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Executive Director, Major Projects Assessment
Department of Planning & Infrastructure
GPO Box 39
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By post

Holcim Australia - State Significant Development Application, Boambee Quarry
Request for Director-General Requirements

This letter has been prepared on behalf of Holcim Australia Pty Ltd (Holcim) to support an application requesting Director–General Requirements (DGRs) for State Significant Development in accordance with Part 4 of the *Environmental Planning & Assessment Act 1979*.

Boambee quarry is an existing quarry owned by Holcim and is an important source of road base and high quality aggregate materials for the Coffs Harbour Region. Under Part 2, Clause 8 (1) of the *State Environmental Planning Policy (State and Regional Development) 2011* Boambee Quarry is described as a State Significant Development as it is specified in Schedule 1 as an extractive industry which extracts from a total resource of more than 5 million tonnes. Boambee quarry is an extractive industry which extracts from a total resource of around 7 million tonnes. .

Development consent is being sought by Holcim for the continuation and intensification of operations at Boambee Quarry with some minor infrastructure and operational amendments.

The existing quarry operations were approved via a Land and Environment Court consent in 1995. Holcim make this application with the understanding that any future project approval would replace the existing court consent, in order to obtain a single, contemporary planning approval for its operations at North Boambee.

1. Site details

The Boambee Quarry site is located approximately five kilometres south west of Coffs Harbour central business district and is approximately 55 hectares in size, located at the end of North Boambee Road (Figure 1). Boambee Quarry has been in operation since the early 1950s and was initially purchased in 1990 by the proponent (then CSR Readymix).

The site is largely represented by areas of bare rock, exotic pasture land and small remnant patches of native vegetation with limited connectivity. Land to the east is essentially a managed mosaic of agricultural lands and remnant native vegetation. To the north and west Boambee Quarry is bounded by Boambee State

Forest. Approximately 3 kilometres to the east of the site, on Boambee Road is Bishop Druitt College which is a K-12 school.

The quarry itself is nestled into the surrounding forestry area and is well screened from the local area by intervening topography. Filtered views of the quarry are visible from a small number of locations along the Pacific Highway.

The site currently consists of the following components (Figure 2):

- the quarry pit and quarry face
- a weighbridge at site entrance
- amenities and office buildings in the south west corner of the site
- a workshop for maintenance related tasks
- a primary and secondary processing plant
- stockpiles of various aggregate sizes, dust and gravel
- three small dams
- sedimentation ponds
- internal roads and haul roads.

The site is located in the upper catchment of Newports Creek, which is part of the Boambee/Newports Estuary. The majority of the site drains south-east and south-west directly to Newports Creek located to the south west of the site, however, the northern area drains north-east to a tributary of Newports Creek.

Figure 1 Regional context of the site

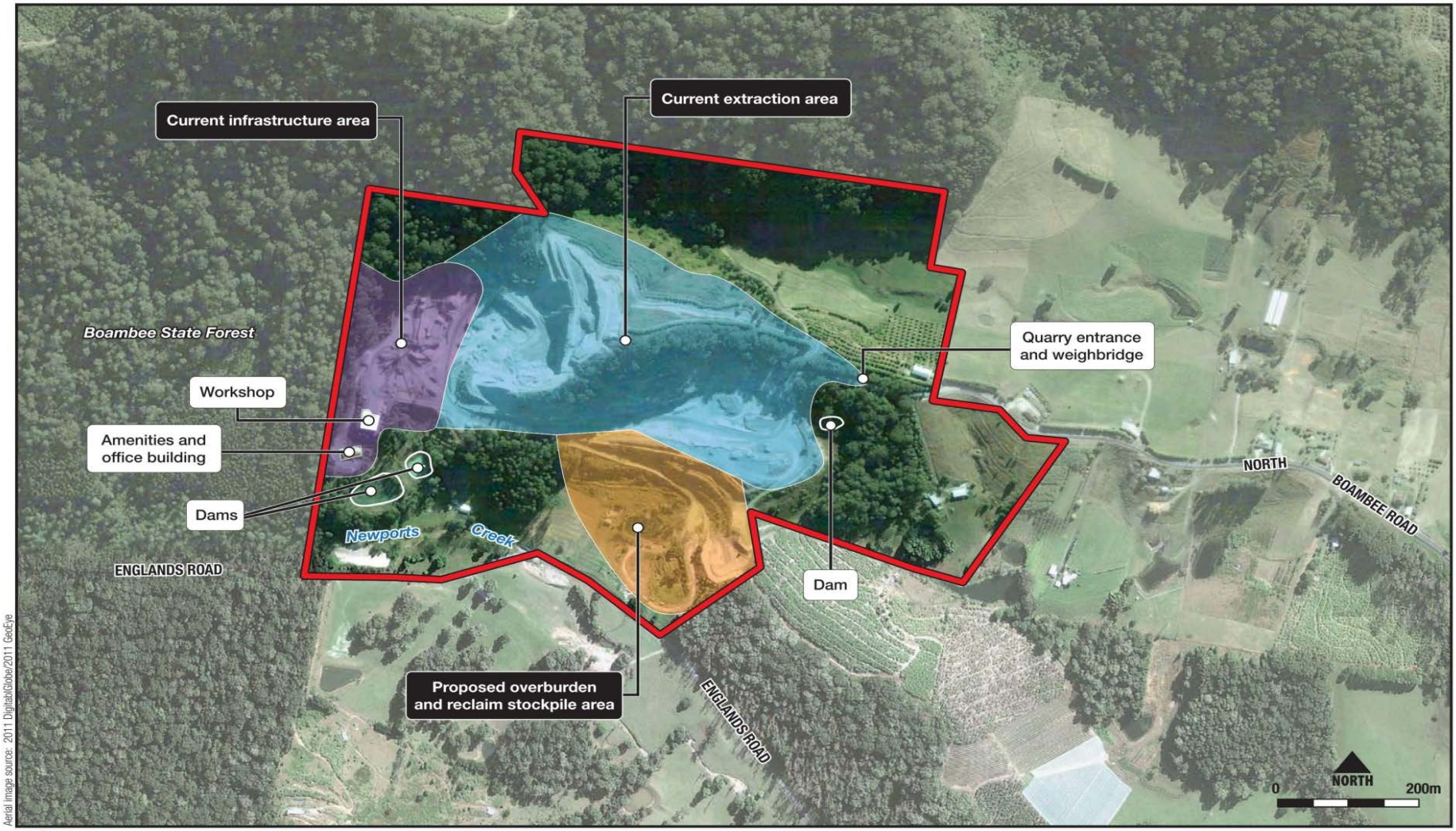

Figure 1.2 **Overview of the existing Boambee Quarry site**

Figure 2 Overview of existing Boambee Quarry site

2. Development description

The project aims to secure the viability of the Boambee Quarry operation through improved plant efficiencies, optimisation of resource recovery and increased annual production levels to service forecast market projections. Approval is sought by Holcim under Part 4 of the EP&A Act for the following key project components:

- continuation of existing and approved quarrying operations at Boambee Quarry
- increasing in the maximum quantity of saleable material from 300,000 tonnes to 400,000 tonnes per annum for a period of 25 years
- lowering the currently approved pit floor from RL 65 to RL 50 to optimise resource recovery
- installation of a mobile pug mill within the existing processing area for blending of road base and pre-coat aggregates, as required
- a new out-of-pit overburden emplacement area on previously disturbed land to the south of the existing pit
- modification of the associated quarry water management system
- removal of the current 27 tonne load capacity limit on product transport trucks in line with RTA standards
- removal of the current 10,000 tonne per blast yield limit to allow implementation of current best practice blasting practices, while remaining within existing approved ground vibration and overpressure limits.
- continued rehabilitation and remediation of the site following extraction of all viable resources.

As part of Holcim Australia's commitment to sustainable development, approval will also be sought to enable the recycling of controlled clean concrete waste for re-use as product. Strict control conditions will apply to all recycled concrete material arriving at the site, including:

- the receipt of recycled concrete from approved suppliers only
- proof of origin
- validation of recycled concrete material to confirm it is free of general waste material, wood, paper and metals.

The recycled concrete will be processed through the current on-site processing infrastructure incorporating the appropriate environmental management control.

Table 2.1 Key features of the Boambee Quarry project

Project component	Current operations	Proposed operations
Limits on saleable material	Up to 300,000 tonnes of hard rock per annum.	Up to 400,000 tonnes of hard rock per annum
Quarry life	35 years, with quarrying to be completed in 2030.	25 years from date of new approval
Operating hours	7 am to 5 pm Monday to Friday 7 am-12 pm Saturday	No change
Number of employees	11 staff and several contractors	No change
Quarrying methods	Blasting, excavator, loader and truck	No change
Blasting	Up to 31 blasts per year with blast yield limited to 10,000 tonnes of fragmented rock per blast.	No change to number of blasts per year. Revised blasting methods to achieve an increase in fragmented rock yielded from blasting.
Infrastructure	Primary and secondary processing plants, workshops and service areas.	Addition of a mobile pug mill (for blending materials) within the existing approved processing area.
Primary processing rate	200 tonnes per hour	No change
Secondary processing rate	150 tonnes per hour	No change
Product stockpiles	High demand materials – 2,000 tonne stockpile; other products in 900 tonne stockpiles.	No change
External product transport	Product transported limited to 27 tonne capacity haul trucks along North Boambee Road. A maximum of 40 loads per day.	Removal of the load capacity of trucks in-line with RTA standards.... No change to the number of loads carted per day along North Boambee Road.
Overburden storage	Limited storage for overburden onsite. Stored in previous disused pit.	New overburden stockpile storage south of the existing quarry pit on Holcim owned & previously disturbed land.
Quarry development	Pit floor approved to RL65	Pit floor RL50 to allow an additional bench and optimisation of resource recovery
Other		Recycling of controlled clean concrete waste for re-use as product.

3. Permissibility and Strategic Planning

3.1 Permissibility

The site is located within the Coffs Harbour Local Government Area. The land upon which the Project would be undertaken is divided between two current land zonings. The applicable zones across the site are 'Rural Agricultural' and 'Environmental Protection Habitat and Catchment' under the *Coffs Harbour City Local Environmental Plan 2000* (the Coffs Harbour LEP). The site also adjoins a large area of 'Rural State Forest' zoning to the North and West of the site.

The portions of land which have been identified as being Environmental Protection Habitat and Catchment have also been identified as containing primary and secondary koala habitat as mapped within the Coffs Harbour City Koala Plan of Management. The impact of the Project in relation to this plan would be considered as part of the overall ecological impact assessment of the Project.

Table 2 summarises the permissibility of the Project within each of the identified zones.

Table 3.1 Overview of permissibility of the Project under the Coffs Harbour LEP

Zone	Permissibility
Rural 1A Agricultural	Permitted with development consent
Environmental Protection 7A Habitat and Catchment	Prohibited

As identified in Table 2, quarry operations within the the 'Environmental Protection 7A Habitat and Catchment zone are prohibited under the *Coffs Harbour City Local Environmental Plan 2000*. Notwithstanding the permissibility of this zoning, consent under the LEPs would not be required as part of the overall approvals process as the Project is to be assessed as a State Significant Development under Part 4 of the EP&A Act.

The existing land use zoning for the Project site (derived from the Coffs Harbour LEP) is shown in Figure 3.

3.2 Strategic planning

The site has been identified in the Mid-North Coast Regional Strategy (DoP 2009) as being an extractive resource of regional significance. Boambee Quarry has also been recognised in regional environmental planning instruments and provided with protection in local environmental plans.

The Project falls within the area covered under the *North Coast Regional Environmental Plan* (North Coast REP) (deemed SEPP). This plan will be considered in the preparation of the environmental impact statement (EIS).

3.3 Environmental protection licence

The general provisions of the *Protection of the Environment Operations Act 1997* (POEO Act) in relation to pollution of the environment would apply throughout the Project and would be considered as part of the EIS for the Project.

Schedule 1 (Clause 19) of the POEO Act identifies extractive industries as a scheduled activity. The impact of the Project on the existing licence (No. 7094) would be considered as part the EIS of the project. At this time, it is not considered that the existing EPL would require amendment for the proposed scope of works for the Project.

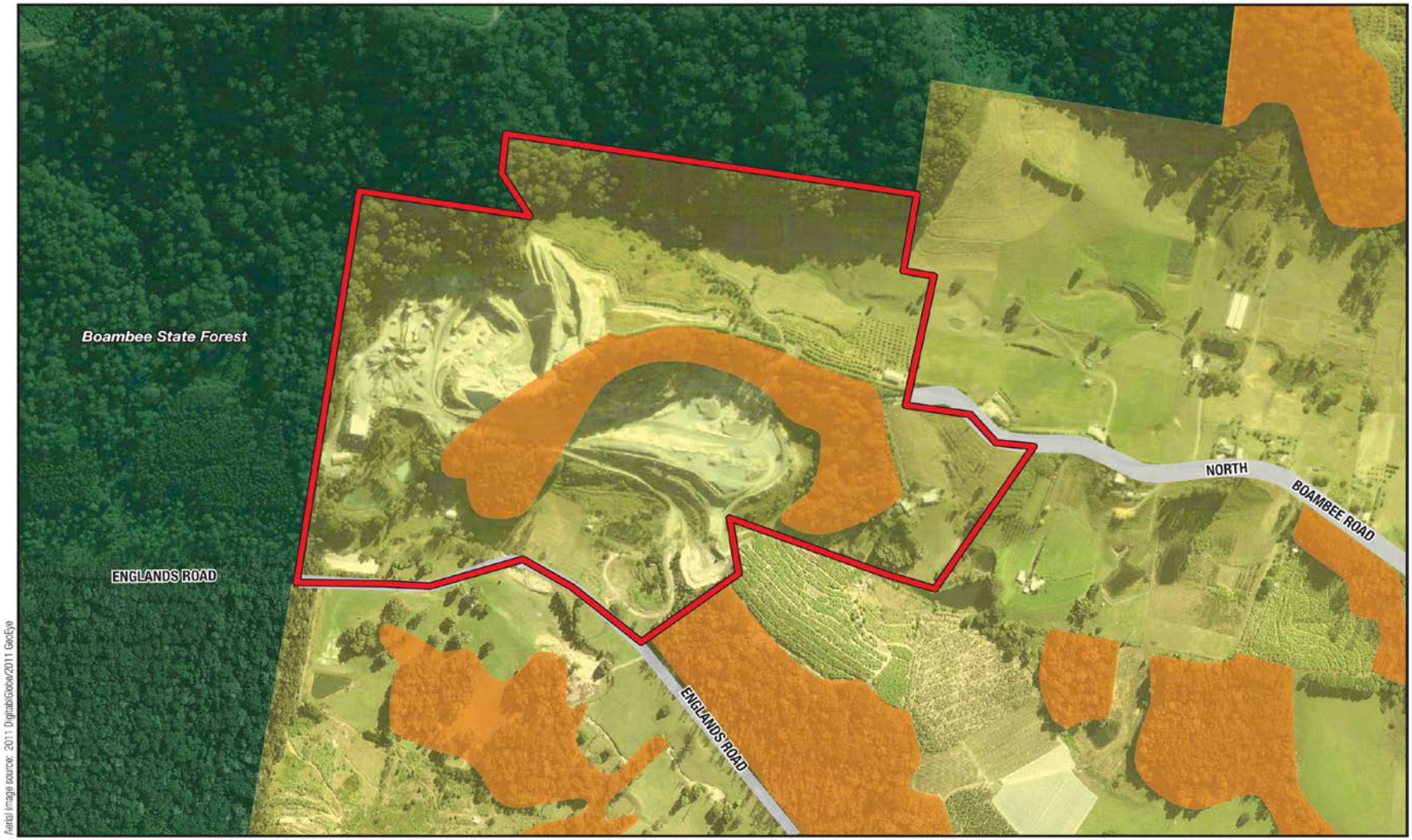

Figure 3 Overview of the zoning of the Boambee Quarry

4. Preliminary environmental impact assessment

A preliminary environmental risk analysis (Attachment A) was undertaken and indicated that the following key environmental issues will require further detailed assessment and may require project-specific impact mitigation measures:

- surface water management
- air quality
- operational noise
- operational vibration
- ecology.

4.1 Surface water management

Flooding is an issue in the Newports Creek catchment, and much of the land along Newports Creek and its tributaries is flood prone. It is understood that Council has commissioned a Boambee-Newports Creek Flood Study, which is currently in draft format.

A water management system is currently implemented at the site as part of existing quarry operations. The system is designed to segregate clean and dirty water. Clean water is diverted around disturbed areas via diversion bunds. Dirty water is captured in sediment dams for settling of suspended solids. Water from sediment dams is stored in storage dams for onsite reuse (e.g. for dust suppression, process water, truck wash, rehabilitation) or for discharge to the creek. Water quality is currently monitored by Holcim at the storage dams and immediately up and down stream of the site. Parameters monitored include pH, turbidity and hydrocarbons.

Potential impacts to surface water that may be associated with the Project include:

- Discharge of potentially contaminated water (containing elevated concentrations of suspended solids) from disturbed areas impacting downstream water quality.
- Changes to disturbed catchment areas impacting runoff volumes, peak flow rates and peak water levels downstream of the site.
- Flooding impacting upon quarry infrastructure and operations. In particular, flooding from Newports Creek may impact the proposed new overburden stockpile.
- The ability of the quarry site to cater for a water deficit or surplus.

The Project is not expected to result in a significant increase in the disturbed catchment area compared to the existing approved quarry. As such, it is considered that the impact of the Project on downstream water resources would be minimal.

A detailed assessment of surface water issues would be undertaken as part of the EIS. This assessment would include long term water balance modelling. The water balance would be used to assess the performance of the sites water management system, and to identify likely water deficits / surpluses and estimate offsite discharges.

A water management strategy would be developed for the proposed Project. It is expected that the proposed strategy would build on the existing strategy.

4.2 Air quality

The predominant land use within the region is agriculture, forestry and farming. There are little to no industrial properties within the immediate area surrounding the quarry. The local air quality is primarily influenced by the proximity to the major traffic route of the Pacific Highway, the urban area of Coffs Harbour and to a lesser extent the surrounding agricultural activities. Local air quality impacts resulting from the existing operations on the site would include those from vehicle/machinery emissions, as well as dust generated from quarry operations and vehicle movements on unsealed roads.

The nearest sensitive receptors to the site include a series of rural residential properties to the east of the site in addition to a school located approximately 3 kilometres to the east of the site along North Boambee Road.

Potential air quality issues associated with the operation would arise from dust generated during the extraction and processing of materials as well as during rehabilitation. Dust sources include mobile equipment such as bulldozers, excavators, and front end loaders in addition to dust generated from blasting activities and the processing of material through the crushing and screening plant.

A detailed air quality assessment and modelling would be undertaken as part of the environmental assessment. Emission factors would be used to estimate the rate at which dust would be emitted from the site and compared to the existing operations.

Air quality goals for dust and particulate matter emissions would be established in accordance with the NSW EPA *Approved Methods and Guidance for the Modelling and Assessment of Air Pollutants* in New South Wales as well as other relevant legislation.

4.3 Operational noise

The site is situated at the end of a local road within a rural/agricultural area. No existing industrial noise influence currently occurs within the immediate vicinity of the site. The principal source of noise that contributes to existing noise levels within the vicinity of the Project is the operation of the existing extraction operations. This includes the processing equipment and truck movements between the Project site and the Pacific Highway.

The operations on the site currently include the use of mobile equipment such as front end loaders and excavators working in the pit, the crushing and screening plant, as well as tipper trucks and semi trailer trucks which transport the material off-site. Occasional blasting operations also occur which are used to break up material from within the pit for collection and transportation off-site.

A preliminary road traffic noise assessment was undertaken by Heggies Pty Ltd (2010) to assess the Project as part of initial investigations. Based on the results of the investigations the report concluded that the Project would result in the following impacts to existing noise levels:

- external noise levels for all residences 12 metres from North Boambee Road are predicted to be below the road traffic noise criteria during periods of peak hourly operations
- at 108 North Boambee Road, external road traffic noise levels are predicted to meet the relevant criteria for up to seven loads/hour (14 movements). External traffic noise level predictions at this location indicate a minor exceedance of the relevant criteria for 10 loads/hour (20 movements)
- road traffic noise levels inside 108 North Boambee Road are likely to meet relevant internal noise design goals if doors and windows are closed during peak operations. Negotiations with this resident about mitigation options to reduce this impact are being considered

- the internal noise level for the nearest school classroom is predicted to be below the relevant noise goal.

The preliminary assessment undertaken by Heggies Pty Ltd (2010) demonstrated that noise emissions from the Project (excepting for one residence at 108 North Boambee Road) would result in predicted noise levels below the relevant noise goals.

A detailed assessment of the noise issues associated with the Project would be undertaken during the EIS phase of the project.

4.4 Operational vibration

Existing operations on the site, such as the use of excavators and movement of transport vehicles to and from the site currently result in some vibration impacts. Additionally, blasting operations occur at a maximum of 31 blasts per year.

The Project seeks to modify the current blasting parameters to allow flexibility in blast yield sizes to meet the proposed increase in annual sales volumes. Any increase in the blast yield from the currently restricted 10,000 tonnes per blast and/or any other modifications to current blasting parameters is not expected to exceed currently approved vibration or overpressure impact levels. The blasting would continue to be restricted to 31 blasts per year (less than one blast per week) and confined to weekdays (9 am to 3 pm).

Heggies Pty Ltd has previously conducted a preliminary assessment of the potential vibration and airblast impacts from blasting associated with the Project. A full assessment of the potential vibration and airblast impacts from blasting associated with the Project would be undertaken as part of the EIS.

4.5 Ecology

The Project site is a highly modified environment (i.e. quarry pit, internal roads, stockpiles etc). Given the Project site has previously been cleared and has operated as an existing quarry for over 50 years, the need for further clearing of vegetation as part of this Project would be minimised.

The preliminary assessment of ecological issues associated with the Project included desk-based searches of relevant literature and databases as well as field surveys in September 2011. The searches and field surveys determined that the site is limited in its potential to represent important habitat for threat-listed fauna species, due to widespread evidence of a sustained history of anthropogenic land-use.

Impacts on EPBC Act-listed species and communities are also unlikely to be significant, and as such it is unlikely that the Project will constitute a Controlled Action. A number of EPBC Act listed Migratory species were observed or have potential to occur within the site, but the site offers marginal habitat opportunities that are abundant and of similar or higher quality elsewhere in the locality. Most migratory species likely to occur within the site are common species in NSW and are unlikely to be significantly impacted upon by proposed works within the subject site.

Further investigations will be undertaken during the preparation of the environmental impact statement to assess the potential biodiversity impacts of the Project and to identify appropriate impact minimisation and mitigation measures. Further tasks would include:

- description of the field surveys undertaken to date
- assessment of any potential loss of habitats or habitat fragmentation resulting from the proposed project

- significance assessments for any threatened biodiversity recorded, or with the potential to occur, in accordance with the *draft Guidelines for Threatened Species Assessment under Part 3A* (NSW National Parks and Wildlife Service 2002) for listings under the *Threatened Species Conservation Act 1995* and *Fisheries Management Act 1994* and the *EPBC Act Policy Statement 1.1 Significant Impact Guidelines* (Department of Environment and Heritage 2006) for listings under the *Environment Protection and Biodiversity Conservation Act 1999*.

4.6 Other potential environmental issues

Desktop studies would be undertaken for inclusion in the EIS to address issues not identified as key issues, including Aboriginal and historical heritage, groundwater, visual amenity and landscape, traffic and transport and contaminated land. A brief description of the potential non-key environmental issues has been provided below.

- Aboriginal and historical heritage – search of Aboriginal Sites Register (Aboriginal Heritage Information Management System – AHIMS) noted that no Aboriginal sites are recorded or Aboriginal places declared in or near the above location. A search of the NSW State Heritage Registered showed that there have been identified items of heritage significant within the suburb of North Boambee within close proximity of the Boambee Quarry site. Furthermore, the project will not result in the disturbance of previously undisturbed land.
- Groundwater –operation of the existing quarry has not intercepted the groundwater table nor have there been any groundwater issues to date. A desktop groundwater study will be undertaken as part of the EIS.
- Visual amenity - the Project site has a restricted view from surrounding properties due to the undulating topography of the site screening the property from adjoining residences. The proposed overburden area to the south of the existing operations may result in some minor changes to the existing visual impact along a limited section of Englands Road. This impact is considered minor as it would only impact occasional users of Englands Road.
- Traffic - access to the site is via North Boambee Road. North Boambee Road has direct access to the Pacific Highway for both north and southward journeys to and from the quarry. The operation of the quarry currently allows for 40 loads per day (80 truck movements) utilising 27 tonne semi trailer trucks. The Project does not propose to increase the number of truck movements per day, however does propose to remove the 27 tonne truck load limit to allow for use of RTA approved standard trucks.
- Socioeconomic - the quarry currently provides an economic benefit to the local community through the creation of jobs and the provision of resources for local industry and construction works. The potential for the project to impact upon the local socioeconomic environment of North Boambee and the surrounding areas would be addressed as part of the EIS. The project is likely to have a positive social and economic impact, through increased investment in the extraction operations on the site, the continuation of full time and casual employment opportunities and the increased availability of natural resources currently required for a variety of large construction projects within the mid north coast area (such as upgrade works to the Pacific Highway).
- Hazards and risks - limited to current operational works within the Project site. These include the movement of vehicles and other operational machinery within the pit area of the quarry and the storage and use of hazardous materials (e.g. fuels) on site.
- Contaminated land - given the history of the property as an existing quarry, contamination is unlikely to be a constraint on site development. A preliminary review of potential contaminants of concern would however be undertaken as part of the EIS.

5. Justification

Boambee Quarry is a hard rock quarry which is an important source of road base and high quality aggregate materials for the Coffs Harbour Region. The NSW State Government has committed $3.6 billion to upgrade the Pacific Highway. Currently approximately 64 kilometres of upgrades have commenced or are approved for the Pacific Highway dual carriageway project. Another 220 km is to be completed by 2014. Three sections of this upgrade project are scheduled to commence shortly in the Coffs Harbour region that Boambee Quarry is centrally located to supply. Materials from the Boambee Quarry resource are essential for the construction of these major projects.

Boambee Quarry is a regionally significant hard rock resource and is listed in the Mid-North Coast Regional Strategy (DoP 2009) as being an extractive resource of regional significance. Boambee Quarry has also been recognised in regional environmental planning instruments and provided with protection in local environmental plans.

Total market projections over the next five years have indicated that there will be a significant shortage of supply for roadbase and aggregate materials within the Coffs Harbour Region. Continued work on the Pacific Highway in the region, indicates that shortfalls of up to 500,000 tonnes per annum will continue after 2014 up to 2020 if the quarry continues to operate under the existing conditions.

In response to the current high demand and projected supply shortages for materials extracted from Boambee Quarry, Holcim is seeking to increase the quantity of saleable material from 300,000 to up to 400,000 tonnes of hard rock per annum. Overall, this will be achieved without large-scale changes to the current approved operations.

6. Consultation

Holcim has an established relationship with the local community. A range of community consultation activities have already been undertaken by Holcim including newsletters and feedback forms delivered to local residents in addition to face to face meetings with specific landowners, Bishop Druitt College and Coffs Harbour City Council.

A newsletter update has been prepared and will be distributed to local stakeholders in November 2011. Community and stakeholder consultation will continue through the EIS process.

7. Capital investment value

The capital investment value of the development is estimated to be $500,000.

Yours sincerely

Emma Dean
Senior Environmental Scientist
Parsons Brinckerhoff

Encl.
Attachment A Preliminary environmental risk assessment

Attachment A

Preliminary environmental risk assessment

Key Issues	Proposed activity	Potential impacts	Proposed controls	Risk Assessment			Further assessment proposed during environmental assessment	Key Issue
				C	P	R		
Surface water management	Expansion of quarry operations, including expansion of disturbed catchment area	Increase in runoff volumes, peak flow rates and peak water levels downstream of the site.	▪ Confirmation of likelihood through detailed surface water investigation (see right column). ▪ Amend existing water management strategy to cater for runoff from quarry expansion (new dams may be required to attenuate peak flows from the new overburden stockpile).	3	C	Moderate	Detailed surface water assessment focusing on existing site water management infrastructure and local catchment hydrology and flooding potential.	Yes
		Discharge of potentially contaminated water (containing elevated concentrations of suspended solids, oils and grease etc) from the site impacting downstream water quality.	▪ Amend existing water management strategy to cater for runoff from quarry expansion (new sediment dams may be required to capture and treat runoff from the new overburden stockpile). ▪ Ongoing surface water quality monitoring in Newports Creek.	3	C	Moderate		
		Flooding in Newports Creek impacting upon quarry infrastructure and operations.	▪ Confirmation of likelihood through detailed surface water investigation (see right column). ▪ Levees may be required to protect the new overburden stockpile from flooding.	3	C	Moderate		
		Increase in surface water runoff from site during initial stages of rehabilitation post-site use.	▪ On-site revegetation for uptake and filtration of water where necessary.	4	B	Moderate		

Key Issues	Proposed activity	Potential impacts	Proposed controls	Risk Assessment			Further assessment proposed during environmental assessment	Key Issue
				C	P	R		
Air quality	Expansion of quarry operations including unloading and loading of materials	Increase in $PM_{2.5}$ at the nearest sensitive receivers.	▪ Maintenance of dust controls on site (i.e. watering dust producing areas, installing sprays on processing equipment and placing enclosures around dust producing areas). ▪ development and maintenance of air quality goals in accordance with NSW EPA Approved Methods and Guidance for the Modelling and Assessment of Air Pollutants.	3	C	Moderate	Detailed air quality assessment including modelling.	Yes
Operational noise	Expansion of quarry operations including blasting size	External and internal noise levels at local residences exceed relevant noise goals.	▪ Confirmation of noise impacts through detailed assessment.	4	B	Moderate	Detailed noise assessment including road traffic noise and blast impacts.	Yes
		Minor exceedence of external traffic noise level at 10 loads/hour (20 movements) at one local residence.	▪ Control noise emissions from trucks. ▪ Maintenance of speed limit on trucks. ▪ Negotiations with residents about mitigation options. ▪ Alternative ventilation options to open windows; ▪ Construction of noise barrier if feasible and acceptable to resident.	4	B	Moderate		
		Exceedence of internal noise design goals at one local residence when windows or doors open.		4	B	Moderate		

Key Issues	Proposed activity	Potential impacts	Proposed controls	Risk Assessment			Further assessment proposed during environmental assessment	Key Issue
				C	P	R		
Operational vibration	Expansion of quarry operations including Increased blasting size	Increase in localised vibration within vicinity of site.	▪ Maintain restriction on yearly number of blasts (31 per year). ▪ Confirmation of vibration impacts through detailed assessment. ▪ Monitoring of additional blast impacts.	3	C	Moderate	Detailed assessment of the vibration impacts from blasting activities.	Yes
Aboriginal and historical heritage	Expansion of quarry operations	Identification of an Aboriginal or historic heritage item.	▪ Consultation with relevant Local Aboriginal Land Council as required	4	D	Low	Aboriginal and historical heritage assessment as required.	No
Ecology	Expansion of quarry operations	Vegetation removal.	▪ Identify appropriate impact minimisation and mitigation measures, following consideration of further assessments (see right column).	4	C	Low	Detailed field surveys of biodiversity features of the site. Preparation of a detailed biological assessment report identifying the significance of biodiversity within the site.	Yes
		Removal of fauna habitat.		4	C	Low		
		Habitat fragmentation and edge effects		3	C	Moderate		
		Increased noise during operation affecting native fauna.		4	C	Low		
		Erosion and soil disturbance.		4	D	Low		
		Direct fauna mortality during truck movements.		4	C	Low		
		Proliferation of exotic species.		4	C	Low		
Community consultation	General quarry operations	Community complaints on issues relating to noise and vibration, traffic and air quality.	▪ Establishment of communication tools between the community and quarry. ▪ Regular community newsletters.	4	C	Low	Preparation of a stakeholder engagement and issues management strategy to guide and inform the community.	No

Key Issues	Proposed activity	Potential impacts	Proposed controls	Risk Assessment			Further assessment proposed during environmental assessment	Key Issue
				C	P	R		
Visual amenity	Expansion of quarry operations	Minor impacts to visual amenity on immediately adjacent properties.	▪ Establishment of vegetation buffers where public visual amenity is affected.	5	B	Low	Topographical analysis of potential visual impacts.	No
Traffic	Expansion of quarry operations	No change from existing operations.	▪ No additional controls are proposed.	5	E	Low	Further assessment is not required as the traffic volume will not increase.	No
Hazards and risks	Expansion of quarry operations; increased blasting operations	Slight increase to the current operational hazards and risks.	▪ Identify appropriate hazard and risk minimisation and mitigation measures, following consideration of further proposed assessments (see right column).	3	D	Low	Desktop review of any additional hazards and risks as part of environment assessment.	No
Contaminated land	Expansion of quarry operations; increased blasting operations	Disturbance of soils used for past agricultural activities.	▪ Maintain site controls: sedimentation control structures and progressive rehabilitation (see also Surface Water Management above).	3	D	Low	Preliminary review of potential contaminants.	No
Services and utilities	Expansion of quarry operations; increased blasting operations	Increased demand on local services and utilities.	▪ Confirmation of likelihood through review of potential impacts.	4	D	Low	Identification of local infrastructure and a desktop review of potential impacts.	No
Cumulative impacts	Expansion of quarry operations; increased blasting operations.	Accumulation of environmental impacts from the proposal across region.	▪ Identify appropriate minimisation and mitigation measures, following consideration of proposed technical assessments.	3	C	Moderate	The cumulative impact of surrounding developments and the project would be evaluated.	No

Potential Consequences					Probability				
Maximum Reasonable Consequence (MRC) Score	MRC Score Description				A ALMOST CERTAIN to happen	B LIKELY to happen at some point	C MODERATE possible, it might happen	D UNLIKELY not likely to happen	E RARE practically impossible
	Environment	Public Safety	Social	Property/Assets					
1 Catastrophic	Regionally significant impacts. Irreversible impacts either on-site or off-site	Fatality or multiple serious injuries or illness	State or regionally significant social impacts	Destruction of, or serious damage to major equipment, plant, buildings etc	**1**	**2**	**4**	**7**	**11**
2 Major	Serious local impacts; significant cost to remediate	Incapacitating injury or long term health problems	Significant impacts to local and regional communities	Serious damage to major equipment, plant, buildings etc; low potential for repair	**3**	**5**	**8**	**12**	**16**
3 Moderate	Moderate local impacts; can be remediated;	Serious injury or health impacts	Significant impact on local community	Damage to major equipment, plant, buildings etc; potentially repairable at substantial cost	**6**	**9**	**13**	**17**	**20**
4 Minor	Minor local impacts; can be remediated	Injury or illness requiring medical treatment	Inconvenience to community/ landowners	Damage to equipment, plant, buildings etc; repairable at significant cost	**10**	**14**	**18**	**21**	**23**
5 Insignificant	Negligible impact, easily remediated	First aid injury	Isolated inconvenience to individuals	Minor, easily repaired damage to equipment, plant, buildings etc.	**15**	**19**	**22**	**24**	**25**

Risk Classification

Critical	**1-3**
High	**4-10**
Moderate	**11-15**
Low	**16-25**