



Decision Document

Environmental Protection Act 1986, Part V

Licensee: **Holcim (Australia) Pty Ltd**

Licence: **L8176/2007/3**

Registered office: Level 8, 799 Pacific Highway
CHATSWOOD NSW 2067

ACN: 099 732 297

Premises address: Baldivis Sand Quarry
1340 Stakehill Road
BALDIVIS WA 6171
Being tenements M70/1046 and M70/1241

Issue date: Thursday, 10 February 2016

Commencement date: Friday, 4 March 2016

Expiry date: Thursday, 2 June 2016

Decision

Based on the assessment detailed in this document the Department of Environment Regulation (DER), has decided to issue a licence. DER considers that in reaching this decision, it has taken into account all relevant considerations and that the Licence and its conditions will ensure that an appropriate level of environmental protection is provided.

Decision Document prepared by:

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Licensing Officer

Decision Document authorised by:

Tim Gentle
Delegated Officer



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1 Purpose of this Document

This decision document explains how DER has assessed and determined the application and provides a record of DER's decision-making process and how relevant factors have been taken into account. Stakeholders should note that this document is limited to DER's assessment and decision making under Part V of the *Environmental Protection Act 1986*. Other approvals may be required for the proposal, and it is the proponent's responsibility to ensure they have all relevant approvals for their Premises.



2 Administrative summary

Administrative details		
Application type	Works Approval ☐ New Licence ☒ Licence amendment ☐ Works Approval amendment ☐	
Activities that cause the premises to become prescribed premises	Category number(s)	Assessed design capacity
	12: Screening, etc. of material	1,000,000 tonnes per annual period
Application verified	Date: 25/01/2016	
Application fee paid	Date: 04/02/2016	
Works Approval has been complied with	Yes ☐ No ☐ N/A ☒	
Compliance Certificate received	Yes ☐ No ☐ N/A ☒	
Commercial-in-confidence claim	Yes ☐ No ☒	
Commercial-in-confidence claim outcome		
Is the proposal a Major Resource Project?	Yes ☐ No ☒	
Was the proposal referred to the Environmental Protection Authority (EPA) under Part IV of the <i>Environmental Protection Act 1986</i> ?	Yes ☐ No ☒	Referral decision No: Managed under Part V ☐ Assessed under Part IV ☐
Is the proposal subject to Ministerial Conditions?	Yes ☐ No ☒	Ministerial statement No: EPA Report No:
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the <i>Environmental Protection Act 1986</i>)?	Yes ☐ No ☒ Department of Water consulted Yes ☐ No ☒	
Is the Premises within an Environmental Protection Policy (EPP) Area? Yes ☒ No ☐		
The Premises is located within the area subject to the provisions of the <i>Environmental Protection (Swan Coastal Plain Lakes) Policy 1992</i> .		
Is the Premises subject to any EPP requirements? Yes ☐ No ☒		
The EPP (Swan Coastal Plain Lakes) prohibits the unauthorised mining, filling, draining or effluent discharge into these lakes. The premises does not impact on any nearby lakes subject to this EPP.		



3 Executive summary of proposal and assessment

This assessment sets out DER's decision making in relation to a licence renewal for the Baldvis Sand Quarry under Part V of the *Environmental Protection Act 1986*.

Holcim (Australia) Pty Ltd (Holcim) operates the Baldvis Sand Quarry (the Quarry) under Licence L8176/2007/2. The Quarry, being one of many basic raw materials quarries operated by Holcim in the State, is located near Baldvis, approximately 50 km south of Perth. Holcim has been quarrying sand from this site since 2007.

The Quarry is located on Mining Lease M70/1241, which is 325 ha in area and includes an explosives manufacturing and storage reserve administered by the Department of Mines and Petroleum (DMP). M70/1241 is also crown reserve, which has been set aside for forestry purposes and administered by the Department of Parks and Wildlife. The Quarry site was previously a pine plantation that was cleared c.2007 by the Forest Products Commission.

M70/1241 is located in an expanding area of residential and rural properties, including properties with uncleared vegetation, market gardens, horse paddocks and vineyard. There are 32 individual properties identified in the immediate vicinity of M70/1241, with numerous other residential properties within a 1 km radius of the lease boundary and the Kwinana Freeway running adjacent to the east.

The life of mine is estimated at 4 years at a nominal extraction rate of 3,000 tonnes per day (maximum 5,500 tonnes per day). Two mobile screening plants are used to produce construction grade and paving grade sand, each with a design capacity of 150 tonnes per hour (tph). A washing plant may also be used to produce concrete grade sand. The washing plant has a design capacity of 200 tph and will be located adjacent to an existing sedimentation pond. An estimated 30% of extracted sand will require screening, and an additional 5% will require screening and washing.

The principle emissions and discharges associated with the screening operations are fugitive dust and noise emissions, particularly as the quarry progresses closer to receptors on the western and southern boundaries. Dust is managed in accordance with a Dust Management Plan. A noise impact assessment of operations (within Stage 1C) indicates the potential for marginal exceedances at the closest receptors to the west and south of the site during worst case operating conditions; however operational noise is largely masked by a high level of ambient noise (attributed to the Kwinana Freeway) and is barely audible at nearby receptors. Holcim is aware of its obligation to comply with the *Environmental Protection (Noise) Regulations 1997* and the general provisions of the Act during operations.

Under the Shire of Serpentine-Jarrahdale Town Planning Scheme No.2, the Quarry is exempt from planning approval as is situated on mining tenement. The primary approval is therefore under the *Mining Act 1978*. The tenement conditions for M70/1241 were amended in June 2015 to authorise the Stage 1C expansion. The expiry of the new Part V licence has been set to align with the expiry of the tenement conditions.

There has been no known complaints recorded as result of screening operations during Holcim's tenure at this site. DER is therefore satisfied that continued operations can be managed to minimise impact to the environment and nearby receptors.



4 Decision table

All applications are assessed in line with the *Environmental Protection Act 1986*, the *Environmental Protection Regulations 1987* and DER's Operational Procedure on Assessing Emissions and Discharges from Prescribed Premises. Where other references have been used in making the decision they are detailed in the decision document.

DECISION TABLE			
Licence section	Condition number L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
General conditions	L – no conditions	Normal operation There are no specified general conditions for normal operating conditions. Abnormal operation <u>Emission Description</u> <i>Emission:</i> Contamination of stormwater with hydrocarbons, dissolved and suspended solids from operational areas. <i>Impact:</i> The discharge of contaminated stormwater into the environment can result in a reduction of fresh groundwater quality and surface water quality. <i>Controls:</i> Hydrocarbons stored on-site for maintenance are stored and banded in accordance with AS1940. The maintenance area contains a containment apron, the washdown bay has a drive-in sump and oil-water separator. Any stormwater falling within the operational area is expected to quickly infiltrate due to the high permeability of the ground materials. <u>Risk Assessment</u> <i>Consequence:</i> Minor. <i>Likelihood:</i> Rare. <i>Risk Rating:</i> Low. <u>Regulatory Controls</u> No conditions required on the licence. The risk of stormwater runoff from operational areas is low to nil. Stormwater falling within operational areas will be contained within the operational area, and given the porous nature of the soil, will likely immediately infiltrate. <u>Residual Risk</u> <i>Consequence:</i> Minor. <i>Likelihood:</i> Rare. <i>Risk Rating:</i> Low.	



DECISION TABLE			
Licence section	Condition number L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
Premises operation	L1.2.1	Normal & abnormal operation <u>Emission Description</u> <i>Emission:</i> Sand washing water comprising fine material ($\leq 75 \mu\text{m}$) and water generated from the sand washing process. <i>Impact:</i> The uncontrolled discharge of fines into the environment can result in a reduction of fresh groundwater quality and surface water quality. <i>Controls:</i> Water from the sand washing process will be discharged to the existing sedimentation pond (which has been separated into 2 basins) for settling of the fines. <u>Risk Assessment</u> <i>Consequence:</i> Minor. <i>Likelihood:</i> Unlikely. <i>Risk Rating:</i> Moderate. <u>Regulatory Controls</u> L1.2.1 has been added to the licence to require the containment of material that would otherwise cause environmental impacts if uncontrolled, which specifies that sand washing water must be discharged to the existing sedimentation pond that is constructed with a minimum groundwater separation, clay lined to minimise infiltration and managed to maintain integrity. <u>Residual Risk</u> <i>Consequence:</i> Minor. <i>Likelihood:</i> Unlikely. <i>Risk Rating:</i> Moderate.	
Emissions general	L2.1.1	Descriptive limits have been set through conditions of the licence and therefore conditions regarding recording and investigation of exceedances of limits has been included.	
Point source emissions to air including monitoring	L – no conditions	There are no point source emissions to air expected or authorised during operation of the quarry. No specified conditions relating to point source emissions to air or the monitoring of these emissions are required on the licence.	
Point source emissions to surface water	L – no conditions	There are no point source emissions to surface water expected or authorised during operation of the quarry. No specified conditions relating to point source emissions to surface water or the monitoring of these emissions are required on the licence.	



DECISION TABLE			
Licence section	Condition number L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
Point source emissions to groundwater including monitoring	L – no conditions	There are no point source emissions to groundwater expected or authorised during operation of the quarry. No specified conditions relating to point source emissions to groundwater or the monitoring of these emissions are required on the licence.	
Emissions to land including monitoring	L – no conditions	There are no emissions to land expected or authorised during operation of the quarry. No specified conditions relating to emissions to land or the monitoring of these emissions are required on the licence.	
Fugitive emissions	L2.2.1 – 2.2.2	DER's assessment and decision making are detailed in Appendix A.	
Odour	L – no conditions	Odour is not expected from crushing and screening operations. No specified conditions relating to odour are required on the licence.	
Noise	L – no conditions	DER's assessment and decision making are detailed in Appendix A.	
Monitoring general	L3.1.1 – 3.1.4	No additional general monitoring conditions are required on the licence other than the standard NATA accreditation, monitoring timeframes and calibration requirements.	
Monitoring of inputs and outputs	L – no conditions	Monitoring of inputs and outputs is not required to adequately manage emissions during screening operations. No specified conditions relating to process monitoring are required to be added to the licence.	
Process monitoring	L – no conditions	Process monitoring is not required to adequately manage emissions during screening operations. No specified conditions relating to process monitoring are required to be added to the licence.	
Ambient quality monitoring	L3.2.1 – 3.2.2	Monitoring of ambient noise levels is required to validate assessment predictions and to provide assurance over the effectiveness of site noise management. Monitoring is required in accordance with the proponent's Noise Management Plan, and will include monitoring of noise levels during construction of the noise bund and quarterly attended monitoring during operations. Monitoring of ambient air (dust) levels is required to provide assurance over the effectiveness of site dust management and demonstrate performance against the limit set at the boundary. Continuous monitoring will be undertaken in accordance with the proponent's Dust Management Plan, and will be monitored at the Tuart Ridge Winery and the site administration office. A third mobile monitor will be used during quarrying of areas 2 & 6 of Stage 1C.	



DECISION TABLE			
Licence section	Condition number L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
Meteorological monitoring	L – no conditions	Monitoring of meteorological conditions is not required.	
Improvements	L – no conditions	No improvements are required.	
Information	L – no additional conditions	No additional reporting conditions are required on the licence other than the minimum record keeping, annual reporting and notification requirements.	
Licence Duration	N/A	The licence duration has been determined in accordance with the DER guidance statement: Licence duration (May 2015), to align with the expiry of the first of the two relevant mining tenements to expire, being M70/1046 (14/11/2027).	Guidance Statement: Licence duration (DER, May 2015)



5 Advertisement and consultation table

Date	Event	Comments received/Notes	How comments were taken into consideration
15/02/2016	Application advertised in West Australian newspaper	Nil.	N/A.



6 Risk Assessment

Note: This matrix is taken from the DER Corporate Policy Statement No. 07 - Operational Risk Management

Table 1: Emissions Risk Matrix

Likelihood	Consequence				
	Insignificant	Minor	Moderate	Major	Severe
Almost Certain	Moderate	High	High	Extreme	Extreme
Likely	Moderate	Moderate	High	High	Extreme
Possible	Low	Moderate	Moderate	High	Extreme
Unlikely	Low	Moderate	Moderate	Moderate	High
Rare	Low	Low	Moderate	Moderate	High



Appendix A

There are two mobile screening plants on the premises – one for producing construction sand and the other for paving sand. For the most part, one screening plant is used at any one time. The majority of screening is carried out using the construction sand screening plant, which follows the extraction areas. The paving screening plant will be located adjacent to the sand washing plant within the existing Stage 1A and 1B area. Each of the screening plants has a design capacity of 150 tonnes per hour.

It is anticipated that up to 30% of the extracted sand will require screening. On days when screening is required, each plant can operate for up to 10 hours per day.

A1 Fugitive emissions – dust

Dust generated from screening operations has the potential to impact on the health, welfare and amenity of local residents, impact on the health of animals and deposit on surrounding native vegetation. In addition to screening operations, fugitive dust is likely to be generated from site preparation activities such as topsoil stripping, sand extraction activities, movement of vehicles, and wind erosion of exposed surfaces.

Emission Risk Assessment

Emission Description

Emission: Dust, or total suspended particulate matter (TSP), comprised of coarse particulate matter (CPM), which is generally comprised of: particles greater than 10 µm in diameter, and the respirable fraction comprised of particles less than 10 µm in diameter (PM₁₀). The majority of dust generated during the development and operation of sand quarries is CPM, being comprised of unprocessed mineral oxide particles.

Holcim has continuously measured PM₁₀ emissions at the nearest receptor (Tuart Ridge Winery, located 270 m north-west of the Stage 1B operations) from a public health perspective. Analysis of data gathered during 2014 indicates PM₁₀ concentrations (24-hour average) ranging from 5 – 35 µg/m³, with 4 results recorded above 45 µg/m³. There has been one exceedance of the National Environment Protection Measure for Ambient Air Quality (Air NEPM) for particles as PM₁₀ (50 µg/m³, 24 hour average) recorded at this location and confirmed to be attributed to the quarry since operations commenced in 2008.

Impact: Dust emissions can be harmful to human health and the environment. Elevated TSP levels can impact ambient environmental quality resulting in amenity impacts and can smother vegetation. PM₁₀ or PM_{2.5} can be drawn deep into the lungs causing human health impacts. The chemical and physical properties of the particles, the size of the particles and the duration of exposure are all factors which may affect human health impacts.

When uncontrolled, the amount of dust emitted will be dependent on the nature of the mineral material that is exposed, moisture content and weather conditions.

Controls: Measures to manage and control fugitive dust emissions during operations are outlined in the proponent's Dust Management Plan (March 2015). Key management strategies in addition to the standard use of water carts include:

- Limiting the size of the active working open areas to less than 10 ha;
- Ensuring there is a 150 m buffer between excavation areas and residents on Stakehill Rd and Amarillo Dr;
- Positioning of product stockpiles away from site boundaries;



- Staged, incremental stripping program, including stabilising previous extraction stages prior to entering subsequent stages; and
- Continuous (365 days per year) monitoring of ambient air (PM₁₀) both on and off the premises, with trigger levels set and instant notifications sent to the quarry manager when triggered for management actions.

Risk Assessment – Normal operation

The consequence of dust emissions crossing the boundary of the Premises would be a localised alteration of the environment, with minor reversible health effects. The likelihood of this consequence occurring under typical screening operations is unlikely (not expected to occur), with a combined risk rating of moderate.

Consequence: Minor.

Likelihood: Unlikely.

Risk Rating: Moderate.

Risk Assessment – Abnormal operation

The likelihood of this consequence occurring under abnormal operating conditions (e.g. unfavourable meteorological conditions, screening plant malfunction, etc.), is possible (could occur), with a combined risk rating of moderate.

Consequence: Minor.

Likelihood: Possible.

Risk Rating: Moderate.

Regulatory Controls

Continuous monitoring of ambient dust levels (PM₁₀) at an off-site location is an existing requirement on the licence for the protection of human health and to provide assurance over the effectiveness of dust management at the site. At present the licence requires continuous monitoring at the Tuart Ridge Winery, located on Stakehill Rd, directly north of the Stage 1 operations. This location monitors emissions under southerly to easterly winds, which are the predominant (morning) winds during the summer months.

The previous licence referenced a 24 hour target of 50 µg/m³ at the receptor with an allowed exceedance of 5 days per year (i.e. the Air NEPM). It is DER's preference to set monitoring requirements at a premises boundary; however as the winery monitoring location has already been well established at a receptor, DER has elected to retain the monitoring program at this location due to its accessibility and proximity to a reliable power supply and for continuity of data.

The (recorded) impacts of fugitive dust from existing operations has been relatively minor, which in part is likely to be due to operations being restricted to a relatively small footprint. The Stage 1C expansion however, will significantly increase the quarry footprint from approximately 32 to 140 ha, and will bring operations closer to several receptors that bound the premises to the west and south. In summer months where there are strong prevailing winds from the east (mornings) and south-west (afternoons), the potential impacts to receptors will increase. As such, DER has determined to convert the previous target (PM₁₀ 90 µg/m³, 24-hour average) to a limit at the winery monitoring location AQ2, as this has been assessed as an appropriate location for representing the level of impact to receptors from quarrying operations (i.e. on easterly and southerly winds). Although the Air NEPM is not recognised by DER as a regulatory standard, it is considered appropriate in this instance to apply as the standard for ambient air quality at the premises, given the risk of dust from existing operations is not significant enough to warrant substantial changes to the existing monitoring setup and program.



This differs from the existing licence as this is no longer a target value, but rather the absolute maximum (limit) concentration, not to be exceeded at the receptor. Due to the number of external influences on PM₁₀ readings (e.g. smoke from bushfires), DER would not consider it to be a breach of licence conditions where it can be demonstrated that an exceedance is not attributed to operations on the premises.

Holcim maintains a second monitoring site near the site administration office, for monitoring emissions under south-westerly and south-easterly winds. This was predominantly used during baseline studies and is currently being voluntarily monitored. DER has determined to formalise the monitoring program at this location in the licence for comparison to data gathered at the winery location.

As the construction sand screening plant will follow the extraction areas, DER considers it appropriate for monitoring to be undertaken in the southern section of the premises during these operations. Holcim has reviewed their Dust Management Plan for the Stage 1C expansion and has proposed an additional (third) mobile dust monitoring station that will follow the extraction areas. DER accepts the proposed monitoring of the northern zone during quarrying operations in Area 2 and the southern zone during quarrying operations in Area 6 (this has been extended this to include Area 7); and has formalised these requirements by adding to the licence. DER notes the third mobile monitor proposed (E-sampler or Protinus) does not meet AS3580; however considers the data gathered from this monitor to be principally used for management purposes.

Residual Risk – Normal operation

With the above regulatory controls imposed through the licence, the residual risk rating of fugitive dust emissions under normal operating conditions is moderate.

Consequence: Minor.

Likelihood: Unlikely.

Risk Rating: Moderate.

Residual Risk – Abnormal operation

With the above regulatory controls imposed through the licence, the residual risk rating of fugitive dust emissions during abnormal operating conditions is moderate.

Consequence: Minor.

Likelihood: Possible.

Risk Rating: Moderate.

Reference documents:

Baldivis Sand Quarry Environmental Management Plan, Appendix B – Dust Management Plan, Revision 0 (24 March 2015), Holcim (Australia) Pty Ltd

National Environment Protection Measure for Ambient Air Quality (Air NEPM), National Environment Protection Council (1998)



A2 Noise emissions

Quarrying operations generates noise from multiple sources and activities, including mobile equipment and fixed plant. This licence has a focus on noise generated from crushing and screening activities on the premises; however given the nature of quarrying operations it is difficult to single this noise out from that generated during the extraction of material from the ground and haul truck movements. It is therefore assumed that screening activities will contribute to the overall noise generated from the quarry and public expectation is that all noise from the quarry will be regulated through the licence.

Emission Risk Assessment

Environmental noise impact assessment has been undertaken for the previous stages 1A (2007) and 1B (2013), and has been revised to include Stage 1C. The revised assessment includes noise generated from all sources under all likely operational scenarios. Existing noise criteria has been reviewed and a new set of assigned noise levels has been set out, identifying influencing factors for zoning, transport factor and tonality. DER is satisfied with the assumptions used in the SoundPlan model and the noise criteria applied to nearby receptors.

Emission Description

As discussed above, two screening plants are used. The construction sand screening plant is mobile and follows the extraction areas, while the paving screening plant operates from a fixed location, adjacent to the sand washing plant within the existing Stage 1A and 1B area. Normal operating hours are 7:00 am – 6:00 pm Monday to Friday.

Emission: Noise from quarrying operations. Predicted noise levels indicate that if the noise is assumed to be tonal, the potential for marginal exceedances (in the range of 1 – 3 dB) may occur at nine sensitive receptors located west, south-west and south of the site during the afternoon period under worst case scenarios. It is noted the dominant noise levels are during sand extraction activities; however noise from screening plants is likely to contribute to these levels (when operating). Noise data from existing operations has not been included with the application.

Impact: Noise emissions can cause nuisance and a reduced quality of life and health for human populations, particularly when the source is located near sensitive receptors. Noise can affect the psychological status of human population nearby in terms of emotional stress, anger and physical symptoms. Frequency, intensity, duration, meteorological conditions and distance to receptor are all factors which may affect the impact of noise emissions on sensitive receptors.

It is noted the baseline ambient noise levels at the site are 5 – 10 dB above the nominated noise criteria for all sensitive receptors surrounding the site. If on-site operational conditions are followed as per the assumptions made in the noise impact assessment, noise emissions from the quarry are not likely to be audible at the nearest receptors. As such, noise emissions from the quarry are not tonal at the nearest receptors.

Controls: Assumptions made in the noise impact assessment to ensure compliance with the nominated noise criteria include:

- Ensuring the quantity of equipment and plant are maintained at the assessed sound power level;
- Constructing a noise bund with a constant pit face of ≥ 5 m as the working of the pit progresses with the extraction;
- Keeping plant and equipment in good working order to avoid excessive vibration and increase engine noise;



- Ensuring that screening and washing plant and generator engine lids are maintained closed during operation;
- Minimising the use of screening plant when not required; and
- Avoiding the use of screening plants while empty.

The Stage 1C expansion will significantly increase the quarry footprint and will bring operations closer to several receptors, particularly those that bound the premises to the west and south. Receptors in these areas are likely to experience noise from areas they previously have not been exposed to, particularly during operations in Areas 1, 2 and 7 when plant will be operating at times up to 150 m from the premises boundary.

Risk Assessment – Normal operation

The consequence of noise emissions exceeding the assigned level(s) at noise sensitive premises would be localised, short-term impact, and causing concern and complaints. Based on the existing operations and the high level of ambient noise, the likelihood of this consequence occurring under normal operating conditions is rare (occurs in exceptional circumstances), with a combined risk rating of low.

Consequence: Minor.

Likelihood: Rare.

Risk Rating: Low.

Risk Assessment – Abnormal operation

The likelihood of this consequence occurring under abnormal operating conditions (e.g. unfavourable meteorological conditions) is possible (could occur). Under these conditions, noise emissions from the quarry may become audible which may attract a 5 dB penalty for tonality, making the overall noise level marginally compliant at the nearest receptors. As such, the combined risk rating is considered moderate.

Consequence: Minor.

Likelihood: Possible.

Risk Rating: Moderate.

Regulatory Controls

The proponent has a legislative requirement to comply with the assigned noise levels at all times as set in the Noise Regulations.

The existing licence does not require noise monitoring. The applicant has proposed in its Noise Management Plan (March 2015) to undertake attended noise monitoring during construction of the noise bund and quarterly noise monitoring comprised of attended daily monitoring and unattended noise logging over a 7 day period. Given that predicted emissions indicate the potential for exceedances at the neighbouring receptors under worst case conditions is unlikely, DER considers the monitoring as proposed will be sufficient. This monitoring will also be useful for validating assessment predictions and for providing assurance over the effectiveness of noise management at the site. Given noise emissions from the screening plant is the primary consideration for DER from this site, the existing monitoring location at the winery is considered to be an appropriate location for such attended monitoring. Additional monitoring is also considered appropriate when operations are occurring in the southern area of the premises.

Conditions will therefore be added to the licence to require noise monitoring as per the Noise Management Plan, i.e. during construction of the noise bund and quarterly during operations. Additional conditions will be added to specify that all noise measurements are carried out in accordance with Part 4 (as applicable) of the Noise Regulations, and that any results that do not comply with the assigned levels are reported to DER and are thoroughly investigated.



Residual Risk

With the above regulatory controls imposed through the licence, the residual risk rating of noise during operation of the Stage 1C expansion is moderate.

Consequence: Minor.

Likelihood: Unlikely.

Risk Rating: Moderate.

Reference documents:

Holcim Baldivis Sand Quarry Stage 1C Expansion – Environmental Noise Impact Assessment, Revision 4 (June 2015), Wood & Grieve Engineers

Baldivis Sand Quarry Environmental Management Plan, Appendix F – Noise Management Plan, Revision 0 (24 March 2015), Holcim (Australia) Pty Ltd

Environmental Protection (Noise) Regulations 1997 (Noise Regulations)