Decision Report

Application for Licence Amendment

Division 3, Part V *Environmental Protection Act 1986*

Licence Number	L6930/1986/12
Applicant	Boral Resources (WA) Ltd
ACN	008 686 904
File Number	DER2017/001645
Premises	Toodyay Hard Rock Quarry Lot 111 on Plan 410101 Volume 2944 Folio 808 Cobbler Pool Road, Morangup
Date of Report	25 January 2019
Status of Report	Final

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1. Definitions of terms and acronyms

In this Decision Report, the terms in Table 1 have the meanings defined.

Table 1: Definitions

Term	Definition
ACN	Australian Company Number
Category/ Categories/ Cat.	categories of Prescribed Premises as set out in Schedule 1 of the EP Regulations
Compliance Report	Audit Compliance Report completed annually and submitted to the CEO
Decision Report	refers to this document.
Delegated Officer	an officer under section 20 of the EP Act.
DWER	Department of Water and Environmental Regulation As of 1 July 2017, the Department of Environment Regulation (DER), the Office of the Environmental Protection Authority (OEPA) and the Department of Water (DoW) amalgamated to form the Department of Water and Environmental Regulation (DWER). DWER was established under section 35 of the *Public Sector Management Act 1994* and is responsible for the administration of the *Environmental Protection Act 1986* along with other legislation.
EIL	Extractive Industry Licence A licence issued by the Local Government Authority under the *Planning and Development Act 2005 (WA)*
EP Act	*Environmental Protection Act 1986* (WA)
EP Regulations	*Environmental Protection Regulations 1987* (WA)
Licence Holder	Boral Resources (WA) Ltd
mbgl	metres below ground level
Noise Regulations	*Environmental Protection (Noise) Regulations 1997* (WA)
Occupier	has the same meaning given to that term under the EP Act
OEPA	Office of the Environment Protection Authority
PM	Particulate Matter
PM_{10}	used to describe particulate matter that is smaller than 10 microns (µm) in diameter
Prescribed	has the same meaning given to that term under the EP Act

Premises	
Premises	refers to the premises to which this Decision Report applies, as specified at the front of this Decision Report
Primary Activities	as defined in Schedule 2 of the Licence
Risk Event	As described in *Guidance Statement: Risk Assessment*

2. Purpose and scope of assessment

Boral Resources (WA) Ltd (Boral) has applied for an amendment of existing licence (L6930/1986/12) to crush and screen up to 500,000 tonnes per annum of granite at their Toodyay Hard Rock Quarry located at Lot 111 Cobbler Pool Road Morangup, approximately 22 km south-east of Chittering in the Shire of Toodyay.

The proposed operation is a prescribed activity Category 12 under Schedule 1 of the EP Regulations as described in Table 2 below.

Table 2: Prescribed Premises Categories

Classification of Premises	Description	Premises production or design capacity or throughput
Category 12	Screening, etc of material: premises (other than premises within category 5 or 8) on which material extracted from the ground is screened, washed, crushed, ground, milled, sized or separated.	500,000 tonnes or more per year

This Decision Report sets out DWER's assessment and decision making in relation to the application to amend the licence under Division 3, Part V of the EP Act.

The scope of assessment for this Decision Report relates to the risk of emissions to public health and the environment during the operation of activities relating to crushing and screening.

The licence amendment application is for a production capacity increase of up to 500,000 tonnes per year. An Extractive Industry Licence (EIL) for the Premises was granted by the Shire of Toodyay under the *Planning and Development Act 2005* on 6 August 2018 for a 10 year term. The previous EIL expired on 21 February 2018 and the Shire of Toodyay considered an application from Boral to reactivate the EIL for Boral's hard rock quarry in Morangup.

Key finding

The Delegated Officer has determined that:

1. The scope of this Decision Report is for assessment for a production throughput of up to 500,000 tonnes per year, consistent with the EIL issued by the Shire of Toodyay on 6 August 2018 under the *Planning and Development Act 2005* and the outcome of subsequent mediation.
2. Boral is the legal entity that owns Lot 111 Cobbler Pool Road located at Morangup in the Shire of Toodyay, and therefore, Boral is the Occupier of the premises.

3. Application details

Table 3 lists the documents submitted during the assessment process.

Table 3: Documents and information submitted during the assessment process

Document/information description	Date received
Licence amendment application package comprising: • Application form • Licence Amendment L6930/1986/12 Supporting Document • Boral Resources Toodyay Quarry Environmental Noise Impact Assessment • Boral Resources Environmental Policy	19 April 2018
Stormwater calculations	15 May 2018
Site Plan - updated Premises map	16 May 2018
Certificate of title for Lot 111 Cobbler Pool Road, Morangup	

4. Overview of Premises

4.1 Background

Operations at the Premises have historically been conducted on a campaign basis, based on market demand. The premises have remained inactive since 2010, when operations ceased due to market conditions.

Boral proposes to reinstate operations through extraction and processing of hard rock material however the current licensed annual production volume of 50,000 tonnes is a significant barrier to the quarry supplying large infrastructure projects in the region. Therefore Boral requires the annual production limit to be increased. This will allow Boral to supply the local construction materials market, as well as providing the capacity to service larger infrastructure project which occur from time to time.

4.2 Operational aspects

Boral propose to use 200 tph mobile crushing and screening plant on the Premises to process up to 500,000 tonnes per year of granite from the ground. Granite extraction operations at the quarry will be over an area of approximately 6.55 hectares in 9 stages over a period of 10 years. The licence amendment application states that there is a potential for up to 150 years supply of hard rock from the Premises.

Extraction and processing of hard rock at the premises is proposed to be undertaken in the following manner:

- The quarry rock face is drilled and blasted;
- Hard rock is loaded into a dump truck and transported to the processing area;
- Hard rock is fed into crushing and screening equipment, where it is crushed into a number of grades (a loader is used to charge the crushing and screening plant which creates a series of stockpiles);
- Graded material is processed in a 200tph mobile processing plant to produce a variety

of products for use in road making, concrete manufacturing and general bulk earthworks;

- Stockpiles of processed material are formed in the stockpile areas; and
- Material is loaded from the formed stockpiles directly onto road trucks for transport off site.

Depending on demand for products, mobile crushing and screening plant will operate on the Premises for up to 6 months each year. For major project works this may result 350,000 tonnes or more of product, however for normal supply operations product volumes are likely to be less. The crushing and screening plant will be located in the most southern portion of the Premises, adjacent to an existing stockpile area. A diesel storage tank will also be located in this area (refer to Figure 1). The diesel storage facility on the Premises shall comply with Australian Standards (AS) 1940 – 2004 'The storage and handling of flammable and combustible liquids'.

Water required for dust suppression, water sprays on crushing and screening plant and emergency services (fire-fighting) will be sourced from the large stormwater detention basin (dam) located north of the existing extraction area/pit. Stormwater from extraction areas, as well as other operational areas, and process water from crushing and screening activities will report back to one of numerous sedimentation ponds for re-use or conveyed to the large stormwater dam. Any controlled stormwater discharges from the Premises, in the event the dam exceeds its holding capacity, will be via the licensed discharge point (refer to Figure 1).

Boral propose to operate the quarry for 11 hours a day Monday to Saturday (excluding public holidays). The EIL for the quarry, issued to Boral by the Shire of Toodyay, restricted operations from 6:00 am to 5:00 pm Monday to Saturday.

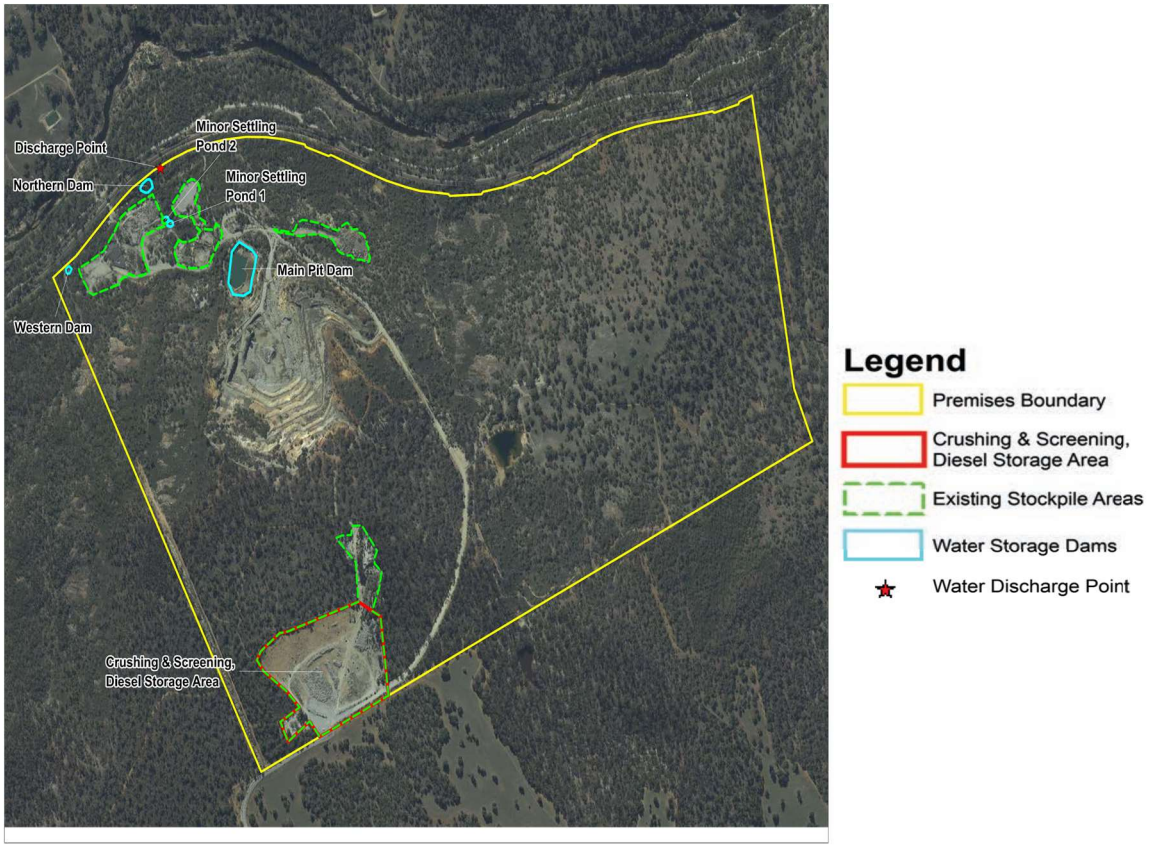

Figure 1: Boral hard rock quarry infrastructure locations

The Toodyay quarry infrastructure and equipment, as it relates to Category 12 activities, is detailed in Table 4 below.

Table 4: Cobbler Pool Road Quarry Category 12 infrastructure and equipment

Infrastructure and equipment	
Prescribed Activity Category 12	
Up to 500,000 tonnes per annual period of granite shall be crushed and screened into various sizes and stockpiled on the premises.	
1	Mobile crushers and screeners and associated processing plant (design capacity of 686,400 tonnes per year) includes: • 1180 Premiertrack Jaw Crusher; • 1300 Maxtrak Cone Crusher; • McClockey R155 Screener; • H6203 Screener; • Conveyors and material stackers
2	Stormwater management (drainage) infrastructure including water diversion bunds, drains, sumps, sedimentation ponds, a dam and discharge point.
3	Supporting plant and equipment including drill rig, 47t excavator, WA500 front end loader, 40t articulated dump truck, water truck, haulage trucks and light vehicles.
4	20 kL self-bunded diesel storage tank.

4.3 Legislative context

Table 5 below summarises other approvals relevant to the assessment.

Table 5: Relevant approvals

Legislation	**Number**	**Approval Holder**	**Approval**
Planning and Development Act 2005	Ref: OPA35724	Boral Resources (WA) Ltd	An application for an Extractive Industry Licence (EIL) for the quarry was considered by the Shire of Toodyay. The EIL was issued on 6 August 2018 for a 10 year period and will require a clearing permit to be issued by the DWER prior to any vegetation clearing on the Premises.

4.4 Part IV of the EP Act

The proposal has not been referred to the Environmental Protection Authority (EPA) and is not subject to conditions under Part IV of the EP Act. The Delegated Officer has determined that the environmental impact of the proposal are not so significant as to require referral to the EPA under Part IV of the EPA Act.

4.5 Contaminated sites

The Premises is not listed as a contaminated site under the *Contaminated Sites Act 2003*.

4.6 Other relevant approvals

4.6.1 Federal Legislation

The proposal has not been referred or assessed under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth).

4.6.2 Planning approval

An EIL for the Premises was granted under the *Planning and Development Act 2005* by the Shire of Toodyay on 6 August 2018 for a period of ten years. This planning approval enables the Applicant to reactivate the EIL for Boral's hard rock quarry in Morangup.

4.7 Part V of the EP Act

4.7.1 Applicable regulations, standards and guidelines

The overarching legislative framework of this assessment is the EP Act and EP Regulations. DWER guidance statements which inform this assessment are:

- *Guidance Statement: Regulatory Principles (July 2015)*
- *Guidance Statement: Setting Conditions (October 2015)*
- *Guidance Statement: Land Use Planning (February 2017)*
- *Guidance Statement: Licence Duration (August 2016)*
- *Guidance Statement: Publication of Annual Audit Compliance Reports (May 2016)*
- *Guidance Statement: Decision Making (February 2017)*
- *Guidance Statement: Risk Assessments (February 2017)*
- *Guidance Statement: Environmental Siting (November 2016)*

4.7.2 Licence history

The licence history for the Premises since 1 October 2000 is summarised in Table 6 below.

Table 6: Licence history

Instrument	Issued	Nature and extent of licence renewal or amendment
L6930/1986/5	1/10/2000	Licence re-issue - category 12 crushing and screening of material.
L6930/1986/6	7/11/2001	Licence re-issue - category 12 crushing and screening of material.
L6930/1986/7	20/11/2002	Licence re-issue - category 12 crushing and screening of material.
L6930/1986/8	1/10/2003	Licence re-issue - category 12 crushing and screening of material.
L6930/1986/9	1/11/2004	Licence re-issue - category 12 crushing and screening of material.
L6930/1986/10	31/10/2005	Licence re-issue - category 12 crushing and screening of material.
L6930/1986/11	30/10/2008	Licence re-issue - category 12 crushing and screening of material.
L6930/1986/12	30/10/2011	Licence re-issue - category 12 crushing and screening of material.
L6930/1986/12	5/9/2013	Licence converted to REFIRE format.
L6930/1986/12	27/10/2017	Amendment to extend licence expiry date by 3 months

L6930/1986/12	25/1/2018	Amendment to extend licence expiry date by 1 year
L6930/1986/12	22/01/2019	Licence amendment to increase production capacity to 500,000 tpa.

4.7.3 Compliance review

A review of previous Annual Environmental Reports indicated that since 1 January 2010 through to 31 December 2016 there have been no category 12 activities undertaken at the Toodyay Hard Rock Quarry.

The Licence Holder had filled an armour rock contract during October 2009 until September 2010 but this materials contract did not require category 12 crushing and screening operations.

Two compliance inspections were completed at the Premises on 29 May 2012 and 23 October 2013.

During the 29 May 2012 inspection, Boral had failed to immediately recover, remove and dispose of liquid waste from spills or leaks that had accumulated within the diesel storage tank bund. By the 8 June 2012 the Licence Holder had addressed this incident by removing the liquid waste (hydrocarbons) and disposing at an approved facility. The permanent fuel tank and bund were replaced by a mobile double lined tanker. The licence amendment application includes the re-establishment of diesel storage tanks on the Premises.

On 23 October 2013 the Licence Holder was deemed compliant with all the conditions of the licence.

An incident was recorded on 24 June 2014 when the Annual Environmental Report and Compliance Report for this Premises were provided after the due date. As this is a deemed a technical non-compliance with no impacts upon receiving environment, the incident was resolved by correspondence.

4.7.4 Clearing of native vegetation

DWER records indicated that a clearing permit CPS 2553/1 was issued to the Licence Holder on 13 October 2008. The permit expired on 2 November 2013 and authorised the mechanical clearing of 20 ha of vegetation from the Premises. On 26 October 2010, DWER completed satellite monitoring of the clearing at the Premises and determined that approximately 9 Ha of native vegetation was cleared outside the approved area. The DWER investigated this matter and determined a level of enforcement resulting in a conviction on 25 March 2014 under Part V of the EP Act.

Since this incident, no other applications to clear native vegetation have been made for the Premises. Expansion of quarry operations to 500,000 tpa will necessitate clearing of up to 2.2 ha of native vegetation. Boral will obtain a permit to clear native vegetation from DWER prior to commencing extraction activities in vegetated areas.

5. Consultation

Consultation with interested parties was conducted as necessary through the Shire of Toodyay's development approval process and assessment of the EIL application for the quarry operation (a letter from the Shire of Toodyay inviting comment on the EIL application was received by DWER on 30 April 2018).

6. Location and siting

6.1 Siting context

The Premises is located at Lot 111 Plan 410101 Cobbler Pool Road, Morangup in the Shire of Toodyay and is in the Avon River catchment. It is mostly vegetated except where quarrying activities have occurred in the past. The Premises is owned by the Licence Holder and land immediately to the north, south and east is zoned 'Rural' under the Shire of Toodyay Planning Scheme. The Moondyne Nature Reserve, vested with the Department of Biodiversity, Conservation and Attractions, is at the western boundary of the Premises.

6.2 Residential and sensitive premises

The nearest sensitive receptors to the Premises are a number of residents to the north of the Premises boundary. The nearest of these receptors is located 550 m from the Premises northern boundary and approximately 1.6 km from the site of proposed crushing and screening activities. The distances of these sensitive receptors are indicated in Figure 2 and detailed in Table 7 below.

The Applicant engaged a specialist consultant (WSP) to undertake a noise impact assessment of noise emissions associated with proposed Premises operations. This assessment of potential noise impacts on the nearest sensitive receptors concluded that, based on the proposed crushing and screening location and distance to the nearest sensitive receptors, the predicted noise levels will be compliant with the EP (Noise) Regulations during quarry operations.

Also, given the significant separation distance between the prescribed activity and residential receptors, impacts from fugitive dust emissions from the Premises are not expected to occur.

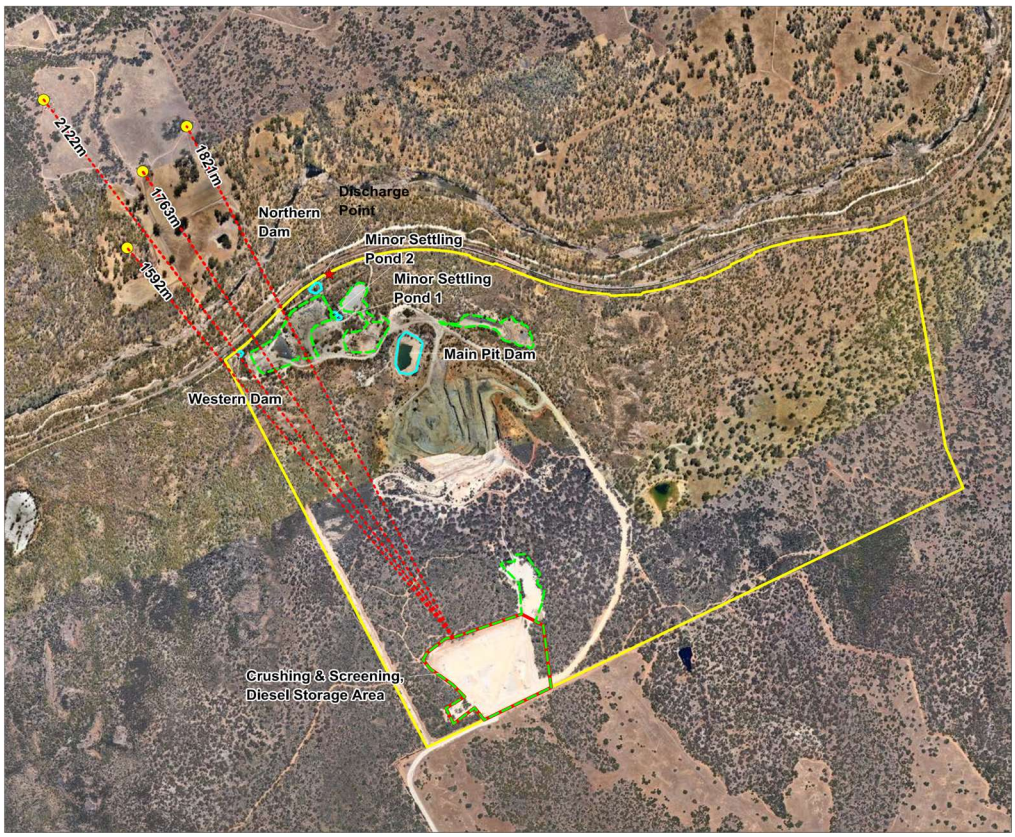

Figure 2: Location of noise sensitive receptors from prescribed activity

Table 7: Receptors and distance from Category 12 prescribed activity

Sensitive receptors	Distance from Prescribed Activity
Residence – Lot 28334 Cobbler Pool Rd	Approximately 1.6 km north-west of the crushing and screening area
Residence – 1000 Cobbler Pool Rd	Approximately 1.75 km north-west of the crushing and screening area
Residence – Lot 371 Cobbler Pool Rd	Approximately 1.85 km north-west of the crushing and screening area
Residence – 535 Cobbler Pool Rd	Approximately 3.7 km north-east of the crushing and screening area

6.3 Specified ecosystems

Specified ecosystems are areas of high conservation value and special significance that may be impacted as a result of activities at or Emissions and Discharges from the Premises. The distances from the extraction area to specified ecosystems and designated areas (as listed in *Guidance Statement: Environmental Siting (*DER 2016d) are shown in Table 8. No Threatened Ecological Communities (TECs) are known to occur within a five kilometre radius of the Premises boundary.

Table 8: Environmental values

Specified ecosystems	Distance from the Premises
Ramsar sites in Western Australia	There are no Ramsar sites within 10 km radius of the Premises.
Department of Biodiversity Conservation and Attractions managed lands and water	Moondyne Nature Reserve borders the Premises western boundary.
Waterways Conservation Areas	There are no Waterways Conservation Areas within a 10 km radius of the Premises.
Bush Forever Site 481	750m
Biological Component	
Endangered Species	The Carnaby Cockatoo (*Calyptorhynchus latirostris*) has been recorded within Moondyne Nature Reserve west of the Premises boundary.
Moondyne Nature Reserve	Directly west of the Prescribed Premises boundary with forest of jarrah, marri and powderbark with wandoo valleys.

6.4 Groundwater and water sources

The distances to groundwater and water sources are shown in Table 9 below.

Table 9: Groundwater and water sources

Groundwater / Water Resources	Distance from Premises	Environmental Value
Proclaimed Surface Water and Irrigation District under the *Rights in Water and Irrigation Act 1914.*	The premises is within the Avon River Catchment Area which is a proclaimed Surface Water and Irrigation District.	There are no public drinking water source areas within 10 km radius of the Premises.
Major watercourses	The Avon River is located approximately 100 m from the northern boundary of the Premises.	Domestic, stock, agricultural, industrial, recreational and environmental flows of the Avon River and greater Swan River.
Groundwater Local fractured rock groundwater aquifer (unproclaimed)	Premises overlays fractured rock aquifer within gneiss granite. Groundwater depth is reflected by topography and is opportunistic perched and fractured rock shallow aquifers from ground surface to 30 mbgl, however the quarry pit does not intersect groundwater.	Used for domestic and industrial use and irrigation. Required to facilitate conservation and protection of local environmental values.

6.5 Geology and soils

The licence amendment application describes the geology within the Premises boundary as locally metamorphosed, foliated, gneissic with abundant mafic and ultramafic inclusions with undifferentiated felsic intrusive rocks, including monzogranite, granodiorite, granite, tonalite, quartz monzonite, syenogranite, diorite, monzodiorite and pegmatite.

The main soil types are described as:

- Clackline System - moderately dissected areas with gravelly slopes and ridges and minor rock outcrop on the eastern side of the Darling Plateau over weathered granite and granitic gneiss;
- Boyagin System - large duricrust remnants surrounded by stripped terrain of rock outcrops and fresh soils in Eastern Darling Range Zone; and
- Wundowie System - intact undulating lateritic terrain with minor rock outcrops in the north eastern Darling Range.

Topographic contours across the Premises range from 105 m AHD on the northern property boundary near the Avon River to 290 m AHD at the southern property boundary.

6.6 Meteorology

The closest Bureau of Meteorology (BoM) weather station to the Premises is located at Bakers Hill. The area experiences a Mediterranean climate with hot dry summers and cool wet winters.

6.6.1 Wind, rainfall and temperature

Winds, temperature and rainfall in the Perth region are factors that influences storm water, dust control and sediment and erosion control management strategies at the Premises.

The minimum average monthly temperature ranges from approximately 7.0˚C to 16˚C and maximum average monthly temperature ranges approximately 15˚C to 32.0˚C. The average annual rainfall in the area is approximately 595 mm per annum with a maximum mean rainfall of 113 mm during July. Prevailing winds are south easterly in the morning and west/south-westerly in the afternoon.

7. Risk assessment

7.1 Determination of emission, pathway and receptor

In undertaking the risk assessment, DWER will identify all potential emissions pathways and potential receptors to establish whether there is a Risk Event which requires detailed risk assessment (DER 2017a).

To establish a Risk Event there must be an emission, a receptor which may be exposed to that emission through an identified actual or likely pathway, and a potential adverse effect to the receptor from exposure to that emission. Where there is no actual or likely pathway and/or no receptor, the emission will be screened out and will not be considered as a Risk Event. In addition, where an emission has an actual or likely pathway and a receptor which may be adversely impacted, but that emission is regulated through other mechanisms such as Part IV of the EP Act, that emission will not be risk assessed further and will be screened out through Table 10.

The identification of the sources, pathways and receptors to determine Risk Events are set out in Table 10 below.

Table 10: Identification of emissions, pathway and receptors during operation

Risk Events						**Continue to detailed risk assessment**	**Reasoning**
Sources/Activities		**Potential emissions**	**Potential receptors**	**Potential pathway**	**Potential adverse impacts**		
Cat 12 Screening etc. of material	Operation of crushing infrastructure and movement / stockpiling of material via conveyors and stacker	**Dust**: associated with material extracted from the ground	The nearest sensitive receptor (resident) is 1.6 km from crushing and screening area on the Premises. Moondyne Nature Reserve and Avon Valley National Park has contiguous boundary with Premises.	Air / wind dispersion	Human health and amenity impacts	No	The nearest sensitive receptor (resident) is approximately 1.6 km from crushing and screening activities (refer to section 7.2) and the Applicant will implement a range of controls to minimise and manage emissions including: • Visual monitoring of dust lift-off during crushing and screening, stockpiling, blasting and on-site truck movements; • Wetting-down or other treatment of unsealed roads and stockpiles; • Use of water sprays and shields on crushing and screening equipment;

Risk Events						Continue to detailed risk assessment	Reasoning
Sources/Activities		Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts		
							• Speed limit of 30 km/hr to apply to all vehicles on unsealed roads; • Use of tarpaulins to cover loaded trucks leaving the Premises. • Employ a complaints management system and investigate and action any dust related complaints in a timely manner.
					Dust deposition on vegetation	No	While recent research does not provide enough evidence of plant health impacts from dust emissions, it is possible that dust deposition may be detrimental to population viability of susceptible plant species and communities in the long term, although impact is likely to be low level. Furthermore, the conservation value of Moondyne Nature Reserve and Avon Valley National Park is not particularly high, i.e. no species with conservation status, therefore long-term dust deposition on vegetation due to activities on the Premises may result in slight to minor consequences and low to medium risk to vegetation health. The Licence Holder will implement various management measures to reduce dust emissions from the Premises and minimise dust impacts to vegetation as much as possible.
		Noise: From operation	The nearest sensitive receptor (resident) is 1.6 km from crushing		Amenity impacts	No	The nearest resident is approximately 1.6 km from the site of crushing and screening activities. Subsequently noise

Risk Events						Continue to detailed risk assessment	Reasoning
Sources/Activities		**Potential emissions**	**Potential receptors**	**Potential pathway**	**Potential adverse impacts**		
		of the mobile crushing and screening plant	and screening area on the Premises (no sensitive receptors within 1000m).				from the Premises is expected to comply with the Noise Regulations (noise impact assessment concluded that quarry operation will comply with relevant noise levels - refer to section 7.2).
Cat 12 Screening etc. of material		Stormwater may become contaminated with sediment and fine particles	Vegetation and surface water bodies (e.g. Avon River). Aquatic ecosystems of the Avon River.	Direct discharge and overland flow	Increase in surface water turbidity causing aquatic ecosystem impacts	Yes	Refer section 8.4
	Diesel storage facility and refuelling activities	Discharge to land and/or water resources from spills and/or leaks.	Soils Surface water and aquatic ecosystems of the Avon River. Groundwater	Direct discharge of contaminated stormwater Infiltration (seepage) through the soil profile.	Contamination of soils, surface water bodies (e.g. Avon River) and groundwater resources	Yes	Refer section 8.5

7.2 Consequence and likelihood of risk events

A risk rating will be determined for risk events in accordance with the risk rating matrix set out in Table 11 below.

Table 11: Risk rating matrix

Likelihood	Consequence				
	Slight	Minor	Moderate	Major	Severe
Almost certain	Medium	High	High	Extreme	Extreme
Likely	Medium	Medium	High	High	Extreme
Possible	Low	Medium	Medium	High	Extreme
Unlikely	Low	Medium	Medium	Medium	High
Rare	Low	Low	Medium	Medium	High

DWER will undertake an assessment of the consequence and likelihood of the Risk Event in accordance with Table 12 below.

Table 12: Risk criteria table

Likelihood		Consequence		
The following criteria has been used to determine the likelihood of the Risk Event occurring.		The following criteria has been used to determine the consequences of a Risk Event occurring:		
			Environment	Public health* and amenity (such as air and water quality, noise, and odour)
Almost Certain	The risk event is expected to occur in most circumstances	Severe	• **onsite impacts**: catastrophic • **offsite impacts local scale**: high level or above • **offsite impacts wider scale:** mid-level or above • Mid to long-term or permanent impact to an area of high conservation value or special significance^ • Specific Consequence Criteria (for environment) are significantly exceeded	• Loss of life • **Adverse health effects:** high level or ongoing medical treatment • Specific Consequence Criteria (for public health) are significantly exceeded • **Local scale impacts:** permanent loss of amenity
Likely	The risk event will probably occur in most circumstances	Major	• **onsite impacts**: high level • **offsite impacts local scale**: mid-level • **offsite impacts wider scale**: low level • Short-term impact to an area of high conservation value or special significance^ • Specific Consequence Criteria (for environment) are exceeded	• **Adverse health effects:** mid-level or frequent medical treatment • Specific Consequence Criteria (for public health) are exceeded • **Local scale impacts**: high level impact to amenity
Possible	The risk event could occur at some time	Moderate	• **onsite impacts**: mid-level • **offsite impacts local scale**: low level • **offsite impacts wider scale**: minimal • Specific Consequence Criteria (for environment) are at risk of not being met	• **Adverse health effects:** low level or occasional medical treatment • Specific Consequence Criteria (for public health) are at risk of not being met • **Local scale impacts:** mid-level impact to amenity

Likelihood		Consequence		
The following criteria has been used to determine the likelihood of the Risk Event occurring.		**The following criteria has been used to determine the consequences of a Risk Event occurring:**		
			Environment	**Public health* and amenity (such as air and water quality, noise, and odour)**
Almost Certain	The risk event is expected to occur in most circumstances	Severe	• **onsite impacts**: catastrophic • **offsite impacts local scale**: high level or above • **offsite impacts wider scale:** mid-level or above • Mid to long-term or permanent impact to an area of high conservation value or special significance^ • Specific Consequence Criteria (for environment) are significantly exceeded	• Loss of life • **Adverse health effects:** high level or ongoing medical treatment • Specific Consequence Criteria (for public health) are significantly exceeded • **Local scale impacts:** permanent loss of amenity
Unlikely	The risk event will probably not occur in most circumstances	Minor	• **onsite impacts**: low level • **offsite impacts local scale**: minimal • **offsite impacts wider scale**: not detectable • Specific Consequence Criteria (for environment) likely to be met	• Specific Consequence Criteria (for public health) are likely to be met • **Local scale impacts:** low level impact to amenity
Rare	The risk event may only occur in exceptional circumstances	Slight	• **onsite impact**: minimal • Specific Consequence Criteria (for environment) met	• **Local scale**: minimal to amenity • Specific Consequence Criteria (for public health) met

^ Determination of areas of high conservation value or special significance should be informed by the *Guidance Statement: Environmental Siting* (DER 2016a).
* In applying public health criteria, DWER may have regard to the Department of Health's *Health Risk Assessment (Scoping) Guidelines* (DoH 2010)
"onsite" means within the Prescribed Premises boundary.

7.3 Acceptability and treatment of Risk Event

DWER will determine the acceptability and treatment of Risk Events in accordance with Table 13 below:

Table 13: Risk treatment table

Rating of Risk Event	Acceptability	Treatment
Extreme	Unacceptable.	Risk Event will not be tolerated. DWER may refuse application.
High	May be acceptable. Subject to multiple regulatory controls.	Risk Event may be tolerated and may be subject to multiple regulatory controls. This may include both outcome-based and management conditions.
Medium	Acceptable, generally subject to regulatory controls.	Risk Event is tolerable and is likely to be subject to some regulatory controls. A preference for outcome-based conditions where practical and appropriate will be applied.

Low	Acceptable, generally not controlled.	Risk Event is acceptable and will generally not be subject to regulatory controls.

7.4 Risk Assessment – Stormwater sediment contamination

7.4.1 General characterisation and impact of contaminated stormwater discharge

There is the potential for stormwater to become contaminated with sediment and/or hydrocarbons during operation of crushing and screening plant and other quarry activities, which may then be discharged to land and/or the Avon River if not appropriately diverted, stored, treated and disposed. The risk of hydrocarbon contamination of stormwater posed by the diesel storage facility, refueling activities and vehicle and equipment maintenance activities on the Premises is addressed in Section 8.5.

Suspended particulates (fine sediments) generated during crushing and screening, and associated quarry operations, become highly mobile in stormwater during heavy rainfall events and create a risk to the quality of stormwater discharged from the Premises.

The crushing and screening plant will be located in the most southern portion of the Premises. Due to the natural topography at the quarry overland flow of stormwater contaminated with sediment from this area and other active quarry areas may cause off-site impacts on the neighbouring property and the Avon River which is located approximately 100 m down gradient from the stormwater discharge point at the northern boundary of the Premises. For example, fine sediments in stormwater discharged from the Premises have the potential to increase the turbidity of the Avon River which may limit light availability to submerged macrophytes (aquatic plants) and inhibit their growth by preventing photosynthesis.

A plan containing the topographic contours of the Premises is provided in Figure 3.

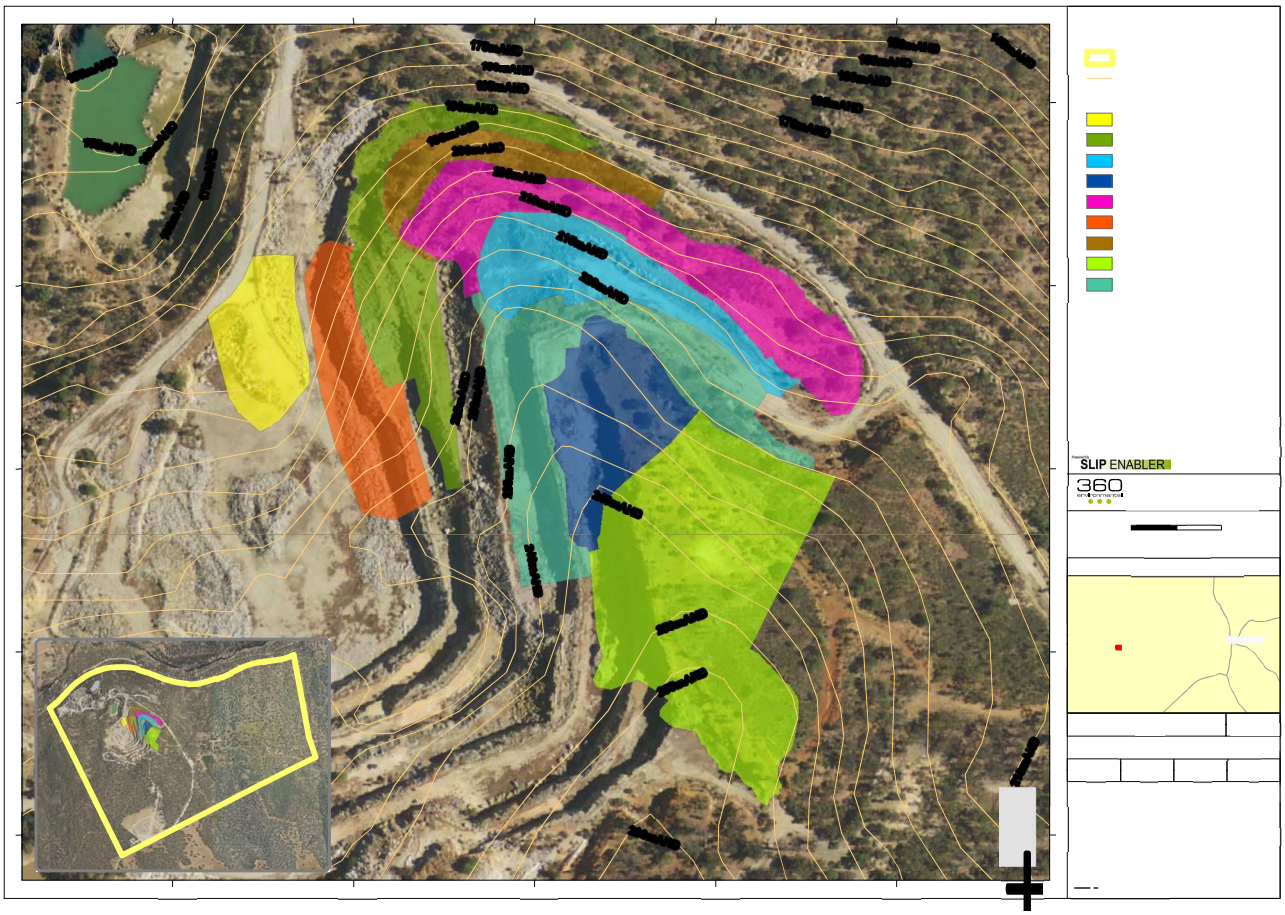

Figure 3: Topography at the hard rock quarry on Lot 111 Cobbler Pool Rd Morangup

7.4.2 Criteria for assessment

Water quality guidelines (ANZECC, 2000) recommend that the trigger level for turbidity for freshwater in slightly to moderately disturbed ecosystems in south-west Australia measured in Nephelometric Turbidity Unit (NTU), is between 10 and 100 NTU depending on condition of the catchment and depth of the water body. Also, turbidity naturally varies with flow rates in streams that are dependent upon local storms and rainfall events. Therefore it is not practical to apply absolute limits for turbidity levels. Instead, limits for deviations from background turbidity levels are normally applied.

The Delegated Officer considers that differences in turbidity levels between upstream and downstream of potential discharge should not vary by more than 20%. Variations above that should trigger a management response. The turbidity of water is easily measured by using "Turbidity tubes" or "hand-held instruments" allowing field measurements and enabling immediate management responses.

7.4.3 Applicant controls for stormwater sediment contamination

This assessment has reviewed the controls set out in Table 14 below. The location of stormwater management infrastructure is indicated in Figure 4.

Table 14: Applicant's proposed stormwater management measures

Controls for stormwater sediment contamination	
Engineering/design	• Site surfaces will be shaped to allow for natural drainage and to avoid pooling or ponding in active areas;

	• Using a number of sumps and sedimentation ponds/dams stormwater drainage will be managed on the Premises to prevent movement of sediment off-site. Stormwater retention/sedimentation basins on the Premises are referred to as: ○ Main Pit (81,100 m^3) ○ Northern Dam (2,460 m^3) ○ Western Dam (420 m^3) ○ Minor Settling Pond 1 (600 m^3) ○ Minor Settling Pond 2 (750 m^3) • The storage capacity of stormwater retention/sedimentation basins will accommodate a one in ten year 1 hour rainfall event over a 24-hour period and allow adequate retention time to reduce suspended sediment load prior to discharge off-site.
Management procedures	• Storage capacity of sedimentation basins will be maintained through routine cleaning; and • Stockpiled material is stored away from drainage paths, and if required stockpiles shall be stabilised to prevent erosion.

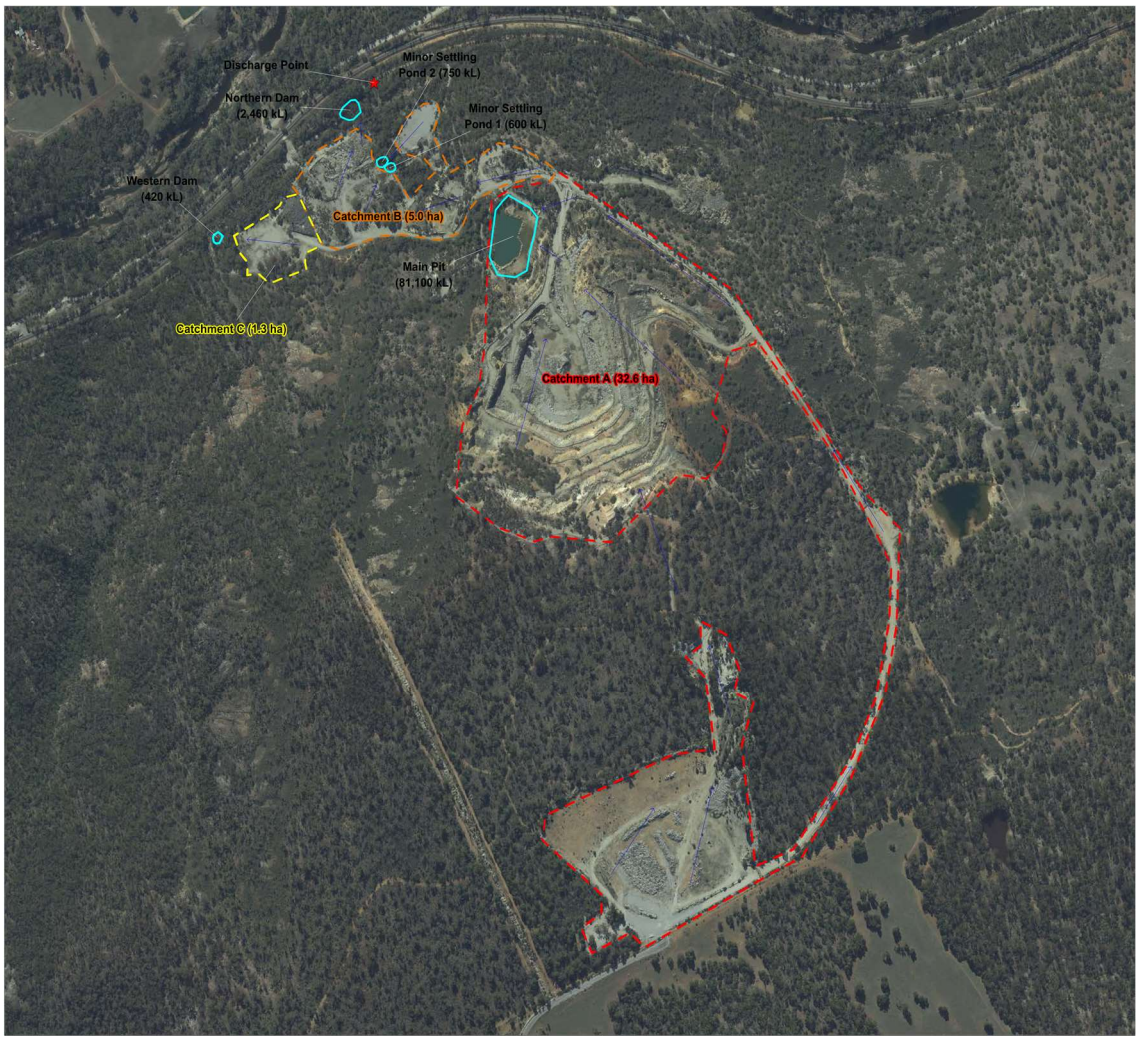

Figure 4: Location of stormwater infrastructure and discharge point

7.4.4 Consequence of Risk Event

If stormwater contaminated with sediment flows into the Avon River, located close to the northern boundary of the Premises, this would constitute environmental impacts off site at a local level with specific consequence criteria not being met. Therefore, the Delegated Officer considers the consequence of impact from sediment contaminated stormwater to be **Moderate.**

7.4.5 Likelihood of Risk Event

The Delegated Officer has determined that, with consideration to the controls already in place or proposed by the Applicant, discharges of stormwater contaminated with sediment will probably not occur in most circumstances. Therefore, the Delegated Officer considers the likelihood of contaminated stormwater discharge to be **Unlikely**.

7.4.6 Overall rating of stormwater contamination Risk Event

The Delegated Officer has compared the consequence and likelihood ratings described above with the risk rating matrix (Table 11) and determined that the overall rating for the risk of contaminated stormwater discharge is **Medium**.

7.5 Risk Assessment – Hydrocarbon spills or leaks

7.5.1 General characterisation and impact of hydrocarbon spills or leaks

Hydrocarbons are toxic in nature and can contain other substances including heavy metals, Polycyclic Aromatic Compounds (PAH's) and Monocyclic Aromatic Hydrocarbons (BTEX). Unplanned spills or leaks to land may occur as a result of an accident or inadequate management procedures, emergency or malfunction associated with hydrocarbon storage infrastructure, refueling activities and/or any vehicle and equipment maintenance on the Premises.

Discharge of hydrocarbons may contaminate soil and impact vegetation and surface water ecosystems via stormwater run-off. Hydrocarbons that infiltrate through the soil profile may also impact groundwater.

7.5.2 Criteria for assessment

There is a range of measurement and assessment criteria relevant to hydrocarbon contamination of land and water resources including:

- *Australian Water Quality Guidelines* (ANZECC & ARMCANZ 2000) provides fresh and marine water criteria; and
- *Assessment and Management of Contaminated Sites* (DER 2014) provides ecological and human health assessment levels for soil.

7.5.3 Applicant controls for managing hydrocarbons

This assessment has reviewed the controls set out in Table 15 below.

Table 15: Applicant's proposed controls for spills or leaks of hydrocarbons

Controls for management of spills / leaks of hydrocarbons	
Engineering controls	Hydrocarbon storage on the Premises will comply with Australian Standard (AS) 1940 – 2004 '*The Storage and Handling of Flammable and Combustible Liquids'* and other relevant regulations, e.g. *Dangerous Goods Safety Act 2004*. Diesel fuel will be stored in a self-bunded (double-skinned) tank.

Management controls	A number of management measures will be implemented to manage and mitigate potential issues associated with hydrocarbon (diesel) storage on the Premises. The Premises will be equipped with spill kits and equipment that will be regularly monitored and maintained. The kit will include sufficient quantities of absorbent materials, equipment for recovering spilled materials and containers for storing recovered materials. In the event that any diesel leaks or spills occur, an immediate response will include: • Isolation of the source of spill or leak; • Using spill kits to contain and soak-up the spill and minimise any potential for migration into environmentally-sensitive receptors e.g. stormwater drainage lines; • Ensuring all traces of the spill and containment and/or absorbent materials have been cleaned up; • Reporting the spill to the Site Manager and relevant Environmental Manager as soon as possible. • The waste material generated from spill clean-up (i.e. absorbent material and impacted soil) will be stored separately and isolated, until collected by a licensed contractor for disposal at an authorised facility in accordance with relevant regulatory requirements; and • Where necessary, validation sampling will be undertaken to verify that all contaminated soil has been removed.

7.5.4 Consequence of Risk Event

If a breach of containment (leak) causes hydrocarbon discharge to occur, the Delegated Officer has determined that the impact of soil and water contamination will be low level on-site impacts, with minimal off-site impacts that are not detectable at a broader scale. Therefore, the Delegated Officer considers the consequence of a breach of hydrocarbon containment (leak) or spill to be **Minor.**

7.5.5 Likelihood of Risk Event

The Delegated Officer has determined that the likelihood of a breach of containment causing hydrocarbon discharge to land occurring may only occur in exceptional circumstances. Therefore, the Delegated Officer considers the likelihood of the Risk Event to be **Rare.**

7.5.6 Overall rating of hydrocarbon spills or leaks Risk Event

The Delegated Officer has compared the consequence and likelihood ratings described above with the risk rating matrix (Table 11) and determined that the overall rating for the risk of spills or leaks of hydrocarbons is **Low.**

7.6 Summary of acceptability and treatment of Risk Events

A summary of the risk assessment and the acceptability or unacceptability of the risk events set out above, with the appropriate treatment and control, are set out in Table 16 below. Controls are described further in section 9.

Table 16: Risk assessment summary

Emission		Pathway and Receptor	Applicant controls	Risk Rating	Acceptability
Type	**Source**				
Discharge to land and / or water contaminated stormwater	Sediment contaminated stormwater	Direct discharge of contaminated stormwater to soils, vegetation and surface water bodies (e.g. Avon River). Aquatic ecosystems of the Avon River.	Infrastructure controls (drainage design, sedimentation basins) and management procedures (maintenance and monitoring).	Medium consequence Unlikely **Medium risk**	Acceptable subject to Applicant controls conditioned and regulatory (licence) conditions
Discharge to land and/or water from spills/leaks of hydrocarbons	Diesel storage facilities and refuelling activities	Direct discharge of contaminated stormwater to soils, vegetation and surface water bodies (e.g. Avon River). Infiltration (seepage) of contaminated stormwater to groundwater.	Siting, infrastructure controls, management / procedures.	Minor consequence Rare **Low risk**	Acceptable subject to Applicant controls conditioned.

8. Regulatory controls

A summary of regulatory controls determined to be appropriate for the Risk Event is set out in Table 17. The risks are set out in the assessment in section 8 and the controls are detailed in this section. DWER will determine controls having regard to the adequacy of controls proposed by the Applicant. The conditions of the Licence will be set to give effect to the determined regulatory controls.

Table 17: Summary of regulatory controls to be applied

		Controls (references are to sections below, setting out details of controls)		
		8.1.1 and 8.1.2 Infrastructure and equipment	**8.2 Specified actions**	**8.3 Monitoring**
Risk events (see risk assessment in section 8)	**1. Contaminated stormwater discharges**	●	●	●
	2. Hydrocarbon spills and/or leaks	●		

8.1 Siting of Infrastructure

The Siting of infrastructure is derived from Application documents and management plans. The Delegated Officer considers that the siting of the infrastructure, in Table 18 below, is required to ensure compliance with the Noise Regulations, to manage stormwater on the Premises and provide regulatory oversight of commitments made by the Applicant.

Table 18: Infrastructure requirements

Infrastructure	Requirements and location
Stormwater retention/sedimentation basins	Each of the following sedimentation basins on the Premises, as indicated in Licence Schedule 1, shall have sufficient capacity to accommodate a one in ten year 1 hour rainfall event over a 24-hour period: • Main Pit (81,100 m^3) • Northern Dam (2,460 m^3) • Western Dam (420 m^3) • Minor Settling Pond 1 (600 m^3) • Minor Settling Pond 2 (750 m^3)
Crushing and screening plant	Located in the southern portion of the Premises, as indicated in Licence Schedule 1.
Diesel storage facility	20 kL self-bunded diesel tank complying with Australian Standard (AS) 1940 – 2004 '*The Storage and Handling of Flammable and Combustible Liquids'* and located in the Diesel Storage Area, as indicated in Licence Schedule 1.

Hydrocarbon spill kits	To include sufficient quantities of absorbent materials, equipment for recovering spilled materials and containers for storing recovered materials.

Note: These requirements are derived from construction and design specifications from the current and previous authorised licences. The Delegated Officer notes that previous iterations of the licence required monitoring of contaminated stormwater discharge and quality parameters against the *Australian Drinking Water Guidelines*. Therefore, water quality monitoring will be required under the Part V EP Act Licence.

Grounds: In accordance with DWER's *Guidance Statement: Risk Assessments* (DER 2017a) the Licence Holder's controls in relation to management of contaminated stormwater and hydrocarbons will be conditioned as they lower the assessed likelihood of the risk event.

8.2 Specified actions

The Delegated Officer considers the specified actions listed in Table 19 are to be required controls to manage the risk of contaminated stormwater discharges.

Table 19: Management Controls

Management Controls	
Maintain storage capacity of stormwater retention / sedimentation basins	During operations, remove particulates/sediment material from the stormwater retention basins/ponds on at least a monthly basis or more regularly as necessary.

8.3 Monitoring requirements

The Delegated Officer considers monthly stormwater discharge monitoring during Premises operations, with limits on the level of Total Suspended Solids (TSS) contamination being discharged off-site, at the discharge point during quarry operations shall be included in the licence.

9. Determination of Licence conditions

The conditions in the issued Licence have been determined in accordance with the *Guidance Statement: Setting Conditions* (DER 2015a).

The *Guidance Statement: Licence Duration* (DER 2016a) has been applied to the issued Licence. The expiry date of the Licence has been set at not later than 6 August 2028 (the Licence correlates with the EIL expiry date).

Table 20 below provides a summary of the conditions to be applied to this Licence.

Table 20: Summary of conditions to be applied

Condition Ref	Grounds
Authorised Emissions Condition 1	This condition is a valid, risk-based condition to ensure appropriate linkage between the licence and the EP Act.
Infrastructure and Equipment Condition 2	This condition is valid, risk-based and contains appropriate controls.
Emissions Monitoring Conditions 3 and 4	This condition is valid, risk-based and contains appropriate controls.
Specified Actions Condition 5	These conditions are valid, risk-based and contain appropriate controls.

Record-keeping, reporting and notifications Conditions 6 to 11	These conditions are valid and are necessary administration and reporting requirements to ensure compliance.

DWER notes that it may review the appropriateness and adequacy of controls at any time and that, following a review, DWER may initiate amendments to the licence under the EP Act.

10. Applicant's comments

The Applicant was provided with the draft Decision Report and draft Licence on 6 November 2018. The Applicant provided minor comments on 14 November 2018 along with a copy of the EIL approval from the Shire of Toodyay.

11. Conclusion

This assessment of the risks of activities on the Premises has been undertaken with due consideration of a number of factors, including the documents and policies specified in this Decision Report (summarised in Appendix 1).

Based on this assessment, it has been determined that the Issued Licence will be granted subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

Tim Gentle

Manager Licensing – Resource Industries

Delegated Officer under section 20
of the *Environmental Protection Act 1986*

Appendix 1: Key documents

Document title	In text ref	Availability
L6930 Boral Toodyay Quarry Licence Amendment Application (including noise impact assessment)	Application	DWER records (A1648270)
Application supporting information (revised Premises map, stormwater calculations and infrastructure)	Application	DWER records (A1674236)
Australian and New Zealand Guidelines for Fresh and Marine Water Quality. October, 2000	ANZECC, 2000	Accessed at www.mfe.govt.nz
Annual Environmental Reports and Compliance Reports from 1 January 2010 to 31 December 2016.	Annual Reports	DWER records (A864439, A871766, A1363851)
Previous licence L6930/1986/12 – issued 5th September 2013	Previous licence	DWER records (A1525890)
DER *Guidance Statement: Setting Conditions*, October 2015	DER 2015a	Accessed at http://www.dwer.wa.gov.au
DER *Guidance Statement: Risk Assessment*, February 2017	DER 2017a	
DER *Guidance Statement: Regulatory Principles,* July 2015	DER 2015b	
DER *Guidance Statement: Decision Making*, February 2016	DER 2017b	
DER *Guidance Statement: Licence Duration*, August 2016	DER 2016a	
DER *Guidance Statement: Environmental Siting*, November 2016	DER 2016b	

Appendix 2: Summary of applicant's comments on risk assessment and draft conditions

Condition	Summary of Applicant's comment	DWER response
5	Re-wording of inspection of stormwater retention basins/ponds	Minor re-wording addressed
6	Re-numbering of order of conditions	Written records also to be kept in relation to Table 5

Attachment 1: Licence L6930/1986/12