Rockley Falls Quarry

MODIFICATION REPORT - FOR EXTENSION OF BATCH PLANTS OPERATION AND HOURS

- Final
- 23 November 2011

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Assessment Summary

In June 2008, approval was granted to Abigroup to establish and operate the Rockley Falls Quarry (the quarry) near Holbrook, NSW. Quarrying at the site is presently ceased.

A 'dry-mix' concrete batch plant currently operates at the quarry to supply concrete for drainage and other 'hand pour' operations to the HHWA. This approval is due to lapse when the HHWA is completed, in late 2011. A modification for a wet-mix batch plant was previously approved by the Department of Planning and Infrastructure (DoPI) in April 2011; however this approval lapsed on 30 July 2011. Abigroup is seeking to obtain approval to use the wet and dry-mix batch plants at the quarry for the nearby Holbrook Bypass project. Abigroup is also proposing to extend the operating hours of wet and dry-mix batch plant operation to allow for paving activities for the Holbrook Bypass to be conducted in the evening and early morning during summer months, from October 2012 to May 2013.

As noted above there are currently no extractive activities taking place at the quarry, Sand washing of approximately 300 to 400 tonnes per day of existing stockpiled manufactured sand (quarry dust) would continue during normal working hours (i.e. 7.00am to 6.00pm Monday to Saturday) to provide sand for batching activities. Abigroup intends to move the sand washing area adjacent to the wet and dry-mix batch plants. Abigroup has assessed the potential environmental impacts of sand washing continuing, the operation of the batch plants for the Holbrook Bypass project and extending the current operating hours of the batch plants, to determine whether these works would be largely consistent with the nature and scale of operations and environmental impacts considered in Project Approval No 07-0078 and Environment Protection Licence (EPL) No. 12884. A modification under Section 75W of the *Environmental Planning and Assessment Act* (EP&A Act) would be required as the activity is not consistent with those described in the Approved Project.

The area is rural in nature and the number of sensitive receivers in the vicinity of the quarry is low (7 receivers within 3 km). The background noise is dominated by highway traffic with vehicle numbers increasing during the evening period. An acoustic model was developed to predict the likely noise levels at sensitive receivers as a result of the wet and dry-mix batch plants and sand washing operations at the new location. The results of the model were compared against assessment criteria described in the Minister's Conditions of Approval (MCoA) and EPL. Activities directly associated with the operation of the wet-mix and dry-mix batch plants and extended hours of operation are not expected to exceed the criteria. However, the noise associated with the movement of dry materials to the batching plants and the movement of product from the plants has the potential to exceed criteria at the closest receivers.

Incremental dust generated by the batch plants during the extended working hours and form sand washing operations in the new location would be minimal and is not likely to significantly increase dust concentrations (measured on a 24-hourly and monthly basis). The air quality in the area is sufficiently good and the currently generated dust sufficiently low to allow for any such increases in dust generation.

In summary, the proposed batching plants extended working hours and relocation of sand washing operations are not expected to result in adverse impacts on air quality. Where noise levels exceed the assessment criteria at the two closest receivers (Rockley Falls) and there would be potential impacts on the acoustic amenity for these sensitive receivers, negotiated agreements would need to be undertaken with residents, in line with condition MCoA 2.19 and 2.20c of the of the Holbrook Bypass Project Approval.

There are no other significant additional impacts on other environmental aspects relating to continued operation of the batch plants and extended operating hours of the quarry.

Based on this assessment, Abigroup does not anticipate that the proposed continued operation of the batch plants or the extension to approved operating hours would result in any additional adverse impacts on sensitive receivers and the impacts would be consistent with those presented in the original Environmental Assessment (EA) for the project. Overall no modification to the EPL or the MCoA would be required except those relating to a description of the approved activities on site.

It is noted that the Abigroup is committed to achieving excellent environmental outcomes and would ensure that all operations are undertaken strictly in accordance with the quarry Environmental Management Plan (EMP), which includes a requirement for regular monitoring, reporting; identification of areas of improvement; and regular consultation with the surrounding community.

1. Introduction

1.1. Background and purpose of this submission

The Holbrook Bypass Project is a federally funded upgrade of the existing Hume Highway. The section of highway bypassing the village of Holbrook, NSW, (the Project) is being constructed by Abigroup.

The Rockley Falls Quarry (the quarry) is located on the Hume Highway north of Holbrook, NSW and about 3 km from the northern section of the new Bypass. The quarry is currently being operated under Ministerial approval 07-0078, dated 16 June 2008 and Environmental Protection Licence (EPL) No. 12884 from the Office of Environment and Heritage (OEH).

The Minister's Conditions of Approval (MCoA) and the EPL permit the extraction and processing of up to 700 000 tonnes of quarry material per annum during the operating hours of 7.00am to 6.00pm Monday to Saturday. However, there are currently no extractive activities occurring at the quarry and at this stage Abigroup has no intentions to recommence extractive activities.

Previous modifications to the Rockley Falls Quarry approval include:

- Amendment of sediment basin criteria, approved by the Department of Planning and Infrastructure (DoPI) in June 2009.
- Extension of stockpile area and enlargement of an existing sediment basin, approved by DoPII in November 2009.
- Vegetation offset and Dry-Mix Batch Plant, approved by DoPI in May 2010.
- Wet-Mix Batch Plant and extension of operating hours, approved in DoPI in April 2011.

Abigroup is proposing the following amendments to operation at the quarry:

1) Extend approval for use of dry and wet-mix batch plant for the Holbrook Bypass.

Extension of the approval of the operation of the dry and wet batch plant beyond the HHWA project is required for the paving and other concrete needs of the nearby Holbrook Bypass. This extended approval is required until October 2013. There are existing dry and wet-mix batch plants on site, with approval due to lapse at the end of the HHWA project for the dry-mix batch plant and the approval for the operation of the wet-mix batch plant lapsed in July 2010.

2) Extension of batch plant operating hours

An extension of the wet and dry-mix batch plant operation hours is required to ensure the concrete needs of the Holbrook Bypass Project can be met outside normal working hours. The Holbrook Bypass project being constructed under Ministerial approval 08-0138 dated 23 April 2010 has approval to compete paving activities during the evening ((6.00pm to 10.00pm) and night-time (10.00pm to 7.00am) due to technical considerations (such as the need to meet a particular quality

specification for the placement of concrete pavement) and climatic conditions (i.e. cold winters and hot summers) . An extension of operating hours from the existing 7.00am to 6.00pm Monday to Saturday to the following is requested.

- 5.00am to 6.00pm Monday to Friday and 5.00am to 1.00 pm on Saturday, November 2011 to September 2012.
- 4.00am to 8.00pm Monday to Friday and 4.00am to 1.00 pm on Saturday, October 2012 to May 2013.
- 5.00am to 6.00pm Monday to Friday and 5.00am to 1.00 pm on Saturday from June 2013 until October 2013.

It should be noted that the DoPI granted approval for the extension of quarry operational hours on 6 April 2011. This approval allowed Abigroup to extend operation from the existing hours of 7.00am to 6.00pm Monday to Friday by two hours to 6.00am to 7.00pm Monday to Friday until 30 July 2011.

3) Relocation of sand washing operations

Current sand washing activities provide sand for HHWA paving works. Abigroup intend to relocate the current operations to adjacent to the batch plants which is also in close proximity to existing stockpiles of manufactured sand. Abigroup estimate that 300-400 tonnes of stockpiled manufactured sand would be washed per day.

It should be noted that sand washing activities are covered under the existing project approval for the quarry. It has been included in this modification report for completeness and to ensure the cumulative impacts of all activities taking place at the project site are adequately assessed.

Consultation has been undertaken with DoPI regarding the approval process for the construction and operation of the wet-mix and dry-mix batch plant and for the extended operational hours. This was completed for the previous modifications submitted in April 2010 for the dry-mix batch plant and in February 2011 for the wet-mix batch and extended operation hours. The DoPI advised that a modification under Section 75W of the *Environmental Planning and Assessment Act* (EP&A Act) would be required since the activity is not consistent with that described in the existing project approvals. Abigroup has prepared this document to support a request for a modification to the existing project approvals to permit these activities.

This document addresses:

- Potential cumulative impacts on the amenity of the local community from batching and sand washing operations.
- Potential impacts on the amenity of the local community of increasing the operating hours.
- Outcomes of community and stakeholder consultation regarding the wet-mix batch plant and extended operating hours.
- Environmental impact mitigation measures.

1.2. Planning & Legislative Context

The quarry was approved under Part 3A of the *Environmental Planning and Assessment Act 1979,* which has since been repealed. However, existing Part 3A projects are still subject to Part 3A processes and as such potential modifications to the approved project are dealt with in Section 75W of the Act. Under Section 75W(2) of the Act:

The proponent may request the Minister to modify the Minister's approval for a project.

As noted in **Section 1.1** a modification to the existing project approval is required from the DoPI for approval to continue the use of the dry and wet-mix batch plants at the quarry for the construction of the Holbrook Bypass and to extend the operational hours of the quarry as these activities are not considered consistent to those described in the approved project.

It should be noted that concrete batching is no longer a scheduled activity under the *Protection of the Environment Operations Act 1997* and the quantity of cement handled is significantly less than the scheduled quantity requiring an EPL.

MCoA and EPL conditions relevant to batch plants are presented in **Table 1-1** and consistency is assessed in **Section 4**.

No changes to the EPL or the MCoA are required except those relating to a description of the approved activities on site.

- **Table 1-1 Relevant Conditions of Approval and EPL conditions**

Relevant Condition	Requirements of Condition
MCoA Schedule 2 Condition 5A	The dry-mix batch plant may be operated until construction of the Hume Highway Woomargama Alliance Bypass is completed.
MCoA Schedule 2 Condition 5B	The operation of the Wet-Mix Batch plant and extended project to operating hours (as described in the documents listed under condition 2(g) of Schedule 2) may be undertaken until 20 July 2011 unless otherwise agreed by the Director-General.
MCoA Schedule 2, Condition 9 EPL Condition O2.1	The Proponent shall ensure that all plant and equipment used at this site is: a) maintained in a proper and efficient condition; and b) operated in a proper and efficient manner
MCoA Schedule 3, Condition 3 EPL Condition L6.1	The Proponent shall ensure that the noise generated by the project does not exceed the noise impact assessment criteria in Table 2.

Location	**$L_{Aeq\ (15\ min)}$ dB(A)**
Cromer residence	45

<table>
<tr><th>Relevant Condition</th><th>Requirements of Condition</th></tr>
<tr><td></td><td>
<table>
<tr><td>Quambatook residence</td><td>35</td></tr>
<tr><td>Beenly residence</td><td>36</td></tr>
<tr><td>Tumbarook residence</td><td>35</td></tr>
<tr><td>Jerapoohl residence</td><td>35</td></tr>
<tr><td>Springhaven residence</td><td>35</td></tr>
</table>
Table 2: Noise Impact Assessment Criteria
</td></tr>
<tr><td>MCoA Schedule 3, Condition 4

EPL Condition L6.2</td><td>Construction work shall only be carried out:
c) between 7.00am and 6.00pm Monday to Friday;
d) between 8.00am and 1.00pm on Saturdays; and
e) at no time on Sundays or Public Holidays.</td></tr>
<tr><td>MCoA, Schedule 3, Condition 5</td><td>The project shall operate:
a) between 7.00am and 6.00pm Monday to Saturday; and
b) at no time on Sundays or Public Holidays.</td></tr>
<tr><td>MCoA Schedule 3, Condition 14</td><td>The Proponent shall ensure that dust generated by the project does not exceed the criteria listed in Table 5 at any residence on privately owned land
<table>
<tr><th>Pollutant</th><th>Averaging period</th><th>Maximum increase from the project</th><th>Maximum acceptable limit</th></tr>
<tr><td>TSP</td><td>annual</td><td>70 µg/m^3</td><td>90 µg/m^3</td></tr>
<tr><td>PM_{10}</td><td>annual</td><td>20 µg/m^3</td><td>30 µg/m^3</td></tr>
<tr><td>PM_{10}</td><td>24- hour</td><td>25 µg/m^3</td><td>50 µg/m^3</td></tr>
<tr><td>Deposited dust</td><td>annual</td><td>2 g/m^2/month</td><td>4 g/m^2/month</td></tr>
</table>
Table 5: Particulate Impact Assessment Criteria
</td></tr>
<tr><td>MCoA Schedule 3, Condition 19</td><td>The Proponent shall not discharge any water from the quarry or its associated operations except in accordance with an EPL.</td></tr>
<tr><td>MCoA Schedule 3, Condition 24 a)</td><td>All sediment and erosion controls would be consistent with the requirements of Managing Urban Stormwater: Soils and Construction, Volume 1, 4th edition 2004 (Landcom).</td></tr>
</table>

Relevant Condition	Requirements of Condition
MCoA Schedule 3, Condition 38	Lighting Emissions The Proponent shall: (a) take all practicable measures to mitigate off-site lighting impacts from the project; and (b) ensure that all external lighting associated with the project complies with Australian *Standard AS4282 (INT) 1995 – Control of Obtrusive Effects of Outdoor Lighting,* to the satisfaction of the Director-General.
EPL Condition L1.1	Except as may be expressly provided in any other condition of this licence, the licensee must comply with section 120 of the *Protection of the Environment Operations Act 1997*.
EPL Condition L6.3	Noise from the premises is to be measured at the most affected point within the residential boundary or at the most affected point within 30m of the dwelling (rural situations) where the dwelling is more than 30m from the boundary to determine compliance with $L_{Aeq(15\ minute)}$ noise limits on condition L6.1, unless otherwise noted.
EPL Condition M2.1	Total suspended solids to be monitored for each discharge point.
EPL Condition O3.1	Activities occurring in or on the premises must be carried out in a manner that would minimise the generation, or emissions from the premises, of wind-blown or traffic generated dust.
EPL Condition O3.2	All areas must be maintained in a condition that minimises the generation of dust.

Previous assessments have focused primarily on receivers located on non-quarry owned land however this submission includes noise predictions at noise sensitive receivers located within 1.5km in accordance with MCoA 2.19 of the Holbrook Bypass Project Approval. MCoA 2.19 advises the following:

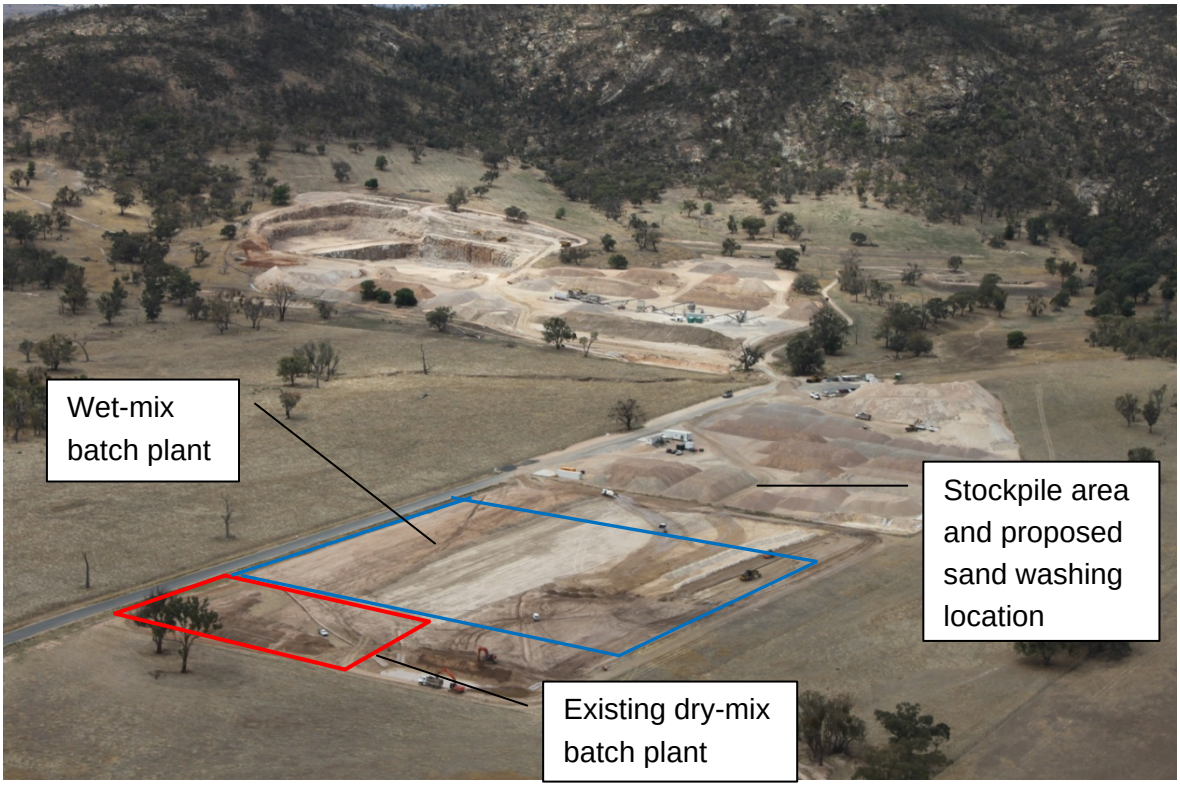
'2.19: Concrete paving, concrete batching (including deliveries) related to paving, and concrete saw cutting activities may be undertaken outside the hours identified in condition 2.18, if required for technical reason, excluding Sundays and public holidays, subject to negotiated agreements (consistent with condition2.20c) being in place with receivers that are within 1.5 kilometres of a batch plant, unless otherwise agreed by the Director General. The Construction Noise and Vibration Plan required under condition 6.4c shall identify these activities, technical reasons, expected impacts, negotiated agreements and address notification and mitigation measures for these activities.'

In line with MCoA 2.19 and 2.20c, where a receiver is located within 1.5km of the batch plant, and is subject to noise levels higher than assessment criteria as a result, negotiated agreements will be sought.

2. Project description

2.1. Wet-mix batch plant

The wet-mix batch plant was approved by the DoPI on 6 April 2011 and the approval to operate the batch plant lapsed on 30 July 2011. The wet-mix batch plant has not been operational since 30 July 2011. The wet batch plant is located adjacent to the existing dry-mix batch plant, on the eastern boundary of the stockpile area, in line with the April 2011 submission, as shown in **Figure 1**. This location is optimal due to its proximity to the aggregate supply at the quarry (minimising material handling); ability to access the Hume Highway and available space. No additional land would be disturbed to allow the continued operation of the wet-mix batch plant.



- **Figure 1: Rockley Falls Quarry and proposed wet-mix batch plant location**

The wet-mix batch plant is comprised of aggregate bins, aggregate loading hoppers, conveyors, a weigh hopper, a split cement and fly ash silo and a tilt-drum mixing bowl. The batching process involves a loader filling the aggregate hopper, whilst cement and fly-ash are supplied to the mixing bowl. The concrete is transferred to open-back trucks which reverse into the loading bay.

The wet-mix batch plant produces an average of 1200m^3 of concrete per day and a maximum of 1,300m^3 per day. Power to the plant is generated from a 750kVa diesel generator supplied with the batch plant.

Traffic to and from the wet-mix batch plant utilises the existing bitumen access road to the quarry from the Hume Highway. As a result of the proposed extended operating hours, there is a potential for an increase in vehicle numbers during morning and evening shoulder periods and during night time periods.

The major potential impacts from the wet-mix batch plant are on noise and dust amenity.

2.2. Dry –mix batch plant

The existing dry-mix batch plant was approved by the DoPI on 24 May 2010. It is located on the eastern boundary of the stockpile area (see **Figure 1**) and is comprised of a feed hopper and two storage silos for cement and flyash. Aggregate is delivered to the waiting agitator truck via a belt conveyor and cement and flyash via a screw conveyor. Following loading, the agitator mixes the load for up to three minutes at a slump stand before delivery to the project. An average of 150m^3 of concrete, with a maximum of 450m^3 is produced each day, generating an average of 25 agitator truck movements per day (maximum 75 movements).

The major potential impacts from the dry-batch plant are upon noise and dust amenity.

2.3. Extension of batching operating hours

The extended operating hours for which approval is being sought would be as follows:

- 5.00am to 6.00pm Monday to Friday and 5.00am to 1.00 pm on Saturday, November 2011 to September 2012.
- 4.00am to 8.00pm Monday to Friday and 4.00am to 1.00 pm on Saturday, - While the batch plants will be potentially operational during these hours, the haulage of concrete from the batch plant would be limited to 5am to 7pm. Generally truck noise from haulage is the most significant noise source from the activity. Deliveries of materials for the batch plants with be required 24 hours a day, however there will be only a maximum of 5 trucks during the night time periods.

  , October 2012 to May 2013.
- 5.00am to 6.00pm Monday to Friday and 5.00am to 1.00 pm on Saturday, June 2013 until October 2013.

It is noted that extension of approved hours of operation have previously been approved by the DoPI on 6 April 2011 and a temporary modification to the approved hours of operation was previously granted to the quarry for the Hume Highway Southern Alliance Project.

2.4. Sand Washing

In addition to the concrete batching plants, Abigroup would continue to operate the sand washing facility. This would be moved from its current location adjacent to the quarry extraction area to within the stockpiling area (see **Figure 1)**. Approximately 300 to 400 tonnes of existing, stockpiled

manufactured sand will be washed per day. Hours of operation of the sand washing plant are not proposed to change from the currently approved hours (i.e. 7.00am to 6.00pm Monday to Saturday). Additional minor tanks, pipelines and pumps would be required to support the sandwashing facility. These would be located in areas that have been already disturbed by quarry operations and would not have a significant impact on any aspect of the environment.

2.5. Technical justification for extension of hours

As noted i**n Section 1.1** extended hours are required due to technical considerations and climatic conditions related to rainfall and temperature to ensure the Roads and Maritime Service (RMS) requirements can be met for paving activities associated with the Holbrook Bypass Project. The RMS specifications prevent the placement of concrete during rain or when the ambient air temperature is below 5C or above 32C. As hot weather affects the quality of concrete pavement, paving in the early evening and into the night is recommended as it takes advantage of night-time cooling. For colder weather concreting, early morning paving is recommended to take advantage of daytime solar radiation and heat generation to promote concrete strength,

To meet the program for the Holbrook Bypass project, paving would need to occur in the summer months, Due to climatic conditions experienced in the region during the summer months, where ambient temperatures often exceed the maximum temperature threshold of 32C, concrete paving would need to occur during the day, evening and night time periods.

Concrete batch plants would need operate in conjunction with the concrete paving works during the evening and night-time periods to ensure the production demands can be satisfied.

It should be noted that out of hours paving activities are not Abigroup's preferred option for construction of the Holbrook bypass due to deceased productivity rates and cost efficiencies associated with work during the evening and night-time. Hence, wherever possible Abigroup would endeavour to minimise out of hours paving activities.

In addition to the technical considerations, in accordance with the provisions laid out within the Out of Hours Work (OOHW) Protocol in the Construction Noise Management Plan which was developed to satisfy the Project Approval for the Holbrook Bypass, the following applies;

- The Holbrook Bypass Project Approval lists construction hours under MCoA 2.18 as 7.00am-6.00pm Monday to Friday, 8.00am - 1.00pm Saturdays and at no time on Sundays or public holidays. However MCoA 2.19 states that concrete batching related to paving may be undertaken outside of the hours identified above if required for technical reasons, subject to negotiated agreements, provided the conditions stipulated in MCoA 2.20 are satisfied.
- The Holbrook Bypass Construction Noise and Vibration Management Plan (Abigroup, 2011) includes an Out of Hours Work (OOHW) Protocol, in accordance with project approval MCoA 6.4(c)(vii). This Protocol provides guidance to the Environmental Manager and Environmental Representative in the assessment, management and approval of works outside the approved construction hours. The Protocol also includes guidance for determination of the level or risk

for any activity proposed to be undertaken outside standard construction hours. Within the Protocol there is also:

- OOHW Noise Impact Assessment Tool
- OOHW Risk Assessment Tool

This Protocol will limit the impact of the extension of operating hours by providing guidance on the risk of impact and providing recommendations for practicable noise mitigation measures.

3. Existing environment

3.1. Sensitive receivers

The risk of adverse impacts on noise and air quality is a function of:

- The number of receivers likely to be affected.
- Their proximity to the batching plants.
- Existing environmental conditions.

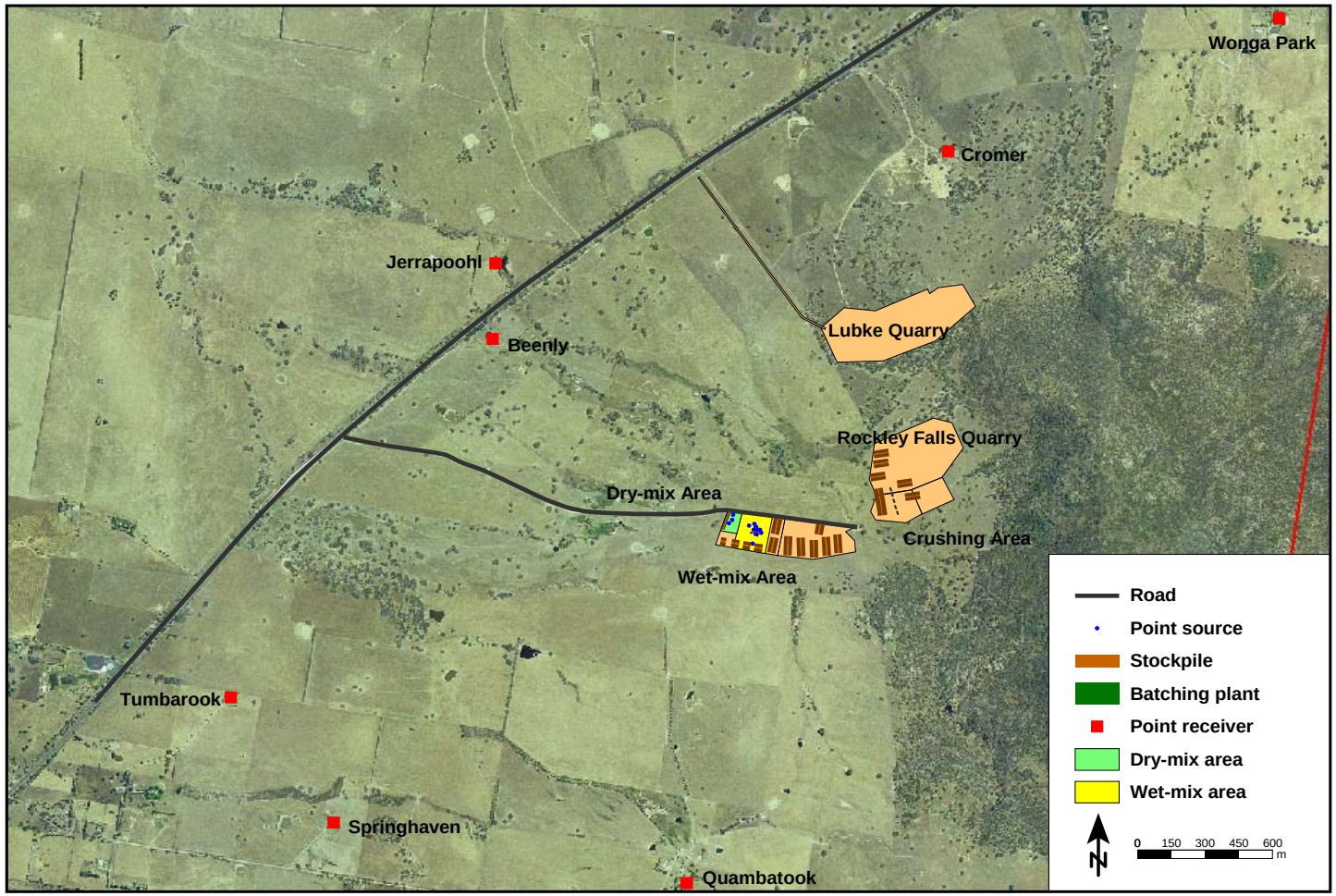
Figure 2 illustrates the identified sensitive receivers and their proximity to the batching plants. A tabulated summary is shown in **Table 3-1.** This submission also includes the assessment of batch plant noise at receivers located within 1.5km in accordance with MCoA 2.19 of the Holbrook Bypass Project Approval.

The nearest receivers to the proposed batching plant are two houses located at Rockley Falls; for the purpose of this report these will be classed as Rockley Falls 1 and Rockley Falls 2, located approximately 500 metres to the west of the batch plant boundary. The existing access road to the batching plant is located approximately 40 metres to the north of Rockley Falls 1.

The next nearest receiver (Cromer) is located on the northern side of the Lubke Quarry and potential impacts from the proposed batching plant are likely to be insignificant in comparison with those from the Lubke Quarry.

- **Table 3-1: Summary of sensitive receivers within 3 km of batching operations**

Property name	Orientation from batch plant	Distance from batch plant (m)
Wonga Park	NE	2500
Cromer	N	1300
Jerrapoohl	NW	2000
Beenly	NW	1900
Tumbarook	SW	3000
Springhaven	SW	2800
Quambatook	S	1800
Rockley Falls 1	W	500
Rockley Falls 2	W	500



- **Figure 2 Identified sensitive receivers**

3.2. Background noise and air quality

3.2.1. Background noise

Noise impacts are assessed by comparing the noise from concrete batching and sand washing activities to the underlying background noise at the point of assessment, which is often at a residential or other noise-sensitive location (e.g. school). When noise from the activity is significantly greater than the background noise of the area, adverse impacts are likely. Conversely, when background noise levels are high, noise from the activity is less likely to cause an adverse impact. Higher levels of existing or underlying background noise generated by sources other than batching activities therefore assist to totally or partially "mask" noise from the activity, making it less intrusive and less likely to cause adverse impacts.

Background noise monitoring was undertaken in three locations in July and August 2007 by Noise and Sound Services (2008[1]) and a summary of monitoring data is provided in **Table 3-2.** Noise levels in the area are generally influenced by traffic with observed levels increasing from the day into the evening period and reducing later in the night, a pattern reflecting commuter traffic. It is considered that this data is still valid for use in assessing the proposed extension to batch plant operating hours.

- **Table 3-2: Summary of monitored background noise levels (2008)**

Location	Period[2]	$L_{A90,15min}$	$L_{Aeq,15min}$
Cromer	Day	36	51
	Evening	41	52
	Night	35	50
Quambatook	Day	29	48
	Evening	33	46
	Night	30	42
Tumbarook	Day	35	51
	Evening	40	50
	Night	35	50

3.2.2. Background air quality

Given the rural environment and lack of industrial premises, there are few sources of air pollutants. The dominant pollutant in this area would be particulate generated largely by wind erosion of exposed soil, agricultural activities and highway traffic.

[1] Noise and Sound Services 2008, Noise impact statement for the proposed Rockley Falls Quarry, Report No. NSS 21080 – Rev A Final, Noise and Sound Services, St Ives NSW

[2] Day – 7 am to 6 pm; Evening – 6 pm to 10 pm; Night – 10 pm to 7 am

No air quality data were obtained prior to commencement of quarry operations; however, monitoring of air quality, in terms of particulate, has been underway since August 2008 at selected representative locations and these data are discussed in **Section 5.3.**

4. Cumulative noise and dust impacts

4.1. Nature and scale of operation

The existing MCoA and the EPL applicable to operation of the quarry and its processing areas permit the extraction and processing of up to 700 000 tonnes of quarry material per annum during the operating hours of 7.00 am to 6.00 pm Monday to Saturday. A 'dry' and 'wet' mix concrete batching plant was subsequently approved for operation on the site under the project approval.

The dominant noise sources from operation of the batch plants are likely to include those identified in **Table 4-1**.

- **Table 4-1: Dominant noise sources of operating batching plant**

Noise source	Description
Aggregate loading	A front end loader (FEL) is used to load aggregate and sand from the stockpiles into the hoppers.
Aggregate hopper gates	The aggregate is loaded onto the conveyors via gates which are controlled by compressed-air power rams. There is a significant air release each time gates are opened.
Aggregate conveyor	The aggregate is loaded to the mixing drum via a conveyor. The conveyor is driven by an electric motor and runs on rollers, which squeal if not properly lubricated.
Dust extraction fan	The dust extractor fan is externally mounted
Vibratory aggregate hopper cleaner	This cleaner is activated each batch to ensure all product has been loaded and emits a mid-range frequency hum
Mixing drum	Rotation powered by an electric motor and tilts into the waiting truck
Truck movements	Truck movements are a significant noise source for the plant, with an expected turnaround time of 3 minutes, 20 trucks would enter and leave the site per hour. However, of that 3 minutes, the trucks are in idle for approximately half the time whilst waiting to load. Other truck movements include aggregate and cement deliveries at a lower frequency (anticipate 6 – 7 cement / flyash deliveries each day).
Compressor	Used to operate aggregate hopper gates, externally mounted
Generator	A 750kVA diesel generator will operate continuously whilst the plant is operational.
Cement loading	Cement is pneumatically loaded to the silo using a blower on the silo.
Reverse beepers	Trucks are generally required to reverse into the loading bay; however beepers are not a dominant noise source.
Light vehicles	Regular movements for worker transport and various site activities. Unlikely to contribute significantly to overall plant noise

For the purpose of the noise assessment, noise emissions from the operation of the batch plants will be the same as those assessed during the former modification submissions related to the batch plants. However, these emissions will now need to be assessed for longer operating periods, including night time periods.

In addition to the extended operating hours of the batch plant, there will also be an increase in vehicle movements (cement trucks and material trucks) along the access road.

This assessment has been undertaken to consider the potential impacts of the batch plants and extension of operating hours on air quality and acoustic amenity. An assessment will also be undertaken for the noise associated with truck movements along the access road.

4.2. Noise impacts

4.2.1. Assessment criteria

Notwithstanding the measured background noise levels, the MCoA and EPL require that noise from the project does not exceed the noise impact assessment criteria listed in **Table 4-2** during normal operating hours.

Evening and night noise criteria, required since operational hours are proposed to be extended into the periods, have been established based on the L_{A90} background noise levels plus 5 dB(A) as described in the Industrial Noise Policy (OEH 2000). These are summarised in Table 4-2 Background noise measurements have not been undertaken at 'Beenly', 'Jerrapoohl', Rockley Falls 1 or Rockley Falls 2, and therefore the criteria at representative receiver locations have been applied to these. 'Tumbarook' monitoring data provides a reasonable indication of noise levels at these receivers due to the relative proximity of each to the highway.

With the exception of the quieter 'Quambatook', the criteria in **Table 4-2** are in line with the Planning Noise Levels provided by the INP for rural residential receivers.

- **Table 4-2: $L_{Aeq,\ 15\ minute}$ Operational noise limits**

Residence	Assessment criteria, $L_{Aeq,\ 15\ minute}$ dB(A)			Criteria Source
	Day	Evening	Night	
Cromer	45	46	40	Cromer
Quambatook	35	38	35	Quambatook
Beenly	36	45	40	Tumbarook
Tumbarook	35	45	40	Tumbarook
Jerrapoohl	35	45	40	Tumbarook
Rockley Falls 1	35	45	40	Tumbarook
Rockley Falls 2	35	45	40	Tumbarook

4.2.2. Noise predictions

Noise sources from the operation of the site were input into an acoustic noise modelling package to predict and assess the plant noise at the nearest noise sensitive receivers. The model was developed using SoundPLAN V7.0, a package that is accepted and endorsed by numerous agencies nationally and internationally, including OEH. The Concawe prediction algorithm was applied to this situation to account for varied meteorological effects. The assessment method takes into account attenuation due to distance, atmospheric absorption, structural and topographical barriers, the effect of intervening ground types and weather conditions.

The noise sources incorporated into the model included the following. It should be noted that these souces represent a worst case scenario for batching and sand washing operations.

- Wet-mix plant:
  - truck movements – approximately 1 movement per 2 minutes (one truck in and one out). Assumed a L_{Aeq} sound power level of 109 dB(A), with 2 trucks added to the model to account for this activity.
  - loader activity – continuous filling of aggregate hoppers, L_{Aeq} sound power of 111 dB(A)
  - batching plant, of which the sound power was derived from on-site measurements and given a total plant L_{Aeq} sound power of 110 dB(A), equating to an approximate sound power emission of 87 dB(A)/m^2 across the surface of the plant. This source was validated against "test" receivers at approximately the same locations in which the measurements were taken.
  - cement and flyash delivery – approximately 7 per day, taken as part of the batching plant noise level since this operation was included in the monitoring of the plant.
- Dry-mix plant
  - agitator trucks, one loading and one at the slump stand - noise levels of agitator trucks loading at a similar capacity batching plant were measured during a previous project with a L_{Aeq} noise level of 76 dB(A) recorded at 25m, equivalent to a sound power level of 112 dB(A). It was observed that noise from the front of the trucks was 6 dB(A) lower than from the side due to screening provided by the truck cabin.
- Sand Washing
  - Sand washing will be undertaken in the stockpiling area. Noise emissions from this equipment have been measured during its operation. A sound power level of 100 dB(A) has been adopted for assessment purposes.

The locations of mobile equipment in the models were arbitrary and will differ in practice. Furthermore, sound power levels are likely to vary from those shown when the actual plant is installed and there may be additional types of equipment involved; however the values used should account for the typical range of potential sound power levels.

Noise screens and treatments in the model include planned aggregate stockpiles which would be used in the supply for the batching process. Aggregate stockpiles were assumed to be approximately 3 metre high. A 3 metre high noise screen to the agitator truck loading and slumping areas has also been included in the model to protect receivers located at Rockley Falls.

Noise mitigation options specific to the type and model of batch plant to be installed have not been included in this assessment since the effect of reducing fan, compressor or motor noise on the total emission cannot be determined at this stage.

4.2.3. Modelling results

Predicted noise levels resulting from operation of the proposed batching plant are summarised in **Table 4-3**. In comparison with the assessment criteria described in **Section 4.2.1**, the risk of adverse impact from the batch plant is low for properties located beyond 1500 metres. The model includes the noise associated with vehicles using the access road during daytime, evening and night time periods.

At the two closest receivers (Rockley Falls 1 and 2), the noise associated with the batch plant (wet and dry) is below assessment criteria during day, evening and night time periods. However; when noise associated with vehicle movements along the access road is combined with plant noise at these two receivers, the assessment criteria is exceeded during each assessment period.

The sand washing plant is not likely to present a significant risk of cumulative impact with the batching operations given it is approximately 10 dB(A) quieter than these facilities.

Hence, the extension of operational hours for the batch plants operations is likely to only have a significant impact on the two closest receivers and this relates primarily to vehicle movements along the access road rather than batch plant noise. As such, negotiated agreements will need to be undertaken with these residents in line with condition MCoA 2.19 and 2.20c of the of the Holbrook Bypass Project Approval.

As noted in **Section 2.5**, out of hours paving activities are not Abigroup's preferred option for construction of the Holbrook bypass due to deceased productivity rates and cost inefficiencies associated with work during the evening and night-time. Hence, wherever possible Abigroup would endeavour to minimise out of hours paving activities.

Also although the batch plants will be potentially operational during 4am -8pm, the haulage of concrete from the batch plant would be limited to 5am to 7pm. Generally truck noise from the haulage is most significant noise source from the activity. Deliveries of materials for the batch plants with be required 24 hours a day, however there will be only a maximum of 4 trucks during the night time periods.

- **Table 4-3: Predicted noise levels at identified sensitive receivers.**

Receiver No	Distance from batch plant (m)		Predicted noise level at receiver, $L_{Aeq,15min}$ / dB(A)						Assessment criteria, $L_{Aeq, 15\ min}$		
		Distance from access road (m)	Wet plant only	Dry plant only	Sand washing plant only	Vehicle Movements	Combined wet and dry batching and sand washing plant	Batch Plants and Vehicle Movements	Daytime	Evening	Night
Cromer	1500	1670	28	31	13	23	33	**33**	45	46	45
Quambatook	2000	1200	22	22	12	19	24	**24**	35	38	40
Beenly	1700	550	26	30	20	22	31	**31**	36	45	45
Tumbarook	1600	1500	24	29	19	21	30	**30**	35	45	45
Jerrapoohl	2500	900	14	20	10	18	21	**21**	35	45	45
Rockley Falls 1	500	40	29	32	22	47	34	**47**	35	45	45
Rockley Falls 2	500	80	28	34	24	47	35	**47**	35	45	45

4.3. Dust impacts

This section demonstrates that sensitive receivers in the vicinity of the quarry site would not be adversely by operation of the batch plants and sand washing activities. As with the noise assessment, the only changes to operations is an increase in traffic movements during morning and evening shoulder periods, and throughout the night and an increase in operating hours.

4.3.1. Assessment criteria

In order to determine whether receivers are, or are likely to be, adversely impacted by concrete batching operations and sand washing activities, assessment criteria for air quality impacts are provided in the MCoA, which prescribe acceptable limits to the level of dust at each sensitive receiver. These criteria are reproduced in **Table 4-4**.

- **Table 4-4 Operational dust limits for the evening period**

Pollutant	Averaging period	Maximum increase from this project	Maximum acceptable level
TSP	Annual	70 µg/m^3	90 µg/m^3
PM_{10}	Annual	20 µg/m^3	30 µg/m^3
PM_{10}	24 hour	25 µg/m^3	50 µg/m^3
Deposited dust	annual	2 g/m^2/month	4 g/m^2/month

4.3.2. Measured dust levels

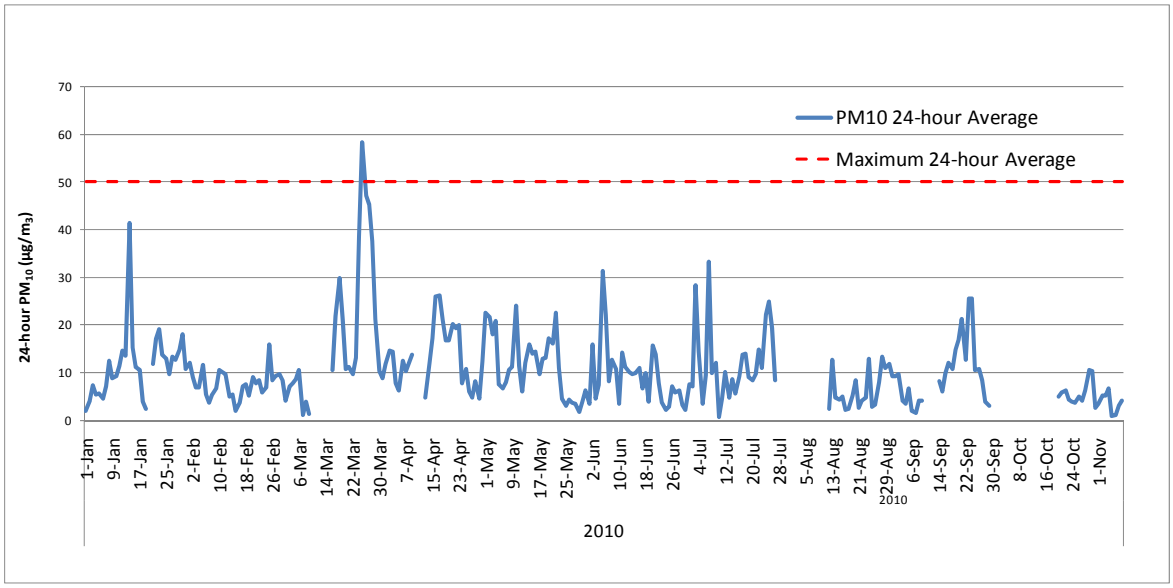
Monitoring of deposited dust has been undertaken at the following locations since commencement of quarry operations.

- Tumbarook
- Quambatook
- Cromer
- Beenly

Monitoring has shown that the dust concentration is occasionally greater than 4 g/m^2/month during some months of the year, at some receivers. However, the criterion is an annual average with which the existing quarry operations comply. Furthermore, the occasional monthly exceedances have been identified as being from natural phenomena such as dust storms and bush fires.

Concentrations of fine particulate, as PM_{10}, have been monitored almost continuously using a DustTrak aerosol monitor from November 2008 at the Tumbarook property (refer **Figure 2**). Results for 2010 in **Figure 3** demonstrate that, with the exception of anomalous dusty conditions due to natural phenomena such as droughts and fires, quarry operations comply with the 24-hour average assessment criterion of 50 µg/m^3. The average recorded value, including quarry operations and ambient sources, is approximately 14 µg/m^3.

- **Figure 3: PM_{10} monitoring data – Tumbarook 2010**



4.3.3. Expected dust impacts

The typical dust emission sources from the batching plants may include:

- delivery of raw materials in trucks, trailers and tankers.
- storage of raw materials in bunkers and stockpiles.
- transfer of raw materials by front end loaders, conveyors, hoppers and agitators.
- leakage or spillage of raw materials from silos, inspection covers and duct work.

Raw material delivery is unlikely to generate significant dust impacts considering cement and fly ash would be pneumatically transferred to sealed storage silos. Transfer of materials would be undertaken at appropriate pressures to prevent filter blow-out. Aggregate would be taken from existing stockpiles at the quarry and would generate no additional dust to current operations.

Sand washing is not a significantly dusty practice, with the use of water in the washing process maintaining dust emissions at a minimum.

With the nearest sensitive receiver approximately 500 metres from the proposed site, air quality at sensitive receivers is unlikely to be adversely impacted by the operation of the batch plants and with the implementation of the Rockley Falls Quarry EMP, which includes measures to minimise the generation of dust, the cumulative impact on air quality due to the batch plant would be negligible.

In accordance with the EMP, and consistent with the approved batching plant, dust monitoring will be undertaken during the operation phase to ensure dust levels comply with the project air quality objectives.

5. Other potential impacts on amenity

In addition to potential impacts on air quality and noise, a range of other environmental aspects have been considered as part of this submission. These aspects are discussed below and include:

- Soil and water
- Heritage
- Traffic
- Flora and fauna
- Waste
- Energy consumption
- Visual impacts

5.1. Soil and Water

- **Table 5-1 Potential soil and water impacts**

Operation	Potential impacts on soil and water
Wet-mix batch plant	Due to the requirement for water for use in the wet-mix batch plant, there is the potential for impacts on water quality if environmental management measures are not appropriately implemented during both construction and operation. Water required to make concrete would be sourced from the existing water supply for the quarry, a licenced RTA bore on the Hume Highway. Water use is within the licensed capacity of the bore. A 250,000L tank would be installed which would store the water for supply to both batch plants. During operation contaminated (cementitious) water is generated from the wet-mix batch operations. Approximately 2,000 litres per day of waste water would be generated from the mixer bowl wash out. Additional waste water is generated from the truck washing area, the concrete batching area and any other areas that may generate stormwater contaminated with cement dust or residues. Temporary sediment and erosion controls would be installed during plant operation. Contaminated waste water is diverted to cementitious settling ponds (designed according to OEH guidelines of a 1 in 25 year rain event) prior to release via the existing sediment basin which is a licensed discharge point. Waste water generated from the bowl wash would be recycled for concrete tipper washout and a cementitous waste water system installed to capture water run-off beneath the plant and bowls. This water would be used to wash out trucks. Clean surface water, including that generated from areas such as the stockpile sites, would be diverted away from the wet-mix batch plant and captured as per the current water management plan into the existing sediment basins. A Progressive Erosion and Sediment Control Plan (ERSED Plan) would be developed for construction and operation of the wet-mix batch plant. This plan would be developed in accordance with '*Managing Urban Stormwater:*

Operation	Potential impacts on soil and water
	Soils and Construction Volume 1 & Volume 2D Main Road Construction' (the Blue Book). If contamination of water occurs, the water would be fully contained and any discharges would be required to meet the current EPL discharge limits.
Dry-mix batch plant	The dry-mix batch plant does not have any additional impacts on water quality. Run-off from the batch area is treated in an existing sedimentation basin, designed in accordance with the requirements of *Managing Urban Stormwater: Soils and Construction, Volume 1, 4th Edition* (Landcom, 2004). Any discharges are required to meet the current EPL discharge limits. As the dry-mix batch plant is small and is located a distance away from the sedimentation basin, runoff from the batch plant does not require any special measures. As for the wet-mix batch plant, water required to make concrete would be sourced from the existing water supply for the quarry, a licenced RTA bore on the Hume Highway. The proposed water use is within the licensed capacity of this bore. A 250,000L tank would be installed which would store the water for supply to both batch plants.
Extended operating hours	The proposed activities to be undertaken during extended operating hours would require minimal volumes of water for vehicle maintenance and from time to time dust suppression activities. Should any waste water be produced, this would be managed in accordance with the EMP.
Sand washing	Water required for sand washing is managed in accordance with the Site Water Balance (Appendix M of the EMP). This states that water would be reused as much as possible and pumped from the clean water pond through the washing plant under gravity feed back to the existing sedimentation pond, allowing natural settling of sediments before spilling over to the clean water pond. The Site Water Balance would be amended to reflect the new location for sand washing.

5.2. Heritage (Aboriginal and Non-Aboriginal)

The quarry footprint is not anticipated to increase as a result of this proposal and there would be no increased impacts on heritage aspects.

5.3. Traffic

- **Table 5-2 Potential traffic impacts**

<table>
<tr><th>Operation</th><th>Potential impacts on traffic</th></tr>
<tr><td>Wet-mix and dry-mix batch plant</td><td>Traffic movements (in and outbound) per hour as a result of the batch plants include:
<table>
<tr><th colspan="4">Maximum inbound and outbound Traffic Movements (per hour)</th></tr>
<tr><td></td><td>Nov 11 to Sept 12</td><td>Oct 12 to May 13</td><td>May 13 to Oct 13</td></tr>
<tr><td>Cement and Flyash</td><td>1.5</td><td>1.5</td><td>1.5</td></tr>
<tr><td>Fine sand/course aggregate</td><td>8</td><td>8</td><td>8</td></tr>
<tr><td>8-wheel tippers (Concrete)</td><td>13</td><td>13</td><td>13</td></tr>
<tr><td>Agitators</td><td>9</td><td>9</td><td>9</td></tr>
</table></td></tr>
<tr><td>Extended operating hours</td><td>The extended operating hours from November 2011 to September 2012 and from May 2013 to October 2013 allow for early deliveries to the batch and to allow for the first concrete load to be on the Project site to commence paving activities at 7.00am. The extended hours would also allow for early arrival of the workforce to commence warm up activities.</td></tr>
<tr><td>Sand washing</td><td>There would be no requirement for any additional truck movements for sand washing, as the material is already stockpiled on site.</td></tr>
</table>

5.3.1. Flora and Fauna

The quarry footprint and the extended operating hours are not proposed to be increased as a result of this proposal and no additional clearing is required, thus there would be no adverse impacts on flora or fauna.

5.4. Waste

- **Table 5-3 Potential impacts on waste management**

Operation	Potential impacts on waste
Wet-mix batch plant	Concrete waste produced as a by-product of batching operations would be managed in accordance with the control measures and safeguards noted in the quarry EMP.
Dry-mix batch plant	
Extended operating hours	Extension of operating hours will not result in any net increase in waste.

Sand washing	Relocation of existing sand washing operations will not result in any net increase in waste.

5.5. Energy consumption

- **Table 5-4 Potential impacts on energy consumption**

Operation	Potential impacts on energy consumption
Wet-mix batch plant	The wet-mix batch plant is not a significant energy consumer and uses small motors to drive the conveyors. Energy for the wet-mix batch plant is supplied via a 750kVa generator which is installed alongside the wet-mix batch plant. Diesel fuel is consumed by the agitator trucks during loading and transport of the concrete. This is offset by a lower number of haul trucks required to transport aggregate to an alternative batching plant location. Less material handling is required for onsite batching as there is a reduction in fuel consumption and greenhouse gas emissions. Impacts are expected to be negligible and remain consistent with those discussed in the EA.
Dry-mix batch plant	The dry-mix batch plant does not consist of any significant energy consumers, with small motors used to drive the conveyors. Diesel fuel is consumed by the agitator trucks during loading and transport of the concrete. However, this is offset by a lower number of haul trucks required to transport aggregate to an alternative batching plant location. Fuel consumption and greenhouse gas emissions are reduced as a result of less material handling due to on-site batch plants. Impacts are expected to be negligible and remain consistent with those discussed in the EA.
Extended operating hours	Diesel fuel consumption by stationary and mobile equipment is the chief energy use at the quarry. A proportional increase in diesel fuel consumption is expected on a daily basis. However, translating fuel consumption into volumes of aggregate processed, no net increase in fuel consumption is expected, since the total volume of aggregate would remain the same.
Sand washing	Relocation of existing sand washing operations will have no impact on energy consumption.

5.6. Visual impacts

Operation	Potential impacts on visual impacts
Wet-mix batch plant	The wet-mix batch plant is approximately 24m high and 60m long and is located in an existing stockpile area as shown in **Figure 1**. The wet-mix batch plant is consistent in appearance to other facilities. There are five (5) residents which would potentially be able to see the batch plant. Two (2) of these residents are within 500 metres of the batch plant and the other three (3) and they are at least 1.5 km distant. Given the size and scale of the quarrying operations, the similar plant already on site and distances to the nearest residents, it is deemed that the batch plant has a negligible impact on visual amenity.
Dry-mix batch plant	The dry-mix batch plant is approximately 10m high and 30m long and is located in an existing stockpile area. The dry-mix batch plant is similar in appearance to other facilities on site.
Extended operating hours	Given the proposed extension of operating hours would result in operating before sunrise and after sunset and 24 hours for a eight month period, lighting would be required to illuminate the work area and may have some effect on the environment on which it is installed. There is potential conflict between the lighting needed to facilitate night activities and the degree of spill light control required to maintain the amenity and environmental integrity of an area. Effects on residents generally involve a perceived change in amenity arising from either of the following: ▪ The illumination from spill light being obtrusive, particularly where the light enters rooms or dwellings that are normally dark, e.g. bedrooms. The illuminance on surfaces, particularly vertical surfaces, is an indicator of this effect. ▪ The direct view of bright luminaries from normal viewing directions causing annoyance, distraction or even discomfort. The luminance of a luminaire, in a nominated direction, is an indicator of this effect. AS 4282 recommends two sets of illuminance limits based on the times of operation of the lighting, i.e. pre-curfew and during curfewed hours (see **Table 5-5**). The recommended maximum values for the hours of operation between 6am and 11pm are not applicable to this submission.

Operation	Potential impacts on visual impacts

- **Table 5-5 Target light emission goals – AS4282 1997**

Light technical parameter	Hours of operation	Recommended maximum values		
		Commercial areas or at commercial property boundary	Residential areas	
			Light surrounds	Dark surrounds
Illuminance in vertical plane (V)	6am to 11pm	25 LUX	10 LUX	10LUX
	11pm to 6am	4 LUX	2 LUX	1 LUX
Luminous intensity emitted by each luminaire	6am to 11pm	2500-7500 cd[1,2]	2500-7500 cd[1,2]	2500-7500 cd[1,2]
	11pm to 6am	2500 cd	1000 cd	500 cd

Note 1 Luminous intensity limit is dependent on the size of the lighted area
2 Limits shown assume a 'Level 1 control' for environmentally sensitive areas

Considering the distance to the nearest receiver, lighting is not expected to result in a significant adverse impact on amenity. However, monitoring and consultation would be undertaken to ensure the recommended maximum values for illuminance and luminous intensity are not exceeded and amenity is maintained. Where it is observed or reported that lighting is resulting in an adverse impact on amenity and/or animal life, proactive measures would be implemented to minimise light illuminating the key areas. Such measures would include, where practical:

- Aim the luminaires away from the direction of nearby residential or sensitive areas.
- Use luminaires with precise asymmetrical light control and full cut off above the horizontal.
- Minimise glare by keeping beam angle at 70 degrees for floodlights mounted at high level.

Additional low level lighting should be installed to provide sufficient illumination at the ground level under fog conditions since high level lighting becomes less effective for the movement of vehicles.

Best practice management of lighting should be adopted at each site, and would including the following.

- Lights used to illuminate the site for security must be angled or shielded so that they do not directly illuminate any nearby sensitive land uses.
- Car parks and roads are situated and/or screened to avoid stray lighting

Operation	Potential impacts on visual impacts
	from vehicle headlights directly illuminating any nearby sensitive land uses. ▪ Vegetative screening, earthen banks and constructed walls are used, if required, to screen against light impact. In relation to light mitigation measures, AS 4282 provides additional information in an Appendix titled “General principles for control of the obtrusive effects of outdoor lighting”.
Sand washing	The relocation of existing sand washing operations will not be visible to nearest sensitive receivers and is similar in appearance to other facilities on site.

5.7. Environmental Benefits

As noted in the introduction, there are a number of environmental benefits in extending the operation of the batch plants for the Holbrook Bypass. These include:

- A reduction in the overall duration of construction activities for the Holbrook Bypass.
- A reduction in the potential for quality risks by supplying LMC and PCP from two different plants (if cross contaminated at the paver it would require the material to be removed and replaced which would add to the waste produced).
- No additional land disturbance required for the construction of batch plants in a new location.
- Reduction in greenhouse gas production due to reduced vehicle movements associated with batching in this location (i.e. stockpiled manufactured sand to be used for batching operations, hence no requirement for deliveries of sand).
- A reduction in the risk to the overall timeframe for operations, as if one wet-mix batch plant breaks down the other would still be functioning and paving activities can continue uninterrupted.

The environmental benefits of extending the working hours include:

- Allows essential maintenance activities to occur outside peak operating hours to reduce potential delays to quarry operations on site.
- Supply material so that paving of the Project can occur at night and early morning during summer months, and consequently decrease the construction time of the Project.

6. Consultation

Abigroup consulted sensitive receivers surrounding the quarry for previous modifications for the installation of the wet-mix and dry-mix batch plants on 6 April 2011 and 24 May 2010 respectively. There were no objections raised for the installation of the wet-mix batch plant and only one concern regarding dust raised for the installation of the dry-mix batch plant. The resident was informed that appropriate dust controls are in place to manage any potential air quality impacts.

In accordance with the Holbrook Bypass, project approval specifically MCoA 2.20(c) negotiated agreements are currently being drafted for the affected receivers where prescribed noise levels for operation of the batch plants outside normal working hours cannot be achieved. In the formation of the negotiated agreement, the receiver would be provided with an explanation of the scope and time frame of the works, the predicted noise impacts and how these are likely to affect the receiver. The affected receiver would be given the option to terminate the agreement on request.

In addition, approval would be sort from OEH (i.e. variation to the quarries EPL) prior to any out of hours batching operations commencing.

7. Management of environmental impacts

Wet-mix and dry-mix batch plant

The assessment demonstrates that the extension of operation of the wet-mix and dry-mix batch plants for construction of the Holbrook Bypass would be unlikely to result in additional adverse impacts on sensitive receivers or other environmental aspects. Abigroup is committed to achieving excellent environmental outcomes and would ensure that all operations are undertaken strictly in accordance with the quarry EMP, which includes a requirement for regular monitoring, reporting and identification of areas of improvement. The EMP would be updated to include the wet-mix batch plant operations and a separate Progressive Erosion and Sediment Control Plan has been developed to control impacts associated with water supply and waste water generation.

Throughout the period of construction for the project, noise and air quality monitoring would be undertaken at the frequency and location specified an EMP updated to address this proposal. Any adverse impacts that may occur shall be recorded and managed by Abigroup.

Water quality monitoring of sedimentation basins discharges would be undertaken in compliance with EPL conditions.

The community and stakeholder management program implemented on the project would ensure any issues arising from the operation of the wet-mix batch plant are rapidly identified and managed appropriately.

Extension of batch plant operating hours

Extension of the quarry operating hours would increase traffic movements to and from the site during morning and evening shoulder periods and throughout the night, having a minor impact on noise. The extension of the operating hours would be unlikely to result in any additional adverse impacts on sensitive receivers or environmental aspects.

Out of hours paving activities are not Abigroup's preferred option for construction of the Holbrook bypass due to deceased productivity rates and cost efficiencies associated with work during the evening and night-time. Hence, wherever possible Abigroup would endeavour to minimise out of hours paving activities.

Relocation of sand washing operations

The relocation of existing sand washing operations to the sand stockpile area would be unlikely to result in any additional adverse impacts on sensitive receivers or environmental aspects. The water required for sand washing will be managed in accordance with the CEMP Site Water Balance. As above, water quality monitoring of the sediment basin would be undertaken in compliance with ELP conditions.

8. Consideration of EPBC Act

Presented in the table below is an assessment of the proposed batch plant against the EPBC Act.

8.1. EPBC ACT 1999 Factors (Commonwealth Legislation)

Factor (Commonwealth Legislation)	Impacts
a. Any environmental impact on a World Heritage property? Comments: The works would not be undertaken near any world heritage properties and as such are not expected to have any impact on any world heritage properties.	Nil
b. Any environmental impact on wetlands of international importance? Comments: There are no wetlands of international significance in the surrounding area. The proposed works are not expected to have any impact on any wetlands of international significance.	N/A
c. Any environmental impact on Commonwealth listed threatened species or ecological communities? Comments: There are no commonwealth listed threatened species or ecological communities that are expected to be impacted on by the proposed works.	Nil
d. Any environmental impact on Commonwealth listed migratory species? Comments: The proposed works would not result in any vegetation removal, and are to be undertaken in an area which is already cleared. As such the proposed works are not expected to have any impact on any habitat for Commonwealth listed migratory species or any actual Commonwealth listed threatened species.	Nil
e. Does any part of the proposal involve a nuclear action? Comments: No part of the proposed works involves a nuclear action.	N/A
f. Any environmental impact on a Commonwealth marine area? Comments: The proposed works are not expected to have any impact Commonwealth marine areas.	N/A

Factor (Commonwealth Legislation)	Impacts
g. Any direct or indirect effect on Commonwealth land? Comments: The proposed works are not expected to have any impact on any Commonwealth Land.	N/A

9. Conclusion

In the following table the consistency of the proposed batch plant with the Approved Project is summarised.

FACTOR	YES	NO
3.1 Fundamental consistency with project		
Will all proposed modifications, considered together, result in a radical change to the activity as approved? (Note – this question is aimed at the fundamental concept of the project, its location and standard.) The proposed extension of wet and dry-mix batch plants for construction of the Holbrook Bypass, the extension of the operating hours and relocation of sand washing operations is not expected to result in a major change to the approved project or its described activities. There would be no change in the scale of the extractive activities as described in the EA, MCoA and EPL. The environmental impacts associated with the wet and dry-mix batch plants are consistent with those already outlined in the EA.		✓
3.2 Consistency with objectives and functions of approved activity as a whole		
Will all proposed modifications, considered together, result in any substantive change to the objectives and functions of the approved project as a whole? The proposed modification would not result in a substantive change to the objectives or functions of the approved activity as a whole as they are consistent with the objectives and functions as outlined in the EA being to supply road building materials to the Hume Highway Duplication Project.		✓
3.3 Consistency with objectives and functions of elements of approved activity		
Will each separate proposed modification result in any substantive change to the objectives and functions of that element of the approved activity which it modifies AND do so without better satisfying any other Conditions of Approval such that a net improvement in the environment results? The production of concrete for the Holbrook Bypass was not identified as a specific element or activity at the quarry.	✓	

FACTOR	YES	NO
3.4 Consistency with environmental impact		
Are there any new environmental impacts or changes to environmental impact associated with the proposed modification that are not covered by safeguards or mitigation measures identified in the EIS, Representations Report or associated documents; or any Condition of Approval; or which would make safeguards, mitigation measures or Conditions of Approval ineffective? The proposed extension of wet and dry-mix batch plant operations, the extension of operating hours and the relocation of sand washing operations would result in no net change in environmental outcomes. The mitigation measures identified in the EA, SoC and the Conditions of Approval would all still apply and be effective to manage the proposed works.		✓
3.5 Consistency with particular Conditions of Approval		
Will any proposed modification, either by itself or in association with any other proposed modifications, result in the inability to satisfy any Condition of Approval? The proposed modification would not result in a change in impact that due to its nature or scale, should be made public. The potential impacts of the proposal are discussed in **Section** 4 and **Section** 5.		✓

It is concluded that the proposed activities do not result in a substantial change to the approved project and remain consistent with the objectives and function of quarry as outlined in the EA. The proposed works are generally consistent with the specific relevant MCoA, SoC and EPL.

Potential impacts to the environment from the proposed works have been identified and discussed in **Section 4** and **Section 5**. Given the rural nature of the area, the number and density of sensitive receivers adjacent to the construction corridor is very low. Noise monitoring of existing operations has shown that the quarry has not exceeded the Project noise criteria to date, and furthermore, the background noise at most receivers is dominated by highway traffic, with existing quarry operations generally audible only 50% of the time. Similarly air quality monitoring has shown that depositional dust levels generally comply with criteria, and that where exceedances have been recorded, these have occurred as a result of external influences.

Water for the batch plants and the sand washing operations would be supplied through the borehole water source currently used on the site. Potentially contaminated waste water would be managed in accordance with the Progressive Erosion and Sediment Control Plan prepared specifically for the wet-mix batch plant activities, which forms part of the overall site *EMP*. The

proposed works are not likely to significantly increase dust or noise emissions above current levels. The proposed works are also not likely to result in any other significant impacts above current conditions.

Consequently, the proposed changes arising from the use of the wet and dry mix batch plant for the Holbrook Bypass, extension of the operating hours and the relocation of sand washing operations are considered to be consistent with the approved project.