



## Application for Works Approval

### Part V Division 3 of the *Environmental Protection Act 1986*

---

**Works Approval Number** W6100/2017/1

**Applicant** Hanson Construction Materials Pty Ltd

**ACN** 009 679 734

**File Number** DER2017/001688

**Premises** McKinley Road Quarry  
McKinley Road  
NOWERGUP  
Legal description -  
Mining Lease M70/1316  
As defined by the coordinates in Schedule 1  
of the Works Approval

**Date of Report** 24 August 2022

**Decision** Granted

**A/MANAGER, RESOURCE INDUSTRIES  
INDUSTRY REGULATION**

an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

<b>1. Decision summary</b>	<b>1</b>
<b>2. Scope of assessment</b>	<b>1</b>
2.1 Regulatory framework	1
2.2 Application summary and overview of Premises	1
2.3 Water Management Plan	1
<b>3. Risk assessment</b>	<b>2</b>
3.1 Source-pathways and receptors	2
3.1.1 Emissions and controls	2
3.1.2 Receptors	3
3.2 Risk ratings	2
3.3 Risk assessment – impact of noise emissions on nearby residences	5
3.4 Risk assessment – Impact of dust emissions on nearby residences	6
3.5 Risk assessment – Impact of noise emissions on known black cockatoos roosting sites	9
3.6 Risk assessment – Impacts to the public drinking water source protected area from hydrocarbon storage/use	10
<b>4. Consultation</b>	<b>13</b>
<b>5. Conclusion</b>	<b>14</b>
<b>References</b>	<b>14</b>
<b>Appendix 1: Summary of applicant’s comments on risk assessment and draft conditions</b>	<b>15</b>
<b>Appendix 2: Water Management Plan</b>	<b>17</b>
<b>Appendix 3: Sensitive receptors – additional figures</b>	<b>18</b>
Table 1: Proposed applicant controls	2
Table 2: Sensitive human and environmental receptors and distance from prescribed activity (Stage 1 and 2 areas)	4
Table 3: Risk assessment of potential emissions and discharges from the Premises during construction and operation	3
Table 4: Consultation	13
Figure 1 Project stages and location of sensitive residential receptors R1 – R13. Stage 1 and 2 operations (outlined in yellow) assessed only	7
Figure 2 Black cockatoo roosting sites	1
Figure 3 Annual wind rose at Perth Metro weather station site 009225 (9am and 3pm)	6
Figure 4 Air quality monitoring locations – Stage 1	8
Figure 5 Air quality monitoring locations - Stage 2	9
Figure 6 Public Drinking Water Source Areas	11

Figure 7 Site Layout showing fuel storage is outside of the Public Drinking Water Source Area ..... 12

Figure 8 Threatened fauna surrounding stage 1 area..... 18

Figure 9 Threatened fauna locations Stage 2 Area ..... 19

Figure 10 Adjacent threatened ecological communities and wetlands – stage 1 and 2.....20

Figure 11 Gngangara-Moore State Forest.....21

## 1. Decision summary

This decision report documents the assessment of potential risks to the environment and public health from emissions and discharges during the construction and operation of the Premises. As a result of this assessment, Works Approval W6100/2017/1 has been granted.

## 2. Scope of assessment

### 2.1 Regulatory framework

In completing the assessment documented in this decision report, the department has considered and given due regard to its regulatory framework and relevant policy documents which are available at <https://dwer.wa.gov.au/regulatory-documents>.

### 2.2 Application summary and overview of Premises

On 21 September 2017, Hanson Construction Materials Pty Ltd (Hanson) applied for a works approval (W6100/2017/1) under section 54 of the *Environmental Protection Act 1986* (EP Act). Works proposed relate to category 12 activities (screening etc. of material) at the premises on McKinley Road, Nowergup, Mining Lease M70/1316. The proposal involves crushing and screening up to 1 million tonnes per annum (tpa) of sand material. The proposed site has an expected life of over 50 years. The estimated excavation area for the whole life of the mine is 1,970 hectares (ha) over five stages. As the timeframe for a standard works approval is five years or less, only stages 1 and 2 will be assessed and approved as part of this application. Further detail with respect to granting of stages 1 and 2 only is presented in Appendix 1.

Hanson has modified operational hours from the original proposed operation 24 hours/day, 7 days/week to:

- 7am - 5pm Monday to Saturday, when operating at distances within 800m of residences; and
- 7am – 7pm, 7 days per week when operating at distances of more than 800m from residences.

Works approval W6100/2017/1 defines the assessed production capacity and category of works relating to the premises category under Schedule 1 of the *Environmental Protection Regulations 1987* (EP Regulations). The works approval outlines infrastructure and equipment relating to the premises category and any associated activities as per the *Guidance Statement: Risk Assessments* (DER 2017).

### 2.3 Water Management Plan

As part of the works approval application, Hanson submitted a Water Management Plan (WMP) by Rocla, completed for Hanson's proposed activities on mining tenement M70/1316. This plan was submitted to then Department of Water (DoW) (Swan Region) in 2016 and indicated it would await advice from DoW (now DWER) once the methodology for determining the Likely Future Maximum Winter Water Table (LFMWWT) had been agreed by DoW (now DWER). DWER has provided the advice in Appendix 2 of this decision report and notes that the applicant is required to operate in line with their extractive industries licence. It should be noted that extraction activities are outside the scope of this works approval.

### 3. Risk assessment

The department assesses the risks of emissions from prescribed premises and identifies the potential source, pathway and impact to receptors in accordance with the *Guidance Statement: Risk Assessments* (DER 2017).

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.

#### 3.1 Source-pathways and receptors

##### 3.1.1 Emissions and controls

The key emissions and associated actual or likely pathway during premises operation considered in this decision report are detailed in Table 1 below. Table 1 also lists the measures the applicant has proposed to control emissions, where necessary.

**Table 1: Proposed applicant controls**

Emission	Sources	Potential pathways	Proposed controls
<b>Construction and operation</b>			
Dust	Screening of material, vehicle movements, lift-off from stockpiles and/or stored product, earthworks	Air/windborne pathway	<ul style="list-style-type: none"> <li>water spraying by a water cart used as required. Hanson holds groundwater licence GWL200048(1) for dust suppression and industrial use (entitlement 106,363kL, expires 5/7/2027)</li> <li>all vehicles leaving site to have covered loads</li> <li>traffic areas to be maintained in a manner which minimises dust generation;</li> <li>the area disturbed or open at any one time will be minimized as far as practicable</li> </ul>
Noise	Screening of material, mobile machinery, vehicle movements	Air/windborne pathway	<ul style="list-style-type: none"> <li>hours of operation: within 800m of residential dwellings: 7am to 5pm, Monday to Saturday</li> <li>hours of operation: more than 800m from residential dwellings: 7am to 7pm, Monday to Sunday</li> </ul> <p>Where sand operations occur within 800m of sensitive premises:</p> <ul style="list-style-type: none"> <li>mobile screening plants will be located either within the quarry pit or shielded by sand stockpiles;</li> <li>all mobile equipment to be fitted with mufflers and noise shielding devices; and</li> <li>mobile plant fitted with self-adjusting broadband reversing alarms.</li> </ul>
	Overburden removal	Air/windborne	<ul style="list-style-type: none"> <li>when removing overburden between 800m</li> </ul>

Emission	Sources	Potential pathways	Proposed controls
		pathway	<p>and 550 metres of residences use only one front end loader with a sound power level not exceeding 107dB(A).</p> <ul style="list-style-type: none"> <li>when removing overburden within 550 metres of residences use only one front-end loader with a sound power level not exceeding 103dB(A).</li> <li>overburden removal not to occur within 100m of the premises boundary, adjacent to residences</li> </ul>
Hydrocarbons and hydrocarbon contaminated stormwater	Run-off from fuel storage area (17.5kL above ground diesel storage tank), equipment, machinery	Overland run off and vertical transport of contaminated stormwater through soil profile to groundwater	<ul style="list-style-type: none"> <li>bunds and v-drains will be established along the access road to contain run-off.</li> <li>fuel storage area and vehicle washdown bay to be located on the western portion of the site outside of the public drinking water source protected area</li> <li>installation of seven groundwater monitoring bores to assess groundwater levels, gain baseline information and monitor for potential future contamination</li> <li>monthly groundwater elevation data to be collected over eighteen months as per former Department of Water's advice to be used to inform extraction depth</li> <li>groundwater to be monitored twice over the water level monitoring period (winter high and summer low)</li> </ul>
Sediment laden stormwater	Screening and stockpiling of material	Overland run off	<ul style="list-style-type: none"> <li>all surface water will be contained on site. Run-off from the quarry pit, stockpiles, cleaning down and haul roads will be contained, and not released into areas of native vegetation.</li> </ul>

### 3.1.2 Receptors

In accordance with the *Guidance Statement: Risk Assessment* (DER 2017), the Delegated Officer has excluded the applicant's employees, visitors and contractors from this assessment. Protection of these parties often involves different exposure risks and prevention strategies and is provided for under other state legislation.

Table 2 below provides a summary of potential human and environmental receptors that may be impacted as a result of activities upon or emission and discharges from the prescribed premises (*Guidance Statement: Environmental Siting* (DER 2016)).

**Table 2: Sensitive human and environmental receptors and distance from prescribed activity (Stage 1 and 2 areas)**

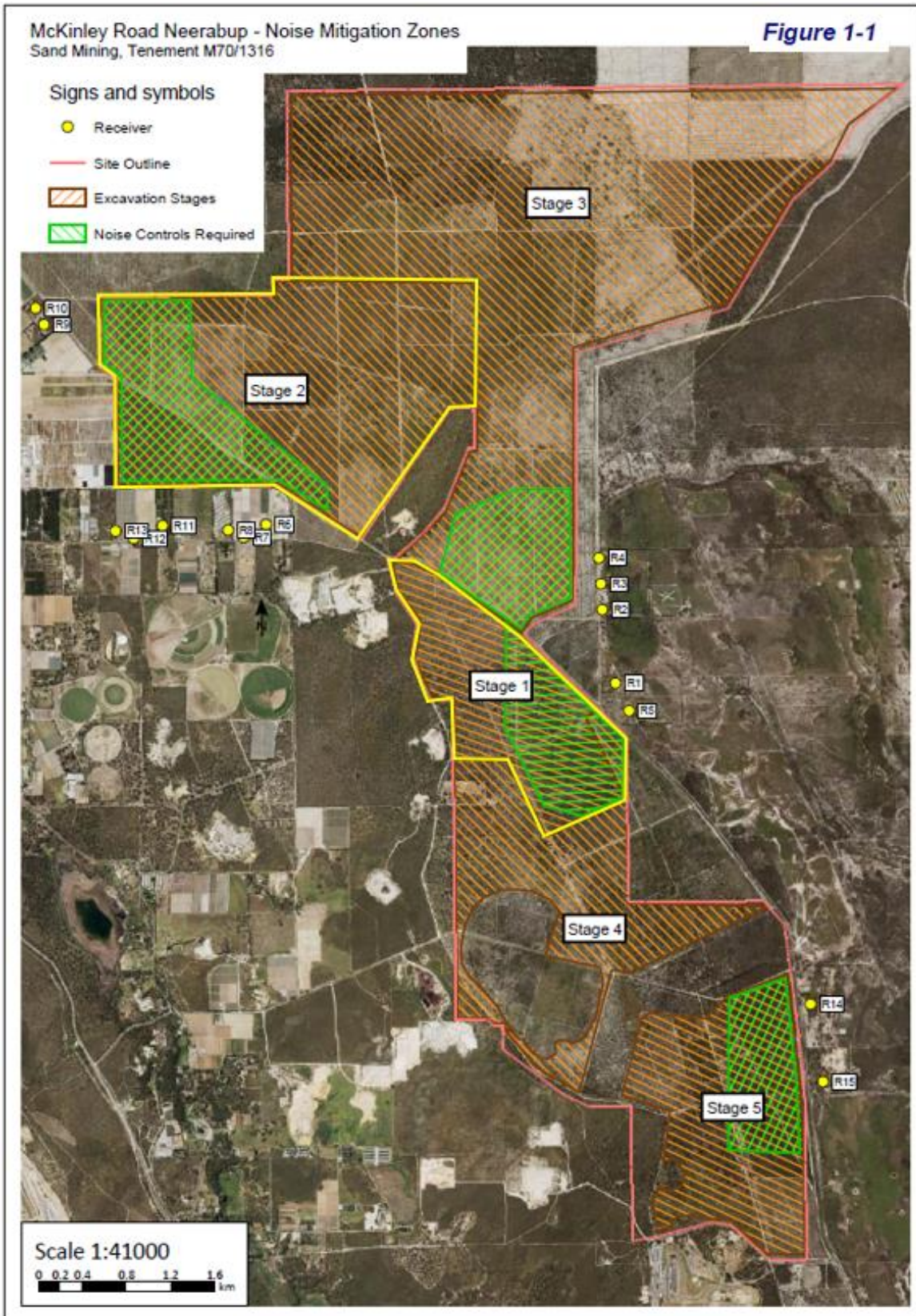
Human receptors	Distance from prescribed activity
<p>Residential dwellings</p> <p>Annual climate summary statistics indicate:</p> <ul style="list-style-type: none"> <li>• 9am prevailing wind direction is west and south-west</li> <li>• 3pm prevailing wind direction is north-east</li> </ul>	<p><u>Stage one</u></p> <p>Stage one residential dwellings are within the annual 3pm prevailing wind direction (east and north-east of the premises). Distances are from the stage 1 area proposed (see Figure Figure 1)</p> <p><b>R1: Lot 5455 on Plan 206214</b></p> <p>Lot boundary: ~60m east Residential dwelling: ~275m east</p> <p><b>R2: Lot 4 on Plan 72799</b></p> <p>Lot boundary: ~685m east Residential dwelling: ~750m north-east</p> <p><b>R3: Lot 3 on Plan 72799</b></p> <p>Lot boundary: ~790m north-east Residential dwelling: ~850m north-east</p> <p><b>R4: Lot 3 on Plan 72799</b></p> <p>Lot boundary: ~790m north-east Residential dwelling: ~980m north-east</p> <p><b>R5: Lot 2 on Plan 57000</b></p> <p>Lot boundary: ~20m east Residential dwelling: ~270m east</p> <p><u>Stage two:</u></p> <p>Stage two residential dwellings are within the annual 9am prevailing wind direction (west and south-west of the premises). Distances are from the stage two area proposed (see Figure 1)</p> <p><b>R6: Lot 17 on Plan 8913</b></p> <p>Lot boundary: ~20m south Residential dwelling: ~350m south / south-west</p> <p><b>R7: Lot 16 on Plan 8913</b></p> <p>Lot boundary: ~20m south Residential dwelling: ~460m south</p> <p><b>R8: Lot 15 on Plan 8913</b></p> <p>Lot boundary: ~20m south Residential dwelling: ~400m south</p> <p><b>R9: Lot 34 on Plan 87350</b></p> <p>Lot boundary: ~350m west Residential dwelling: ~495m west</p> <p><b>R10: Lot 35 on Plan 87350</b></p> <p>Lot boundary: 460m west Residential dwelling: 570m west</p>

	<p><b>R11: Lot 13 on Plan 8913</b></p> <p>Lot boundary: ~20m south Residential dwelling: ~365m south</p> <p><b>R12: Lot 10 on Plan 8913</b></p> <p>Lot boundary: ~20m south Residential dwelling: ~460m south</p> <p><b>R13: Lot 9 on Plan 8913</b></p> <p>Lot boundary: ~20m south Residential dwelling: ~390m south / south-west</p>
<p><u>Groundwater users</u></p> <p><b>2 groundwater licences within 1km of stage 1 area</b></p> <ul style="list-style-type: none"> <li>• GWL59113(7) – dust suppression + industrial use <ul style="list-style-type: none"> <li>○ The Trustee for WA Limestone Unit Trust – 25,000kL expires 12/2/2029</li> </ul> </li> <li>• GWL178588(2) – dust suppression + industrial use <ul style="list-style-type: none"> <li>○ Limestone Building Block Co Pty Ltd – 25,000kL expires 4/9/2029</li> </ul> </li> </ul>	<p>0.9km north-west</p> <p>0.32km north-west</p>
<b>Environmental receptors</b>	<b>Distance from prescribed activity</b>
<p><u>Drinking water source area</u></p> <p>Gnangara Underground Water Pollution control area</p> <p>Figure 6 and Figure 7.</p>	<p>Most of the Premises lies within a Priority 1 (P1) Public Drinking Water Source Area (PDWSA)</p> <p>P1 areas are defined and managed to ensure there is no degradation of the quality of the drinking water source with the objective of risk avoidance.</p> <p>Estimated depth to water ranges between 15 – 32 metres below ground level (RPS, 2016).</p> <p>Further discussed in section 3.6.</p>
<p><u>Department of Biodiversity, Conservations and Attractions (DBCA) Legislated Tenure</u></p> <p>Gnangara-Moore River State Forest</p>	<p>On-site (overlaps with stage 1 and 2) (Figure 11, Appendix 3)</p> <p>Note, clearing permit exists for site: CPS 7176/2</p>
<u>Bush forever area</u>	<p>On-site (stage 1) (Figure 10, Appendix 3)</p>
<u>Lake Pinjar wetlands</u>	<p>Immediately east of stage 1 (Figure 10, Appendix 3)</p>
<p><u>Threatened fauna</u></p> <ul style="list-style-type: none"> <li>• Carnaby's Black cockatoo (<i>Calyptorhynchus latirostris</i>). Protected under the <i>Environment</i></li> </ul>	<p>Cockatoo nesting and roosting sites approximately 2.5km from Stage 1 and 5.7km from Stage 2<sup>1</sup>.</p>

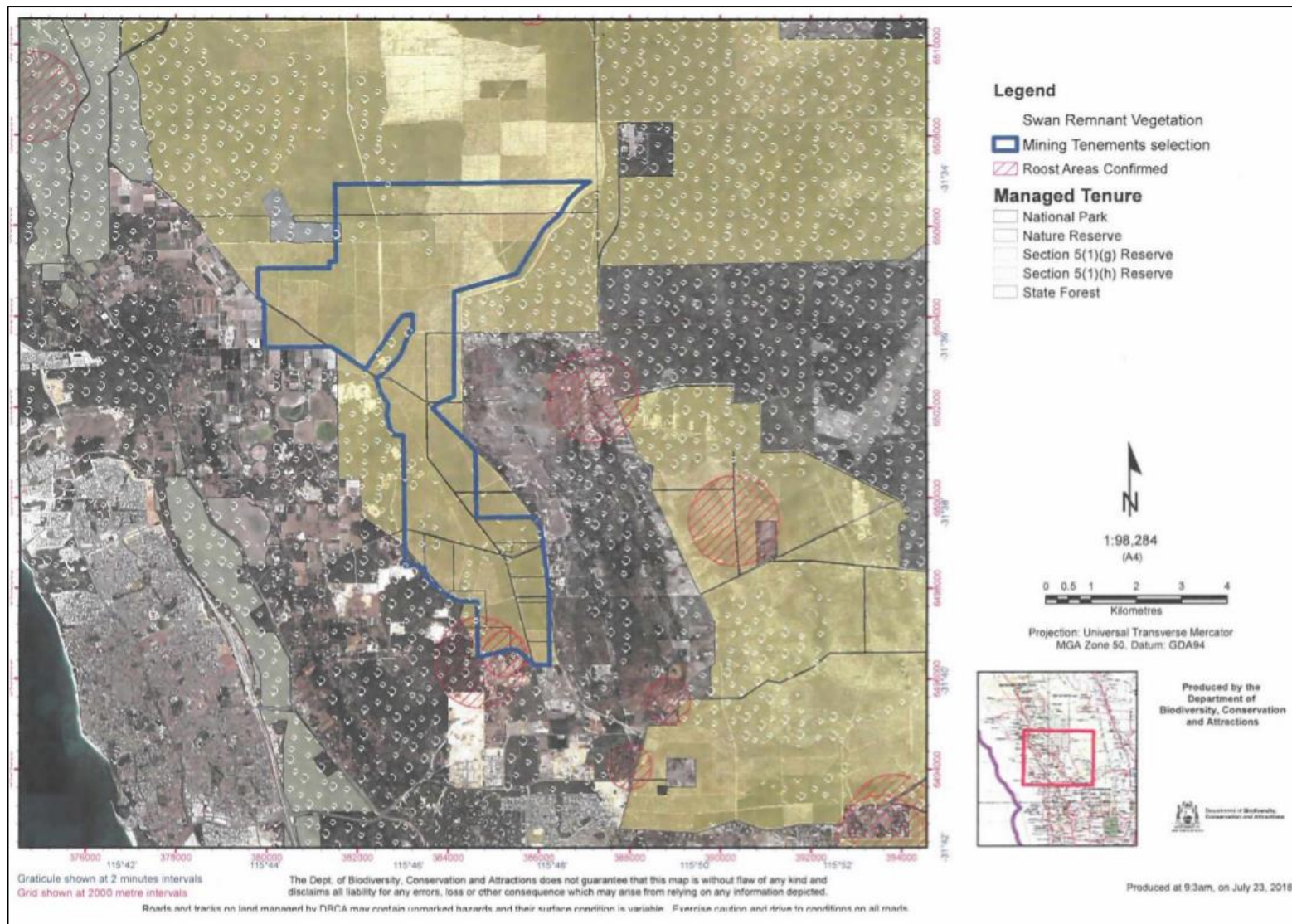


<p><i>Protection and Biodiversity Conservation Act 1999 (the EPBC Act) (See Figure 2)</i></p> <ul style="list-style-type: none"> <li>• Forest red tailed black cockatoo (<i>Calyptorhynchus banksii naso</i>)</li> <li>• Blue billed duck (<i>Oxyura australis</i>)</li> <li>• Bar-tailed godwit (<i>Limosa lapponica</i>)</li> <li>• Curlew sand piper (<i>Calidris ferruginea</i>)</li> <li>• Fork-tailed swift (<i>Apus pacificus</i>)</li> <li>• Glossy Ibis (<i>Plegadis falcinellus</i>)</li> <li>• Peregrine Falcon (<i>Falco peregrinus</i>)</li> <li>• Red necked stint (<i>Calidris ruficollis</i>)</li> </ul>	<p>Other threatened fauna sited within and immediately surrounding premises boundary (See Figure 8, Appendix 3)</p>
<p><u>Threatened ecological communities (TEC)</u></p> <p>Threatened ecological communities are present immediately adjacent to the stage 1 and stage 2 areas:</p> <ul style="list-style-type: none"> <li>• Banksia dominated woodlands (priority 3 – poorly known communities).</li> <li>• Tuart Woodland (critically endangered)</li> <li>• Northern Spearwood shrublands (priority 3 – poorly known communities) (on-site within the northern project area)</li> <li>• Melaleuca shrubland (endangered) – on-site within the northern project area (within proposed future stage 3 area)</li> </ul>	<p>Immediately adjacent to stage 1 and 2 areas (Figure 10, Appendix 3)</p>
<p><u>Environmentally Sensitive Areas</u></p> <p>Clearing regulations</p>	<p>5 areas on-site or adjacent</p> <p>CPS clearing permit granted on 28 March 2018 (7176/2) to allow clearing of 1000 hectares within mining lease 70/1316</p>

Note 1: Information based on DWER mapping and advice received from DBCA.



**Figure 1 Project stages and location of sensitive residential receptors R1 – R13. Stage 1 and 2 operations (outlined in yellow) assessed only.**



**Figure 2 Black cockatoo roosting sites**

W6100/2017/1

IR-T13 Decision Report Template (short) v2.0 (July 2020)

## 3.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guidance Statement: Risk Assessments* (DER 2017) for each identified emission source and takes into account potential source-pathway and receptor linkages as identified in Section 3.1. Where linkages are incomplete, they have not been considered further in the risk assessment.

Where the applicant has proposed mitigation measures/controls (as detailed in Section 3.1), these have been considered when determining the final risk rating. Where the Delegated Officer considers the applicant's proposed controls to be critical to maintaining an acceptable level of risk, these will be incorporated into the works approval as regulatory controls.

Additional regulatory controls may be imposed where the applicant's controls are not deemed sufficient. Where this is the case the need for additional controls will be documented and justified in Table 3.

Works Approval W6100/2017/1 that accompanies this Decision Report authorises construction and stage 1 time-limited operations only. The conditions in the issued Works Approval, as outlined in Table 3 have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

A licence is required following the time-limited operational phase authorised under the works approval to authorise emissions associated with the ongoing operation of the Premises i.e. category 12 activities. A risk assessment for the operational phase has been included in this Decision Report, however licence conditions will not be finalised until the department assesses the licence application.

**Table 3: Risk assessment of potential emissions and discharges from the Premises during construction and operation**

Risk Event					Risk rating <sup>1</sup> C = consequence L = likelihood	Applicant controls sufficient?	Conditions <sup>2</sup> of works approval	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Applicant controls				
<b>Construction</b>								
Placement of screen and associated equipment including vehicle movements (reversing beepers).	Dust	Air/windborne pathway causing impacts to nearby residences, and poor health of TECs and threatened fauna	Residential dwellings TECs DBCA legislated tenure Wetlands	Refer to Section 3.1	C = Slight L = Possible <b>Low Risk</b>	Y	N/A	The minor construction works (equipment placement) are not expected to generate significant dust emissions.
	Noise		Residential dwellings Threatened fauna (black cockatoos)	Refer to Section 3.1	C = Moderate L = Possible <b>Medium Risk</b>	N	<b>Condition 2</b> (construction requirements)	Due to medium risk associated with noise, applicant proposed broad band reversing alarms, screen plant noise limit and front-end loader noise limits have been placed on the works approval as regulatory controls (condition 2). <u>DWER control</u> The applicant initially proposed use of 107dB(A) front end loader for use between 550m and 1km, based on LGA (2020) noise modelling recommendations. In 21 day comments they then suggested modifying this to 550-800m with no supporting evidence to justify the alteration. The initial proposed control has therefore been maintained on the works approval.
<b>Time limited operations</b>								
Screening, crushing, unloading, loading and storage of material Vehicle movements	Dust	Air/windborne pathway causing impacts to health and amenity, and	Residential dwellings TECs DBCA legislated	Refer to Section 3.1	C = Moderate L = Possible <b>Medium Risk</b>	N	<b>Condition 9 (no visible dust to cross premises boundary)</b> <b>Condition 10 (dust management)</b> <b>Conditions 14 – 17 (PM<sub>10</sub>)</b>	See section 3.4 – dust emissions

Risk Event					Risk rating <sup>1</sup> C = consequence L = likelihood	Applicant controls sufficient?	Conditions <sup>2</sup> of works approval	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Applicant controls				
		threatened and priority flora and fauna	tenure Wetlands				<b><u>ambient air quality monitoring at site boundary</u></b> <b><u>Condition 18 - 19 (Dust monitoring limit exceedances)</u></b>	
	Noise	Air/windborne pathway causing impacts to nearby residences	Residential dwellings	Refer to Section 3.1	C = Moderate L = Possible <b>Medium Risk</b>	N	<b><u>Conditions 2 and 8</u></b> (infrastructure requirements) <b><u>Condition 12 and 13</u></b> (noise monitoring) <b><u>Condition 20 – 25</u></b> (compliance and reporting)	See section 3.3 – noise emissions
		Air/windborne pathway causing impacts to threatened and priority fauna	Threatened fauna (black cockatoos)	Refer to Section 3.1	C = Minor L = Unlikely <b>Medium Risk</b>	Y	N/A	See section 3.5 – noise impacts to fauna
	Sediment laden stormwater	Overland run-off	Wetlands	Refer to Section 3.1	C = Moderate L = Unlikely <b>Medium Risk</b>	Y	Condition 2 (infrastructure requirements surface water management)	Applicant controls for surface water management have been placed on the works approval as regulatory controls.
	Hydrocarbon contaminated stormwater	Overland run off and vertical transport of contaminated stormwater through soil profile to groundwater	Threatened and priority flora Groundwater – P1 Drinking water	Refer to Section 3.1	C = Moderate L = Unlikely <b>Medium Risk</b>	Y	Condition 2 (fuel storage tank to be banded and located outside of the PDSWA)	Applicant proposed controls to be placed on the works approval as regulatory controls. See section 3.6 – public drinking water source protected area

Note 1: Consequence ratings, likelihood ratings and risk descriptions are detailed in the *Guidance Statement: Risk Assessments* (DER 2017).

Note 2: Proposed applicant controls are depicted by standard text. **Bold and underline text** depicts additional regulatory controls imposed by department.

### 3.3 Risk assessment – impact of noise emissions on nearby residences

The allowable LA<sub>10</sub> daytime noise level is 45 decibels (dB) at noise sensitive premises (i.e., residential receptors) under the *Environmental Protection (Noise) Regulations 1997* (Noise Regulations).

Hanson has provided two modelling reports by Loyd George Acoustics (LGA) as part of their application for potential impacts to residential dwellings from proposed operations. The first report was provided in 2018 for original proposed operations (24 hours per day, 7 days per week) with a number of controls including large 8 meter noise bunds. The second LGA noise modelling report was submitted in 2020 and modelled noise emissions for stage 1 daytime operational hours 7am - 7pm Monday to Saturday only.

In response to the first draft of this works approval, provided to Hanson in 2022, new noise controls and operational hours were proposed, as detailed in section 3.1.1 and Appendix 1 (including modified operational hours and controls based on an 800m buffer). DWER sought internal technical advice regarding the new proposed controls, with reference to the two modelling reports which had already been provided to the department. Technical advice indicated that the new proposed controls, for stages one and two, would require verification for operation within 800m of residences, but were likely to be compliant with the daytime noise level of 45 dB outlined within the Noise Regulations.

Internal technical advice also continued to advise inclusion of recommendations by LGA (2020) regarding overburden removal:

- when removing overburden between 1km and 550 metres of residences use only one front end loader with a sound power level not exceeding 107dB(A).
- when removing overburden within 550 metres of residences use only one front-end loader with a sound power level not exceeding 103dB(A).

#### **DWER outcome**

As the closest residential dwelling is only 275m east of the proposed operations, the assessed risk of noise impacts on receptors is considered 'medium risk' with a consequence rating of "moderate" and likelihood of "possible". To minimise risk, the applicant proposed controls, including use of quieter plant within 550m and 1km of the residences, have been placed on the works approval as regulatory controls. Applicant proposed day-time hours have also been conditioned on the works approval.

As only modelling has been submitted, a requirement to assess actual noise emissions during time limited operations has also been conditioned. Noise verification testing will be required for screening plant operation when within 800m of residential dwellings.

For further discussion with respect to noise impacts to Black Cockatoo's see section 3.5.

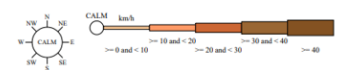
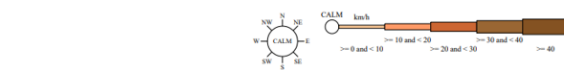
### 3.4 Risk assessment – Impact of dust emissions on nearby residences

Annual wind roses (including wind speed, direction and frequency) for the nearest coastal weather station recording climate data (~23km south of the premise, Perth metro weather station no. 009225) are provided in Figure 3 and summarised below:

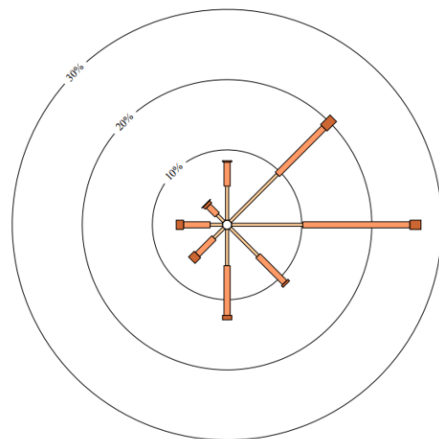
- The 9am prevailing wind direction is west / south-west, towards threatened ecological communities and residential dwellings (R6 – R13 associated with Stage 2)<sup>1</sup>. To the south-west, the closest residence (R6) is 350m from the site boundary.
- The 3pm prevailing wind direction is east / north-east towards residential receptors (R1 – R5 associated with Stage 1).<sup>2</sup> The closest residence is 275m to the east (R5).

**Rose of Wind direction versus Wind speed in km/h (12 Jan 1994 to 11 Aug 2021)**  
 Custom times selected, refer to attached note for details  
**PERTH METRO**  
 Site No: 009225 • Opened Feb 1993 • Still Open • Latitude: -31.9192° • Longitude: 115.8728° • Elevation 24.m  
 An asterisk (\*) indicates that calm is less than 0.5%.  
 Other important info about this analysis is available in the accompanying notes.

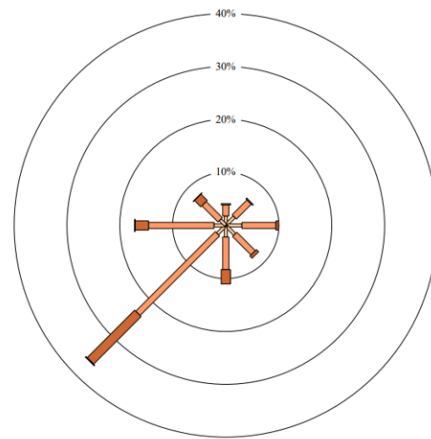
**Rose of Wind direction versus Wind speed in km/h (12 Jan 1994 to 11 Aug 2021)**  
 Custom times selected, refer to attached note for details  
**PERTH METRO**  
 Site No: 009225 • Opened Feb 1993 • Still Open • Latitude: -31.9192° • Longitude: 115.8728° • Elevation 24.m  
 An asterisk (\*) indicates that calm is less than 0.5%.  
 Other important info about this analysis is available in the accompanying notes.



9 am  
 10056 Total Observations  
 Calm 3%



3 pm  
 10054 Total Observations  
 Calm \*



**Figure 3 Annual wind rose at Perth Metro weather station site 009225 (9am and 3pm)**

The applicant proposed controls for dust management are listed in section 3.1.1, key controls include use of a water cart and minimising the area open or disturbed at any one time.

<sup>1</sup> Winds originating from the east occur less than 30% of the time with a majority of wind speeds 0-20km per hour. Winds originating from the north-east occur approximately 20% of the time, with a majority of wind speeds 0-20km per hour.

<sup>2</sup> Winds from the south-west occur less than 40% of the time, which a majority of wind speeds between 0-20km per hour.



## **DWER outcome**

As residential dwellings are down-wind from both the 9am and 3pm prevailing wind directions, the assessed risk of dust to receptors is considered 'medium risk' with a consequence rating of "moderate" and likelihood of "Possible". To minimise risk, the applicant proposed control for use of a water cart has been placed on the works approval as a regulatory control. To protect human and environmental receptors DWER has also conditioned that no visible dust crosses the boundary of the premises and wetting down of exposed areas, stockpiles and limiting on-site vehicle speeds to less than 40km/hour.

Due to the proximity of human receptors, DWER has also placed a requirement for dust monitoring at the premises boundary near the residences (Figure 4 and Figure 5). Monitoring for the PM<sub>10</sub> size fraction at the site boundary will be used for assessing human health impacts from the operations. Fugitive dust monitors measuring PM<sub>10</sub> are to be installed, calibrated and operated to Australian Standards. Monitoring shall be conducted continuously during the 180 days' time limited operations period for each stage (separate time limited operations for stage 1 and 2) approved under this works approval. The need for continued dust monitoring or monitoring at the receptors (rather than boundary monitoring) will be considered during the licence application assessment stage, considering the data collected during time limited operations.

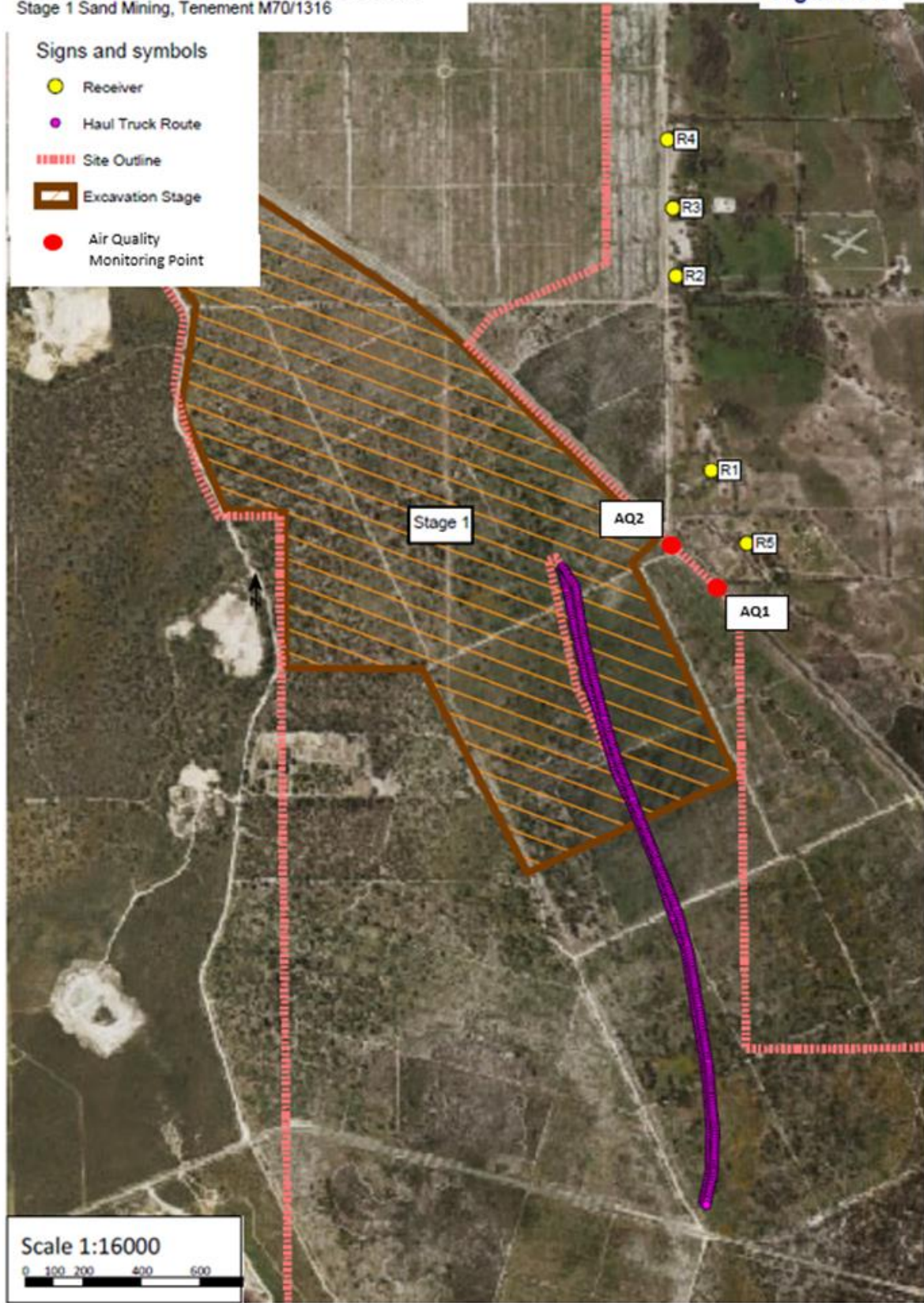
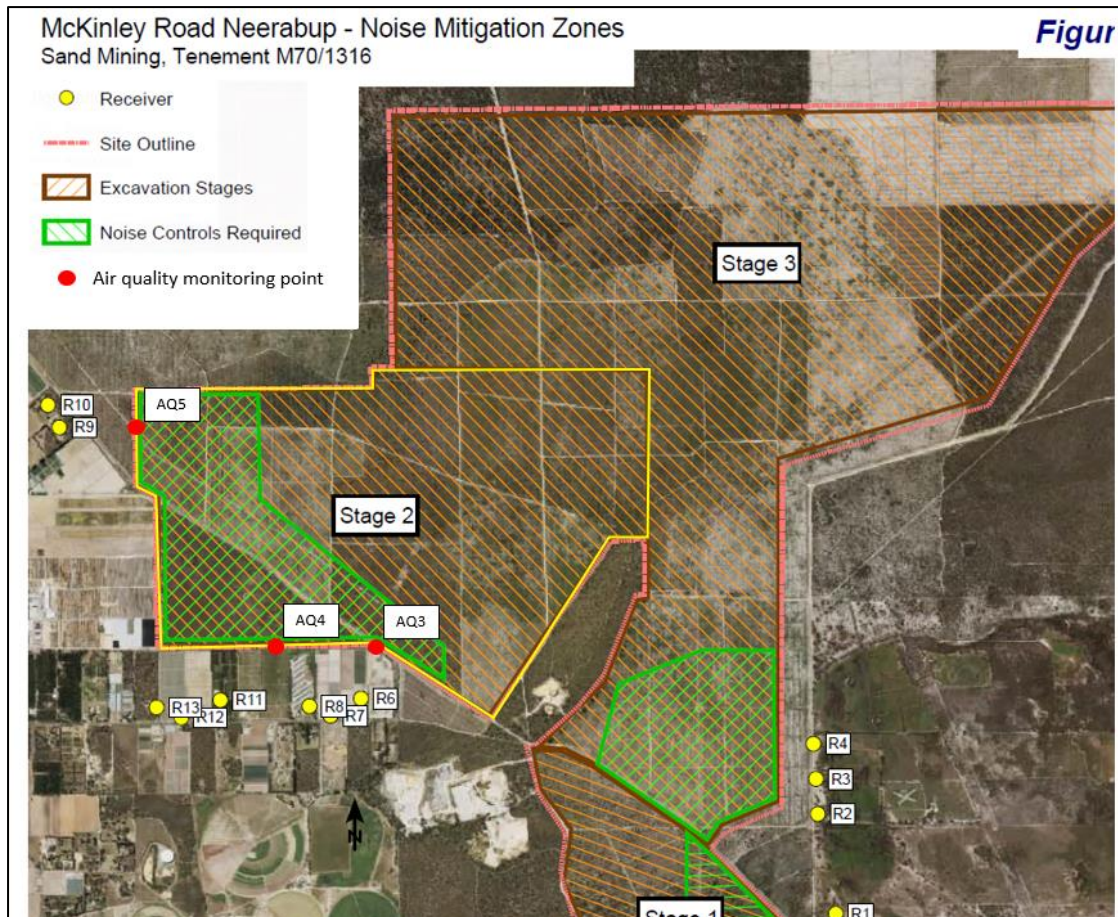


Figure 4 Air quality monitoring locations – Stage 1



**Figure 5 Air quality monitoring locations - Stage 2**

### 3.5 Risk assessment – Impact of noise emissions on known black cockatoos roosting sites

Advice from Department of Biodiversity, Conservation and Attractions (DBCA) indicate that Black Cockatoos, when roosting, can be sensitive to disturbance from noise. Noise impacts causing alterations in bird parental behaviour and reproductive stress are well documented in the literature (Injaian et al., 2018; Bottalico et al., 2016; Kleist et al., 2017). DWER notes that whilst the clearing permit will assess for clearing of vegetation associated with black cockatoo habitat, DWER will regulate on-going emissions from operations<sup>3</sup>, including noise. DBCA advice indicates, that whilst black cockatoos will occupy roosts predominantly at night, there will be periods of time after 7am and before 7pm when birds will occupy roosts and may be sensitive to disturbance from the proposed site operations (proposed for 7am-7pm Monday to Sunday operations, when >800m from residential dwellings). DBCA notes that there are no currently known roosts within proximity to the stage 1 or stage 2 areas, but that stage 5 of the proposed operations overlaps with a known roosting site (Figure 2). Further assessment by DWER with respect to black cockatoos may occur when Hanson applies to commence operations within the stage 5 area.

<sup>3</sup>The Department of Water and Environmental Regulation (DWER) has responsibility under Part V Division 3 of the EP Act for granting works approvals, licences, and registrations for prescribed premises. Part V Division 3 regulates emissions and discharges to prevent unacceptable impacts to public health or the environment, including sensitive receptors such as threatened fauna and flora. An assessment under a clearing permit does not assess for on-going impacts associated with emissions from site (such as from dust or noise) for the remaining habitat trees on site which will not be cleared.

Hanson has indicated it will undertake a survey for Black Cockatoo roosts prior to clearing and that survey results will be provided to DBCA (correspondence received by DWER on 23 May 2022).

DBCA advice also notes, that for later assessment of future stages, the locations and use of nocturnal roosts (and other habitat) by black cockatoos are very likely to change over the >50 year life of the proposed activities as the surrounding landscape is modified – for example as areas of mature pine plantation are removed or nearby urban and other development progresses. As well as roosts being removed, these changes also mean that cockatoos will establish new roosts, and the remaining mature pines could become more important for roosting. Therefore, regular review to determine potential impacts and mitigation strategies or monitoring may be warranted.

### **DWER outcome**

As known roosting locations are ~2.5km and 5.7km from the stage 1 and stage 2 areas, the assessed risk of noise to black cockatoos is considered “medium risk” with a consequence rating of “Minor” and likelihood of “unlikely”.

For stage 1 and 2 of the operations no additional regulatory controls are required to manage the risk of noise impacts on black cockatoos. DWER notes that should Hanson identify, during its pre-clearing survey, that black Cockatoo roosts are within proximity of the stage 1 or stage 2 areas (which have not been previously identified as roosting sites by DBCA), that they should consult with DBCA regarding further management of risks to these receptors and that this may be further considered during assessment by DWER at the licence application stage.

Further assessment by DWER with respect to black cockatoos may occur when Hanson applies to commence operations within the stage 5 area (containing known roosting areas).

## **3.6 Risk assessment – Impacts to the public drinking water source protected area from hydrocarbon storage/use.**

The site is located partially within a Priority 1 (P1) area<sup>4</sup> of the Gnangara PDWSA (Figure 6), which provides drinking water to Perth’s integrated water supply scheme. As there are no wellhead protection zones within the mining tenement, the category 12 activities proposed are considered ‘compatible with conditions’ in P1 areas, according to DWER’s *Water Quality Protection Note 25 – Land use compatibility tables for public drinking water source protected areas*.

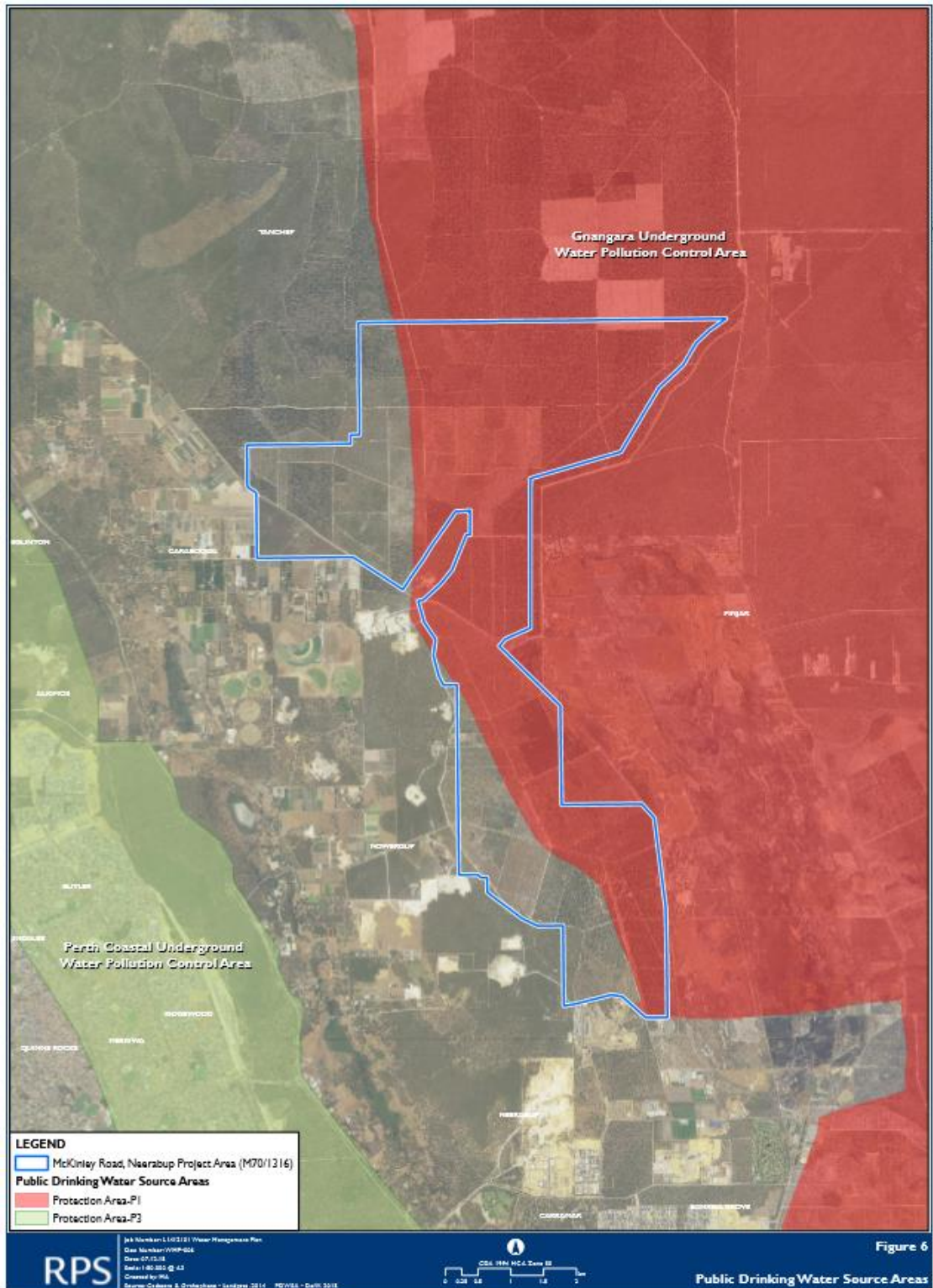
The 17.5kL diesel storage and the washdown area are proposed for location outside the PDWSA (Figure 7). DWER supports this, as it reduces risks to drinking water quality and public health.

### **DWER outcome**

The assessed risk for category 12 activities to the public drinking water source protected area is considered ‘medium risk’ with a consequence rating of “moderate” and likelihood of “unlikely”. DWER supports placement of the 17.5kL diesel storage and washdown area outside of the PDWSA. This has been placed as a requirement on the works approval.

---

<sup>4</sup> Priority 1 (P1) source protection areas are defined and managed to ensure there is no degradation of the water resource in these areas. This is the highest level of protection for the water source and normally will apply to land owned by the State, and that is characterised by low-intensity and low-risk land use, such as forestry. Protection of the public water supply outweighs virtually all other considerations in respect to the use of this land. P1 source protection areas are managed in accordance with the principle of risk avoidance.



**Figure 6 Public Drinking Water Source Areas**

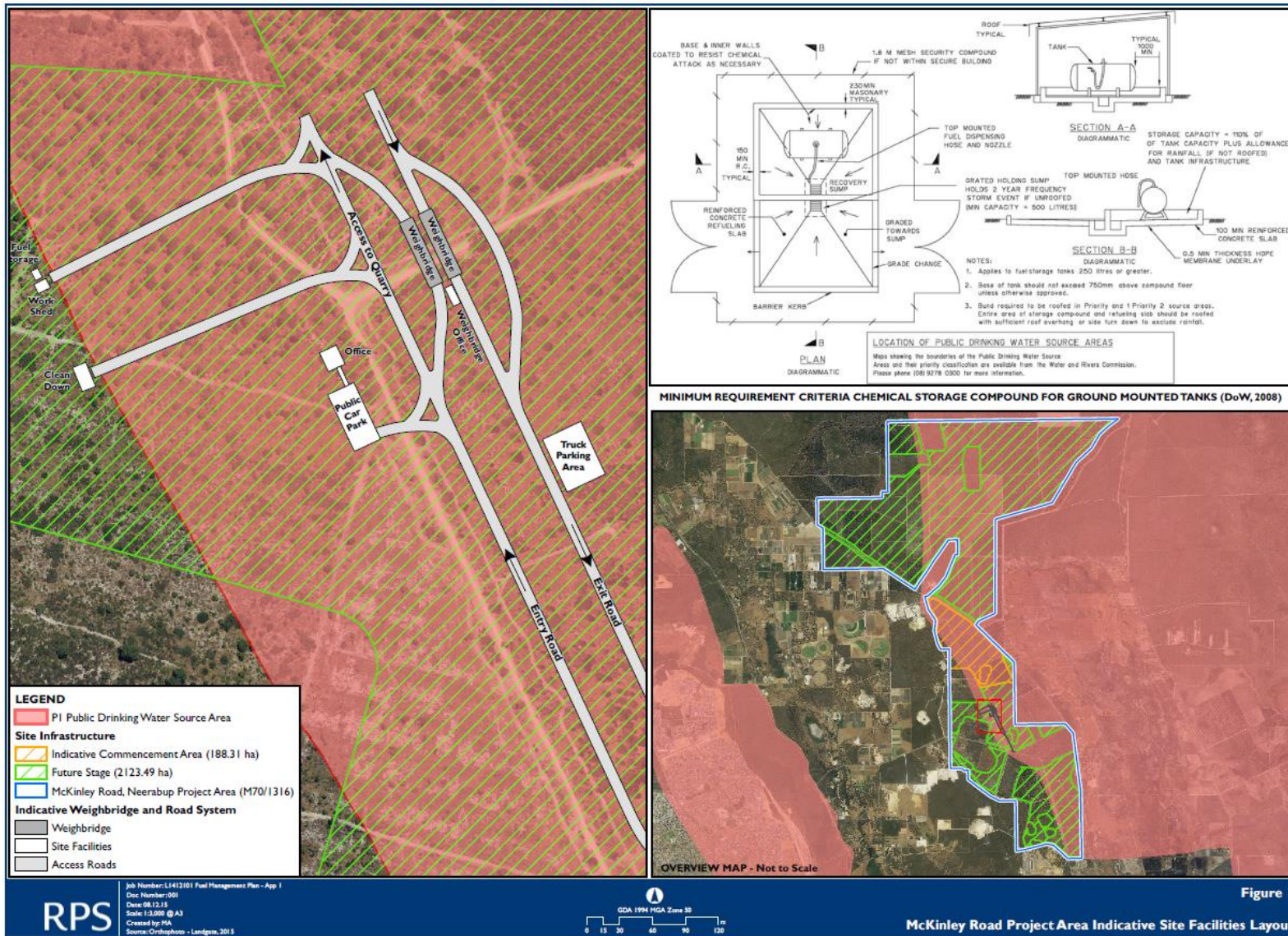


Figure 7 Site Layout showing fuel storage is outside of the Public Drinking Water Source Area

W6100/2017/1

## 4. Consultation

Table 4 provides a summary of the consultation undertaken by the department.

**Table 4: Consultation**

Consultation method	Comments received	Department response
Application advertised on the department's website (31/07/2019)	None received.	N/A.
Local Government Authority advised of proposal (2/8/2019)	<p>The City of Wanneroo replied on 22/8/2019 advising DWER liaise with DMIRS as the applicant has an approved mining proposal. Additionally, they advised that the mining will be situated on land reserved for the purposes of 'State Forest' and 'Parks and Recreation' under the Metropolitan Region Scheme (MRS) and that DWER consult Department of Planning, Lands and Heritage.</p> <p>Additionally, City of Wanneroo notes that the proposed screening and washing facilities may be situated on land gazetted as road reserve and advised that works should not encroach on unused road reserve.</p>	<p>The tenement falls within land managed by the Department of Parks and Wildlife (now Department of Biodiversity, Conservation and Attractions) who were consulted during the mining proposal approval.</p> <p>DWER sent a stakeholder letter to DMIRS on 9/11/2020. DMIRS replied on 12/11/2020 that a Mining Proposal and associated Mine Closure Plan (REG ID 56208) for sand mining on M70/1316 was approved by DMIRS in March 2017.</p>
Department of Biodiversity, Conservation and Attractions (DBCA) (18/7/2019)	<p>DBCA replied on 28/8/2019 with several recommendations to protect black cockatoo roost sites within the area including:</p> <ul style="list-style-type: none"> <li>collection of baseline data on cockatoo breeding sites/roosts before mining begins</li> <li>monthly or quarterly monitoring for impacts of dust and noise on black cockatoo's when operations are at 1km from roosts</li> <li>implement reasonably practicable measures to reduce dust and noise emissions, particularly within 500m of known roosting sites.</li> </ul>	DWER has incorporated DBCA advice into the risk assessment.
Department of Mines, Industry Regulation and Safety (DMIRS) (9/11/2020)	DMIRS replied on 12/11/2020 that a Mining Proposal and associated Mine Closure Plan (REG ID 56208) for sand mining on M70/1316 was approved by DMIRS in March 2017.	N/A.
Department of Planning, Lands and Heritage (9/11/2020)	None received.	N/A.

Community consultation: letters directly handed to thirteen closest residences for stage 1 (31/7/2019) and stage 2 (27/7/2022)  See receptor Table 2 for residents contacted.	None received.	N/A.
Draft provided to applicant on 21/12/2021	Draft comments received on 23/5/2022 See Appendix 1.	See Appendix 1.
Second draft provided to applicant on 16/8/2022	The applicant responded on 22/8/2022 accepting the second draft with no further comments.	N/A.

## 5. Conclusion

Based on the assessment in this decision report, the Delegated Officer has determined that a works approval will be granted, subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

## References

1. Bottalico, P. et al., 2016. *Effects of noise generated by construction sites on wild birds*, Noise Control Engineering
2. Department of Environment Regulation (DER) 2016, *Guidance Statement: Environmental Siting*, Perth, Western Australia.
3. DER 2017, *Guidance Statement: Risk Assessments*, Perth, Western Australia.
4. DER 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
5. RPS Group, 2016. *Water Management Plan – McKinley Road Neerabup Sand Extraction Project, Tenement M70/1316*. Trim reference: A1707238
6. Hanson Construction Materials 2017. *Application and supporting information*. Trim reference CEO2642/17
7. Injaian, A. Taff, C. Patricelli, G. 2018. *Experimental Anthropogenic Noise Impacts Avian Parental Behaviour, nestling growth and nestling oxidative stress*. Animal Behaviour
8. Kleist, et al., 2018. *Chronic anthropogenic noise disrupts glucocorticoid signaling and has multiple effects on fitness in an avian community*
9. Lloyd George Acoustics, 2020. *Environmental Noise Assessment – McKinley Road Sand Extraction Project Stage 1*. Trim reference: A1900546
10. DBCA, 2020. Advice with respect to Black Cockatoo monitoring and management. Trim reference A1966116



## Appendix 1: Summary of applicant's comments on risk assessment and draft conditions

Condition	Summary of applicant's comment on Draft 1	Department's response to comments on Draft 1
Request to amend the instrument to authorise all stages 1 to 5	Based on a shift of operational priorities, Hanson has requested, at the 21 day draft comment period, that they would seek to commence at stage two, rather than stage one (originally proposed to encompass the first ten years of operation), and would like all five stages (for a 50 year project) granted for the one works approval.	<p>Granting all five stages of the project is beyond the approval timeline for a works approval (for which standard time frames are five years or less). Granting an instrument for such timeframes and over such a large area would create the risk for additional stakeholders (i.e. new residential dwellings) relevant to the project who would not have been included as part of the consultation or in the risk assessment.</p> <p>As Hanson is now proposing to commence in stage two, the department (after assessment) has determined to authorise construction for both stage one and stage two areas.. The applicant may seek to apply for approval for additional stages at the licence application stage.</p>
<p><u>Black cockatoos:</u></p> <p>Conditions 1 and 18</p>	<p>A summary of Hanson's comments raise the following key concerns:</p> <ol style="list-style-type: none"> <li>1. That there are large areas on-site devoid of vegetation structure;</li> <li>2. A works approval and/or screening licence are not appropriate mechanisms to enforce ongoing impact assessments with respect to black cockatoos;</li> <li>3. The conditions would be expensive to implement proportionate to their perceived risk.</li> </ol> <p>Hanson proposes alternative controls including:</p> <ul style="list-style-type: none"> <li>• Inductions to on-site visitors;</li> <li>• A pre-clearing survey for black cockatoo's roosting/breeding trees;</li> <li>• If a tree is being actively used by black cockatoo's, then all operational activities will cease within 100 m of the tree;</li> <li>• Signage placed along roads to alert vehicles of birds;</li> <li>• Native fauna encountered onsite shall be given the opportunity to move on if there is no threat to personnel safety in doing so;</li> <li>• If sick or injured animals are encountered, the nominated fauna handler will be called to rescue the animal;</li> <li>• Design/position any lighting towards operational areas and away from vegetated areas; and</li> <li>• Progressive rehabilitation of completed areas, including providing alternative food</li> </ul>	<p>DWER has conducted further risk assessment (see section 3.5) and modified the conditions of the works approval, including removal of conditions 1 and 18.</p> <p>DWER notes that whilst the clearing permit will assess for clearing of vegetation associated with black cockatoo habitat, DWER will regulate on-going emissions from operations , including noise.</p> <p>There are no currently known roosts within proximity to the stage 1 or stage 2 areas. However, stage 5 of the proposed operations overlaps with a known roosting site (Figure 2). Further assessment by DWER with respect to black cockatoos may occur when Hanson applies to commence operations within the stage 5 area.</p> <p>Hanson has indicated it will undertake a survey for Black Cockatoo roosts prior to clearing and that survey results will be provided to DBCA. Should Hanson encounter black cockatoos within the stage 1 or 2 areas during the survey, they should consult with DBCA regarding further management of risks to these receptors. This will also be further considered during assessment by DWER at the licence application stage.</p>

Condition	Summary of applicant's comment on Draft 1	Department's response to comments on Draft 1
	sources for black cockatoo species.	
<u>Dust monitoring:</u> Conditions 2, 12, 13, 14, 15, 16, 17, 18 (formerly 19)	Hanson considers dust monitoring should only apply when screening equipment is within 800m of sensitive premises.	DWER has modified the relevant conditions to indicate that dust monitoring will only be required once operations commence within 800m of residential dwellings.
<u>Front end loader noise restrictions:</u> 2 and 7	Hanson requests modification of it's of use of the 107dB(A) front end loader between 550m and 1km, to 550m and 800m.	DWER notes that this control was originally proposed by Hanson based on Lloyd George Acoustics (2020) report to be compliant with day-time noise regulations. As Hanson has not provided additional supporting evidence, the use of a 107dB(A) front end loader between 550 metres and 1km will remain as a requirement on the works approval.
<u>Reporting:</u> 3	Hanson comments that the compliance report would be tailored to the use/applicability of the infrastructure based on the distance to sensitive premises.	Compliance reporting is a standard requirement for all items of infrastructure as required under a works approval. Where particular items of infrastructure might have specific requirements based on their proximity to residential dwellings, this is specified in condition 2, which condition 3 references.
<u>Noise conditions:</u> 2, 7, 10, 11	Hanson proposes to amend operational times to the following: <ul style="list-style-type: none"> <li>• Operations &lt;800m from residential dwellings: 7am – 5pm Monday to Saturday</li> <li>• Operations &gt;800m from residential dwellings: 7am – 7pm Monday to Sunday</li> </ul> Hanson considers that if operation of screening infrastructure is more than 800m from residential dwellings, then noise monitoring is not warranted. Hanson indicates, that where it will operate within 800m from residential dwellings: <ul style="list-style-type: none"> <li>• Mobile screening plants will be located either within the quarry pit or shield by sand stockpiles;</li> <li>• All mobile equipment to be fitted with mufflers and noise shielding devices;</li> <li>• No overburden removal within 100m of the tenement boundary adjacent to residential dwellings; and</li> <li>• Mobile plant fitted with self-adjusting broadband reversing alarms.</li> </ul>	DWER has sought internal technical advice regarding the new proposed operational hours and controls for both stage one and stage two. Advice indicates, that within 800m of residences, Hanson will be required to demonstrate that the design of the sand stockpile or the pit wall is able to provide sufficient noise reduction to ensure the noise compliance.  Noise verification testing has therefore been conditioned when operating within 800m of residential dwellings.  Hanson proposed controls for mufflers and noise shielding devices, broad band reversing alarms and no overburden removal within 100m of tenement boundary, have been placed on the works approval as regulatory controls.  See section 3.3 for further discussion with respect to noise.

## Appendix 2: Water Management Plan

### Water management plan

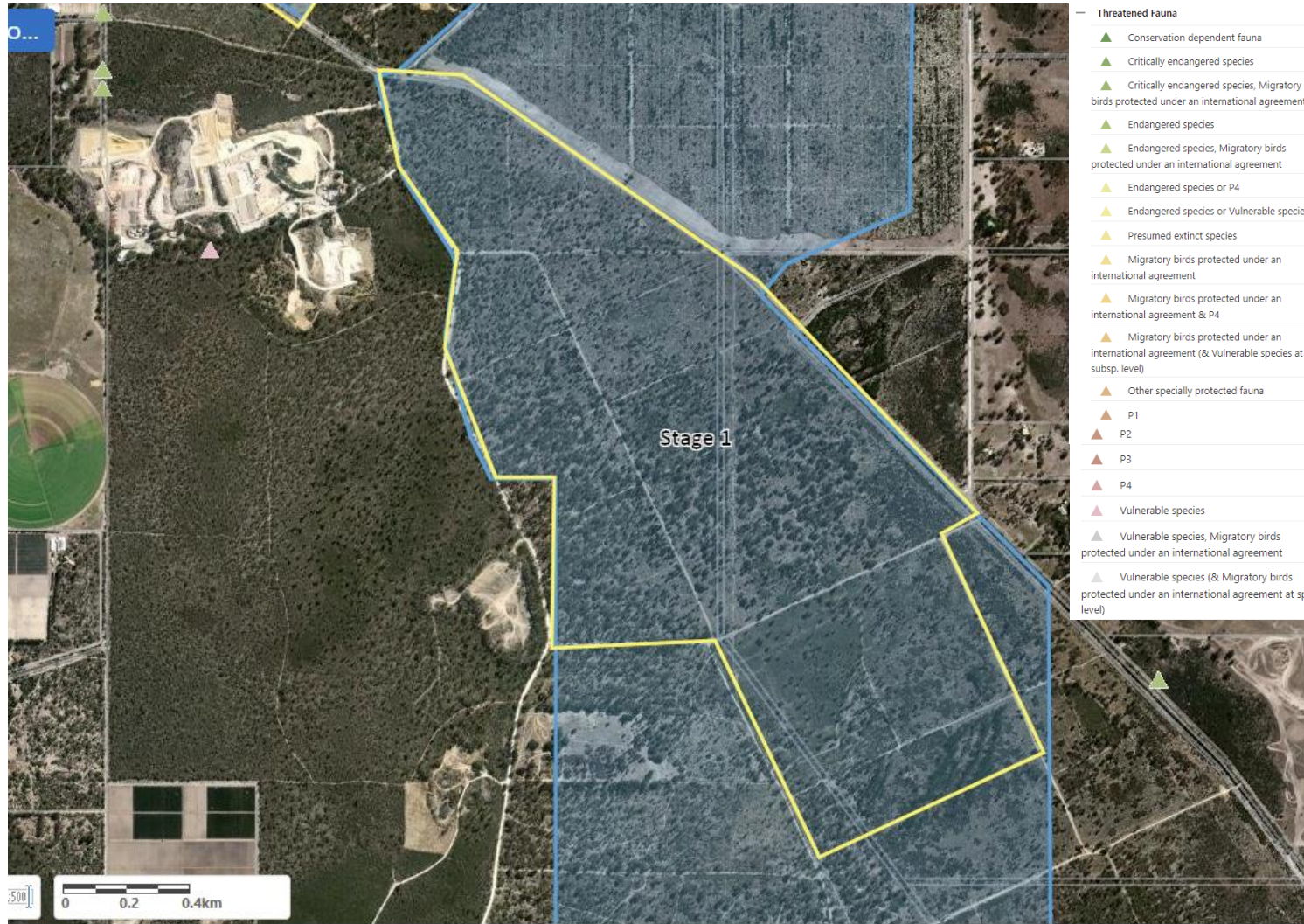
As part of the works approval application, Hanson submitted a Water Management Plan (WMP) by Rocla, completed for Hanson's proposed activities at M70/1316. This plan was submitted to then Department of Water (DoW) (Swan Region) in 2016. The WMP indicated that it would commit to the quarry excavation depth being set at 3m above the historical maximum groundwater level (HMGL), as outlined by then DoW, once the methodology for determining the Likely Future Maximum Winter Water Table (LFMWWT) had been agreed by DoW (now DWER).

Since that time, DWER has finalised the method for calculating the LFMWWT for Gnangara, which is to use the highest levels from the year 2000. From this level, the applicant can then determine the 3m vertical separation distance required for the extraction within a P1 area. This is fully explained and published in DWER's [Water Quality Protection Note 15: Basic raw materials extraction](#) (WQPN 15).

The applicant has proposed that they will update the Water Management Plan upon receiving further advice from DWER. DWER consequently provides the following advice, noting that the applicant is also required to operate in accordance with their extractive industries licence. The water management plan should:

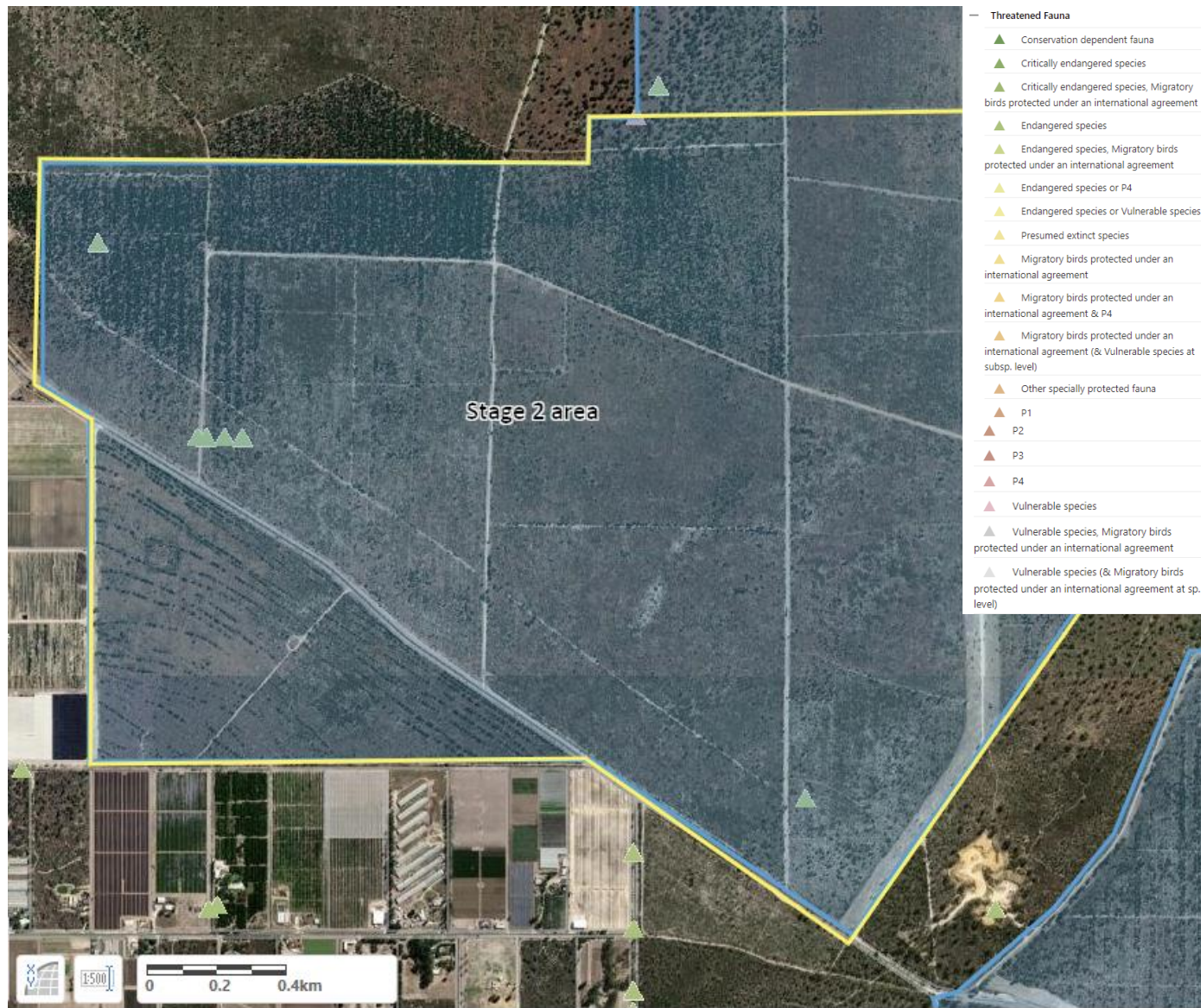
- Review the groundwater levels and extraction depth to ensure the 3m separation is achieved, in accordance with [WQPN 15: Basic raw materials extraction](#). That is, it should use the highest water levels from the year 2000 to determine the 3m separation. It should also consider any further groundwater monitoring that has been completed.
- Water Corporation should be added to the list of emergency contacts for spills within the PDWSA.
- DWER's pollution response hotline should be added to the list of emergency contacts for possible contamination events/spills.
- Consider [WQPN 56: Tanks near sensitive water resources](#) and [WQPN 10: Contaminant spills: emergency response plans](#), which have both been updated since the water management plan was originally submitted

## Appendix 3: Sensitive receptors – additional figures



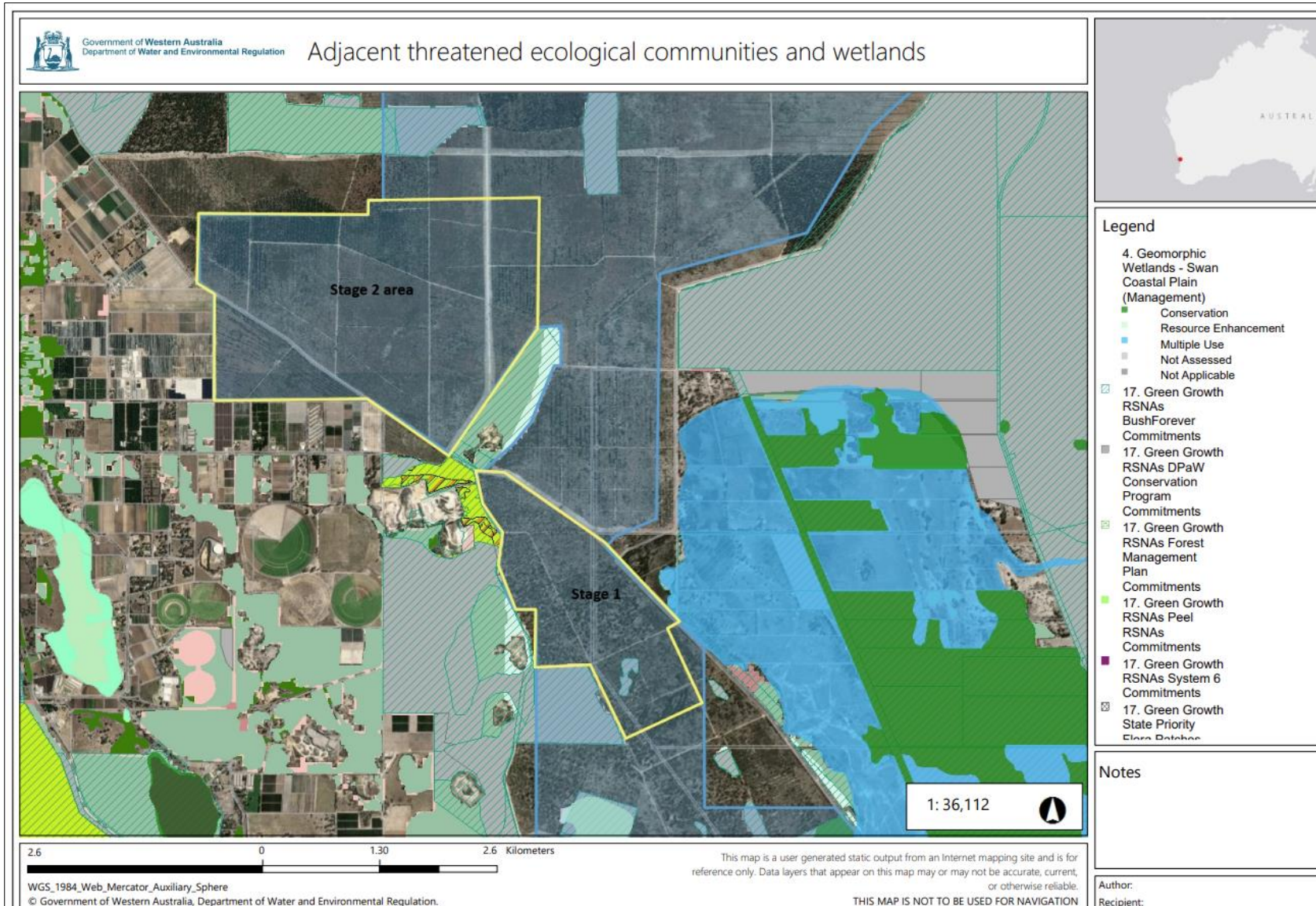
**Figure 8 Threatened fauna surrounding stage 1 area**

W6100/2017/1



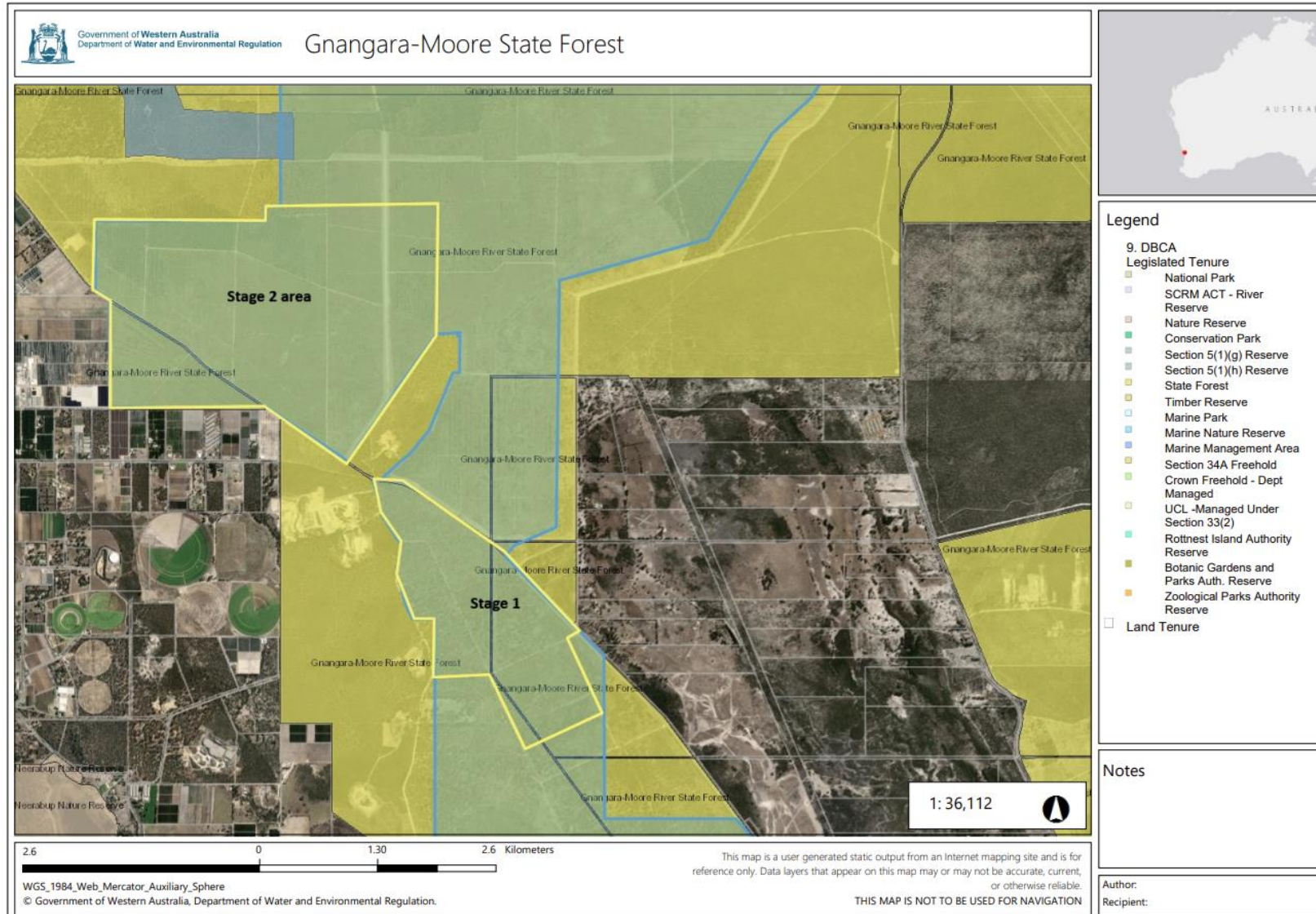
**Figure 9 Threatened fauna locations Stage 2 Area**

W6100/2017/1



**Figure 10 Adjacent threatened ecological communities and wetlands – stage 1 and 2**

W6100/2017/1



**Figure 11 Gngangara-Moore State Forest**

W6100/2017/1