STATE SIGNIFICANT DEVELOPMENT ASSESSMENT: Teven Quarry Project (SSD 6422)

Environmental Assessment Report
Section 89E of the
Environmental Planning and Assessment Act 1979

July 2015

Cover Photograph: Looking west from Teven Road towards Teven Quarry (Google © Street view – January 2010)

July 2015
NSW Department of Planning & Environment
www.planning.nsw.gov.au

1. BACKGROUND

Holcim (Australia) Pty Ltd (Holcim) owns and operates the Teven Quarry, an existing hard rock quarry located on Stokers Lane, Teven, approximately 8 kilometres (km) northwest of Ballina in the Ballina local government area (see **Figure 1**).

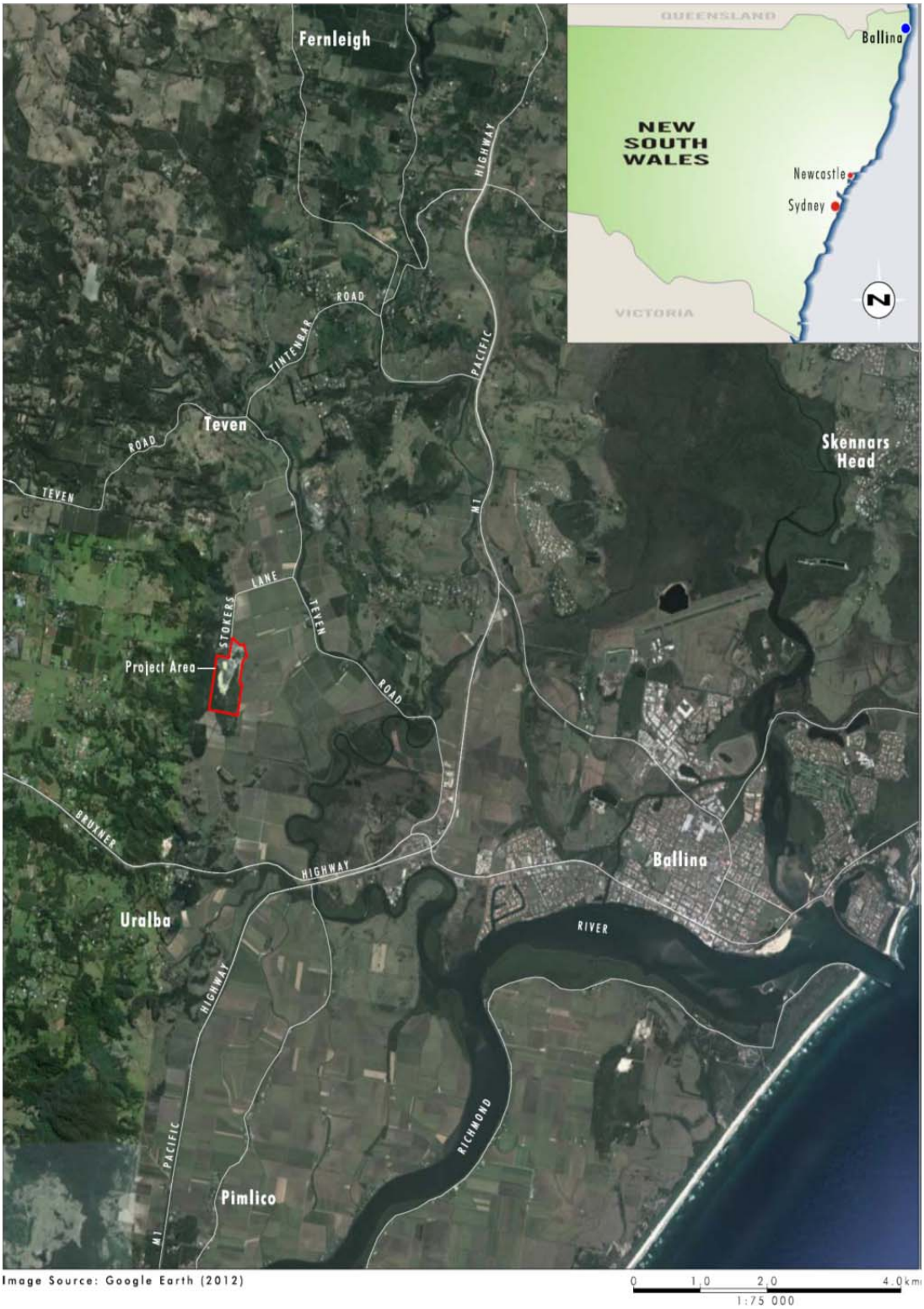

Figure 1: *Location of Teven Quarry*

Teven Quarry has been operating since the 1940s and supplies construction and road building materials to the Northern Rivers region of NSW, principally in the local government areas of Ballina, Byron, Lismore and Tweed. The main products of the quarry are sub-base, road base, asphalt aggregates and concrete aggregates, which are used primarily in road and concrete construction.

Teven Quarry currently operates under two development consents, namely:

- DA 1995/263 (granted through Land and Environment Court Order 10722 of 1995) for an extractive industry and gravel crushing plant; and
- DA 2000/431 (issued by Ballina Shire Council) for alterations and additions to operational facilities and changes to stockpiling areas.

These consents provide for resource extraction, processing and the transport of quarry products by road from the site. The current quarrying process at Teven Quarry involves the following key steps:

- vegetation clearing and topsoil stripping;
- overburden removal;
- drilling and blasting;
- hauling of rock from the quarry to the crushers; and
- crushing, screening, stockpiling and delivery of quarry products.

Teven Quarry operates a fixed, three-stage crushing process, with primary, secondary and tertiary crushers located in the infrastructure area to the north of the pit, as shown on **Figures 2 and 3.** Extracted rock is crushed and screened to produce aggregates ranging in size from < 7 millimetres (mm) up to 60 mm. In the infrastructure area, conveyors transport crushed rock to the screens and screened rock to the product stockpiles along the northern and eastern property boundaries.

DA 1995/263 initially allowed an annual production rate of 200,000 tonnes per annum (tpa), increasing annually by 1.5%, extracted from a resource of 6.5 million tonnes. On this basis, the consent allows a production rate of 269,000 tpa for 2015 and would allow a production rate of approximately 496,000 tpa when it is due to lapse in 2056. Over the past five years, production at Teven Quarry has reached or neared the relevant annual limit.

Teven Quarry has an area of approximately 35.4 hectares (ha), with an approved extraction area of 16 ha. Teven Quarry's resource is contained within a north-south ridge which forms part of the escarpment that separates the coastal floodplains (used for sugar cane farming) to its east, from the Alstonville Plateau (used for a mixture of farming and rural residential purposes) to its west. The ridge has an elevation of about 70 metres Australian Height Datum (m AHD) at its centre and elevations of about 5 m AHD at its eastern and western boundaries. Current quarry planning is to continue extraction southwards, to a maximum depth of 4 m AHD and place overburden in the northwestern area of the pit to create a visual and acoustic barrier.

Surface water runoff at the quarry is collected in a cane-field drain located along its eastern boundary, which drains into Maguires Creek, approximately one km to the east of the site. Maguires Creek is a tributary of Emigrant Creek, which joins the Richmond River near Ballina.

Holcim holds an existing environment protection licence (EPL) under section 55 of the *Protection of the Environment Operations Act 1997* (EPL 3293), which contains limits for wet weather discharges from the site and for noise and blasting emissions.

2. PROPOSED DEVELOPMENT

The demand for quarry products in the Northern Rivers region is expected to increase as a result of forecast population growth and major infrastructure projects, including the proposed Pacific Highway upgrade between Ballina and Woolgoolga.

Holcim proposes to increase Teven Quarry's maximum production rate to 500,000 tpa, extend its hours of operation for a limited range of activities and include concrete recycling in the activities that can be carried out on site.

The increased production rate would be achieved by maximising use of the existing crushing and screening plant (which has a capacity of approximately 350,000 tpa) and adding an in-pit mobile processing plant (with a capacity of approximately 150,000 tpa) to cater for periods of peak demand.

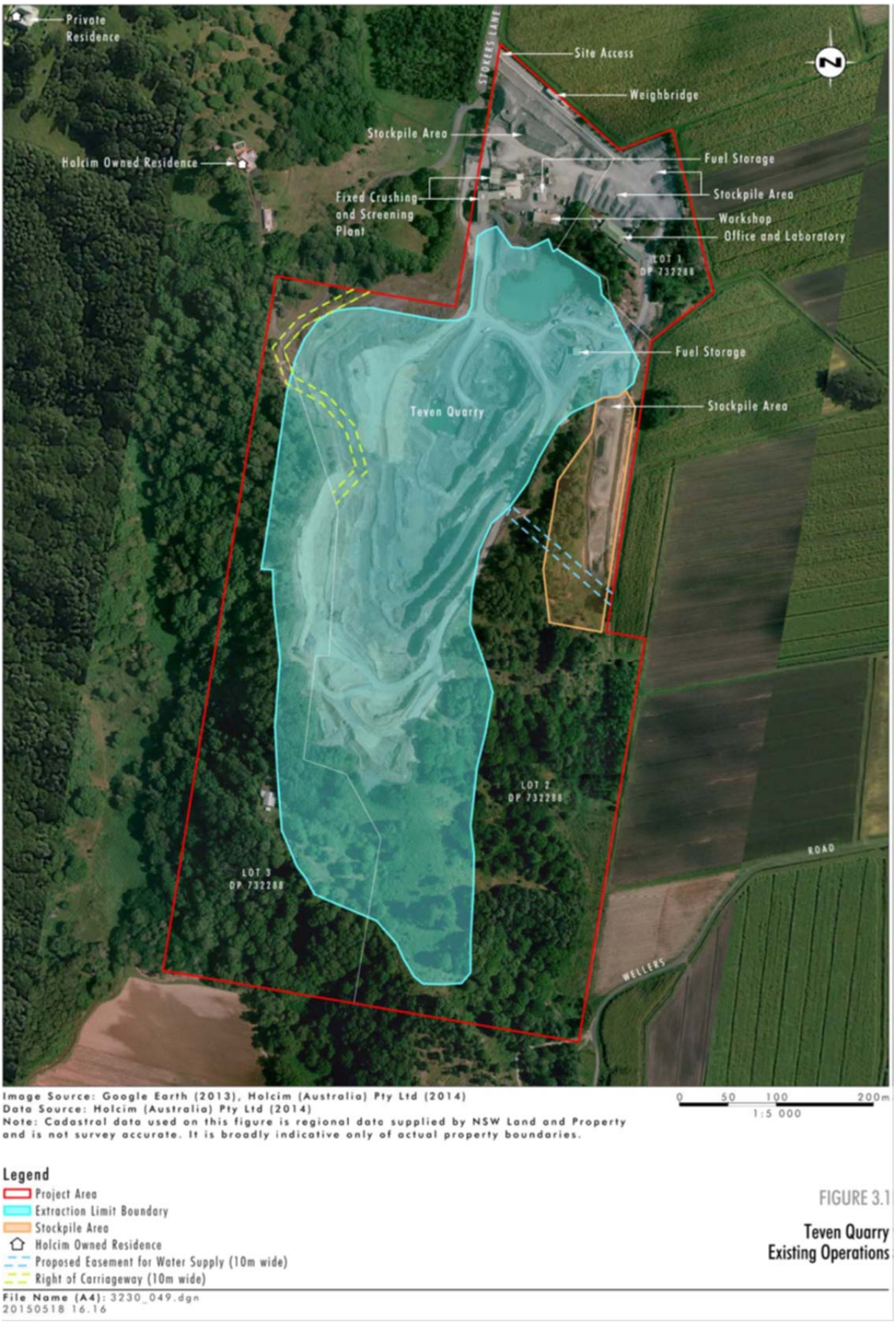

Figure 2: *Existing layout*

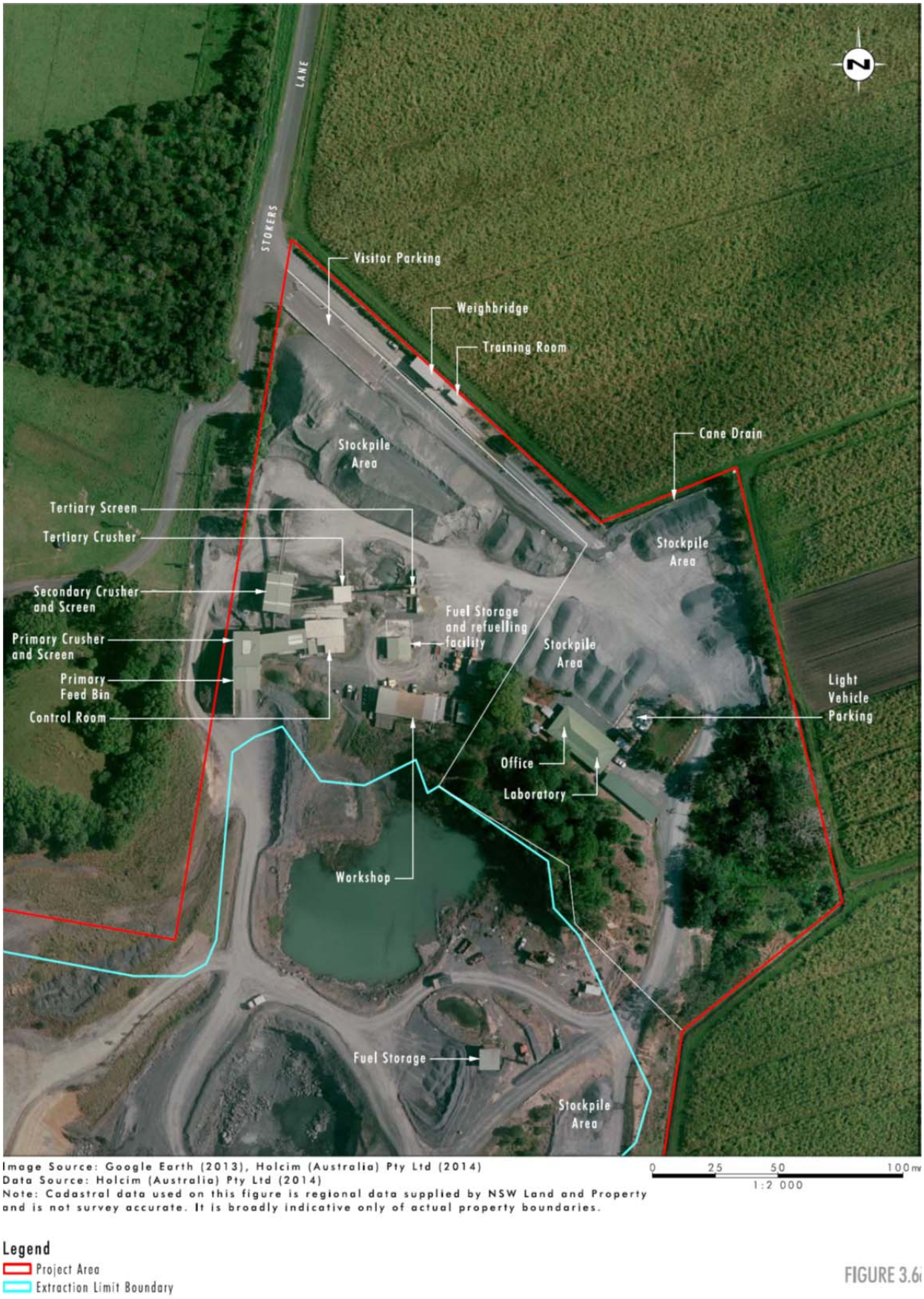

Figure 3: *Existing infrastructure area*

The project includes the addition of a mobile pug mill on site to expand the range of products. The pug mill, or continuous mixing plant, allows materials to be simultaneously ground and mixed with water or other liquid additives. The mill would be located either within the existing infrastructure area or within the pit. In addition, Holcim is seeking approval to recycle up to 10,000 tpa of clean surplus concrete from local concrete plants.

Holcim proposes to extend its hours of operation to allow a limited range of activities between 6 pm and 10 pm, Monday to Friday (on a campaign basis) to meet the needs of particular projects. These activities include stockpile management, product loading and transport and maintenance. Laden truck movements during the extended hours would be limited to a maximum of six loads per hour.

Holcim is seeking approval for a 30 year life for Teven Quarry. However, if a production rate of 500,000 tpa was maintained, the life of the quarry would be about 11 years.

Holcim proposes no changes to the extent of the approved extraction area, the depth of the quarry pit, the extent of infrastructure and stockpile areas, or to the size of the resource to be extracted.

Aspects of the existing and proposed development are compared in **Table 1**.

Table 1: *Key aspects of the existing and proposed development*

Aspect	Existing	Proposed
Approved Rate of Production	200,000 tpa in 1995 269,000 tpa in 2015 496,000 tpa in 2056	Up to 500,000 tpa
Quarry Life	2056	30 years from date of approval (ie 2045)
Employees	8 full-time employees	11 full-time employees
Hours of Operation	7 am – 5 pm Monday to Friday 7 am – 4 pm Saturday	7 am – 6 pm Monday to Saturday Extended hours from 6 pm to 10 pm Monday to Friday for product loading and transport, stockpile management and maintenance only
Blasting Hours	9 am – 3 pm Monday to Friday	No change
Quarrying Methods	Drill and blast, crushing and screening, stockpiling and hauling	No change
Blasting	Approximately one blast every six weeks	Up to 2 blasts per month
Processing Methods	Fixed primary, secondary and tertiary crushing and screening plant with a processing capacity of 350,000 tpa	Retention of existing plant Addition of a mobile crushing and screening plant with a capacity of 150,000 tpa Addition of a mobile pug mill
Concrete Recycling	N/A	Recycling of up to 10,000 tpa of surplus concrete from local concrete batching facilities
Transport	Up to 60 light vehicle movements per day (30 in/30 out) and an average of 78 truck movements per day (39 laden trucks)	Up to 70 light vehicle movements per day (35 in/35 out) and an average of 146 truck movements per day (73 laden trucks)
	Transport via Stokers Land to Teven Road; 70% of trucks travel south to the Bruxner Highway and 30% north to Tintenbar Road	No change to transport routes, but increased proportion of heavy vehicles travelling south to the Bruxner Highway (95%)

3. STATUTORY CONTEXT

3.1 State Significant Development

The project is classified as State significant development under section 89C of the *Environmental Planning and Assessment Act 1979* (EP&A Act), as it would extract from a total resource of more than 5 million tonnes. Therefore, it meets the criteria for State significant extractive industries development set out in Schedule 1 of *State Environmental Planning Policy (State and Regional Development) 2011*.

The Minister for Planning is the consent authority for the development application. However, under the Minister's delegation of 16 February 2015, the Executive Director, Resource Assessments and Compliance, may determine the application.

3.2 Permissibility

The northern part of the site is zoned RU1 – Primary Production under the *Ballina Local Environmental Plan (LEP) 2012*. The southern part of the site is zoned 1(e) Rural – Extractive and Mineral Resources under the *Ballina LEP 1987.*

Extractive industries are permissible with consent in both these zones. The term 'extractive industry' is more strictly defined in the *Ballina LEP 1987* (under the adopted Model Provisions of 1980) and does not include concrete recycling. The proposed concrete recycling activity is permissible as it would be carried out wholly within the portion of the site zoned RU1 under *Ballina LEP 2012*.

Consequently, all aspects of the project are permissible with development consent under Ballina Council's two applicable LEPs.

The project is also permissible with consent under clause 7 of *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007* (Mining SEPP).

3.3 Environmental Planning Instruments

Under section 79C of the EP&A Act, the Department is required to consider the relevant provisions of any environmental planning instruments (EPIs).

Consideration of the relevant EPIs is provided in Section 5 of Holcim's Environmental Impact Statement (EIS, see **Appendix A**) and is further considered by the Department in **Appendix D** of this report. Following from this consideration and its assessment of the project, the Department is satisfied that the project has adequately addressed the applicable requirements of the relevant EPIs.

3.4 Integrated Approvals

Under section 89J of the EP&A Act, a number of other statutory approvals have been integrated into the State significant development approval process and are not required to be separately obtained for the project. These include approvals under the *National Parks and Wildlife Act 1974,* the *Heritage Act 1977* and the *Water Management Act 2000*.

Under section 89K of the EP&A Act, a number of other approvals are required, and must be substantially consistent with any development consent. These approvals include EPLs under the *Protection of the Environment Operations Act 1997*.

The Department has consulted with relevant government authorities and considered the relevant issues relating to these approvals in its assessment (see Section 5).

3.5 Objects of the EP&A Act

The Minister is required to consider the objects of the EP&A Act when making decisions under the Act. The most relevant objects are Section 5(a)(i),(ii),(vi) and (vii), which are as follows.

> *To encourage:*
> *(i) the proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment;*
> *(ii) the promotion and co-ordination of the orderly and economic use and development of land;*
> *(vi) the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats; and*
> *(vii) ecologically sustainable development.*

The Department has undertaken a merit assessment of the proposed development in accordance with these objects.

4. CONSULTATION

The Department publicly exhibited the development application and EIS (**Appendix A**) from 8 December 2014 to 2 February 2015:

- on the Department's website;
- at the Department's Information Centre;
- at Ballina Shire Council's office; and
- at the Nature Conservation Council's office.

The Department also advertised the exhibition in the *Lismore Northern Star*; and notified relevant State Government authorities and Ballina Shire Council of the exhibition.

Ballina Shire Council and five government agencies made submissions on the proposed modification (see **Appendix B**). In addition, five submissions were received from nearby residents.

4.1 Government Agencies

Ballina Shire Council (BSC) noted that Teven Quarry's operations and its noise and dust impacts would continue to be regulated by the Environment Protection Authority. Council asked for clarification on proposed vehicle numbers on Teven Road, west of Tintenbar Road. Council also made recommendations relating to road safety measures and section 94 contributions.

The **Division of Resources and Energy** (DRE) within the Department of Trade and Investment, advised that the hard rock resource at Teven represents a regionally important source of hard rock aggregate, and that the expansion of existing quarries helps to ensure a continued supply of material for a range of building and construction uses in NSW. DRE recommended that Holcim should amend its Statement of Commitments to include the provision of production data to DRE.

The **Environment Protection Authority** (EPA) advised that it would be able to issue a variation to the site's existing EPL, and asked that conditions reflecting the proposed variations be incorporated in the consent. The EPA advised that it did not support the proposed increase in Saturday operating hours from the current 4 pm to the proposed 6 pm and Holcim accepted the EPA's position.

The **Office of Environment and Heritage** (OEH) raised issues about the lack of consultation with Aboriginal groups and recommended conditions relating to Aboriginal cultural heritage and the preparation and implementation of a Biodiversity Management Plan.

Roads and Maritime Services (RMS) made recommendations relating to the upgrade of the Teven Road/Stokers Lane intersection, improved delineation on Teven Road, preparation of a drivers' code of conduct and contributions towards the maintenance of the local road network.

The **NSW Office of Water** (NOW) considered that extraction would be unlikely to intersect the water table or impact on groundwater levels, but recommended a condition requiring that a groundwater licence is obtained in the event that groundwater is intersected. NOW also recommended that any dams on site would need to comply with the Harvestable Right Order under the *Water Management Act 2000* and that the Surface Water Management Plan is updated.

4.2 Community Submissions

Five submissions received from nearby residents raised issues about noise, dust, flooding, impacts on wildlife and road maintenance. The local residents are particularly concerned about the impacts of trucks travelling to and from the quarry in terms of amenity impacts (noise, vibration and dust) and road safety (as Teven Rd is used by local school buses). All five residents are opposed to the proposed extensions to operating hours.

On 16 April 2015, an adjoining landowner obtained consent for the construction of a 'studio outbuilding' under the provisions of *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*. The landowner advised that the outbuilding, when constructed, would contain a meditation room and a music room. At the time of the Department's assessment, the outbuilding was yet to be constructed.

4.3 Response to Submissions and Residual Issues

Holcim provided its Response to Submissions (RTS) on 17 April 2015 (**Appendix C**).

The Department forwarded the RTS to relevant Government agencies and made it publicly available on the Department's website.

All agencies (Ballina Shire Council, DRE, OEH, EPA and RMS) advised that the information in the RTS adequately addressed the issues that they had raised.

5. ASSESSMENT

The Department considers that the two key issues associated with the project are the:
- impacts of noise from quarrying and transport operations on nearby residents; and
- traffic impacts.

5.1 Noise and Blasting

The key elements of the proposed project that could result in additional noise impacts, when compared with existing operations, are the increased rate of production for extraction, processing and transport and the extended operating hours.

The EIS includes a Noise & Blasting Impact Assessment (NBIA), prepared in accordance with applicable guidelines, including the *NSW Industrial Noise Policy* (INP), the *NSW Road Noise Policy* (RNP) and the *Technical Basis for Guidelines to Minimise Annoyance due to Blasting Overpressure and Ground Vibration.*

Background Noise Levels

Noise monitoring for the NBIA was undertaken at three representative locations (see **Figure 4**), which found that:
- N1 (to the northwest) receives little or no noise from road traffic or quarrying activities and has background noise levels (RBLs) of 32 dBA, 31 dBA and 30 dBA in the day, evening and night-time periods respectively;
- N2 (to the east) is influenced by noise from Teven Road, and has RBLs of 33 dBA, 30 dBA and 30 dBA in the day, evening and night-time periods respectively; and
- N3 (to the south) is influenced by local noise sources, specifically insects (cicadas) and frogs, and has RBLs of 36 dBA, 38 dBA and 37 dBA in the day, evening and night-time periods respectively.

Assessment Criteria

The NBIA identified 34 residences that could potentially be adversely impacted by noise from quarrying and transport activities. These 34 receivers were grouped into two areas based on their proximity to Teven Road (see **Figure 4**). Area 1 consists of receivers along Teven Road and Area 2 consists of all other residential receivers. The PSNLs for these two areas are provided in **Table 2**.

Table 2: *PSNLs for Areas 1 and 2*

Receiver Description	Time Period	PSNL [1]
Area 1 – Residences located in proximity of Teven Road	Day	38 $L_{Aeq,15min}$
	Evening	35 $L_{Aeq,15min}$
	Night	35 $L_{Aeq,15min}$
Area 2 – All other residential receivers	Day	37 $L_{Aeq,15min}$
	Evening	36 $L_{Aeq,15min}$
	Night	35 $L_{Aeq,15min}$

Note 1: The most conservative of the alternatives available has been used to set the PSNL

Predicted Operational Noise

The NBIA modelled predicted noise levels for two conceptual stages of quarry development (Year 1 and Year 11), which were considered to represent the potential worst-case scenarios. The model assumed the simultaneous operation of all equipment on site, including the mobile crushing plant and the mobile pug mill. In practice, this equipment would only be operated on a campaign basis during periods of maximum production. Temperature inversions are a significant feature of the area, occurring for more than 30% of the night-time period during winter, and these were included in the noise model.

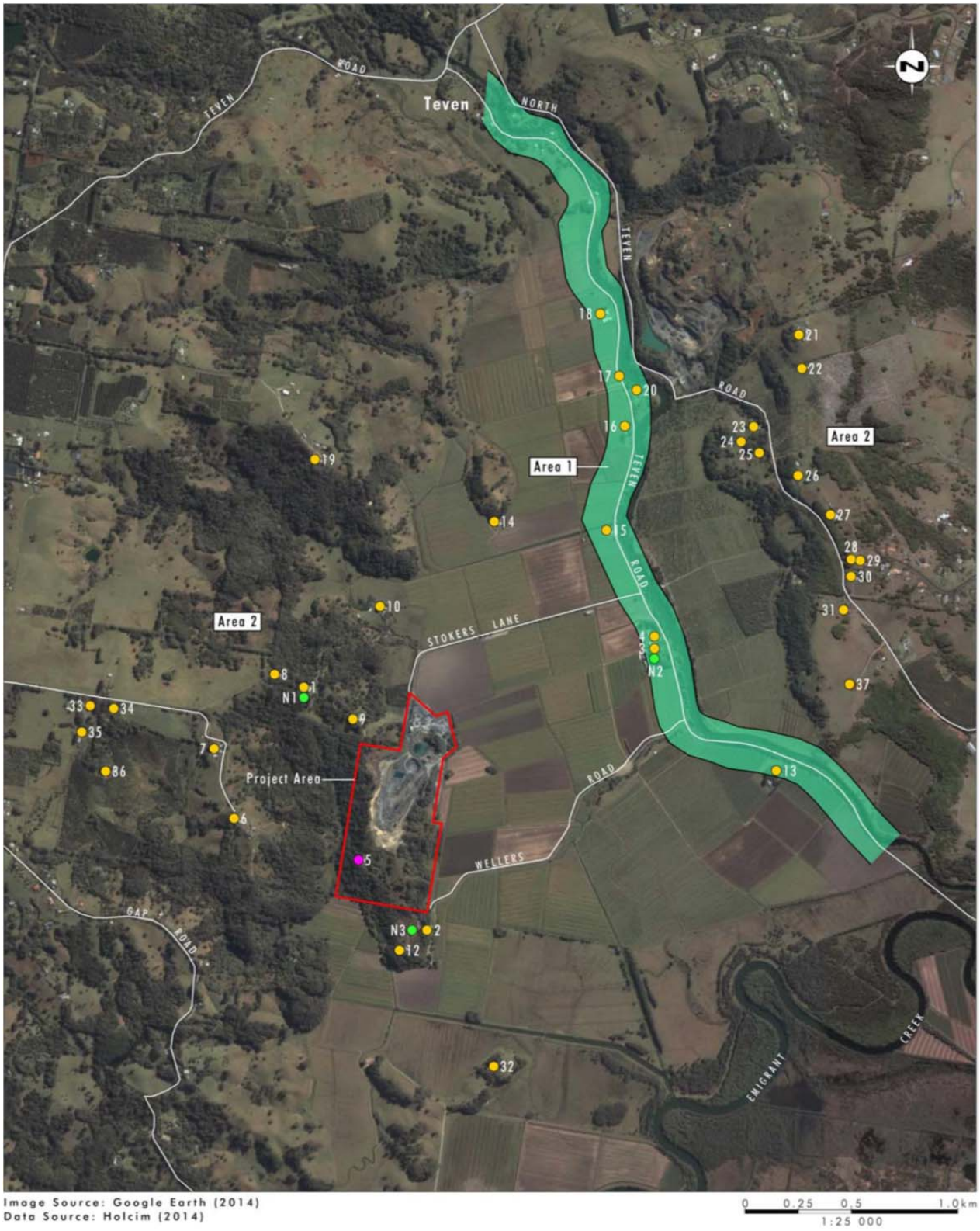

Figure 4: *Location of noise monitors and residential receivers*

The NBIA found that, under worse-case operational and meteorological conditions, the project would comply with the daytime PSNLs at all but one of the surrounding 34 residences. The exception is R9 which is predicted to have a day-time noise level of 45 dBA under both scenarios. The NBIA found that the project would comply with the evening PSNLs at all residential receivers. Since the EIS was exhibited, Holcim has purchased property R9. Subsequently, the project would meet the day and evening PSNLs at all privately-owned residences.

Over the last eight years, Holcim has implemented a number of noise mitigation measures at Teven Quarry in consultation with the EPA. These include enclosure of the crushing and screening plant, installation of rubber lining in the primary feed bin, construction of noise bunds around the operating area, and the use of 'quackers' on mobile equipment in place of conventional reversing alarms.

Additional noise mitigation measures proposed as part of the project are:

- maintenance of product stockpiles in strategic locations, where practicable, along the northern edge of the site to attenuate noise from product loading activities;
- use of broad band reversing alarms on all mobile equipment; and
- management of mobile equipment during critical weather conditions.

The Department is satisfied that the measures previously adopted and now proposed by Holcim include most reasonable and feasible noise mitigation measures and that all PSNLs for residential receivers are predicted to be met. Notwithstanding, there would be opportunities for Teven to reduce the activities of particular mobile plant, should noise emissions approach the PSNLs (eg the mobile crusher and pug mill do not necessarily have to be operated at the same time, as was part of the modelled scenarios).

Since the EIS was exhibited, one of the adjoining property owners (R10) sought and received approval to construct a 55 m^2 'studio outbuilding' under the provisions *of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*. The proposed outbuilding would be located approximately 50 m from Stokers Lane and 100 m from the northern boundary of the quarry. The proposed outbuilding is classified as a non-habitable building in the complying development certificate issued on 16 April 2014. The owner of R10 has indicated that the proposed outbuilding would be used as a meditation studio, notwithstanding that the proposed site is significantly affected by noise from the existing quarry operations.

The Department therefore requested that Holcim provide the predicted daytime and evening operational noise levels at the site of the proposed studio. The predictions indicated that the operational noise levels at the outbuilding site would be up to 58 dB(A) $L_{Aeq(15\ min)}$ during the day and up to 45 dB(A) $L_{Aeq(15\ min)}$ during the evening.

The Department considers the most appropriate classification for the proposed use of the outbuilding under Table 2.1 of the INP would be 'Area specifically reserved for passive recreation'. The acceptable noise level for this type of use is 50 dB(A) $L_{eq(period)}$. However, given that the proposed outbuilding would be located in an existing rural/industrial interface zone, the appropriate level would be 55 dB(A) $L_{eq(period)}$. The Department notes that the passive recreation criterion is for external activities. The Department has recommended the inclusion of the 55 dB(A) $L_{eq(period)}$ criterion for the proposed outbuilding (when it is in use) in the conditions of the consent, to be measured externally to the building. These criteria are expected to be readily met by the quarry. However, the Department also notes that the noise attenuation provided by any substantial façade to the proposed outbuilding would be expected to be at least 10 dB(A), which would also substantially decrease any intrusive noise level from quarrying activities.

Cumulative Noise

Other potential industrial noise sources in the area are Boral's Teven Quarry, approximately 2.5 km to the northeast, and the Tuckombil Quarry located in Alstonville, approximately 3.2 km to the west.

Given the distance between Holcim's Teven Quarry and these sources, the NBIA considers it unlikely that cumulative noise impact assessment criteria would be exceeded as a result of the project. The Department agrees with this assessment.

Transport Noise

The NBIA assessed the impacts of transport noise from the proposed project on sensitive receivers located on Stokers Lane and Teven Road, namely:

- R10 in Stokers Lane;
- R3, R4 and R13 on Teven Road to the south of Stokers Lane; and
- R15, R16, R17, R18 and R20 on Teven Road to the north of Stokers Lane.

Under the RNP, Teven Road is categorised as a sub-arterial road and Stokers Lane is categorised as a local road. The road noise criteria that apply to these roads are shown in **Table 3** below.

***Table 3**: Road noise criteria for Teven Road and Stokers Lane*

Road Category	Type of Project/Land Use	Assessment Criteria dB(A)	
		Day (7.00 am – 10.00 pm)	Night (10.00 pm – 7.00 am)
Freeway/arterial/ sub-arterial roads	Existing residences affected by additional traffic on existing freeways/arterial/sub-arterial roads generated by land use developments	$L_{Aeq,\ 15\ hour}$ 60 (external)	$L_{Aeq,\ 9\ hour}$ 55 (external)
Local Roads	Existing residences affected by noise by additional traffic on existing local roads generated by land use developments	$L_{Aeq,\ 1\ hour}$ 55 (external)	$L_{Aeq,\ 1\ hour}$ 50 (external)

For Receiver R10 on Stokers Lane, additional traffic is predicted to result in minor traffic noise increases, from 39.3 dBA to 40.3 dBA in the morning peak and 35.7 dBA to 37.5 dBA in the afternoon peak. These are considered to be imperceptible increases (less than 2 dBA) and well below the 55 dBA $L_{Aeq,\ 1\ hour}$ criterion for local roads.

The predicted noise impacts for the receivers along Teven Road as a result of the proposed project are shown in **Table 4**.

***Table 4:** Predicted noise impact for residential receivers in Teven Road*

Receiver Location	Existing	Project at Peak Production	Relative Increase	Criteria[1] $L_{Aeq,(15\ hour)}$
R3	54.4	55.6	1.2	60
R4	59.6	60.8	1.2	60
R13	52.8	54.0	1.2	60
R15	63.4	63.0	-0.4	60
R16	63.4	63.0	-0.4	60
R17	63.4	63.0	-0.4	60
R18	55.6	55.3	-0.3	60
R20	52.1	51.7	-0.4	60

Note 1: Day time, sub-arterial road 15 hour duration criteria, NSW Road Noise Policy, OEH 2011

Of the receiver locations predicted to experience increased transport noise due to the proposed project, the relevant road traffic noise criterion of 60 dBA would be exceeded at one location, R4. As the maximum predicted increase in traffic noise of 1.2 dBA is less than the 2 dBA stipulated as the maximum in the RNP, the predicted traffic noise impacts of the project are considered acceptable.

Therefore, noise from Teven Quarry's transport activities is predicted to comply with all relevant noise criteria at all potentially affected receivers, and the increase in traffic noise as a result of the project is expected to be minor.

Blasting

No changes are proposed to the current hours for drilling and blasting, with blasting only taking place between 9 am and 3 pm Monday to Friday and not on public holidays. Holcim advises that blasting currently takes place approximately once every six weeks. The project would increase the frequency of blasting to a maximum of twice per month.

The NBIA predicts that the standard criteria for ground vibration and peak airblast would be met at all privately-owned residences. Holcim has committed to design all blasts to comply with the standard criteria. The Department accepts that this outcome is achievable and has recommended a condition of consent requiring Holcim to prepare and implement a Blast Management Plan, including a monitoring program to ensure that it complies with the relevant blast criteria at all privately-owned residences. The Department has also recommended a condition requiring that there be no more than one blast a day and no more than two blasts per month. With these conditions in place, the Department considers the impacts of blasting associated with the proposed project are acceptable.

Conclusion

The operational noise from the project is predicted to meet the PSNLs at all privately-owned properties. There would be minor increases in traffic noise for one property in Stokers Lane and three properties in Teven Road. However, the predicted increases either do not the relevant criteria or are less than 2 dBA in excess of existing noise levels, and are therefore compliant with the RNP.

The Department has included noise criteria in the draft conditions of consent and has also recommended conditions requiring Holcim to:

- implement best practice noise management to minimise the construction, operational and traffic noise of the project, including the proposed additional noise mitigation measures;
- monitor noise generated by the project at representative surrounding receivers;
- review monitoring data to modify operations to ensure compliance if necessary; and
- prepare and implement a Noise Management Plan.

With the implementation of these recommended conditions, the Department is satisfied that the noise impacts associated with the project would be acceptable.

5.2 Traffic and Transport

The EIS includes a Traffic Impact Assessment (TIA) for the project. The TIA included consideration of transport routes and potential impacts from increased traffic volumes.

Transport Routes

Teven Quarry is located at the western end of Stokers Lane, a local road which provides access to the quarry and two residences (see **Figure 4**). Stokers Lane has a T-intersection to Teven Road, a local road connecting the Bruxner Highway to Tintenbar Road. The Bruxner Highway is a State highway that connects Ballina to the Pacific Highway and then heads west to Alstonville, Lismore and Casino. Tintenbar Road is an unclassified, two lane rural regional road, passing through rolling terrain. It carries moderate traffic volumes between Teven Road and the Pacific Highway. Teven Road carries relatively low traffic volumes both north and south of its intersection with Stokers Lane.

The primary transport routes (see **Figure 5**) currently used by Teven Quarry are:

- Route 1 – Stokers Lane, south along Teven Road to Bruxner Highway and then west towards Lismore; or east to Pacific Highway, for trips north or south, or to Ballina via River Street; and
- Route 2 – Stokers Lane, north along Teven Road to Tintenbar Road, and then east along Tintenbar Road to Tamarind Drive to the Pacific Highway.

A Road Safety Audit undertaken for the project found that Route 1 has fewer curves and better sight lines, and is better suited to heavy vehicles than Route 2. It recommended that Route 1 be the primary transport route for the project, with Route 2 being used for local deliveries only. At the time of the EIS and based on current production rates approximately 70% of Teven Quarry's trucks travelled on Route 1 and 30% travelled on Route 2 (with the majority of heavy vehicle transport on Route 2 supplying the Pacific Highway upgrade). Holcim has committed to changing its transport operations so that at least 95% of quarry trucks travel on Route 1 (including all deliveries to the Pacific Highway) and no more than 5% travel on Route 2 to supply local markets.

Existing Traffic

On average, Teven Quarry currently generates about 60 light vehicle movements per day (30 inbound and 30 outbound) and 78 heavy vehicle movements per day (39 inbound and 39 outbound). During a busy week, this can increase to 106 heavy vehicle movements per day (53 inbound and 53 outbound). The existing traffic varies considerably from day to day, as well as from hour to hour, depending on demand, with the busiest hours occurring in the mornings. Deliveries taper off in the afternoon.

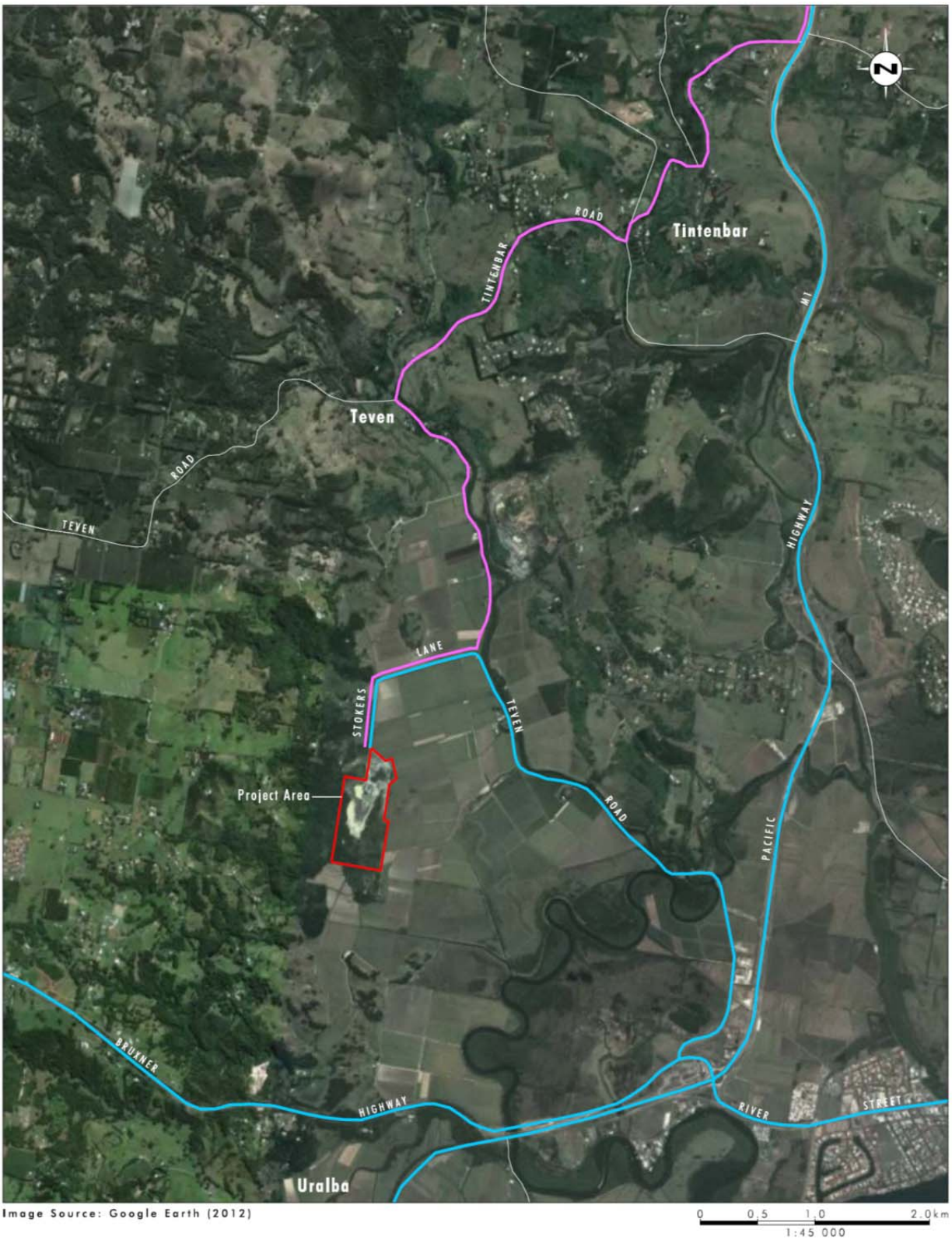

***Figure 5**: Teven Quarry's transport routes*

Current hourly traffic generation is:

- 8-10 heavy vehicle movements (4-5 laden trucks) during an average hour;
- 16-20 heavy vehicle movements (8-10 laden trucks) during a busy hour; and
- 24 heavy vehicle movements (12 laden trucks) per hour at maximum loading capacity.

Proposed Traffic Generation

The proposed project at full production would contribute an average of 146 heavy vehicle movements per day to the local road network, an additional 68 heavy vehicle movements over current averages.

The increase in average daily and hourly traffic volumes (compared to the levels in 2014), as a result of the project, are shown in **Tables 5 and 6**.

Table 5: *Predicted increase in daily traffic volumes*

	Existing Approval 265,000 tpa		Project 500,000 tpa		Difference	
	Loads	Two Way Trips	Loads	Two Way Trips	Loads	Two Way Trips
Product Trucks	39	78	73	146	+34	+68
Light vehicles	30	60	35	70	+5	+10

Table 6: *Predicted increase in hourly traffic volumes*

	Existing Approval 265,000 tpa		Project 500,000 tpa		Difference	
	Loads	Two Way Trips	Loads	Two Way Trips	Loads	Two Way Trips
Average Hour	5	10	7	14	+2	+4
Busy Hour	8-10	16-20	10	20	+2	+4
Maximum Hour (7.00am – 6.00pm)	12	24	12	24	Nil	Nil
Maximum Hour (6.00pm – 10.00pm)	-	-	6	12	+6	+12

Due to the restricted use of Route 2 for local deliveries, the project is predicted to result in a decrease of 18 heavy vehicle movements per day on this route and an increase of 86 heavy vehicle movements per day on Teven Road to the south (Route 1).

With the proposed changes in transport arrangements for the project, so that only local deliveries occur via Route 2, the TIA estimates the average total southbound heavy-vehicle movements on Teven Road would increase from 246 to 330 movements per 15 hr production day and average total northbound movements would reduce from 203 to 187 heavy vehicle movements. Total vehicle movements include all non-quarry related heavy vehicles as well as quarry trucks.

The maximum number of truck movements is constrained by the loading capacity at the quarry (capable of dispatching 12 laden trucks per hour) which Holcim does not propose to increase. Thus, the theoretical maximum number of truck movements to and from the site would remain the same during the operating hours of 7:00 am to 6:00 pm (264 movements). The only increase to maximum daily truck movement numbers would arise from the extended operating hours (6:00 pm to 10:00 pm), during which Holcim proposes to dispatch no more than 6 laden trucks per hour (a total of 48 additional truck movements).

In Stokers Lane the average two-way heavy vehicle movements are predicted to increase from 16 to 20 movements per hour in the morning peak (7:00 am to 9:00 am) and from 7 to 11 movements per hour in the afternoon peak (3:00 pm to 5:00 pm).

As shown on Table 6, changes in heavy vehicle movements per hour would be relatively minor during the daytime and limited to an additional 12 movements (6 laden trucks) per hour during the evening period. An additional 10 light vehicle movements per day are predicted for proposed maximum production.

Intersection Performance
The TIA modelled the impact of the increased traffic on the intersections of Stokers Lane/Teven Road and Teven Road/Bruxner Highway. Modelling predicted the Stokers Lane/Teven Road intersection would continue to have a Level of Service A with low vehicle delays and the Teven Road/Bruxner Highway intersection would retain a Level of Service C, which is a satisfactory level of service.

On the wider road network, including the intersection of Bruxner Highway/Pacific Highway and River Street, the additional traffic volumes could be accommodated without any measureable change in Level of Service.

The Department is satisfied that the impact of the additional heavy vehicles on the road network as a result of the proposed project would be minor. The RMS and Council both recommended that the findings of the Road Safety Audit are implemented, including preparation of a drivers' code of conduct. The requirements of the RMS and Council have been incorporated in the recommended conditions. The Department has also recommended a condition requiring Holcim to limit the transport operations to 146 vehicle movements per day, averaged over a calendar month.

Road Maintenance and Contributions
Submissions from Council and local residents raised the issue of road maintenance, including concerns over the degradation of roads used by quarry trucks and consequent implications for the generation of dust, as well as road safety and amenity issues.

Holcim currently pays a truck haulage road contribution of $0.345/tonne to Council and originally proposed that this rate remain. In its submission on the EIS, Council requested further justification to substantiate the break-down in truck numbers heading to the north or south of Teven Quarry. Council has reviewed the information provided in the RTS and advised it is satisfied with the additional rationale provided by Holcim, however it suggested a revised road contribution rate of $0.3501/tonne. Holcim has confirmed its acceptance of Council's proposed road contribution rate and the Department has reflected this in a recommended condition of consent.

The issue of whether the contributions collected from Teven Quarry are used to maintain roads used by quarry trucks was also raised. *Ballina Shire Heavy Haulage Contributions Plan 2011* does not specify the roads or sections of roads where contributions are to be spent, noting that the application of funds collected under the plan is to be determined as part of Council's annual Integrated Planning & Reporting process. The Department considers Council is the appropriate authority to determine how contributions collected for the maintenance of roads are spent. However, the Department encourages Council to use the money collected from Holcim on the maintenance of Teven Road.

5.3 Water Management
Teven Quarry is located within the catchments of Emigrant Creek and Maguires Creek, which ultimately flow into Richmond River, which then flows in an easterly direction to the coast at Ballina.

Teven Quarry's current water management system diverts clean run-off from upstream around the quarry to the cane-field drains that flow into Maguires Creek and Emigrant Creek. Run-off from disturbed areas is collected in two dams, the Main Dam (capacity of 11.5 megalitres (ML)) and the Pit Dam (17.7 ML), which is a sump storage at the base of the quarry pit. As the pit expands, the Pit Dam will increase in size to a maximum of 23.5 ML. The water collected in the Pit Dam is pumped to the 11.5 ML Main Dam from which water is taken for processing and dust suppression. Teven Quarry operates under an EPL, which regulates the discharge of surplus water from the quarry via a licensed discharge point to a cane-field drain to the east of the site.

Water Balance
Teven Quarry currently operates with a water surplus of 34.6 ML/year. Although the project would result in an increased demand for process water and for water for dust suppression, modelling shows that the water demands of the project can be met, under a range of climate scenarios.

Flooding
To reduce flood risk, a 2 m high bund has been constructed around the eastern boundary of the quarry. In a 1 in 100 year flood event, it is predicted that the northern part of the quarry site would flood. Holcim proposes to review the risks associated with this and determine if additional flood

protection measures are required. The Department is satisfied that the risk of flooding would not increase as a result of the proposed project and there would be no additional downstream impacts.

Water licensing
NOW has requested that Holcim ensure the design of on site water storages complies with the site's Maximum Harvestable Rights Dam Capacity. While the storage volume of the quarry pit would increase, no further dams are proposed and Holcim has committed to ensure that it complies with the Harvestable Rights requirements under the *Water Management Act 2000*.

5.4 Air Quality
The EIS includes an air quality impact assessment (AQIA) which assessed the project's potential impacts on air quality through the emission of particulate matter in the form of PM_{10}, Total Suspended Particulates (TSP) and deposited dust.

The most significant air emissions at Teven Quarry result from material handling, material transport, processing, wind erosion and blasting. These emissions have the potential to increase due to the proposed increased production rate, increased truck movements, increased operating hours, and the addition of the mobile processing plant and pug mill.

Air Quality Impact Assessment
The AQIA included predictive air quality modelling for the twelve most sensitive residential receivers. As a result of the proposed project, the predicted change in air quality at the worst-impacted receiver would be an increase in:
- PM_{10} annual average levels from 16.4 to 17.3 $\mu g/m^3$ (against the EPA criterion of 30 $\mu g/m^3$);
- TSP annual average levels from 39.1 to 41.1 $\mu g/m^3$ (against the EPA criterion of 90 $\mu g/m^3$); and
- deposited average annual dust levels from 2.6 to 2.9 g/m^2/month (against the EPA criterion of 4 g/m^2/month).

The project is therefore predicted to comply with all annual average air quality criteria at all residential receivers. However, there is a potential risk that two properties (R9 and R6) would experience air quality impacts above the 50 $\mu g/m^3$ 24-hour average criterion for up to one day each year. The predictions are up to 57 $\mu g/m^3$ at R9 and 51 $\mu g/m^3$ at R6. Since the EIS was exhibited, Holcim has purchased R9. Subsequently the only predicted exceedance of the 24-hour average PM_{10} criterion is at R6, where the exceedance is only predicted to occur on one day per year.

The Department notes that the risk of exceeding the 24-hour average PM_{10} criterion is very low and is the same under both existing and proposed operations. As well, a conservative approach was taken in the air quality modelling with the maximum predictions added to the 95th percentile background levels. The Department therefore considers that Teven Quarry would be able to operate in compliance with the 24-hour average PM_{10} criterion under almost all meteorological conditions and has recommended a condition requiring compliance with current standard air quality criteria.

Conclusion
Although the project would result in only minimal changes to air quality in the vicinity of the quarry, it remains important that emissions are minimised as far is as reasonable and feasible. The Department has recommended conditions that would require Holcim to:
- comply with current air quality criteria;
- implement all reasonable and feasible mitigation and management measures to minimise air quality impacts; and
- develop a comprehensive Air Quality Management Plan.

5.4 Other Issues
The Department's recommendations with regard to other issues associated with the project are listed in **Table 7**.

Table 7: *Other issues*

Issue	Consideration	Conclusion and Recommendation
Land Capability and Agriculture	• Most of the land in the project area is Class 7 land which generally comprises areas of steep slopes, shallow soils and/or rock outcrops. This land is unsuitable for agricultural purposes, apart from limited light grazing. • A small part of the site is Class 1 land, with a high potential for agriculture. The Class 1 land is located on the northern and eastern fringes of the site and is associated with the adjoining floodplain. • The nearest Biophysical Strategic Agricultural Land is located 600 m northwest of the site.	• No additional disturbance to the land surface, beyond that already approved, is proposed. • The Department is satisfied there would be no loss of agricultural land and no significant impact on adjoining agricultural land as a result of the project.
Biodiversity	• No additional clearing of vegetation is proposed, other than already approved. • The project's potential impacts on biodiversity are limited to indirect impacts resulting from the proposed intensification of operations, ie changes to noise, air quality and surface water. • There are 7 main vegetation communities within the site. However, the majority of vegetation is regrowth that has occurred since grazing was discontinued in the mid-1990s. • One patch of vegetation (with an area of 0.52 ha) on the northeastern boundary of the site includes components of communities listed under both NSW and Commonwealth legislation: o *Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions* listed as an Endangered Ecological Community under the *Threatened Species Conservation Act 1995*; and o *Lowland Rainforest of Subtropical Australia* listed as a Critically Endangered Ecological Community under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. • However, this patch is highly disturbed, and is regrowth vegetation occurring since grazing was discontinued.	• As no additional clearing is proposed, there would be no additional direct impacts on flora or fauna. • The project is unlikely to result in any significant change to the current noise, dust and surface water impacts, therefore indirect impacts would be minimal. • The Department is satisfied that the project would have a minimal impact on local and regional biodiversity. • A condition is proposed for the enhancement and protection of flora on the site, through protecting the patch of rainforest, conserving hollow-bearing trees and implementing a rehabilitation strategy targeting removal of weeds and planting of native species.
Aboriginal Heritage	• There are no known sites of Aboriginal heritage within the project area.	• The project involves no additional clearing. Given the historic use of the property for grazing and quarrying, no impacts on Aboriginal heritage are expected. • OEH's recommended condition, relating to actions to be taken in the event that any objects or items of Aboriginal cultural heritage significance are found, is included in the draft consent.
Ground Water	• The groundwater level at Teven Quarry is estimated to range from 0 to 3 m AHD. • The Teven Quarry pit has been extracted to a maximum depth of 4 m AHD with no observed groundwater inflows to date (minor seepages has been associated with surface water inflows). • The quarry is not expected to intersect the underlying groundwater table.	• The Department considers it is highly unlikely the quarry pit would intersect groundwater and there would be no impact on groundwater users during the life of the project. • The Department has included NOW's recommendation to include a condition requiring hydrogeological investigations and groundwater licensing in the event that groundwater is encountered.

Socio Economic	• The project would involve ongoing employment of eight full-time staff and an additional three full-time positions. • The EIS estimates the project would result in the direct expenditure in the local economy of approximately $2 million. • Ongoing expenditure, associated with quarry operations and labour, is estimated at approximately $3.2 million annually. • In addition, Teven Quarry contributes to the State and Commonwealth governments through payment of taxes. • Teven Quarry currently contributes an annual payment to Ballina Shire Council for the maintenance of the local road network at a rate of $0.345 per tonne of quarry product (which equates to $172,500/year at the proposed maximum production rates).	• Holcim has agreed with Council's request to increase the rate of contributions to $0.3501 per tonne. • The Department is satisfied the project would result in socio-economic benefits to the local and regional community.
Visual Amenity	• Teven Quarry is located in an area of moderate to high scenic quality. • However, due to its location at the base of the escarpment, and the presence of a north-south running ridge which shields the lower parts of the extraction area, views of the quarry are generally limited to the low-lying areas to the north and east along Teven Road (see cover photograph). • These views are predominantly of the upper benches of the extraction area, stockpiles, emplacement areas and the infrastructure area, and are seen from a distance of between 1 and 2 kms. • The additional visual impacts which would result from the project relate to the proposed additional infrastructure (mobile pugmill and mobile processing plant) and the use of night-lighting during extended hours of operation.	• The visual impacts of the project would be similar to those that currently exist. • Holcim has committed to measures to mitigate the existing visual impacts of the quarry and to ensure that night-lighting impacts are minimised. • Recommended conditions require screen planting, rehabilitation of disturbed areas as soon as practicable and management of night-lighting to minimise any off-site impacts. • The Department is satisfied that the project would not significantly impact on the visual amenity of the area.

6. CONCLUSION

The Department has assessed the development application, EIS, submissions and RTS in accordance with the relevant requirements of the EP&A Act.

The Department has carefully considered noise impacts on nearby residents associated with the increased average production rate, additional traffic and increased hours of operations. The Department considers that the additional amenity impacts associated with the project would not be significant and could be managed and/or mitigated so as to comply with relevant criteria at all privately-owned residences.

The Department considers the project would provide benefits to the region through provision of a well-located source of hard rock aggregate for construction and road building purposes. The number of jobs at Teven Quarry would increase from 8 to 11, providing on-going and new employment opportunities in the local area. Holcim would also contribute to the maintenance of local roads through annual contributions to Council.

The Department has prepared a contemporary suite of conditions that are consistent with current practice and contemporary standards. Holcim has reviewed and accepted these conditions.

The Department is satisfied that the proposed modification is in the public interest and should be approved, subject to conditions.

7. RECOMMENDATION

It is RECOMMENDED that the Executive Director, Resource Assessments & Compliance, as delegate of the Minister for Planning:

- **considers** the findings and recommendations of this report;
- **approves** the development application, subject to conditions; and
- **signs** the attached instrument of consent (**Appendix E**).

Howard Reed
Director
Assessments
6.7.15

Oliver Holm
Executive Director
Resource Assessments & Compliance

APPENDIX A: ENVIRONMENTAL IMPACT STATEMENT

Refer to the following link:
http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=6422

APPENDIX B: SUBMISSIONS

Refer to the following link:
http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=6422

APPENDIX C: RESPONSE TO SUBMISSIONS

Refer to the following link:
http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=6422

APPENDIX D:
CONSIDERATION OF ENVIRONMENTAL PLANNING INSTRUMENTS
State Environmental Planning Instruments

SEPP (State and Regional Development) 2011
The project, being an extractive industry that extracts from a total resource of more than 5 million tonnes, is 'State Significant Development' as defined under Clause 7 of Schedule 1 of *SEPP (State and Regional Development) 2011*, and requires development consent under Part 4 of the EP&A Act from the Minister for Planning or delegate.

SEPP No.33 – Hazardous and Offensive Development
A preliminary hazard analysis undertaken by Umwelt found that the proposed development is potentially hazardous with respect to the transport of ammonium nitrate suspension, which is used as an explosive pre-cursor and is delivered to Teven Quarry in 6 tonne bulk lots. Although the quantity of ammonium nitrate suspension delivered at one time would not increase as a result of the project, there would be a slight increase in the number of deliveries as a result of the proposed increased rate of production.

The Department has considered the preliminary hazard analysis and is satisfied that the increased risk associated with the additional deliveries of ammonium nitrate suspension is very small. The Department, having considered the delivery route against the factors for selecting a preferred route for the transport of hazardous or dangerous materials, as set out in Hazardous Industry Planning Advisory Paper No 11: Route Selection, is also satisfied that the existing delivery route is the best available route for the delivery of ammonium nitrate suspension.

SEPP No.44 – Koala Habitat Protection
The SEPP requires a consent authority to consider the presence of any core or potential koala habitat. Ballina LGA is listed in Schedule 1 of SEPP 44 and the SEPP applies to the project.

The EIS identifies that the mixed Eucalyptus forest on the western side of the quarry pit as potential koala habitat. However, the project would not result in any additional clearing beyond that already approved and would therefore not have any additional impacts on potential koala habitat.

The Department has recommended conditions to minimise any potential impacts on koalas and to require the Applicant to implement a biodiversity and rehabilitation strategy targeting the removal of weeds and the planting of native species. The Department is therefore satisfied that the project would have either a negligible or a positive impact on koala habitat.

SEPP No.55 – Remediation of Land
The Department is satisfied that the site does not have a significant risk of contamination given its historical and current land uses, and the proposed use is not contrary to the aims, objectives, and provisions of SEPP 55.

SEPP (Infrastructure) 2007
SEPP (Infrastructure) 2007 requires the consent authority to notify relevant government authorities about developments that may affect public infrastructure or public land. The Department notified Council and RMS of the proposed development. Neither authority objected to the project. The relevant infrastructure-related recommendations of Council and the RMS have been incorporated into the recommended conditions of consent.

SEPP (Mining, Petroleum Production and Extractive Industries) 2007
Under the *State Environmental Planning Policy (Mining, Petroleum and Extractive Industries) 2007* (Mining SEPP), there are a number of matters that must be considered by the consent authority prior to granting development consent:

Part 3 of the Mining SEPP requires the consent authority to consider the following:

a) compatibility of the proposal with other land uses;
b) natural resource management and environmental management;
c) resource recovery;
d) road transport; and

e) rehabilitation.

The Department has considered these matters in its merit assessment of the project and is satisfied that the project can be undertaken in a way that is generally compatible with other land uses in the area, and appropriately responds to issues relating to road transport and rehabilitation.

Local Environmental Planning Instruments

The southern part of the site is zoned 1(e) Rural (Extractive and Mineral Resources) under Ballina LEP 1987. The primary objectives of this zone are:

a) to identify land which have extractive or mining industry potential,
b) to prohibit development which would result in the withdrawal of actual or potentially productive mineral resources land, and
c) to prohibit development which would be adversely affected by the operations of extractive or mineral resources development, particularly adverse effects from noise, vibration or dust.

The northern part of the site is zoned RU1 Primary Production under Ballina LEP 2012. The objectives of this zone are:

- To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.
- To encourage diversity in primary industry enterprises and systems appropriate for the area.
- To minimise the fragmentation and alienation of resource lands.
- To minimise conflict between land uses within this zone and land uses within adjoining zones.
- To maintain the rural, cultural and landscape character of the locality.
- To enable development that is compatible with the rural and environmental nature of the land.
- To ensure that there is not unreasonable or uneconomic demands for the provision of public infrastructure.

The Department considers the project is generally in accordance with the objectives of the two land use zones and is satisfied that the proposed development can be undertaken in a manner that is generally consistent with the other aims, objectives and provisions of these instruments.

APPENDIX E: INSTRUMENT OF CONSENT