Decision Report

Application for Licence

Division 3, Part V *Environmental Protection Act 1986*

Licence Number	L9126/2018/1
Applicant	WA Gravel Pty Ltd
ACN	611 058 050
File Number	DER2016/001777
Premises	Hoddy's Well Quarry 984 Chitty Road HODDY'S WELL WA 6566 Lot M1397 on Diagram 6089 Certificate of Title Volume 1051 Folio 86
Date of Report	9 May 2018
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
AACR	Annual Audit Compliance Report
ACN	Australian Company Number
AER	Annual Environment Report
Ambient Air Quality NEPM	*National Environment Protection (Ambient Air Quality) Measure*
Applicant	WA Gravel Pty Ltd
Category/ Categories/ Cat.	categories of Prescribed Premises as set out in Schedule 1 of the EP Regulations
CS Act	*Contaminated Sites Act 2003* (WA)
Decision Report	refers to this document.
Delegated Officer	an officer under section 20 of the EP Act.
Department	means the department established under section 35 of the *Public Sector Management Act 1994* and designated as responsible for the administration of Part V, Division 3 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.
DBCA	Department of Biodiversity, Conservation and Attractions
EPA	Environmental Protection Authority
EP Act	*Environmental Protection Act 1986* (WA)
EP Regulations	*Environmental Protection Regulations 1987* (WA)
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cth.)
Licence Holder	WA Gravel Pty Ltd

Minister	the Minister responsible for the EP Act and associated regulations
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
Prescribed Premises	has the same meaning given to that term under the EP Act.
PEIA	Preliminary Environmental Impact Assessment
Premises	refers to the premises to which this Decision Report applies, as specified at the front of this Decision Report
Risk Event	As described in *Guidance Statement: Risk Assessment*
RIWI Act	*Rights in Water and Irrigation Act 1914*
µg/m^3	micrograms per cubic metre
µg/L	micrograms per litre

2. Purpose and scope of assessment

WA Gravel Pty Ltd propose to operate a gravel quarry in the locality of Hoddy's Well in the Shire of Toodyay, approximately 60 km north-east of Perth. An application for a concurrent works approval and licence was submitted by WA Gravel Pty Ltd (the Applicant) for a gravel screening facility on 1 July 2017. The application triggers a Prescribed Premises category (number 12) in accordance with Schedule 1 Part 1 of the EP Regulations.

The concurrent works approval and licence application was put on hold for a significant period while matters relating to native vegetation clearing on the premises were resolved. During this time quarry operations, including gravel screening by mobile plant, commenced at the site prior to a works approval being issued. Subsequently, this Decision Report assesses emissions and discharges associated with the operation of the Prescribed Premises. Table 2 lists the Prescribed Premises category that has been applied for.

Table 2: Prescribed Premises Categories

Classification of Premises	Description	Approved 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	90,000 tonnes per annual period

2.1 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
Application package comprising: • Hoddy's Well quarry concurrent works approval and licence application form • Attachment 1A – Proof of Occupier Status • Attachment 1B – ASIC Company Extract • Attachment 2 – Aerial Photo of Premises • Attachment 3A – Description/Overview • Attachments 4 and 5 – Other Approvals (Shire of Toodyay Development Approval and Extractive Industry Licence) • Attachment 6 – Public Health and Environmental Risks • Attachment 7 – Siting and Location • Attachment 10 – Fee Calculations	3 August 2016
Information regarding proposed surface water management measures	8 September 2016
Response to Request For Further Information CEO 2483-16 – WA Gravel Pty Ltd, Hoddys Well	30 September 2016
Environmental Noise Assessment (Lloyd George Acoustics)	1 November 2016
Updated site plan to support licence application	28 March 2018

Revised premises boundary map	11 April 2018

3. Background

The Applicant proposes to remove the gravel resource from a property it owns, to provide gravel for current road construction and maintenance needs of the Shire of Toodyay.

The site is currently agricultural land and minor quantities of the gravel resource have been used in the past to construct internal access roads. The proposal to screen the extracted gravel resource for commercial purposes will cause the premises to become prescribed premises under the category of screening of material, as described in Table 2.

The operation project involves the use of a mobile screening plant to produce gravel of various size specifications as well as product stockpiling after it has been processed until required for use. The operation also requires establishment and maintenance of stormwater detention basins down gradient of gravel excavation areas.

4. Overview of Premises

4.1 Operational aspects

Gravel will be extracted in two stages over a maximum area of 4.3467 ha. The initial stage covers 0.8 ha with an estimated resource of approximately 32,000 m^3 (61,440 tonnes, assuming a specific gravity of 1.92 tonnes per cubic metre), to be extracted over a period of 1 – 2 years. No clearing of native vegetation is required in the initial stage. The remaining 3.55 ha, which is covered with native vegetation and will require a clearing permit, has an estimated resource of approximately 253,935 tonnes.

Premises operations will include topsoil removal, ripping, blading, screening and stockpiling of gravel. No crushing of gravel is currently proposed as any oversized material will be stockpiled separately to be processed at a later stage.

Gravel extraction pits on the premises will be three to five metres below ground level (mbgl). Screening of the extracted gravel will be undertaken using a mobile screening machine (screener) with a design capacity of 200 tonnes per hour. A front end loader (FEL) will load gravel into the screener where it is separated into various sizes using screen meshes, with the resultant gravels being transported to stockpiles via conveyors. A spray bar is attached to the side of each of the conveyors to dampen the gravel prior to it being stockpiled.

Once the screening process is complete the screened gravel is loaded onto trucks and removed off-site to fill various supply contracts. Premises operations will take place on a campaign basis of approximately 9 to 11 weeks each year and the hours of operation of the Premises will be restricted to between 7:00 am and 4:30 pm on weekdays (excluding public holidays) and between 7:00 am and 12:00 pm on Saturdays.

Due to the topography of the quarry area it is anticipated that stormwater will naturally be retained on the Premises however active stormwater management will occur on the Premises to ensure all stormwater is retained within the quarry/excavation area (pits). Each stage of operations on the Premises will feature a stormwater detention pond placed at the base of the pit of a sufficient size to contain the 10 year 2 hour average return interval storm event. A diversion bund will also be placed at the upper boundary of each pit to divert any external surface water from entering the excavation area. The detention ponds will also serve as silt traps to avoid any sedimentation issues.

No fuel will be stored on site and all plant and equipment will be refuelled by a mobile fuel truck when required. All mobile plant and equipment will be serviced off site as necessary.

Figure 1: Site Plan

4.2 Infrastructure

The infrastructure, as it relates to Category 12 activities, is detailed in Table 4 and with reference to the Site Plan.

Table 4 lists infrastructure associated with each prescribed premises category.

Table 4: Category 12 screening infrastructure

Infrastructure	
Prescribed Activity Category 12	
Up to 90,000 tonnes of raw material (gravel) will be screened into various sizes and stockpiled on the premises, over a 6 – 8 week period per year, however gravel production each year will be dependent on demand for gravel resources.	
1	Terex Double Deck Finlay Screen (with dust suppression circuit)
2	CAT 966 front end loader
3	Stormwater detention ponds (one in each stage)
4	Topsoil and product stockpiles / noise bunds
Contributory or Secondary Activities	
1	Extractive operations (topsoil removal, ripping, blading) using a D8 bulldozer
2	Loading of stockpiled product into haul trucks (and subsequent truck movements)

4.3 Exclusions to the Premises

Additional activities that will be undertaken by the applicant that are not within the scope of this assessment include:

- Extraction of gravel and transport off-site.
- Clearing of native vegetation
- Staged rehabilitation of the premises during and after cessation of quarry activities.

5. Legislative context

Table 5 summarises other approvals relevant to the assessment.

Table 5: Relevant approvals

Legislation	Number	Approval Holder	Approval
Planning and Development Act 2005	7CHIT/A4575/EXT1 OPA26521	WA Gravel Pty Ltd	An Extractive Industry Licence (EIL) was issued by the Shire of Toodyay on 1 July 2016. The EIL has been issued for 10 years and requires a clearing permit to be issued, prior to any clearing on the premises. The extraction area has been restricted to a maximum of 4.3467 ha.

5.1 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.

5.2 Contaminated sites

The site is not listed on DWER's Contaminated Sites Database.

5.3 Other relevant approvals

5.3.1 Federal Legislation

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

5.4 Part V of the EP Act

5.4.1 Applicable regulations, standards and guidelines

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

- *Guidance Statement: Regulatory Principles (July 2015)*
- *Guidance Statement: Publication of Annual Audit Compliance Reports (May 2016)*

- *Guidance Statement: Setting Conditions (August 2016)*
- *Guidance Statement: Licence Duration (August 2016)*
- *Guidance Statement: Environmental Siting (November 2016)*
- *Guidance Statement: Land Use Planning (February 2017)*
- *Guidance Statement: Decision Making (February 2017)*
- *Guidance Statement: Risk Assessments (February 2017)*

5.4.2 Clearing

Native vegetation clearing permit CPS 7592/1 was issued to A1 Gravel Pty Ltd on 19 April 2018 for the clearing of 3.88 ha of native vegetation on the premises for the purpose of conducting an extractive industry. This permit expires on 19 May 2032.

6. Consultation

The application was advertised in the *West Australian* newspaper on 5 December 2016 seeking public comment. No submissions were received during the consultation period. A letter inviting comment was also sent to the Shire of Toodyay on 5 December 2016 and no response was received.

Written consent from the two nearest residents has been provided by the Applicant as an appendix in the Application.

7. Location and siting

7.1 Siting context

The premises is located in the Avon Valley on the north-eastern edge of the Perth metropolitan area, approximately 13 km south of Toodyay. Surrounding land uses are predominantly agricultural and basic raw materials quarries.

7.2 Residential and sensitive Premises

The distances to residential and sensitive receptors are detailed in Table 6.

Table 6: Receptors and distance from activity boundary

Sensitive Land Uses	Distance from Prescribed Activity
Residential Premises	A number of farm houses are located around the proposed site, with the closest being 750 m north-east and 860 m east of the proposed screening site. Six other residences are located between 1.5 and 5 km of the site.
Application of Guidance Statement: Separation distance	The recommended separation distance from category 12 activities is 1 km, due to the risk of noise and dust. There are 2 receptors located within 1 km of the proposed screening site. As such, the application does not meet the minimum separation distance requirements and therefore is considered to have a higher risk to public health and amenity.

7.3 Specified ecosystems

There are no specified ecosystems within 3 km radius of the premises.

7.4 Water sources

Table 7 indicates the distances to water resources relevant to the assessment.

Table 7: Water resources

Groundwater and water sources	Distance from Premises	Environmental value
Watercourses/waterbodies	A minor, ephemeral creek line is located approximately 850 m south-west of the proposed quarry. It is one of numerous tributaries to the Avon River, which is located approximately 12 km to the north.	The watercourse is linked to the Avon River.
RIWI Act – Surface Water Areas and Irrigation Districts	The Premises is within the Avon River Catchment Area.	Water from the resource is used for potable, pastoral and other purposes

7.5 Meteorology

Relevant climate statistics for the local area are provided below. Wind roses presented in Figure 2 are from observations at Northam, approximately 23 km east of the site. Northam has a Mediterranean climate with hot dry summers and cool wet winters.

7.5.1 Wind direction and strength

The average wind direction at 9 AM and 3 PM is presented in Figure 2. The following wind roses represent the various percentage of wind occurrences recorded during the period 1965 – 2010. The graphs illustrate predominantly moderate winds from the south-east in the mornings (up to 20%), and moderate afternoon westerly/south-easterly winds in the summer and winter months, respectively.

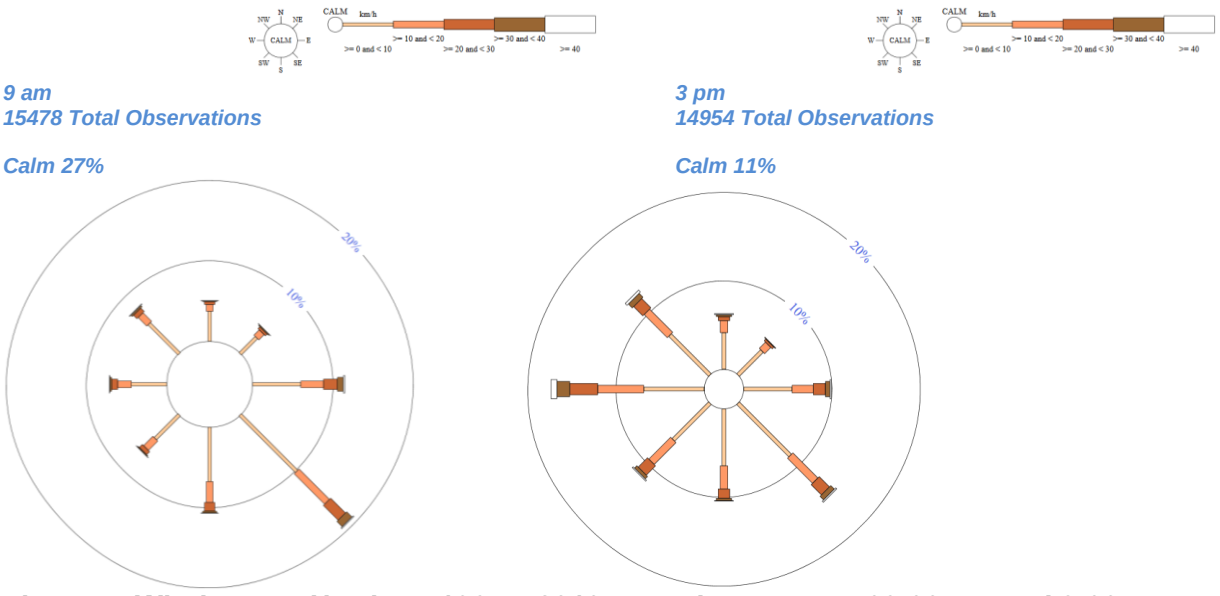

Figure 2: Wind roses, Northam 1965 – 2010 annual average at 09:00 am and 3:00 pm

8. Risk assessment

8.1 Determination of emission, pathway and receptor

In undertaking its 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. 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. The identification of the sources, pathways and receptors to determine Risk Events are set out in Table 8 below.

Table 8: Identification of emissions, pathway and receptors during operation

			Potential Emissions	Potential Receptors	Potential Pathway	Potential Impacts	Continued to detailed risk assessment?	Reasoning
Source (see Section 3.1 for infrastructure references)	**Excavation of raw material and development of material stockpiles**	Bulldozer movements (ripping, blading)	Fugitive dust from gravel movement	Residential premises located 750 m north-east and 860 m east of the active area	Air / wind dispersion	Amenity impacts	Yes	See Section 8.4
			Noise from bulldozer operation				Yes	See Section 8.5
	Loading stockpiled raw material onto the screen	Front end loader (FEL) movements	Fugitive dust from loading operations				Yes	See Section 8.4
			Noise from FEL operation				Yes	See Section 8.5
	Screening of raw material	Screening of gravel into various sizes	Fugitive dust from screening plant				Yes	See Section 8.4
			Noise from screening plant operation				Yes	See Section 8.5
		Transport of screened gravels to	Fugitive dust from conveyor operation				Yes	See Section 8.4

			Potential Emissions	Potential Receptors	Potential Pathway	Potential Impacts	Continued to detailed risk assessment?	Reasoning
		product stockpiles via conveyors	Noise from conveyor operation				Yes	See Section 8.5
	Product stockpiles	Product stockpiles during non-screening operations	Fugitive dust lift-off from stockpiles				Yes	See Section 8.4
	Stormwater management	Contamination of stormwater from sediment	Contaminated stormwater	Surface waters	Direct discharge	Surface water contamination	No	The Delegated Officer considers the risk of contamination of surface water from sediment during quarry operations to be acceptable, given the small footprint, the short-term nature of the works, the management measures proposed (use of detention ponds immediately downstream of excavation cells) and the distance to potential receptors. Furthermore, an EIL condition requires quarry management in accordance with the DWER Water Quality Protection Note 15 – Extractive Industries near sensitive water resources.
		Contamination of stormwater from hydrocarbons	Contaminated stormwater	Groundwater Surface waters	Direct discharge Infiltration	Groundwater pollution Surface water contamination	No	The Delegated Officer considers the risk of contamination of surface water and ground water from hydrocarbons during quarry operations to be acceptable, given the small footprint, the short-term nature of the works, the management measures proposed and the distance to potential receptors. Furthermore, an EIL condition requires quarry management in accordance with the DWER Water Quality Protection Note 15 – Extractive Industries near sensitive water resources.

8.2 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 9.

Table 9: 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 10 below.

Table 10: 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
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.*

* In applying public health criteria, DWER may have regard to the Department of Health's *Health Risk Assessment (Scoping) Guidelines.*

"onsite**"** means within the Prescribed Premises boundary.

8.3 Acceptability and treatment of Risk Event

DWER will determine the acceptability and treatment of Risk Events in accordance with Table 11 below.

Table 11: 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.

8.4 Risk Assessment – Fugitive Dust

8.4.1 General hazard characterisation and impact of fugitive dust Risk Event

Dust, or particulate matter (PM), can have detrimental effects on the human respiratory system. PM less than 10 µm in diameter (PM_{10}) poses greater health risks as they may be drawn deep into the lungs, whilst larger particulates are typically trapped in the noise, mouth or throat.

Activities likely to generate fugitive dust emissions during excavation and screening operations include:

- Bulldozer and front-end loader operations (i.e. development of topsoil/material stockpiles, loading of material onto the screening unit);
- Screening operations and conveying of sized gravels to product stockpiles;
- Fugitive lift-off from product stockpiles; and
- Truck movements on the premises[1], including wheel-generated dust and potentially dust from product carried by the trucks if loads are not adequately covered.

The extraction operations, which include topsoil removal, ripping, blading and stockpiling of raw material, will occur in a concerted 3 week campaign per year. Screening operations will follow over the subsequent 6 – 8 week period.

As the two closest receptors are located east of the proposed quarrying area, fugitive dust emissions would have maximum impact when wind conditions originate from the west. These conditions most frequently occur during the drier summer months from December to April in the afternoon period. The risk of impact on amenity will generally be more significant in stronger wind conditions.

[1] Dust or noise from trucks beyond the premises boundary is beyond the scope of the Part V licensing process.

8.4.2 Criteria for assessment

There are no directly applicable ambient air quality standards for the premises.

The Delegated Officer has determined the **Ambient Air Quality NEPM** provides a benchmark against which the risk of adverse health effects arising from exposure to PM_{10} (from any source) can be assessed (but is not considered a compliance standard) and is shown in Table 12.

Table 12: Ambient Air Quality NEPM – Standards for pollutants

Pollutant	Averaging period	Maximum concentration standard	Maximum allowable exceedances
Particulates as PM_{10}	24 hours	50 µg/m^3	None
	Annual	25 µg/m^3	

The Delegated Officer has also determined the **Kwinana EPP** provides an equivalent ambient air quality standard and limit with respect to TSP emissions from industry. Given the siting context and distances to residential and sensitive receptors, the standard and limit set for Policy Area C (rural and residential land, i.e. non-industrial) is considered to be the most relevant and is shown in Table 13.

Table 13: Kwinana EPP ambient air quality standards and limits for TSP

Policy Area	Averaging period	TSP standard	TSP limit
Area C	24 hours	90 µg/m^3	150 µg/m^3

8.4.3 Applicant controls

This assessment has reviewed the controls set out in Table 14.

Table 14: Applicant's proposed controls for fugitive dust during operations

Controls for fugitive dust	
Dust suppression	- A 15 kL water cart will be used during dry, windy conditions and during earthmoving and screening periods to apply water to unsealed operational areas - Cease operations if dust becomes an issue and ensure adequate wetting down of stockpiles and other operational areas has occurred
Open areas	- Existing native vegetation buffers will be maintained along the western boundary to assist with containing dust lift-off from open areas
Screening	- Screening and stockpiling activities will be undertaken in topographic low points with raw and processed stockpiles arranged such that wind breaks are created to shield receptors from fugitive dust - A spray bar will be attached to the side of each conveyor to dampen gravel prior to being stockpiled

8.4.4 Key findings

The Delegated Officer has reviewed the information regarding fugitive dust impacts Risk Event and has found:

1. Fugitive dust has the potential to cause amenity impacts on nearby receptors (residents).

2. Extraction and screening operations will occur in a concerted 10 – 11week campaign per year. The risk of amenity impacts on nearby receptors will therefore be temporary in nature.
3. The risk of fugitive dust emissions during screening operations primarily relates to the handling and processing of raw material. The key Applicant control measure is suppression with water.
4. Specific infrastructure and equipment controls as well as specified actions will be included in the licence to mitigate and manage dust impacts from the Premises.

8.4.5 Consequence

The nearest residents are located within the minimum recommended separation distance to screening activities, and directly downwind of the prevailing afternoon summer winds.

The extraction operations and subsequent screening operations combined are proposed to occur in a concerted 10 – 11week campaign per year.

As such, the Delegated Officer considers fugitive dust may cause **Minor** and short-term impacts on amenity during active operations.

8.4.6 Likelihood of Risk Event

The Delegated Officer has considered:

- The number of, and distance to, the nearest receptors (residents);
- Local meteorological information;
- Controls proposed by the Applicant; and
- The period over which the extraction and screening operations will occur;

and has determined that minor and short-term impacts on amenity could occur at some time during active operations. Therefore the Delegated Officer considers the likelihood of the fugitive dust Risk Event to be **Possible**.

8.4.7 Overall rating of the fugitive dust impacts Risk Event

The Delegated Officer has compared the consequence and likelihood ratings described above with the risk rating matrix (Table 9) and determined that the overall rating for the risk of fugitive dust impacting on sensitive receptors during operation of the premises is **Medium.**

8.5 Risk Assessment – Noise Emissions

8.5.1 General hazard characterisation and impact of noise emissions

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. Frequency, intensity, duration, meteorological conditions and distance to receptor are all factors which may affect the impact of noise emissions on sensitive receptors.

Activities likely to generate noise emissions during operation of the gravel quarry include:

- Bulldozer and front-end loader operations (i.e. excavation of raw material, development of raw material stockpiles, loading of raw material onto the screening unit);
- Screening operations and conveying of sized gravels to product stockpiles;
- Loading of product into trucks; and

- Truck movements on the premises[2].

The extraction operations, which include topsoil removal, ripping, blading and stockpiling of raw material, will occur in a concerted 3 week campaign per year. This will be followed by screening of the stockpiled raw material over the subsequent 6 – 8 weeks.

As the two closest receptors are located within the minimum recommended separation distance, the risk of noise impacting on amenity is higher than if this separation was met.

The *Applicant Environmental Noise Assessment* submitted with the Application was summarised in section 7.1 including technical review findings of the predicted noise impacts and assessment of proposed controls. It was concluded that noise during operation of the quarry may exceed the Noise Regulations.

8.5.2 Criteria for assessment

The Noise Regulations operate as a prescribed standard under the EP Act and deal with noise emitted on a premises or public place and received on another premises.

They set assigned levels (noise limits) that provide protection to receivers depending upon the type of premises receiving the noise. Noise sensitive receivers have the greatest protection with low assigned levels.

Based on the proposed hours of operation, Table 15 shows the relevant assigned noise levels at the nearest receptors.

Table 15: Assigned noise levels

Premises receiving noise	Time of day	Assigned level (dB)		
		$L_{A\ 10}$	$L_{A\ 1}$	$L_{A\ max}$
Noise sensitive premises: highly sensitive area[3]	0700 to 1900 hours Monday to Saturday	45	55	65

Under Regulation 3, certain types of noise emission do not have to comply with the Noise Regulations. In the case of this Application, these include:

- Noise emissions from a reversing alarm fitted to a motor vehicle, mobile plant, or mining or earthmoving equipment, or a start-up or movement alarm fitted to plant.

During operations, the Applicant is required to comply with the assigned levels specified in Regulation 8 of the Noise Regulations.

8.5.3 Applicant controls

This assessment has reviewed the controls set out in Table 16.

[2] Noise from trucks beyond the premises boundary is beyond the scope of the Part V licensing process.

[3] *Highly sensitive area* means that area (if any) of noise sensitive premises comprising –
(a) a building, or part of a building, on the premises that is used for a noise sensitive purpose; and
(b) any other part of the premises within 15 m of that building or that part of the building.

Table 16: Applicant's proposed controls for noise emissions during operation

Description	Control	Reference to Licence plan (Schedule 1)
Noise bunds/barriers	Placement of topsoil and product stockpiles in strategic locations on the north-east edges of the pits, approximately 5 m high at a natural angle of repose of 3:1 during the operational period	Premises Map (Figure 1)
Siting	Operate the screen as close to the pit face/stockpile as practicable	
Mobile plant and equipment	Use of late model FEL and screening unit, quietest reasonably available	N/A
	Use of 'croaker' (broadband frequency with no tonality) reversing alarms	
Operating hours	7:00 AM – 4:30 PM Monday to Friday (excluding public holidays) and Saturday from 7:00 AM – 12:00 PM	

8.5.4 Noise Modelling

An environmental noise assessment of the proposed extraction, screening and transportation of gravel has been assessed by Lloyd George Acoustics (LGA) using computer modelling software SoundPLAN 7.4 with the CONCAWE algorithms selected, as they include the influence of wind and atmospheric stability.

The model has been used to predict noise levels at the two closest receptors during extraction and in-pit screening scenarios (activities in both pits in the initial stage have been modelled separately), using default meteorological conditions from the DER Environmental Noise guidelines[4], site-specific topographical data and the source sound power levels of the earthmoving machinery to be used.

Once the raw material has been stockpiled, screening will occur using one Finlay 663 mobile screen and one CAT 966 front end loader operating on the site. As this operation follows extraction, the screen and loader will be operating at the bottom of the pit, i.e. approx. 4 m below ground level and therefore, the edges of the pit will provide noise barrier effects.

Screening will occur in both pits in the initial stages and noise from these operations were modelled separately, however in both instances the screen and loader will operate close to a pit face/stockpile to provide maximum noise barrier effects.

Noise modelling has predicted that received noise levels at the two closest receptors will be well below the day time assigned level (L_{A10} noise levels of 28 – 32 dB(A)).

It is also understood broadband noise reversing alarms (e.g. croakers) will be used on site vehicles, further reducing the potential noise impacts on the closest receptors.

8.5.5 DWER Technical Review of Noise Assessment

The *Applicant Environmental Noise Assessment* provided as part of the Application was reviewed by DWER which identified the following:

- Tonality has been assumed to not be present due to distance. DWER does not accept

[4] Draft Guideline on Environmental Noise for Prescribed Premises (DER, May 2016)

this as tonality depends on the existing background noise levels. If deemed to be tonal, a penalty of 5 dB(A) would apply which would therefore result in noise levels (marginally) exceeding the assigned level at the north-east receptor (984 Chitty Rd) during excavation of both pits, and at the eastern receptor (931 Chitty Rd) during excavation of the southern-most pit;

- The conveyor parts of the screening unit, as a sound source, may be considerably higher than 2 m above the ground/pit floor, which was the assumed source height;
- The quoted sound power level of the D8 bulldozer may be too low.

8.5.6 Key findings

The Delegated Officer has reviewed the information regarding the noise emissions Risk Event and has found:

1. Noise from gravel extraction and screening activities on the Premises may impact on nearby sensitive receptors (residents).
2. The Applicant is required to comply with the assigned levels in Regulation 8 of the *Environmental Protection (Noise) Regulations 1997* during extraction and screening operations.
3. Specific infrastructure and equipment controls as well as specified actions will be included in the licence to mitigate and manage potential noise impacts from the Premises.

8.6 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 17 below. Controls are described further in section 9.

Table 17: Risk assessment summary

Emission		Pathway and Receptor	Proponent controls	Impact	Risk Rating	Acceptability
Type	**Source**					
Fugitive dust (operation)	Earthmoving machinery movements, raw material handling, operation of screening unit	Air/wind dispersion Closest receptors 700 – 850 m east of proposed pit location	Infrastructure controls and management procedures	Amenity Health impacts from inhalation of fine particles	Minor consequence Possible likelihood Medium risk	Acceptable subject to Applicant controls conditioned and regulatory (licence) conditions
Noise emissions (operation)	Earthmoving machinery movements, operation of screening unit	Air/wind dispersion Closest receptors 700 – 850 m east of proposed pit location	Siting, infrastructure controls, management / procedures	Amenity	There is potential for amenity impacts of noise from the Premises.	Acceptable subject to Applicant controls conditioned and regulatory (licence) conditions. Compliance with the EP Act Noise Regulations should address potential noise impact.

9. Regulatory controls

A summary of regulatory controls determined to be appropriate for the Risk Event is set out in Table 18. 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 18: Summary of regulatory controls to be applied

		Controls		
		9.1.1 Siting of Infrastructure	9.1.1 Infrastructure and Equipment	9.1.2 Specified Actions
Risk Items (see risk analysis in section Error! eference source not	**1. Fugitive dust from operation**		•	•
	2. Noise from infrastructure and operations	•	•	•

9.1 Licence controls

A summary of controls determined to be appropriate for the Risk Events follows in this section. Controls are set with regard to the adequacy of controls proposed by the Applicant. The conditions for the Licence will be set to give effect to the determined regulatory controls.

9.1.1 Infrastructure and equipment

The following environmental controls, infrastructure and equipment should be maintained and operated onsite:

1. Screening plant to be sited as close to the pit-face or stockpile as practicable during active screening operations.
2. Maximum sound power level of the screening plant is not to exceed 110 dB(A).
3. Maximum sound power level of the front end loader is not to exceed 111 dB(A).
4. Maximum sound power level of the bulldozer is not to exceed 110 dB(A).
5. Noise bunds to be constructed and maintained along the length of the north-east edge of the pits. The height of the bunds must be adequate to ensure compliance with the assigned levels in Regulation 8 of the *Environmental Protection (Noise) Regulations 1997* during extraction and screening operations.
6. Water sprays are to be attached to the side of each conveyor on the screening plant.
7. A 15,000 L water cart is to be available during operations on the premises to control dust emissions.
8. Stormwater detention ponds are to be maintained on the Premises with capacity to contain a 1 in 10 year rain event.
9. Signage containing the quarry manager's contact details shall be erected at the front gate of the Premises.

9.1.2 Specified actions

The following specified actions are to be taken to minimise the impact of fugitive dust and noise emissions on receptors:

1. Excavation and screening operations shall be suspended during high wind conditions.
2. A water cart shall operate proactively when visible dust is generated from activities on the premises.
3. Excavation and screening operations shall cease where dust management measures have not prevented dust lift-off and there is a risk of dust impacting on sensitive receptors (residents).
4. The Licence Holder shall implement a complaints management system to record any complaints received by the Licence Holder.

10. Determination of Licence conditions

The conditions in the Licence in Attachment 1 have been determined in accordance with the *Guidance Statement: Setting Conditions*. Table 19 provides a summary of the conditions to be applied to this Licence.

Table 19: Summary of conditions to be applied

Condition Ref	Grounds
Emissions Condition 1	This condition is valid, risk-based and consistent with the EP Act.
Infrastructure and equipment Condition 2	This condition is valid, risk-based and contains appropriate controls.
Specified Actions Condition 3	This condition is valid, risk-based and contains appropriate controls.
Record Keeping Conditions 4-7	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.

11. Applicant's comments

The Applicant was provided with the draft Decision Report and draft Licence instrument on 3 May 2018. The Applicant did not provide any comments in relation to the draft Decision Report and draft licence and on 4 May 2018 requested to waive the 21 day comment period and for the licence to be issued as soon as possible.

12. 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	Availability
1.	Hoddy's Well Quarry concurrent works approval and licence application form	DWER records (A1144446)
2.	Hoddy's Well Quarry - project description/overview	DWER records ((A1144446)
3.	Hoddy's Well Quarry - public health and environmental risks and proposed management	DWER records (A1144446)
4.	Other relevant approvals (Shire of Toodyay Development Approval and Extractive Industry Licence)	DWER records(A1144446)
5.	Response to Request For Further Information (CEO 2483-16)	DWER records (A1172375)
6.	Hoddy's Well Quarry Siting and Location Plan	DWER records (A1144446)
7.	Hoddy's Well Quarry – proposed surface water management plan	DWER records (A1351353)
8.	Hoddy's Well Quarry – Environmental Noise Assessment	DWER records (A1193706)
9.	Updated site plan to support licence application	DWER records (A1644637)
10.	Hoddy's Well Quarry – revised premises boundary map	DWER records (A1658260)
11.	DWER, July 2015. *Guidance Statement: Regulatory principles.* Department of Environment Regulation, Perth.	accessed at www.dwer.wa.gov.au
12.	DWER, August 2016. *Guidance Statement: Setting conditions.* Department of Environment Regulation, Perth.	
13.	DWER, November 2016. *Environmental Siting.* Department of Environment Regulation, Perth.	
14.	DWER, February 2017. *Guidance Statement: Land Use Planning* Department of Environment Regulation, Perth.	
15.	DWER, February 2017. *Guidance Statement: Decision Making*. Department of Environment Regulation, Perth.	
16.	DWER, February 2017. *Guidance Statement: Risk Assessments*. Department of Environment Regulation, Perth.	

Attachment 1: Licence L9126/2018/1