main sump within the existing quarry will continue to be used for water storage until it is handed over to the landowner following completion of rehabilitation in Stage 2. It will however, continue to be available for the storage of excess runoff during large storm events. If this is not possible an additional 3,500 cubic metres of storage and 300 KL per day of pumping capacity will be required to capture and recycle stormwater during a 1 in 10 year event.

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.

<p>Are any of these water environments likely to support threatened or migratory species? <input type="checkbox"/> NYD <input checked="" type="checkbox"/> No Yes If yes, specify which water environments.</p> <p>The Flora, Fauna and Net Gain Assessment considered that existing farm dams located within the proposed Work Authority area were potential habitat for the Growling Grass Frog, listed as vulnerable under the EPBC Act. Targeted surveys completed for the Growling Grass Frog did not identify the species within the proposed Work Authority area and concluded that the likelihood of occurrence was considered low (refer to Attachment 10).</p>
<p>Are any potentially affected wetlands listed under the Ramsar Convention or in 'A Directory of Important Wetlands in Australia'? <input type="checkbox"/> NYD <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes If yes, please specify.</p> <p>There are no wetlands in or near the proposed Work Authority area. The ecology assessment undertaken by Ecology Australia indicated that the Project area has been identified by the EPBC Preferred Matters Search Tool as being in the catchment of three Ramsar Wetlands:</p> <ul style="list-style-type: none"> • Corner Inlet (approx 65 kilometres from the proposed Work Authority area) • Westport Bay (approx 75 kilometres from the proposed Work Authority area) • Gippsland Lakes (approx 177 kilometres from the proposed Work Authority area) <p>The study determined that the proposed works of the Project are unlikely to impact on any of these Ramsar Wetlands (refer to Attachment 10).</p>
<p>Could the Project affect streamflows? <input type="checkbox"/> NYD <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes If yes, briefly describe implications for streamflows.</p> <p>A Water Resources Assessment completed for the Project determined that surface water impacts would be limited to a reduction of the effective catchment area (refer to Attachment 13). This reduction of effective catchment area was predicted to slightly reduce rainfall/runoff entering Gwyther Creek and slightly reduce peak flow rates. Based on the final design of the pit, the Project would reduce the total catchment area of 0.3% of Gwyther Creek catchment and 0.03% of the Tarwin River West Branch catchment. Impacts on peak flow rates will therefore not be detectable and no significant effect is predicted.</p>
<p>Could regional groundwater resources be affected by the Project? <input type="checkbox"/> NYD <input checked="" type="checkbox"/> No Yes If yes, describe in what way.</p> <p>Potential impacts to groundwater were considered as part of the Water Resources Assessment (refer to Attachment 13). Due to the elevation of the proposed Work Authority area in relation to surrounding topography, depressurisation and drawdown of the groundwater aquifer within the quarry footprint has minimal impact on the surrounding aquifer. Groundwater drawdown in the order of 0.1 metres or less is predicted at the three nearest registered groundwater bores and is therefore unlikely to have a noticeable effect on the productivity of these bores. Impacts to the local and regional groundwater regimes were considered negligible to low. Further detail regarding groundwater impacts is presented in Section 4 of the Water Resources Assessment (refer to Attachment 13).</p>
<p>Could environmental values (beneficial uses) of water environments be affected? <input type="checkbox"/> NYD <input checked="" 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>Could aquatic, estuarine or marine ecosystems be affected by the Project? <input type="checkbox"/> NYD <input checked="" type="checkbox"/> No Yes If yes, describe in what way.</p> <p>No natural surface water bodies are anticipated to be impacted by the Project. Two farm dams would be removed as part of the Project. The potential for these dams to support threatened species was assessed as part of the ecology assessment (refer to Attachment 10). The two farm dams to be removed are of low to moderate quality habitat for common species such as</p>

Australian Wood Duck and Pacific Duck. The reed beds present in one of the dams may provide habitat for common waterbirds, small passerine birds and various frog species. The listed Growling Grass Frog was not recorded within any of the farm dams during the targeted surveys. The ecological assessment indicated that at Dam 2, hundreds of tadpoles, Australasian Shelduck and one Little Pied Cormorant were observed, along with the Striped Marsh Frog and Southern Brown Tree Frog during the targeted nocturnal surveys. At Dam 3, the Striped Marsh Frog was seen and heard calling from the aquatic vegetation of this dam during the targeted assessment (refer to **Attachment 10**).

The removal of the two farm dams may impact on fauna species utilising that habitat, however, it is considered unlikely that this impact will be significant from a regional perspective since the majority of species recorded during the field assessment were common native or exotic bird species that utilise open woodland and grassy habitats, or which have adapted well to disturbed areas. The loss of fauna habitat is also considered unlikely to be of significance due to the proximity of similar vegetation and the ameliorative measures that will be implemented as part of the Project. These measures include protection of remnant species, ongoing weed management and revegetation within the proposed Work Authority area.

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

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

There are no estuarine or marine ecosystems within the Project area. The only aquatic ecosystems within the Project area are three farm dams, two of which will be removed as part of the Project. The ecological study by Ecology Australia determined that the removal of the two small dams will result in the removal of the aquatic vegetation within those dams (refer to **Attachment 10**). This vegetation is not considered 'native vegetation' by DSE since the dams are not naturally occurring water bodies. The two farm dams to be removed are considered to be of low to moderate quality habitat for common fauna species.

Is mitigation of potential effects on water environments proposed?

NYD No Yes If yes, please briefly describe.

As discussed above, Holcim has made a commitment that the Project will maintain a balance between water availability, demand and disposal without having to source additional water or discharge water from the proposed Work Authority area.

The Water Resources Assessment outlines a number of measures designed to mitigate predicted impacts of the Project including the maintenance of the proposed water management system in addition to erosion and sediment controls. These mitigation measures are presented in Section 6 and Section 7 of the Water Resources Assessment (refer to **Attachment 13**).

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

The information used to determine this assessment is based on recognised survey and assessment methods by appropriately experienced and qualified specialists (refer to Part 1 of this referral for further details).

14. Landscape and soils

Landscape

Has a preliminary landscape assessment been prepared?

No Yes If yes, please attach.

A preliminary landscape assessment has not been prepared for the Project, however a detailed visual assessment was undertaken as a component of the Work Plan to identify surrounding locations from which views of the Project may be possible and identify any necessary visual impact mitigation measures.

The proposed Work Authority area is located in a predominantly rural setting, comprising of cleared hillsides to the east and flatter, but relatively higher, grazing land to the north and west, which rises up to a small escarpment on the edge of the Leongatha Plains basin. Vegetation has been largely cleared with the exception of planted windbreaks along roads and fence lines and isolated pockets of remnant vegetation generally following water courses or surrounding residential areas. The cleared grazing land surrounding the proposed Work Authority area is considered to provide views of moderate scenic quality.

The proposed Work Authority area is located in an area of low hills that run towards the Tarwin River at an elevation of around 40 to 70 mAHD. The existing quarry infrastructure and stockpiling areas are visible from the Bass Highway and elevated areas to the north of the proposed Work Authority area along Hillgroves Road due to their elevated and exposed position. The existing quarry pit cannot be seen from any direction due to effective vegetation screening and favorable topography. The quarry represents the only industrial land use visible within the local landscape and while well screened with vegetation, is in clear contrast to the surrounding rural landscape.

The key elements of the Project that have the potential to be visible from public viewing locations, including private residences, are the infrastructure and stockpiling area, proposed quarrying area and haul road. The infrastructure and stockpiling area is visible from locations to the north and west of the quarry, while the proposed pit will potentially be visible from locations to the east and south. Potential views of the haul road will be restricted to locations to the south of the quarry.

Clear views of the proposed Work Authority area are generally restricted to within 1-2 kilometres due to surrounding topography and/or intervening vegetation. Views of the proposed Work Authority area from the Bass Highway and Whitelaw's Track are regularly interrupted by dense windbreaks planted along the roadside.

The visibility of the existing quarry infrastructure will be reduced by relocating the most exposed elements to a lower elevation within the existing pit. Enclosures are also proposed around the processing infrastructure, giving it a more streamlined appearance.

The elevation of the proposed quarry pit in relation to much of the surrounding topography will help to limit the visibility of the pit and mobile equipment operating within the pit from surrounding viewing locations. It is expected that visual bunding and screening can be used to significantly limit views of the pit from all directions, similar to the existing quarry pit.

Photo montages were created from various assessment points to demonstrate the visual impact that the Project may have at the final stage of quarrying and provide a comparison to existing views. The photo montages for each of the assessment points are included as **Attachment 14** and **Attachment 15**.

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.

The Project is not subject to a Landscape Significance Overlay. The proposed Work Authority area is affected by Schedules 5 (land susceptible to erosion) and Schedule 6 (land susceptible to flooding) of the Environmental Significance Overlay. Schedule 5 applies to the majority of the proposed Work Authority area while schedule 6 applies predominantly to a portion of the western extent of the existing Work Authority area. **Attachment 12** shows the environmental significance overlays of the proposed Work Authority area, which outlines the location and layout of the proposed infrastructure layout, and clearly identifies the areas susceptible to erosion (ESO5) and flooding (ESO6).

- **Identified as of regional or State significance in a reputable study of landscape values?**
 NYD No Yes If yes, please specify.

The proposed Work Authority area is not subject to a landscape value overlay. No publicly available reputable study of landscape values for the proposed Work Authority area has been identified.

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

NYD No Yes If yes, please specify.

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

NYD No Yes If yes, please specify.

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

NYD No Yes If yes, please briefly describe.

The Project has been designed to minimise potential visual impacts. Clear views of the proposed Work Authority area are generally restricted to within 1-2 kilometres due to surrounding topography and/or intervening vegetation. Views of the proposed Work Authority area from the Bass Highway and Whitelaw's Track are regularly interrupted by dense windbreaks planted along the roadside. The visibility of the existing quarry infrastructure will be reduced by relocating the most exposed elements to a lower elevation within the existing pit. Enclosures are also proposed around the processing infrastructure, giving it a more streamlined appearance. The elevation of the proposed quarry pit in relation to much of the surrounding topography will help to limit the visibility of the pit and mobile equipment operating within the pit from surrounding viewing locations. It is expected that visual bunding and screening can be used to significantly limit views of the pit from all directions, similar to the existing quarry pit.

The construction of the new quarry pit will result in the removal of the top of a minor hill within the proposed Work Authority area (refer to **Attachment 3**). The Project will also involve the construction of a haul road to allow access between the existing processing infrastructure area and the new pit. This has the potential to affect landscape values as the construction will be visible from certain residential dwellings. There are a number of mitigation measures aimed at minimising impacts to landscape value that would be implemented during both the construction and operational phase of the Project. Further, the Project is located within a rural agricultural landscape adjacent to the existing Leongatha Quarry. The proposed development, particularly the haul road, is not considered incongruous with the surrounding agricultural landscape that has been subject to previous development for agricultural activities.

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

NYD No Yes Please briefly explain response.

There is no potential for effects on landscape values of regional or State importance impacted by the Project.

Is mitigation of potential landscape effects proposed?

NYD No Yes If yes, please briefly describe.

A number of measures have been described in the Work Plan to reduce the potential visual amenity impacts as part of the Project. These measures include:

- construction of progressive bunds around active pit areas. Progressive bunds will be two metres high and will be utilised for all stages of pit development until the maximum disturbance area is reached;
- construction of terminal bunding around the pit perimeter and haul road. Terminal bunds will be one to three metres in height and will be planted with vegetation to stabilise and provide additional shielding. Terminal bunding and plantings will be established around the haul road and eastern pit perimeter during the initial site establishment phase, with terminal bunding around the southern pit perimeter constructed progressively as the pit develops;
- substantial tree planting around the pit perimeter and on terminal bunding. Tree planting will be prioritised early in the site establishment phase to allow for maximum growth over the Project life. Planting will focus on shielding views from key viewing locations in the south and east of the proposed Work Authority area; and

- ongoing maintenance of existing plantings.

The visual assessment conducted for the Project found that initial site establishment earthworks and ongoing development of bunding will present potential visual impacts for some residences to the east and south of the proposed Work Authority area. However, due to the temporary nature of these activities, and the fact that the purpose of these works is to prevent ongoing views of quarrying and mobile plant activity, the visual impact of these works is considered to be minimal. Views of the pit itself will be limited, with some locations along Soldiers Road able to view sections of the upper slopes of the pit. A focus on tree screening in these locations and progressive rehabilitation will assist in minimising this potential impact. Long-term ongoing quarry operations will not be visible from any of the visual assessment points. The Project will provide an opportunity to reduce the existing level of visual impact associated with existing quarry infrastructure by relocating infrastructure to a lower elevation and enclosing the processing plant. A strong focus on establishment of progressive and terminal bunding and early planting of vegetative screening will help to minimise the potential visual impact of the Project and help to integrate the Project with the surrounding environment. Refer to **Attachments 15** and **16** for photographic montages of the visual assessment that was conducted for the proposed Work Authority area.

A detailed rehabilitation plan has been prepared for the Project (refer to **Attachments 7, 8 and 9**). The rehabilitation plan outlines the intended final land use, rehabilitation objectives, criteria, rehabilitation activities (including progressive rehabilitation) and rehabilitation monitoring, care and maintenance. The objectives of the proposed rehabilitation includes: Rehabilitation of the existing and proposed quarrying areas will be undertaken in accordance with the following objectives:

- establish areas for sustainable grazing purposes, commensurate with adjacent land use types;
- establish a net gain offset area to compensate the loss of native vegetation associated with the Project; and
- provide a safe and stable landform compatible with the intended final use.

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

The information used to determine this assessment is based on recognised survey and assessment methods by appropriately experienced and qualified specialists (refer to Part 1 of this referral for further details).

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 majority of the proposed Work Authority area is affected by Schedule 5 of the environmental significance overlay (areas susceptible to erosion) under the SGSC Planning Scheme. Land

affected by this overlay has been identified by the Department of Natural Resources and Environment as being susceptible to erosion. The Water Resources Assessment has provided recommendations for mitigation measures to be implemented during construction and operation to reduce predicted erosion and sediment impacts (Refer to **Attachment 13**). These measures include the maintenance of the 'closed loop' water management system, effective drainage within the proposed haul road and maintenance of the existing sediment pond at the intersection of Quarry Road and Whitelaw's Track. Runoff from the operational areas will be captured via diversion drains and stored onsite within the main pit dam for later reuse. The majority of site runoff within the existing and proposed quarry will be entirely contained within the site and does not pose a risk to surface water quality. There is an existing discharge that receives stormwater from the stockpile area and enters the Whitelaws Track road drainage system via a retention pond located at the corner of Whitelaws Track and Quarry Road (refer to **Attachment 4**). The existing discharge will be removed and incorporated into the water management system. To ensure there are no discharges offsite, a pump will be installed at this storage pond to pump excess water from the pond to the main pit dam.

General surface preparation activities to be undertaken as part of rehabilitation activities include suitable erosion and sediment control measures (e.g. catch drains, sediment dams, silt fences, mulches, etc.), which will be implemented to minimise soil loss from areas undergoing rehabilitation.

The Project design has appropriate measures in place to ensure there are no significant impacts on land stability. Rehabilitation of the quarry pit will be achieved by battering back the upper benches within the highly weathered material to remove the bench landform and achieve a more stable sloping landform. This battering back is only practical in the upper benches of highly weathered material due to the limited availability of overburden for this purpose. The battering will result in a stable sloping landform of approximately 1V:2.5H. Based on knowledge of geology and stability characteristics of the existing pit, the overall risk to slope stability is considered low. It is considered that the proposed final landform gradient will result in a safe and stable landform. Notwithstanding, Holcim would conduct ongoing stability monitoring throughout the construction of the proposed quarrying area in addition to proactive management over the life of the Project.

At the completion of extraction and rehabilitation works within the existing pit, Holcim propose to return the land to pasture and water storage prior to handing the land back to the owner. The intended final land use of the proposed Work Authority area will include pasture and water storage. The area is generally considered suitable for each of these final land uses.

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

NYD No Yes If yes, please briefly describe.

A preliminary geotechnical assessment has been completed based on knowledge gained from the geology of the existing pit. This preliminary assessment determined that the overall risk to slope stability was considered low for a slope batter of 1H:1V. Holcim will be undertaking ongoing slope stability monitoring throughout the advancement of the new quarry pit. It is proposed that an adaptive management approach will be adopted to allow for appropriate management of potential slope stability issues throughout the life of the Project.

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

The information used to determine this assessment is based on recognised survey and assessment methods by appropriately experienced and qualified specialists (refer to Part 1 of this referral for further details).

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.

An assessment of the potential impacts of the Project on the capacity, efficiency and safety of the local road network was conducted by Cardno Grogan Richards Pty Ltd (refer to **Attachment 16**). Predicted increases in traffic volumes associated with the Project are expected to be readily accommodated by the local road network without the need for road or intersection upgrades.

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.

Extensive assessments of potential air quality, noise, visual and traffic impacts resulting from construction and operation of the Project were completed and it was found that with the incorporation of extensive mitigation measures, it is predicted there will be no significant impacts on the amenity of residents.

The air quality assessment determined that the modelled predicted impacts complied with the Mining and Extractive Industries Protocol for Environmental Management (PEM) criteria for Respirable Crystalline Silica (RCS) and PSQUARE METRES₅ at all nearby residences during construction and operation. Moreover, modelled PM₁₀ impacts complied at all residences during both construction and operation.

The noise assessment determined that, with the implementation of noise management measures, noise emissions from construction and operational activities associated with the Project met appropriate criteria at all residences, with the exception of one residence (Dwelling E), which be vacant for the duration of the construction and operational phase of the Project in accordance with established agreements between Holcim and the landholder (refer to **Attachment 3**). Noise management measures identified in the noise assessment will be implemented during the detailed design, construction and operational phases of the Project.

The visual assessment identified that Project infrastructure, the stockpiling area, the quarry pit and the haul road would be potentially visible from public viewing locations including private residences. The visual assessment concluded that temporary visual impacts during site establishment earthworks and ongoing development of bunding required to ultimately reduce potential visual impacts during operation, would affect residences to the east and south of the proposed Work Authority area. These visual impacts are considered minimal as they are temporary in nature and the purpose of these works is to prevent ongoing views of quarrying and mobile plant activity. Long-term ongoing quarry operations will not be visible from any of the visual assessment locations following the implementation of appropriate mitigation management measures.

A traffic assessment determined that the potential increase in traffic is predicted to be low and is expected to be suitably accommodated by the existing road network. It is unlikely that the additional traffic generated by the Project will have an impact on the operation of Whitelaw's Track or the intersection of Whitelaw's Track and Bass Highway. Further, it is considered that given the significant spare capacity of this intersection, the existing intersection arrangement is satisfactory to accommodate future traffic volumes without the need for upgrade. The traffic assessment also addressed potential impacts of traffic generated from the Project within Leongatha. The assessment concluded that traffic generated by the Project would have minimal impact on the Leongatha township.

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.

Extensive environmental studies have been undertaken for the Project including water resources, air quality and noise. Holcim has agreements in place with three nearby residents with potential

air quality and noise impacts due to their proximity to the Project to ensure appropriate management, including vacating of residences over the life of the Project. These studies are summarised in other sections of this referral and are provided as **Attachment 13, 17 and 18**.

Explosives used as part of blasting activities have the potential to be a safety hazard. Blasting activities will be the subject of strict management controls to minimise potential safety hazards. Additionally, no explosives will be stored onsite and will be transported to site by appropriately qualified transport personnel on an 'as required' basis.

There is negligible silica in basalt so there is not expected to be off-site exposure of Respirable Crystalline Silica (RCS) from quarry operations. Notwithstanding, emissions of RCS from quarrying activities have the potential to impact on human health. Potential RCS impacts were modelled as part of the Air Quality Assessment completed for the Project (refer to **Attachment 17**). The results of the dispersion model indicated that predicted impacts readily complied with the applicable RCS criteria for surrounding areas (Mining and Extractive Industries Protocol for Environmental Management).

Based on mitigation and control measures, the Project has been designed to ensure there will be no significant environmental impacts to nearby residents or communities as defined by relevant impact assessment criteria.

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.

Extensive community consultation with surrounding landholders has been undertaken for the Project. This has resulted in Holcim having agreements in place with three nearby residents.

The Social Impact Assessment (SIA) report did not indicate there would be any potential impacts on community facilities as a result of the Project (refer to **Attachment 19**).

Based on mitigation and control measures, the Project has been designed to ensure there will be no significant environmental impacts to nearby residents or communities as defined by relevant impact assessment criteria.

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.

Rural activities, predominately grazing, are the current land use within the proposed Work Authority area. The Project will result in temporary loss of land within the proposed Work Authority area for this activity. A rehabilitation plan has been prepared to allow for the provision of the intended final land use (refer to **Attachments 7, 8 and 9**), namely, pasture, water storage and vegetation protection areas associated with net gain plantings.

Holcim has entered into lease agreements with the two private landholders within the proposed Work Authority area to allow for the use of land for the Project (refer to **Attachment 3**).

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 Social Impact Assessment (SIA) report did not indicate there would be any potential impacts on community facilities as a result of this Project (refer to **Attachment 19**).

Is mitigation of potential social effects proposed?

NYD No Yes If yes, please briefly describe.

The Social Impact Assessment indicated that there would be no significant social impacts as a result of the Project (refer to **Attachment 20**).

Notwithstanding this, Holcim has prepared a Community Engagement Plan (CE Plan) for the Leongatha quarry. This plan details the process of community consultation undertaken to date,

along with details of the process to be undertaken throughout the life of the Project (refer to **Attachment 20**).

The CE Plan provides a functional document that will be used to manage all aspects of ongoing community issues throughout the continuation of the existing quarry and the proposed quarry extension. The CE Plan provides information relating to:

- identification of the affected community;
- assessment of the level of impact;
- management techniques for community feedback;
- community engagement techniques; and
- monitoring of stakeholder engagement.

The CE Plan will be used to facilitate appropriate management of community related issues for the existing and proposed quarrying activities.

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

The information used to determine this assessment is based on recognised survey and assessment methods by appropriately experienced and qualified specialists (refer to Part 1 of this referral for further details).

Cultural heritage

Have relevant Indigenous organisations been consulted on the occurrence of Aboriginal cultural heritage within the site?

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

Indigenous organisations consulted during the preparation of the Cultural Heritage Management Plan included the Boon Wurrung Foundation Ltd and the Bunurong Land Council Aboriginal Corporation (refer to **Attachment 21**). Both of these organisations have nominated to be a RAP for the area, however, at the time of the assessment, no RAP had been declared for the area. Accordingly, Aboriginal Affairs Victoria (AAV) retained the role of the RAP this Project and has also been consulted throughout the Project. Notwithstanding this, an archaeological survey of the proposed Work Authority area was conducted by a team of archaeologist/cultural heritage advisors and Aboriginal representatives from these groups to determine the presence and extent of any Aboriginal cultural heritage material within the disturbance area of the Project.

What investigations of cultural heritage in the site have been done?

(attach details of method and results of any surveys for the Project & describe their accuracy)

A Cultural Heritage Management Plan (CHMP) was prepared for the Project which included an archaeological survey of the proposed Work Authority area by a team of archaeologist/cultural heritage advisors and Aboriginal representatives (refer to **Attachment 21**). This involved a pedestrian survey of the proposed Work Authority area to identify areas of Aboriginal archaeological sensitivity and surface artefact concentrations. Subsurface excavations were conducted in March, September and October 2009 targeting identified areas of Aboriginal archaeological sensitivity which would be impacted by the Project. The CHMP was submitted to and approved by Aboriginal Affairs Victoria in March 2010. Full details of methods and results of the cultural heritage investigation is provided in the approved CHMP (refer to **Attachment 21**).

Is any Aboriginal cultural heritage known from the site?

NYD No Yes If yes, briefly describe:

- Any sites listed on the AAV Site Register
- Sites or areas of sensitivity recorded in recent surveys from the Project site or nearby
- Sites or areas of sensitivity identified by representatives of Indigenous organisations

A total of 21 Aboriginal archaeological sites have previously been recorded on the AAV Site Register within a 10 kilometre radius of the proposed Work Authority area. No sites are currently recorded within a 2.5 kilometre radius of the proposed Work Authority area.

Five sites were recorded within the proposed Work Authority area, during the preparation of the CHMP. These sites comprised artefacts made up of predominately silcrete, quartz, quartzite and basalt. Details of each of these five sites are presented in Section 4.9 of the CHMP (refer to **Attachment 21**).

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

NYD No Yes If yes, please list.

A search was undertaken as part of the Cultural Heritage Management Plan (CHMP) and it was determined there were no non Aboriginal archaeological sites were identified within the proposed Work Authority area.

Is mitigation of potential cultural heritage effects proposed?

NYD No Yes If yes, please briefly describe.

The CHMP describes a number of mitigation measures including an approved salvage program that will be implemented during pre-construction, construction and operation of the Project. The AAV has approved the CHMP including the detailed mitigation measures in March 2010. A copy of the approved CHMP is provided as **Attachment 21**.

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

The information used to determine this assessment is based on recognised survey and assessment methods by appropriately experienced and qualified specialists (refer to Part 1 of this referral for further details).

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
- Other. Please describe.

Please add any relevant additional information.

A greenhouse gas (GHG) assessment undertaken by Heggies for the Project quantified Scope 1, 2 and 3 emissions associated with quarrying activities and the transportation of rock aggregates (refer to **Attachment 22**). The main source of greenhouse emissions from onsite quarrying activities is diesel combustion and consumption of purchased electricity.

It is anticipated that the Project would have a purchased electricity consumption of 555,180kWh associated with 300,000 tonnes per annum operations.

The Project would have an onsite diesel consumption rate of 355,180 Litres at an extraction rate of 300,000 tonnes per annum.

Annual increase in operations of 20,000 tonnes per annum, equating to an approximate annual increase of 7%. Percentage increase of 7% applied to all consumption rates, excluding staff

travel, to determine annual emissions to a maximum extraction rate of 500,000 tonnes per annum.

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.

Topsoil and overburden will be excavated during the construction of the haul and the new quarry pit. It is proposed that the topsoil and overburden will be stockpiled within existing stockpile areas. Further, topsoil and overburden would be preferentially used in rehabilitation activities and for the construction of bunding. There is the potential that some overburden may be sold, however this would only be undertaken in the event that it is not required for rehabilitation activities onsite.

Wastes that will require management in association with the quarry activities include:

- waste oil;
- filters, grease cartridges and oily rags;
- scrap metal;
- silt (from aggregate washing);
- office paper and general rubbish; and
- tyres.

Waste Management

Holcim is committed to the waste hierarchy where emphasis is placed upon return, re-use, recycle and disposal of its wastes. In order to minimise the generation of waste products and re-use waste products, where practicable, the following practices will be adopted:

- all waste oil will be collected and stored onsite in containers in a bunded area within the workshop. The containers will be removed from site by a licensed contractor with all relevant waste tracking documentation completed;
- all oil filters will be separately stored and returned to the manufacturer for re-use;
- scrap metal from the workshop will be deposited into a skip bin for periodic collection and recycling;
- silt will be periodically removed from the various silt control structures and placed/stored in the product stockpiles or overburden materials for use in progressive rehabilitation;
- all office paper and general waste originating from the office, amenities building, and packaging from routine equipment and vehicle maintenance consumables will be placed in appropriate containers for collection by a licensed waste disposal contractor for disposal/recycling at an appropriate waste management facility; and
- all waste tyres will be removed by the supplier of replacement tyres.

Water within the proposed Work Authority area is managed as part of a closed loop system. Runoff from the operational areas will be captured via diversion drains and stored onsite within the main pit dam for later reuse. The majority of site runoff within the existing and proposed quarry will be entirely contained within the site and does not pose a risk to surface water quality. There is an existing discharge that receives stormwater from the stockpile area and enters the Whitelaws Track road drainage system via a retention pond located at the corner of Whitelaws Track and Quarry Road (refer to **Attachment 4**). The existing discharge will be removed and incorporated into the water management system. To ensure there are no discharges offsite, a pump will be installed at this storage pond to pump excess water from the pond to the main pit dam.

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

- Less than 50,000 tonnes of CO₂ equivalent per annum
- Between 50,000 and 100,000 tonnes of CO₂ equivalent per annum
- Between 100,000 and 200,000 tonnes of CO₂ equivalent per annum
- More than 200,000 tonnes of CO₂ equivalent per annum

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

The greenhouse gas assessment of the Project has been undertaken in accordance with the methodologies outlined by relevant international, national and Victorian policies for the assessment of greenhouse gas (GHG) emissions (refer to **Attachment 22**). The greenhouse gas assessment undertaken for the Project quantified Scope 1, 2 and 3 emissions associated with quarrying activities and the transportation of rock aggregates. As required by the GHG PEM, the focus is on estimating energy consumption associated with the operation, calculating non-energy related Scope 1 GHG emissions and identifying and evaluating opportunities to reduce GHG emissions and energy consumption.

The total Project life greenhouse gas emissions for an operating period of 40 years is calculated as approximately 144,748 tCO₂-e equating to approximately 3,619 tCO₂-e per annum on average, substantially less than the trigger value of 200,000 tCO₂-e as outlined in the Ministerial guidelines.

Mitigation measures to reduce potential GHG impacts have been based on the *Best Practice Environmental Management in Mining – Energy Efficiency and Greenhouse Gas Reduction* (Department of Resources, Energy and Tourism 2002) and include:

- installation of the most efficient crusher and other processing plant technology available. The proposed upgrades to existing crushing plant will result in significant improvements in efficiency and allow Holcim to select the most energy efficient plant options for the proposed Work Authority area;
- minimising the use of bin trucks by overland conveyors where possible. The proposed upgrades to the processing infrastructure will include more efficient use of conveyor, stacking and stockpiling arrangements, thereby reducing the need for double handling of product and transfer of materials via truck to overflow stockpiling areas;
- optimisation of incline/decline of haul routes to reduce transport distance from the extraction area;
- reductions in vehicle idling time;
- maintenance of optimum tyre pressure;
- close regulation of the daily operation of lighting;
- seeking continuous improvement in energy efficiency in the quarrying fleet, stationary equipment, rock processing and preparation; and
- investigation of energy efficiency opportunities for mobile and fixed plant and equipment through the detailed design of the Project.

17. Other environmental issues

Are there any other environmental issues arising from the proposed Project?

- No Yes If yes, briefly describe.

Detailed environmental studies have been undertaken for the Project to identify and manage any potential environmental issues and implement mitigation measures where necessary. These

studies indicate that ongoing operations within the proposed Work Authority area will not significantly impact on the environment and surrounding community.

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

Two Strzelecki Gums (listed as vulnerable under the EPBC Act) are present within the proposed Work Authority area. The initial Project design was amended to ensure that impacts to these two Strzelecki Gums would be avoided. Additionally, these two individuals will be managed for conservation throughout the construction and operational phase of the Project.

The Project will impact five archaeological sites within the proposed disturbance footprint. While all five sites will be impacted, parts of site AS1 and AS2 fall outside the proposed disturbance footprint and will therefore remain undisturbed. Holcim has redesigned the proposed haul road to minimise impacts on site AS1 by avoiding the area of highest concentration of artefacts.

The new process infrastructure will be located down slope of the existing process infrastructure. It is considered that the proposed location of the new infrastructure will reduce potential noise and visual impacts by maximising shielding provided by the existing topography of the area. Further, the proposed processing infrastructure

Design: Please describe briefly

The conceptual design for the Project has evolved throughout the Work Plan development process in light of ongoing exploration and geological modelling, environmental constraints and opportunities, and in consideration of stakeholder consultation outcomes. A range of structural noise controls will be incorporated into the plant and quarry design including relocation and enclosure of processing plant, bunding and restrictions to operating hours. Construction of substantial earthen bunds will be undertaken along the proposed haul road to limit noise from trucks. Construction of substantial progressive and terminal bunding will be undertaken around the proposed quarrying area to limit noise from mobile plant operating within the pit. Bunding will range in height from one to three metres depending on the location.

Environmental management: Please describe briefly.

A detailed Environmental Management Plan (EMP) has been prepared for the construction and operation phase of the Project. The aim of the EMP is to provide measures to reduce and minimise environmental impacts associated with the Project. Additionally, Holcim has a Safety, Health and Environment System implemented across its Australian business that will be implemented as part of the Project.

Other: Please describe briefly

Add any relevant additional information.

A Cultural Heritage Management Plan (CHMP) was completed for the Project and approved on 26 March 2010 by Aboriginal Affairs Victoria (AAV) under the *Aboriginal Heritage Act 2006*. A Community Engagement Plan (CEP) was also completed for the Project which involved extensive community consultation and outlines techniques for ongoing community engagement.

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.

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.

An historical archaeological report was completed for the Project. This assessment concluded that no new historical archaeological sites were identified and that there are no requirements for any further historical archaeological investigation (refer to **Attachment 21**).

Has a program for future environmental studies been developed?

No Yes If yes, briefly describe.

Ongoing environmental monitoring will be undertaken during the construction phase and throughout the entire operational phase of the Project. A proposed environmental monitoring program has been established as part of the Environmental Management Plan (EMP) for the Project. This monitoring program was designed with input from all specialist studies completed for the Project. The aim of the monitoring program will be to assess the effectiveness of proposed environmental management measures and to identify areas for continuous improvement.

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.

Community and agency consultation are key to Project planning and necessary to determine the relevant issues to be addressed. Consultation with relevant stakeholders including potentially affected landholders, local residents, the surrounding community, community groups, government authorities, Aboriginal groups and other relevant stakeholders commenced during the early Project planning phase in 2008 and are continuing through the Project design and approval process.

There has been extensive consultation with government agencies throughout the preparation of the Work Plan including the Department of Primary Industries, Department of Industry, Innovation and Regional Development, South Gippsland Shire Council, along with other key authorities and agencies (refer to Section 10 of this referral form).

Consultation with the community has been ongoing throughout the Project design dating back to 2007. Stakeholders consulted to date as part of the consultation program include surrounding residents and government agencies as detailed above. To date there have been two community newsletters that were distributed to local residents informing of the Project and the environmental studies undertaken to identify and manage any potential issues. The first newsletter was issued in February 2009; the second was issued in September 2009. These newsletters also provided local residents the opportunity to provide feedback on any aspects of the Project. A copy of each newsletter is provided as **Attachment 23**. The next (third) community newsletter will provide an update of the status of the approvals process for the Project and is scheduled to be issued in the first half of 2011.

A Socio-Economic Impact Assessment (SIA) was undertaken to assess and evaluate any potential socio-economic impacts associated with the Project, which involved surveying the key stakeholders and local residents. A copy of the SIA is included as **Attachment 19**.

Has a program for future consultation been developed?

NYD No Yes If yes, briefly describe.

Holcim has developed a Community Engagement Plan (CEP) to guide how it manages relationships with local stakeholders into the future. This plan identifies the process of managing community enquiries and feedback in relation to the Project, along with a continuous community engagement process to identify and manage any potential community and socio-economic impacts. A copy of the CEP is provided as **Attachment 20**.

The CEP has been developed for the Project in accordance with the requirements of the *Mineral Resources (Sustainable Development) Act 1990*. The CEP outlines consultation activities and goals to be implemented for the life of the Project.

Authorised person for proponent:

I, Peter Lawlor (full name),
Planning & Approvals Manager (Holcim) (position), confirm that the information contained in this form is, to my knowledge, true and not misleading.

Signature 

Date 21/04/11

Person who prepared this referral:

I, TIM CROSDALE (full name),
ASSOCIATE, UMWELT (AUSTRIA) (position), confirm that the information contained in this form is, to my knowledge, true and not misleading.

Signature 

Date 21 APRIL 2011

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