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Site Environmental and Remediation Services

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12th December 2019

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Sydney
5/2 Bennett Street
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APPLICATION SUBMISSIONS

Timothy Gentle

Manager, Resource Industries

Department of Water and Environmental Regulation

8 Davidson Terrace,

Joondalup WA 6027

RE: Application for Works Approval – Request for Further Information

Dear Mr Gentle,

Our client (Urban Resources) is seeking a Category 12 (Screening) at Lot 810 (No.253) Yangedi Road, Hopeland. The original application for Works Approval was submitted to DWER on 14/10/2019, however, further information has since been requested.

Please find a response to your queries, as outlined in Schedule 1, below.

Schedule 1

1. **Describe any storage facilities needed for hydrocarbons and chemicals**

Any use of hydrocarbons will be managed through the installation of compacted limestone, for the purpose of re-fuelling and small-scale engine maintenance. Spill kits will be made readily available on site at all times, for effective management.

Machinery will not be serviced on site and a fuel farm will not be constructed on site. All fuel, oil, coolant and lubricant will be brought on site as required by a fully contained mobile service truck.

Used engine oil or other waste hazardous chemicals will not be stored on site.

No hazardous chemicals (those with a Material Safety Data Sheet – MSDS) will be stored on site.

See item 4.4 in the Water and Drainage Management Plan for further information.

2. **How will equipment and vehicles be refuelled and serviced?**

A service truck will be utilised on site to re-fuel equipment as required. The truck will comprise a 5000 L diesel fuel capacity and additionally have separate tanks for lubricants, including a waste oil tank and evacuation pump. Refuelling will occur within the site and on an area of compacted limestone.

See item 3.8 in the Water and Drainage Management Plan for further information.

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3. **How will the wastewater/slurry generated from activities originating at the wet screen plan to be treated or disposed of?**

The wastewater slurry from the wet screening operation is fully recycled in the proposed dam system. This dam is split into two sections. Clean water is fed into the plant from one end of the system, and the light slurry is fed into the other end of the dam after screening. The overall volume of material is relatively small and will consist primarily of fine sand, which settles to the bottom of the dam and the clean water recycles back through the system. At periodic intervals (expected to be annually) the settled material from the dam is mechanically excavated and placed in a small stockpile adjoining the dams to dry. Once dry, it is reused in the pasture areas of the site to improve moisture retention. As such, there is no waste generated from the process, just the small amount of sand slurry resulting from the wet screening, which is reused on the site. Other than the addition of water, no chemicals or other additions will be used in this process. Please refer to **Figure 1** at the rear of this letter for an illustrative description of a similar processing plant.

4. **Management Plans**

Please see the Water and Drainage Management Plan attached in **Appendix A**

Please see the Dust Management Plan attached in **Appendix B**

If you require any further information, please contact me on (08) 9220 2000.

Kind regards,

Sarah Poulton

Graduate Environmental Planner

Site Environmental and Remediation Services Pty Ltd

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Figure 1 – Processing Plant


nearmap

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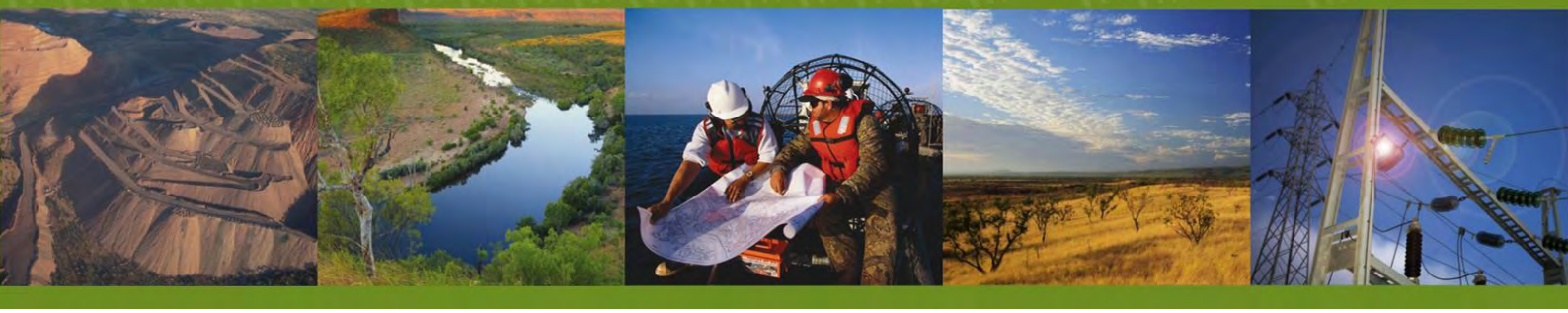
Appendix A – Water and Drainage Management Plan



Lot 810 (253) Yangedi Road, Hopeland

Water and Drainage Management Plan

Prepared for
SAGH Pty Ltd
by Strategen

July 2015

STRATEGEN
environmental consultants

Lot 810 (253) Yangedi Road, Hopeland

Water and Drainage Management Plan

Strategen is a trading name of
Strategen Environmental Consultants Pty Ltd
Level 2, 322 Hay Street Subiaco WA
ACN: 056 190 419

July 2015

Limitations

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The report is based on conditions encountered and information received at the time of preparation of this report or the time that site investigations were carried out. Strategen disclaims responsibility for any changes that may have occurred after this time. This report and any legal issues arising from it are governed by and construed in accordance with the law of Western Australia as at the date of this report.

Environmental conclusions

Within the limitations imposed by the scope of services, the preparation of this report has been undertaken and performed in a professional manner, in accordance with generally accepted environmental consulting practices. No other warranty, whether express or implied, is made.

Client: SAGH Pty Ltd

Report Version	Revision No.	Purpose	Strategen author/reviewer	Submitted to Client	
				Form	Date
Preliminary Draft Report	A	For client review	S Finning / M Dunlop / D Newsome	Electronic	2 July 2015
Final Report	0	For submission	S Finning/ D Newsome	Electronic	15 July 2015

Filename: URE15179_01 R003 Rev 0 - 15 July 2015

Executive Summary

SAGH Pty Ltd is proposing to develop a portion of Lot 810 (253) Yangedi Road, Hopeland (the site). The site is located approximately 50 km south of Perth and 20 km north east of Mandurah in the Shire of Serpentine Jarrahdale. Lot 810 is 72 ha in size, within which approximately 18 ha is proposed to be subject to sand extraction. The operation will comprise staged clearing of the 18ha extraction area (12.6 ha of native vegetation and isolated trees within the remaining 5.4 ha), and staged extraction of the sand resource (with no excavation below the water table), dry-processing, and transport of processed sand off site. This operation is anticipated to have a life time of three years (dependent on market conditions).

The site is generally flat and low-lying with a low sand ridge that runs from south-west to north-east through the northern part of the site. Low-lying land to the north-west and south at elevations of 12–13 mAHD rises 6-7 m to an elevated ridge in the northern area of the site with a maximum elevation of around 20–21 mAHD.

The site is largely located on the Bassendean Dune System with the Pinjarra Plain System occurring in the south east corner of the site. Bassendean Sands have a high hydraulic conductivity and rainfall infiltrates rapidly. As such, there is expected to be minimal stormwater runoff. None of the surficial soil units proposed to be excavated represent a source of sediment that might pose a risk of sediment runoff. Flooding is not considered to be a potential risk to surface drainage due to the high infiltration capacity of the sandy soils.

The site hosts five wetlands as shown in the Geomorphic Wetlands of the Swan Coastal Plain Database and is part of a larger local wetland system (Landgate 2014). A review of available data showed that wetlands within the site are an expression of the regional water table (Hyd2o 2015). No impact to groundwater levels is anticipated as a result of sand extraction, and no excavation is proposed below the water table.

The site is bounded to the east by a drain that flows north towards Karnup Road and into the Serpentine River. Culverts are located along the western boundary of the site, and a drain invert is present on the western boundary (Figure 4). Wetlands are drained by existing surface water drainage infrastructure (outlets, culverts and inverts); there is no foreseen impact to surface water levels from proposed sand extraction activities.

The following management practices will be implemented to manage the potential effects on water quality from the discharge of stormwater with elevated sediment and other contaminant levels:

- staged clearing and retention of tree stumps as long as possible prior to sand extraction to assist with soil stabilisation and reduce surface water flow velocities
- no bulk fuels will be kept onsite and refuelling will be by mobile tanker
- refuelling to occur on a compacted limestone area, with no storage of hazardous materials on site
- spill kits will be available on site at all times for effective management of hydrocarbon spills
- a buffer zone of 50 m will be maintained between sand extraction and naturally vegetated geomorphic wetlands
- a buffer rehabilitation zone of 40 m will be maintained between sand extraction and Yangedi Road to the west
- each stage will be progressively rehabilitated at completion and vegetation cover will be established to encourage spreading and reduce velocities of surface water flow.

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1. Introduction

1.1 Project background

SAGH Pty Ltd is proposing to develop a portion of Lot 810 (253) Yangedi Road, Hopeland (the site). The site is located approximately 50 km south of Perth and 20 km north east of Mandurah in the Shire of Serpentine Jarrahdale (Figure 1). The site is bound by Yangedi Road (and Serpentine Airport) to the west, unconstructed Jarrah Rd road reserve to the north, a drainage reserve to the east, and rural land to the south.

Lot 810 is 72 ha in size, within which approximately 18 ha is proposed to be subject to sand extraction (Figure 2). The operation will first include clearing within the 18ha extraction area (12.6 ha of native vegetation and isolated trees within the remaining 5.4 ha). It will then comprise of extraction of the sand resource, with no excavation below the water table, dry-processing, and transport of processed sand off site. This operation is anticipated to have a life time of three years (dependent on market conditions).

The site is largely cleared and is currently used for stock grazing and pasture cropping, with native vegetation having re-established in the north western area of the property since its original clearing in the 1970s (PGV 2014a). There are no existing facilities on site. Once sand extraction is complete, Lot 810 will be returned to pasture for stock grazing and cropping.

1.2 Purpose and scope

The purpose of this document is to meet the requirements of Condition 12 of Town Planning Scheme approval for development of Yangedi Road, Hopeland. Condition 12 requires the preparation of a Water and Drainage Management Plan (WDMP) that addresses surface and groundwater quality and quantity as follows:

> *Prior to commencement of operations, a Water and Drainage Management Plan that addresses surface and groundwater quality and quantity (including a suitable network of groundwater monitoring bores) is to be submitted to and approved by the Shire and thereafter implemented. The maximum depth of excavation shall facilitate a 2 metre separation to groundwater.*

This WDMP focuses on the key environmental issues of relevance to the Proposal Area. An evaluation of the existing environment, defined management objectives and identification of environmental values requiring protection is provided. The basis for ongoing management of water and drainage, provisions for monitoring and evaluation of environmental conditions, and contingency actions to be implemented, if required, are also detailed within this WDMP.

Water and drainage management will comprise the following:

1. Identification of management measures to prevent impact to surface and groundwater quality and surface water levels.
2. Identification of monitoring actions to identify changes from pre-excavation conditions.
3. Identification of contingency actions in the event that changes from pre-excavation conditions are detected.

1.3 Description of proposal

The proposal comprises a sand extraction facility, with the excavation area defined as a 17.98 ha area within the project boundary (Appendix 1).

It will include dry processing of sand on site (sieving), but no wet-processing or settlement ponds. It requires the use of heavy machinery (including excavators, front end loaders and heavy haulage trucks). Other machinery will be used on a temporary basis (graders, water cart, service truck as required).

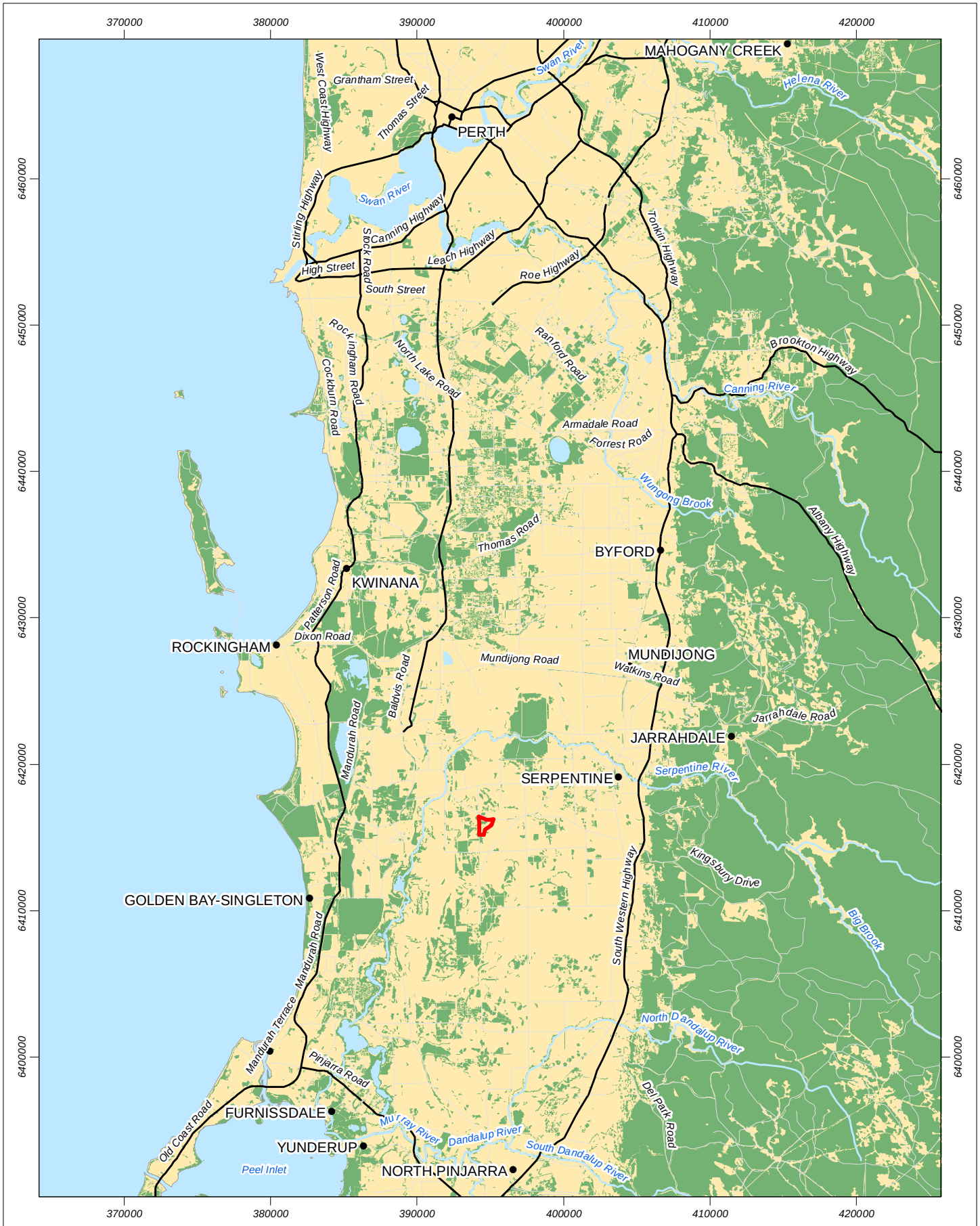

Figure 1: Site location

Scale 1:350,000 at A4

0 2 4 6 8 10 km

Coordinate System: GDA 1994 MGA Zone 50

Note that positional errors may occur in some areas

Date: 19/06/2015

Author: JCrute

Source: Topography: Geoscience Australia 2011.

Legend

- Town
- Major road
- Minor road
- Major river
- Lakes
- Native vegetation
- Lot boundary

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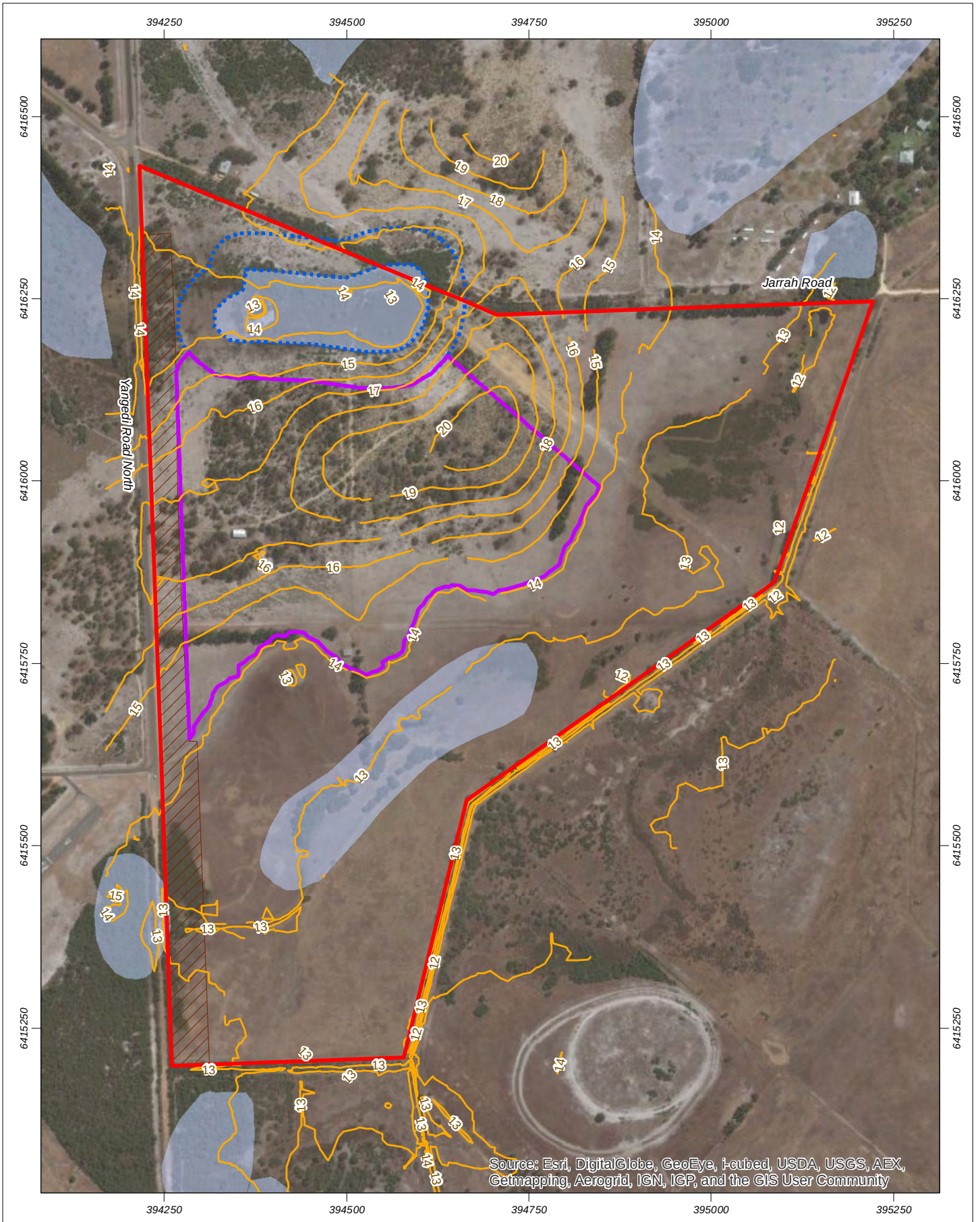

Figure 2: Site layout, topography and proposed sand extraction area

Legend

- Surface elevation (mAHD)
- Lot boundary
- Mine area
- Rehabilitation zone
- 50m wide wetland buffer
- Wetlands*

*"Multiple use" category wetlands not displayed.

Scale 1:7,000 at A4

0 50 100 150 200 250 m

Coordinate System: GDA 1994 MGA Zone 50
Note that positional errors may occur in some areas
Date: 15/07/2015
Author: JCrute
Source: Aerial image: ESRI online approx. 2010. Contours and mine area: Client 2015. Wetlands: DPAW 2014.
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1.4 Approvals history

An Application for Development Approval was submitted to Shire of Serpentine/Jarrahdale in November 2014, for which conditions of approval were provided in May 2015.

This WDMP has been developed to satisfy Condition 12 of the Shire of Serpentine/Jarrahdale approval dated 21 May 2015.

The site is not subject to any other local or State Government approvals processes, but a portion of the site is subject to an application to the Commonwealth Government for approval under the *Environment Protection and Biodiversity Conservation Act 1999*.

1.5 Related documents

The following reports are relevant to the Proposal Area:

- 253 Yangedi Road, Hopelands, *Flora and Vegetation Survey* (PGV Environmental 2014a)
- 253 Yangedi Road, Hopelands, *Black Cockatoo Habitat Assessment* (PGV Environmental 2014b)
- Lot 810 Yangedi Road, Hopeland, *Wetland Management* Plan (WMP - Strategen 2015)
- Lot 810 Yangedi Road, Hopeland, *Landscape Rehabilitation Plan* (LRP – Strategen 2015).

2. Existing environment

2.1 Climate

The site experiences a Mediterranean climate with cool wet winters and hot dry summers. The dry period extends from October–March with the hottest month being January with average minimum and maximum temperatures of 15.3ºC and 30.7ºC respectively in the Perth Metropolitan area. The coolest month is July with average minimum and maximum temperatures of 6.2ºC to 15.4ºC respectively (BoM 2015).

The month of July receives the highest rainfall, recording on average 218.2 mm, while December, January and February receive the lowest volume (BoM 2015).

Predicted regional implications of climate change include an increase in mean daily temperatures and reduced rainfall (particularly winter rainfall) in south Western Australia over the coming decades (CSIRO 2014). It is possible that the water levels of wetlands will continue to lower as a consequence of these effects, resulting in decreases in inflow (direct and from runoff), lowered groundwater levels and an increase in evaporation.

2.2 Elevation

The site is generally flat and low-lying with a low sand ridge that runs from south-west to north-east through the northern part of the site (Figure 2). Low-lying land to the north-west and south at elevations of 12–13 mAHD rises 6-7 m to an elevated ridge in the northern area of the site with a maximum elevation of around 20–21 mAHD. The area of excavation is displayed in Figure 2; Appendix 1.

2.3 Regional context

The site is located within an area identified as having high biodiversity conservation values. Bush Forever Site 378 is located adjacent to the western boundary of the site.

2.4 Geology, geomorphology and soils

The site is largely located on the Bassendean Dune System with the Pinjarra Plain System occurring in the south east corner of the site (Table 1). There are four soil units mapped on the site as shown in Figure 3 and described in Table 2 (Churchward & McArthur 1978).

Bassendean Sands have a high hydraulic conductivity and rainfall infiltrates rapidly. As such, there is expected to be minimal stormwater runoff. None of the surficial soil units proposed to be excavated represent a source of sediment that might pose a risk of sediment runoff. Flooding is not considered to be a potential risk to surface drainage due to the high infiltration capacity of the sandy soils.

Drilling of two DoW bores along the western site boundary and slightly to the northwest (SSB15 & SSB16, Figure 5) showed fine- to medium- grained sands to 4 m bgl (DoW 2012).

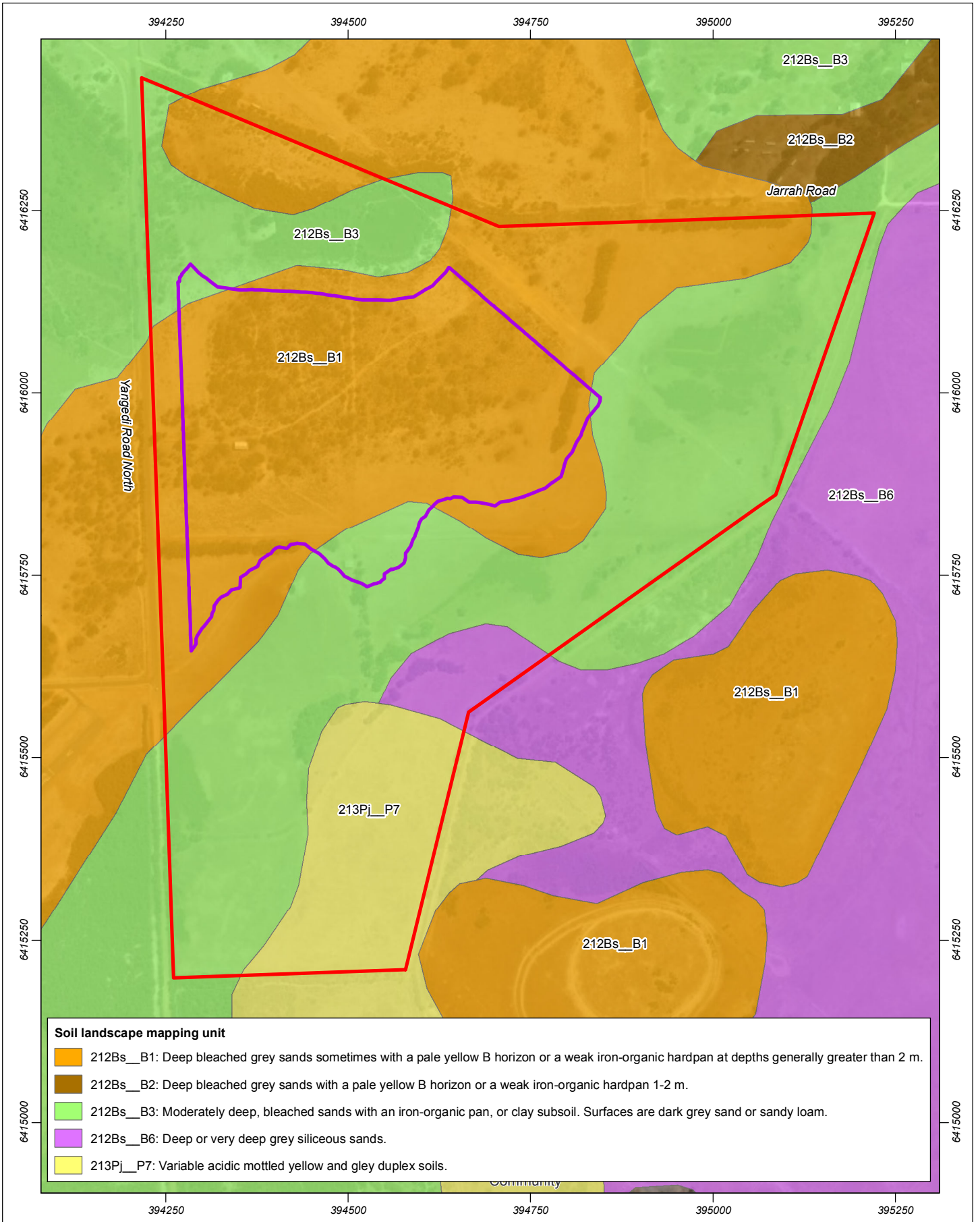

Figure 3: Soil mapping and ASS risk mapping

Scale 1:7,000 at A4

0 50 100 150 200 250 m

Legend

- Lot boundary
- Mine area

Coordinate System: GDA 1994 MGA Zone 50
Note that positional errors may occur in some areas
Date: 14/08/2015
Author: JCrute
Source: Aerial image: ESRI online approx. 2010. Mine area: Client 2015. ASS: DER 2014. Soil: DAFWA 2005.

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Table 1: Soil systems mapped on the proposed area

Soil Systems of the Swan Coastal Plain	Description
Bassendean Dune Soils	These are the oldest of the three dune systems on the Swan Coastal Plain, are thought to be about 800,000 years old and so are the most leached, infertile and acidic. The sands contain little silt or clay, and very low levels of nutrient elements, with any nutrient element content being associated with organic matter. The dunes are low lying hills with poorly drained areas between the hills.
Pinjarra Plain Soils	The soils are complex, and comprise a successive layering of soils formed from erosion of material from the scarp and east of the scarp. Rivers and streams have mostly carried the eroded material, which is deposited from the water as fans of alluvium. Therefore, the plain is made up of layers of soils of different ages. It occupies about one third of the Swan Coastal Plain, and most of it has been cleared and sown to pasture for the grazing industries, mostly dairy, with some beef.

Source: DAFWA 2014

Table 2: Mapped soil units on the site

Soil units	Description
Bassendean B1 (212Bs_B1)	Extremely low to very low relief dunes, undulating sandplain and discrete sand rises with deep bleached grey sands sometimes with a pale yellow B horizon or a weak iron-organic hardpan at depths generally greater than 2m. Banksia dominant.
Bassendean B3 (212Bs_B3)	Closed depressions and poorly defined stream channels with moderately deep, poorly to very poorly drained bleached sands with an iron-organic pan, or clay subsoil. Surfaces are dark grey sand or sandy loam
Bassendean B6 (212Bs_B6)	Sandplain and broad extremely low rises with imperfectly drained deep or very deep grey siliceous sands.
Pinjarra P7 (213Pj_P7)	Seasonally inundated swamps and depressions with very poorly drained variable acidic mottled yellow and grey sandy duplex and effective duplex soils.

Source: DAFWA 2014

The Bassendean B3 soil unit is associated with the dunal ridge that extends through the site and Bassendean B1 and B6 map units are associated with the lower lying areas. The Pinjarra P7 soil unit is located in the south east corner (Figure 3, PGV 2014a).

2.4.1 Acid sulphate soils

The majority of the site is mapped as having a moderate to low risk of Acid Sulphate Soils (ASS) occurring within 3 m of the natural soil surface (Figure 3). There is a small area adjacent to the northern wetland that is mapped a high to moderate risk of ASS occurring within 3 m of the natural soil surface (DER 2014).

2.5 Hydrology

The site occurs within the catchment of the Lower Serpentine River, the Murray River Basin. The Lower Serpentine area is bounded east-west by the Darling Scarp and the Indian Ocean, and bound north–south by the Jandakot Mound (to the north) and Dirk Brook (to the south).

Potential constraints to water management in the area include:

- flooding
- inundation from groundwater
- stormwater
- water quality
- availability and efficiency
- the interaction between groundwater and surface water (DoW undated).

2.5.1 Surface water

The majority of the site is within the catchment of Punrack drain along the eastern boundary of the site, which flows north toward Karnup Rd and ultimately to the Serpentine River (Figure 4). The surface water drainage infrastructure on site drains into the Punrack Drain.

On-site features

Five wetlands occur across the site (Table 3, Figure 4) as shown in the Geomorphic Wetlands of the Swan Coastal Plain Database and is part of a larger local wetland system (Landgate 2014). Management of these landscape features is covered within the WMP (Strategen 2015):

Table 3: Wetlands located on the site

UFI Number	Wetland classification	Wetland Type	Location
14706	Conservation	Sumpland	Located within the site adjacent to the northern boundary
14739	Multiple Use	Sumpland	Located in the north west corner of the site
14708	Resource Enhancement	Sumpland	Located in the south east corner of the site within the larger palusplain wetland 15785
15785	Multiple Use	Palusplain	Located across southern portion of the site
14707	Multiple Use	Sumpland	Located within the larger palusplain wetland 15785

Source: PGV Environmental 2014b

Surface water and groundwater interaction

A review of available data showed that wetlands within the site are an expression of the regional water table; seasonal variations in water table levels vary by 1.2m annually (Hyd2o 2015).

Influence of local surface water drainage on wetland water levels

The site is bounded to the east by a drain that flows north towards Karnup Road and into the Serpentine River. Culverts are located along the western boundary of the site, and a drain invert is present on the western boundary (Figure 4).

Hyd2o identified that surface water drainage system features such as drain outlets, culverts and inverts are the primary influence on wetland water levels (2015). No amendments to the current surface water drainage network infrastructure are proposed as part of sand excavation.

DoW (2012) describes UFI 14738 as a throughflow wetland with water levels being controlled by the outlet drain level (13.5 mAHD) (see Figure 4). The southern resource enhancement wetland (UFI 14708, shown in Figure 4) is part of a local drainage network on the property, which discharges via an outlet to the eastern boundary drain. The level of the outlet to this drain is at approximately 12 mAHD (Hyd2o 2015).

Hyd2o assert that even in wetter years, wetland water levels are not expected to change significantly, as surface water drainage infrastructure will serve to control groundwater rise (2015).

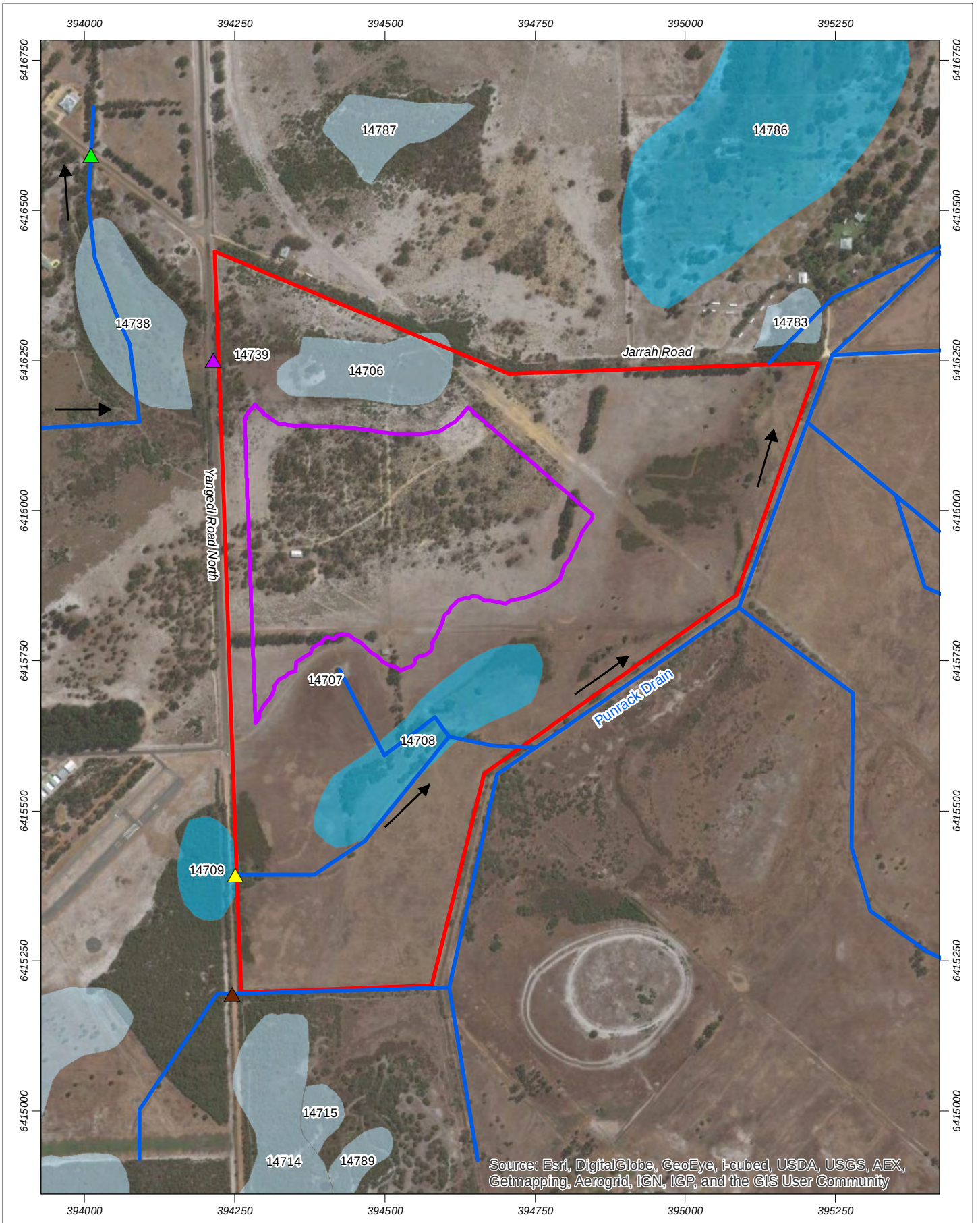

Figure 4: Drainage flow paths

Legend

Culverts & Diameter
- 2x750mm
- 300mm
- 450mm
- 525mm

- Drainage
- Lot boundary
- Mine area

Wetland category*
- Conservation
- Resource Enhancement

Flow direction

*"Multiple use" category wetlands not displayed.

Scale 1:8,500 at A4

0 50 100 150 200 250 m

N

Coordinate System: GDA 1994 MGA Zone 50

Note that positional errors may occur in some areas

Date: 15/07/2015

Author: JCrute

Source: Aerial image: ESRI online approx. 2010. Mine area: Client 2015. Wetlands: DPAW 2014. Drainage and culverts: Hyd2O 2015.

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2.5.2 Groundwater

Groundwater bores currently consist of two DoW bores located offsite to the northwest, and a network of four onsite groundwater monitoring bores (Figure 5). One round of baseline groundwater monitoring has been conducted; with further monitoring proposed to confirm results obtained to date.

Maximum groundwater level

DoW (2012) provides a broad representation of groundwater levels in the area based on regional groundwater modelling calibrated to a grid of long term DoW bore records. This mapping estimated summer groundwater conditions of approximately 11 to 12 mAHD at the site based on estimated May 2010 groundwater levels and provides a regional groundwater flow direction from east to west. No mounding of groundwater within the dunes is evident in the DoW mapping.

Monitoring bores have been installed on site. Observations of water levels will assist to refine regional groundwater mapping and ensure clearance above groundwater is maintained during and following sand extraction.

Flow direction

DoW (2012) indicates the regional groundwater flow direction from east to west.

Impact of sand extraction of groundwater table levels

No impact to groundwater levels is anticipated as a result of sand extraction, as no excavation is proposed below the water table.

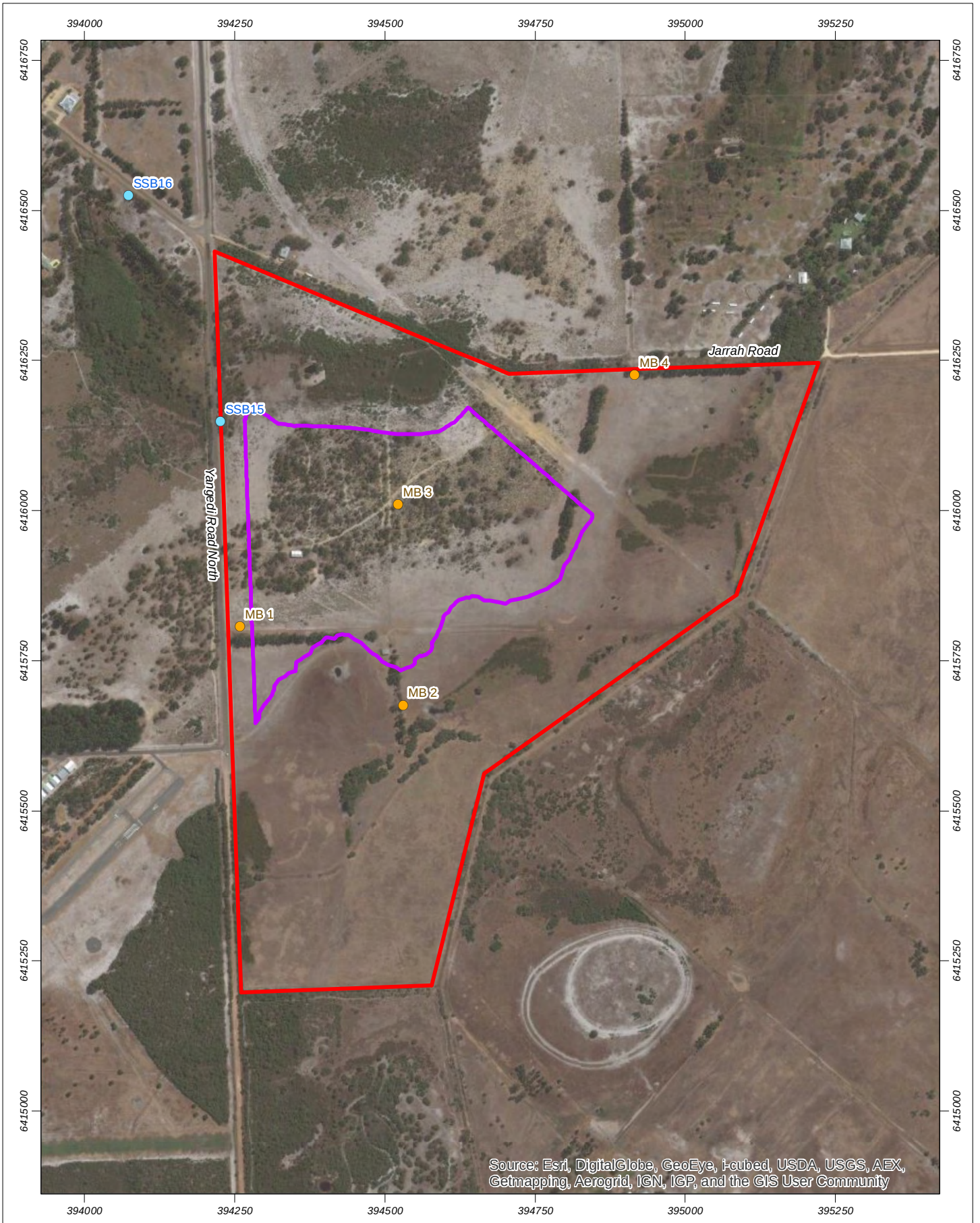

Figure 5: Groundwater bores

Scale 1:8,500 at A4

0 50 100 150 200 250 m

Coordinate System: GDA 1994 MGA Zone 50

Note that positional errors may occur in some areas

Date: 1/07/2015

Author: JCrute

Source: Aerial image: ESRI online approx. 2010. Mine area: Client 2015. Bores: Hyd2O 2015.

Path: Q:\Consult\2015\URE\URE15179\ArcMap_documents\R003\RevA\URE15179_01_R003_RevA_F005.mxd

Legend

- Monitoring bores
- Groundwater bores (DoW)
- Lot boundary
- Mine area

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2.6 Vegetation and flora

A level 2 flora and vegetation survey on the Site was undertaken by PVG Environmental (2014) in accordance with *Guidance Statement No. 51, Guidance for the Assessment of Environmental Factors – Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia* (EPA 2004).

Vegetation Complexes are a broad level of vegetation description which is based on the underlying geomorphology and rainfall (Heddle et al. 1980). The vegetation on the site is part of the Bassendean – Central and South Vegetation Complex (Heddle et al. 1980).

2.6.1 Vegetation types and condition

Vegetation Types are a finer level of vegetation mapping than the Vegetation Complex and are defined by the composition and structure of the dominant vegetation. Four vegetation types are mapped on the site, described in Condition of the vegetation across the Site was assessed by PGV Environmental (2014) using the condition rating scale of Keighery published in Bush Forever (DEP 2000 in PGV 2014). The Keighery condition rating scale ranges from Pristine to Completely Degraded. A description of the vegetation condition ratings is outlined in Table 5.

Vegetation condition of upland and lowland vegetation is described in Table 4.

Table 4 and shown in Figure 6 below.

Condition of the vegetation across the Site was assessed by PGV Environmental (2014) using the condition rating scale of Keighery published in Bush Forever (DEP 2000 in PGV 2014). The Keighery condition rating scale ranges from Pristine to Completely Degraded. A description of the vegetation condition ratings is outlined in Table 5.

Vegetation condition of upland and lowland vegetation is described in Table 4.

Table 4: Vegetation types and condition

Vegetation type	Description	Predominant condition
EmBi: *Eucalyptus marginata/Banksia ilicifolia* Low Open Forest over *Hibbertia hypericoides* Open Low Heath	This vegetation type occurs on the western end and upper slopes of the remnant vegetation on the central rise. Jarrah (*Eucalyptus marginata*) up to 6m high is the dominant tree species with the presence of Holly-leaved Banksia (*Banksia ilicifolia*) and Woody Pear (*Xylomelum occidentale*) common smaller trees. The presence of *Banksia ilicifolia* and *Melaleuca thymoides* indicate groundwater within a few metres of the surface during winter. *Hibbertia hypericoides* was the dominant shrub species with *Drosera porrecta* and *Desmocladus flexuosus* common herb species. The soils were greyish-brown sand. Quadrat Y1 is representative of this vegetation type.	The condition of the dryland vegetation on the central raised area was rated as Very Good for the central portion and Good-Degraded for the western and eastern ends. The western Good-Degraded area had a low rating due to the highly disturbed understorey in close proximity to the farm infrastructure. The eastern Good-Degraded area had a low rating due to the past clearing of trees from this area. Parkland cleared dryland areas were rated as Degraded or Completely Degraded.
BmBaEm: *Banksia menziesii/B. attenuata/Eucalyptus marginata* Low Open Woodland over *Hibbertia hypericoides/Allocasuarina humilis* Open Low Heath	This is the dominant vegetation type on the central rise occurring on dry sandy soil. *Banksia menziesii* and *B. attenuata* are the main tree species, up to 3-4m high with Jarrah present in patches. Common understorey shrubs include *Hibbertia hypericoides, Allocasuarina humilis, Acacia sessilis*, *Daviesia triflora* and typical sub-shrubs and herbs include *Burchardia congesta, Lomandra hermaphrodita, Trachymene pilosa* and *Desmocladus flexuosus*. *Briza maxima* and *Ursinia anthemoides* are common weeds.	

Vegetation type	Description	Predominant condition
MpAf: *Melaleuca preissiana* Low Open Woodland over *Astartea fascicularis* Closed Heath	This vegetation type occurs in low-lying parts of the site on waterlogged black sands. One stand in very good condition occurs near the north-west corner of the site while several other stands in poor quality occur in the broad paddocks on the eastern and southern parts of the property. The stand in very good condition contains Paperbark (*Melaleuca preissiana*) and occasional Spearwood (*Kunzea glabrescens*) up to 4m high in varying density over a dense closed heath of *Astartea fascicularis*. Due to the high density of Astartea very few other species occur in this vegetation type. *Lepidosperma longitudinale* and the climber *Cassytha racemosa* were the only other common species recorded.	The best condition wetland vegetation was the dense MpAf vegetation in the north-western part of the site which is within a Conservation Category Wetland and therefore has important conservation values. Most of the remnant wetland vegetated areas were rated as Degraded due to the dominance of weeds among the wetland shrubs.
Kg: *Kunzea glabrescens* Tall Open Scrub over bare ground	Two small stands of this vegetation type occur bordering the MpAf vegetation in the north-west of the site. The Spearwood (*Kunzea glabrescens*) is dense and up to 4m high. As is typical of Spearwood-dominated vegetation the understorey is mostly fine leaf litter and bare sand with very few native species. The soil is black sand and would be slightly more elevated above the watertable than the MpAf vegetation.	
ErAf: *Eucalyptus rudis* Low Open Forest over *Astartea fascicularis* Shrubland	A small stand of Flooded Gum (*Eucalyptus rudis*) occurs in the north-west corner of the site abutting Yangedi Road. The trees are quite young, 6-9m high, indicating they are all re-growth from a previously cleared event. The understorey is sparse and species poor with *Astartea fascicularis* the dominant native shrub. Most other species were introduced herbs. The soil is grey sand and not waterlogged	

Table 5: Definitions of vegetation condition

Pristine	Pristine or nearly so, no obvious signs of disturbance.
Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species.
Very Good	Vegetation structure altered, obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and grazing.
Completely Degraded	• The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas often described as “parkland cleared” with the flora comprising weed or crop species with isolated native trees or shrubs.

Shown in Figure 6, vegetation complexes to be retained on site include:

- ErAf – one area in good condition
- Kg – three areas: a small area in very good condition, two larger areas in degraded to completely degraded condition
- MpAf – six areas: one area in very good condition, the remaining five areas in degraded condition
- BmBaEm – one area in degraded condition
- Exotic – three areas in completely degraded condition.

Small portions of EmBi and BmBaEm in good to degraded condition are also to be retained.

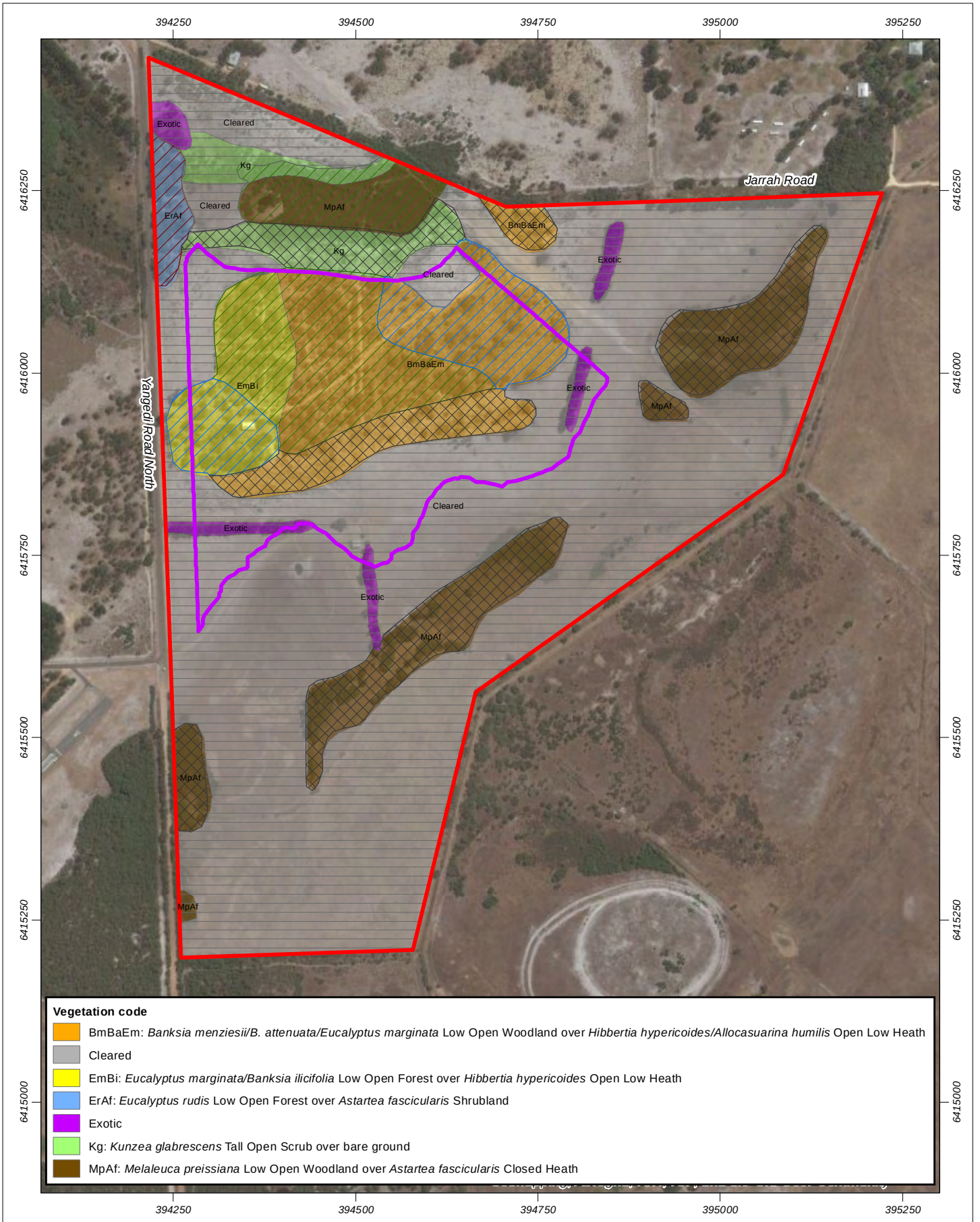

Figure 6: Vegetation type and condition

Scale 1:7,000 at A4

0 50 100 150 200 250 m

N

Legend

Lot boundary

Mine area

Vegetation condition

Very Good

Good

Good to Degraded

Degraded

Completely Degraded

Coordinate System: GDA 1994 MGA Zone 50

Note that positional errors may occur in some areas

Date: 23/06/2015

Author: JCrute

Source: Aerial image: ESRI online approx. 2010. Mine area: Client 2015. Vegetation: PGV 2014.

Path: Q:\Consult\2015\URE\URE15179\ArcMap_documents\R003\RevA\URE15179_01_R003_RevA_F006.mxd

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info@strategen.com.au
www.strategen.com.au

3. Proposed operations

Operations are proposed to include sand extraction from an approximately 18 ha area in the centre of the site (Figure 2). Operations will comprise of sand extraction and dry sieving only, with no wet processing on site. Staging of excavation is shown in Appendix 1.

Sand extraction will involve the following steps:

1. Demarcation of buffer zones around sand extraction area (Figure 2).
2. Clearing of vegetation from Stage 1 of sand extraction area (Appendix 1). Stockpiling of vegetation for use in rehabilitation of the western buffer zone and the sand extraction area.
3. Strip topsoil from sand extraction area and areas of poor vegetation condition in western buffer zone. Stockpile for use in rehabilitation of the western buffer zone and the sand extraction area.
4. Mark out and construct haul roads and compacted limestone pad, install crib-room/site office facilities and ablutions.
5. Commence sand extraction from Stage 1 using front end loaders loading sand onto haul trucks for removal off site.
6. Complete staged clearing and sand extraction as outlined in staged excavation plan.
7. Undertake rehabilitation in a staged manner once resource extraction is complete for each stage.
8. Commence final rehabilitation once sand resource has been removed in accordance with the staged excavation plan.

3.1 Site facilities

No facilities currently exist on the site. Site facilities for on-site operators will consist of the following:

- temporary site office/ crib room (donga)
- temporary ablutions facilities equipped with pump out septic tanks (to be maintained by an external licenced service provider)
- bottled water will be provided to quarry personnel
- hardstand for staff and visitor vehicle parking area
- static wheel wash
- generator (20 kVA) (no fuel will be stored on site).

3.2 Progress of sand extraction

Sand extraction is proposed to be carried out in three stages, commencing in the west and progressing towards the east (Appendix 1). Topsoil will be stripped from areas of native vegetation and replaced within the revegetation zone using direct transfer along the western boundary. Topsoil will be stripped from cleared areas and stockpiled for later use in rehabilitation of the pit floor for agricultural use.

3.3 Stockpiling

No stockpiling of resource sand is anticipated; however, stockpiles of topsoil stripped from areas of cleared and significantly degraded sections of the 40 m revegetation buffer area and the sand extraction area will be required to be retained for future use in rehabilitation of the pit floor for agricultural use. Similarly, large logs and clearing debris is proposed to be retained for use along the perimeter of the rehabilitation zone (refer to section 3.7).

3.4 Groundwater abstraction

No excavation is proposed below the water table. A licence to construct a bore and a licence to take groundwater has been applied for to use for dust suppression in the short term and agricultural use in the long term. Initially, water for purposes such as dust suppression may be trucked on site using a water cart as required.

3.5 Wetland buffers

A 50 m buffer has been integrated into the site layout between the edge of the conservation category wetland in the north of the site (UFI 14706) and the sand extraction area (Figure 2). This boundary will be delineated with bunting or fencing. Vegetation within this buffer area is mapped as Kg (tall open scrub over bare ground) in degraded condition.

3.6 Impact on vegetation

12.6 ha of native vegetation within the sand extraction area is proposed to be cleared, as well as isolated trees located within the remaining 5.4 ha of the sand extraction area. Vegetation in areas to be subject to sand extraction is in a Very Good to Degraded condition. This area will be returned to pasture on completion of sand extraction.

The majority of the site outside of the extraction area is cleared, with vegetation to be retained in Very Good to Completely Degraded condition. There is no perceived significant impact to vegetation to be retained across the remaining 54 ha of the site.

3.7 Revegetation zone

A 40 m buffer zone along the western boundary of the site (between the edge of the sand extraction area and Yangedi Road) will be rehabilitated and retained post-sand extraction (PGV 2014a). The perimeter of this area will be fenced with stock exclusion fencing, and larger logs and debris used to brush the perimeter to decrease potential for wind erosion.

3.8 Refuelling and vehicle maintenance

A service truck with a 5000 L diesel fuel capacity will be used to re-fuel site equipment as required. The service truck will also have tanks for separate lubricants, including a waste oil tank and evacuation pump and will only brought on site as required. Refuelling will occur on an area of compacted limestone within the site.

4. Water management and monitoring

4.1 Objectives

The objectives of water management at the site are as follows:

- to prevent impact to surface and groundwater quality
- to prevent impacts to surface water levels
- to maintain a separation distance of 2 m depth to maximum groundwater table levels.

4.2 Potential sources of impact

Surface water quality

There is a limited potential for the mine to impact surface water quality as:

- the local soils are sandy and the dominant movement of surface water is infiltration to groundwater
- there is no evidence of overland flow (Hyd2o 2015).

The following management practices will be implemented to manage the potential effects on water quality from the discharge of stormwater with elevated sediment levels:

- staged clearing and retention of tree stumps as long as possible prior to sand extraction to assist with soil stabilisation and reduce surface water flow velocities
- a buffer zone of 50 m will be maintained between sand extraction and naturally vegetated geomorphic wetlands
- a buffer rehabilitation zone of 40 m will be maintained between sand extraction and Yangedi Road
- each stage will be progressively rehabilitated at completion and vegetation cover will be established to encourage spreading and reduce velocities of surface water flow.

No sediment control is anticipated to be necessary; however, turbidity of surface water up-gradient of the site, onsite, and down-gradient of the site will be monitored as a contingency measure, with one monitoring round to occur prior to commencement of sand extraction to demonstrate pre-excavation conditions.

Surface water levels

As wetlands are drained by existing surface water drainage infrastructure (outlets, culverts and inverts), there is no foreseen impact to surface water levels from proposed sand extraction activities. On-site surface water levels will be monitored as a contingency measure, with one monitoring round to occur prior to commencement of sand extraction to demonstrate pre-excavation conditions.

4.3 Stormwater management

Existing surface water drainage systems (section 2.5.1) are expected to continue to operate effectively throughout the duration of clearing, operations and rehabilitation of the site.

As noted in section 4.2, turbidity of surface water up-gradient of the site, onsite, and down-gradient of the site will be monitored to characterise any changes throughout the course of operations. Management and monitoring actions are summarised in Table 6 and Table 7.

4.4 Hydrocarbon and chemical management

Due to the high permeability of site geology, release of hydrocarbons to the natural soil surface is a potential source of impact to groundwater quality. As such, any use of hydrocarbons (such as during refuelling or for engine maintenance) will be managed through the installation of an area of compacted limestone for the purpose of re-fuelling and small-scale engine maintenance

Spill kits will be available on site at all times for effective management of hydrocarbon spills.

SAGH Pty Ltd will not service machinery or construct a fuel farm on site. Fuel, oil, coolant and lubricant will be brought on site as required by a fully contained mobile service truck.

Used engine oil or other waste hazardous chemicals will not be stored on site. The service truck has separate tanks for lubricants, including a waste oil tank and evacuation pump. As a result, there will be no storage of hydrocarbon waste on site.

No hazardous chemicals (those with a Material Safety Data Sheet - MSDS) will be stored on site. MSDS for hazardous chemicals used on site will also be available on site at all times. Management actions are summarised in Table 6.

4.5 Solid waste management and housekeeping

Waste streams potentially generated on site include:

- domestic waste
- engine oil and other chemical waste (section 4.4)
- tyres.

All domestic waste generated at the site will either be kept in rubbish bags in vehicles for off-site disposal, or placed into lidded bins (different bins for different waste types). Where lidded bins are present on site, they will be emptied regularly, maintained in good working order to prevent leaks and stored on compacted limestone area.

Used tyres will be removed off site for disposal at an appropriately licensed disposal facility.

Management of used engine oil and other waste hazardous chemicals is provided in section 4.4. Management actions are summarised in Table 6.

4.6 Wastewater management

Wastewater will be managed through the provision and use of temporary portaloos. These facilities will be maintained regularly by an offsite service provider. No solid waste will be disposed of at the site. Management actions are summarised in Table 6.

4.7 Acid sulphate soil management

ASS are mapped as a small area of high-moderate risk of occurrence within 3 m of the surface. The risks to groundwater quality posed by exposure of ASS will be managed through avoiding excavation below the water table. Management actions are summarised in Table 6.

4.8 Monitoring

Monitoring is conducted to verify the effectiveness of nominated management actions. In addition to visual inspections of the site, measurement of surface water levels and surface water turbidity monitoring is proposed. One round of monitoring will be carried out prior to commencement of clearing as a representation of pre-excavation conditions. Monitoring actions are described in Table 7.

4.9 Contingency actions

In the event that monitoring results indicate potential impacts to surface water turbidity levels or on-site surface water levels appear to have changed from pre-excavation levels, contingency actions will be implemented as outlined in Table 8.

Contingency actions include the following:

- preparation of an Erosion Management Plan (in the event that persistent erosion recurs)
- review of current drainage system and preparation of an alternative drainage strategy (in the event that the existing surface water drainage system fails).

4.10 Documentation

Table 6, Table 7 and Table 8 provide suggested records of management, monitoring and contingency actions.

Monitoring reports can be provided to Shire of Serpentine/Jarrahdale on request.

Table 6: Summary of management actions

Number	Target	Action	Timing	Phase	Responsibility	Record (example)
S1	Stormwater management	Identify exposed areas with increased susceptibility to erosion or rilling.	After rain events.	From commencement of clearing to completion of rehabilitation.	Site supervisor or manager appointed by extractive industry licence holder.	Site inspection records.
S2		Stabilise exposed surfaces that show signs of erosion or rilling.	At all times.	From commencement of clearing to completion of rehabilitation.	Site supervisor or manager appointed by extractive industry licence holder.	Internal records.
S3		Identify impediments to the flow of water through existing surface water drainage infrastructure that would significantly alter the surface water system and alter effective site drainage.	At all times.	From commencement of clearing to completion of rehabilitation.	Site supervisor or manager appointed by extractive industry licence holder.	Site inspection records.
S4		Remove impediments that significantly alter the flow of water through existing surface water drainage infrastructure to restore effective flow.	At all times.	From commencement of clearing to completion of rehabilitation.	Site supervisor or manager appointed by extractive industry licence holder.	Internal records.
HC1	Hydrocarbon management	Only undertake refuelling and minor vehicle maintenance on a compacted limestone surface.	At all times.	From commencement of clearing to completion of rehabilitation.	Site supervisor or manager appointed by extractive industry licence holder.	Refuelling records.
HC2		Remove waste oil or other waste hazardous chemicals from site within the working day on which they were generated.	At all times.	From commencement of clearing to completion of rehabilitation.	Site supervisor or manager appointed by extractive industry licence holder.	Disposal dockets.
HC3		Ensure fully-stocked and maintained spill kits are available on site.	At all times.	From commencement of clearing to completion of rehabilitation.	Site supervisor or manager appointed by extractive industry licence holder.	Site inspection records.
HC4		Clean up spills or leaks of hydrocarbons to ground, removing all traces of contaminated soil.	As soon as identified, at all times.	From commencement of clearing to completion of rehabilitation.	Site supervisor or manager appointed by extractive industry licence holder.	Incident register.
HC5		Remove all contaminated items off site and dispose of at an appropriately-licensed waste facility.	Within one working day.	From commencement of clearing to completion of rehabilitation.	Site supervisor or manager appointed by extractive industry licence holder.	Disposal dockets.
SW1	Solid waste and wastewater management	Provide portaloos for use by on-site personnel.	At all times.	From commencement of clearing to completion of rehabilitation.	Site supervisor or manager appointed by extractive industry licence holder.	Correspondence with contractors, invoices for installation and maintenance.
SW2		Ensure solid waste is disposed of off site.	At all times.	From commencement of clearing to completion of rehabilitation.	Site supervisor or manager appointed by extractive industry licence holder.	Correspondence with contractors, invoices for installation and maintenance.
SW3		Ensure on-site ablutions are maintained regularly.	At all times.	From commencement of clearing to completion of rehabilitation.	Site supervisor or manager appointed by extractive industry licence holder.	Correspondence with contractors, invoices for installation and maintenance.
HK1	Housekeeping	Store rubbish in rubbish bags kept within vehicles or within lidded bins.	At all times.	From commencement of clearing to completion of rehabilitation.	Site supervisor or manager appointed by extractive industry licence holder.	Toolbox meeting records, site induction records.

Number	Target	Action	Timing	Phase	Responsibility	Record (example)
HK2		Place lidded bins (for domestic waste) on impermeable surface.	At all times.	From commencement of clearing to completion of rehabilitation.	Site supervisor or manager appointed by extractive industry licence holder.	Site plan, site inspection records.
HK3		Empty lidded bins regularly.	Regularly.	From commencement of clearing to completion of rehabilitation.	Site supervisor or manager appointed by extractive industry licence holder.	Site inspection records, disposal dockets.
HK4		Maintain lidded bins in good working order to prevent leaks or spills.	At all times.	From commencement of clearing to completion of rehabilitation.	Site supervisor or manager appointed by extractive industry licence holder.	Site inspection records.
ASS1	Acid sulphate soils	Do not disturb soils below the water table.	At all times.	From commencement of clearing to completion of rehabilitation.	Site supervisor or manager appointed by extractive industry licence holder.	Site inspection records, incident register.

Table 7: Monitoring actions

Number	Target	Monitoring action	Frequency/ Timing	Phase	Responsibility	Record (example)
GM1	Groundwater level monitoring	Measure depth to groundwater from surveyed bores to determine water table level in mAHD.	Monthly until April 2016. Quarterly from April 2016 onwards.	Once prior to commencement of clearing, then from commencement of clearing to completion of rehabilitation.	Site supervisor or manager appointed by extractive industry licence holder.	Monitoring reports
GM2	Groundwater quality monitoring	Collect samples of groundwater from four on-site groundwater monitoring bores.	Annually during October	Once prior to commencement of clearing, then from commencement of clearing to completion of rehabilitation.	Site supervisor or manager appointed by extractive industry licence holder.	Monitoring reports
SM1	Monitor stormwater management	Inspect site for incidences of erosion or rilling and note extent, duration and actions taken to stabilise the surface (if identified).	Weekly.	From commencement of clearing to completion of rehabilitation.	Site supervisor or manager appointed by extractive industry licence holder.	Inspection report.
SM2		Inspect surface drains on site boundaries to ensure waster movement is unimpeded - note items impeding effectiveness of drains if present and action taken to rectify if identified.	Weekly.	From commencement of clearing to completion of rehabilitation.	Site supervisor or manager appointed by extractive industry licence holder.	Inspection report.
SM3		Measure levels of on-site surface water.	Monthly – first round prior to commencement of clearing and then at times of turbidity sampling.	Prior to commencement of clearing, then from commencement of clearing to completion of rehabilitation.	Site supervisor or manager appointed by extractive industry licence holder.	Inspection report.

Number	Target	Monitoring action	Frequency/ Timing	Phase	Responsibility	Record (example)
SM4		Collect up-gradient, on-site and down-gradient surface water samples and submit to laboratory for analysis for turbidity levels.	First round prior to commencement of clearing, then following first flush rainfall events, and then monthly until end of November –	Prior to commencement of clearing, then from commencement of clearing to completion of rehabilitation.	Site supervisor or manager appointed by extractive industry licence holder.	Monitoring reports.
HCM1	Monitor hydrocarbon and hazardous chemical management	Inspect site for indications of surface spills or leaks of hydrocarbons or hazardous chemicals (stained soil, hydrocarbon odour).	Weekly.	Operations.	Site supervisor or manager appointed by extractive industry licence holder.	Inspection report.
HCM2		Inspect re-fuelling and note location and any incidences of spills or leaks.	As occurs.	Operations.	Site supervisor or manager appointed by extractive industry licence holder.	Incident register.
SWM1	Monitor solid waste and wastewater management	Inspect ablutions for cleanliness and integrity.	Daily.	From commencement of clearing to completion of rehabilitation.	Site supervisor or manager appointed by extractive industry licence holder.	Visual inspection – no written record required.
SWM2		Record maintenance of ablutions (cleaning and emptying).	As occurs.	From commencement of clearing to completion of rehabilitation.	Site supervisor or manager appointed by extractive industry licence holder.	Ablutions maintenance records.
HKM1	Monitor housekeeping management	Inspect lidded bins for bin integrity, noting any leaks or damage.	Weekly.	From commencement of clearing to completion of rehabilitation.	Site supervisor or manager appointed by extractive industry licence holder.	Inspection report.
HKM2		Record disposal of waste from lidded bins.	As occurs.	From commencement of clearing to completion of rehabilitation.	Site supervisor or manager appointed by extractive industry licence holder.	Waste disposal register

Table 8: Contingency actions

Number	Prompt	Action	Frequency	Phase	Responsibility	Record (example)
SCA3	Monitoring results indicate increased levels of turbidity in surface water	1. Formulate an erosion management plan (EMP) for review by Shire of Serpentine/ Jarrahdale. 2. Implement reviewed EMP. 1. Revise EMP to ensure management actions remain current and effective (as necessary).	As occurs.	From commencement of clearing to completion of rehabilitation.	Site supervisor or manager appointed by extractive industry licence holder.	Erosion Management Plan; Incident register.

Number	Prompt	Action	Frequency	Phase	Responsibility	Record (example)
SCA2	Surface water level measurements indicate a change from pre-disturbance levels.	1. Inspect drainage infrastructure up- and down-gradient of site for blockages and alert Shire of Serpentine/ Jarrahdale and DoW if identified. 2. Formulate an alternative drainage strategy (DS) for review by Shire of Serpentine/ Jarrahdale. 3. Implement alternative DS. 4. Revise DS to ensure management actions remain current and effective (as necessary).	As occurs.	From commencement of clearing to completion of rehabilitation.	Site supervisor or manager appointed by extractive industry licence holder.	Drainage Strategy; Incident register.

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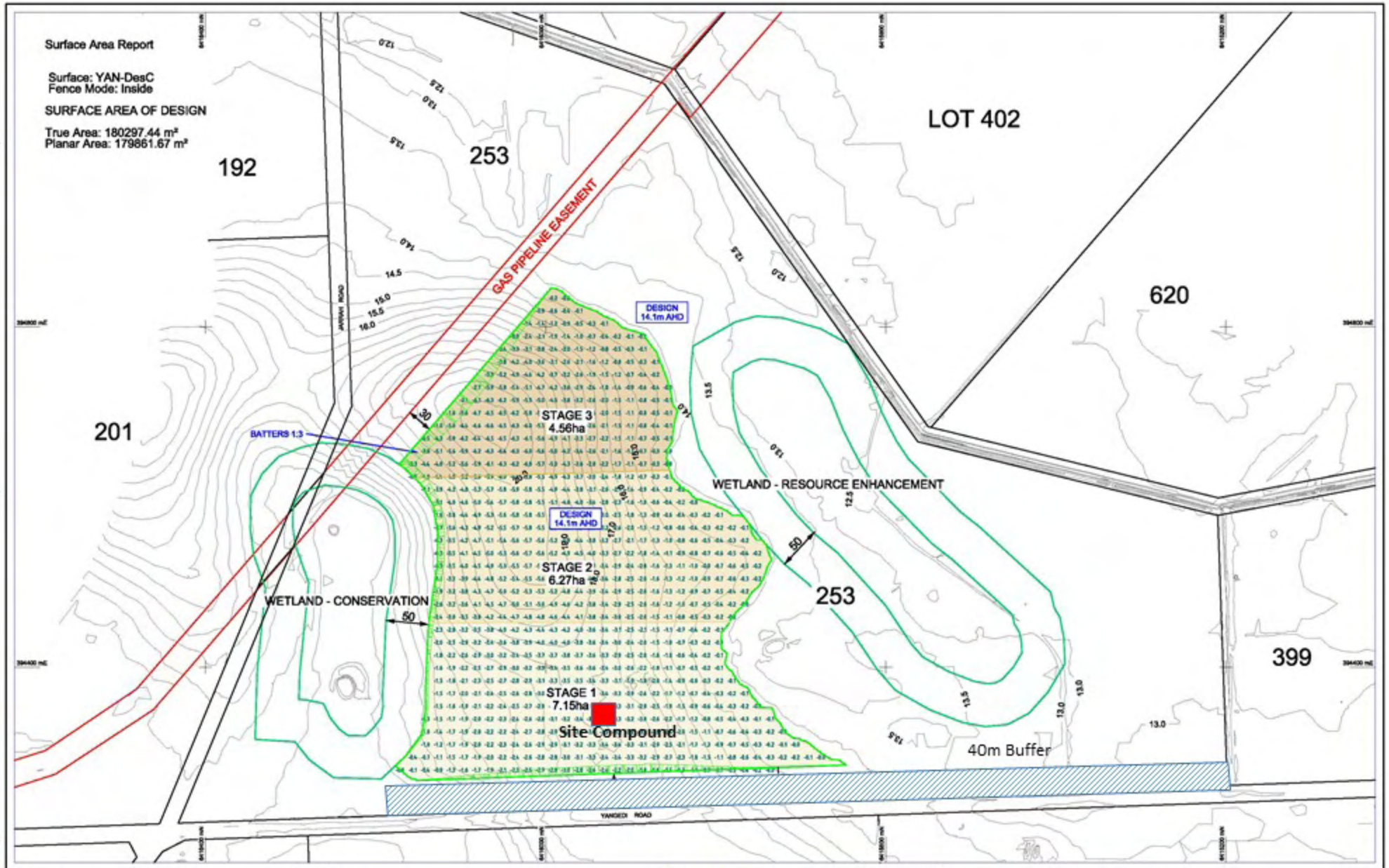
Appendix 1
Staging plan



REV	DATE	AMENDMENT	DRN	CKD
A	18/11/14	INITIAL ISSUE	GRB	

ORIG SIZE A1

NOTES
1. THE VOLUMES ON THIS PLAN HAVE BEEN CALCULATED USING INFORMATION SUPPLIED BY THE CLIENT. THE ACCURACY OF THESE VOLUMES DEPENDS ON THE QUALITY OF THE DATA SUPPLIED.
2. THE VALUES ON THIS PLAN HAVE BEEN CALCULATED USING GRIDDED DATA INTERPOLATED FROM THE ORIGINAL SURVEYS
3. FILL VALUES SHOWN + IN METRES
CUT VALUES SHOWN - IN METRES

SCALE 1 : 2000

DATUM
VERTICAL AHD
HORIZONTAL GDA 94

Urban Resources

BebbCart

URBAN RESOURCES
HOPELANDS - 253 YANGEDI ROAD
PROPOSED EXCAVATION STAGING PLAN

DRAWING NUMBER UR 143.18 - 02 - 01 REV A

SERS
Site Environmental and Remediation Services

Phone
1300 320 696

Email
reception@sers.net.au

Appendix B – Dust Management Plan

SAGH Pty LTD

DUST MANAGEMENT PLAN

PROJECT:
253 Yangedi Road, Hopeland

Revision	Date	Revision Description	Originator	Approved
1	29/01/2015	Issued for approval 253 Yangedi Road	Brad Wood	Stephen Elliott

***UNCONTROLLED DOCUMENT WHEN PRINTED**

DUST MANAGEMENT PLAN

Introduction:

The objective of this document is to ensure that the completed project complies with environmental performance criteria prescribed by Regulation and to minimize impacts on the amenity of surrounding properties.

As a responsible and environmentally conscious company, the company will always strive to minimise the impacts of its works on surrounding residents and the environment. The company is well aware of the dry climatic conditions being experienced within W.A., the likelihood of frequent windy days and the proliferation of migrating soils, which in combination can present challenges in controlling dust emanating from project sites.

Notwithstanding the above points, the best practicable means of minimising dust nuisance from the site will be adopted and will be consistent *with "A guideline for managing the impacts of dust and associated contaminants from land development sites, contaminated sites remediation and other related activities"*, published by the Department of Environmental and Conservation (now the Department of Environmental Regulation - DER) Perth, Western Australia, January, 2011.

The site has been assessed as a Class 3 site in accordance with the above guidelines. Refer to Appendix A for Site Assessment Details, and applicable contingencies and provisions.

A 'Notice to Residents' letter is also enclosed which is to be delivered to all nearby properties which are considered to be within the zone of influence of the works

PRIMARY CONTACTS:

The Principal is the party responsible for the overall project.
Any complaints in relation to dust nuisance should in the first instance be directed to the' Site Supervisor. Alternatively, the Project Manager can be contacted. Contact details are listed hereunder.

Project Manager: Stephen Elliott
Mobile: 0418 950222

TIMING OF WORKS:

Works are scheduled to commence once all approvals are in place.

HOURS OF WORK:

The following days and hours of work apply.

Monday to Friday:	7:00am to 5:00pm
Saturday:	7:00am to 5:00pm
Sundays and Public Holidays:	Not working

Work outside these hours is not permitted unless approval is given by the Site Superintendent. Such activities may include the following tasks that do not result in disturbance to surrounding residences:
Survey work, Groundwater or soil testing, Environmental monitoring, Site inspections / Security patrols and Dust prevention measures.

SITE ACCESS:

Site access will be in line with the proposed TMP.

DUST MANAGEMENT CONTROL METHODS:

1. Notice to be erected at the site, providing contact details of the person to be contacted regarding the works.

2. Appropriate wind fencing is to be stored on site in order to be available within one hour of being required.

3. Areas of land cleared and the period of time they remain cleared are to be kept to a minimum. Stabilization of open areas during earthworks will occur promptly, utilizing chemical stabilization (Dustex). Final stabilization of the site will be done upon completion of the works.

4. Batters and top soil bunds are to be stabilized with hydro mulch with grass seed; however during the summer period seeding will not apply.

5. Vehicle paths are to be restricted to limestone road routes. Plant and vehicles are not to use random routes. Plant will use delineated routes as far as practicable when undertaking specific tasks in a given area.

6. Trucks carrying loose material such as sand, limestone and topsoil must have their covers on and their travel authorized by the site supervisor. Site entries and surrounding streets will be street swept on a regular basis. Additionally, exit points will incorporate wheel washes.

7. Vehicle speeds will be restricted to no more than 20km/hr on the site to minimize dust liftoff.

8. Material drop heights between loaders and trucks and to stockpiles will be kept to a minimum practical height.

9. Appropriate number of water carts allocated to project maintaining site in a damp condition. (Water carts are to have no less than 10,000 litres capacity per 7.5 hectares of disturbed site).

10. Preventative measures may also be required outside of normal working hours where excessive dust generation is detected by the on-site monitors or is observed to be impacting off-site. In the event of dust event outside of normal hours (reported a complaint or from the dust monitor) the site supervisor will respond by inspecting the site to establish what remedial measures are required. Contingency measures that may apply include:

A) Use of water to stabilize areas where visible dust liftoff is occurring
B) Application of spray mulch as soon as is feasible; and
C) Erection of wind fencing stored on-site as a contingency

The site supervisor will record the matter as an environmental incident as per Urban Resources Procedures. Works will cease until remedial measures are undertaken.

10. No burning off is to occur. Vegetation is to be re-used on site where possible.

DUST MONITORING PROGRAM:

The objective of this dust monitoring program is to provide a real-time quantitive measure of dust levels for use by Urban Resources to ensure that appropriate on-site management practices (for dust and other air pollutants) are implemented to prevent excessive dust emissions from causing unacceptable off-site impacts.

1. Three dust monitors are to be located, as shown in the attached site plan, to monitor and assess the effectiveness of management practices in controlling emissions of dust and other air pollutants and therefore guide management decisions.

2. Dust monitor locations have been selected based on typical meteorological conditions that prevail at the site and also considering the topography, predicted area of greatest impact and the location of sensitive receptors.

3. The dust monitoring instrument utilized is the DustTrak II. The instrument will be calibrated in accordance with the manufacturers recommendations including a field check at least once per week.

4. Background monitoring will be implemented for at least one week prior to site activity commencing to provide information on the typical base line levels of air pollutants in the ambient air in the absence of site activity.

5. The DustTrak II instruments are equipped with an SMS alarm card that can trigger an alarm to the mobile phone of the site supervisor or a second person at preset alarm levels. See item 7 for the proposed trigger levels.

6. The only statutory assessment criteria for atmospheric particulate concentrations is the National Environmental Protection Measure (NEPM) criteria of 50ug/m^3 (24 hour average) not to be exceeded more than 5 times per year which is a target for urban air quality throughout Australia. Accordingly this value has been adopted as one alarm criteria.

It is also useful to use a 1 hour average assessment criteria as this ensures that management actions can be implemented quickly to prevent short-term events resulting in an exceedance of the NEPM criteria. A 1 hour average value of 1000 ug/m^3 has been adopted as a 1 hour average alert level as if that value is maintained for 1 hour then it is possible that the 50 ug/m^3 (24 hour average criteria) will be exceeded.

7 Management response to the adopted assessment criteria. To minimise the possibility that the adopted assessment criteria will be exceeded, two sets of alarm levels and responses will be implemented as described in the table below The Corrective Action Alert levels have been set at 80% of the adopted Alarm criteria with the aim that action will be taken to prevent and exceedance of the Alarm level.

Alarm Type	Trigger Value (ug/m^3)	Management Response
1 hour average Corrective Action Alert	800	• Flashing light triggered on top of monitoring unit • Alarm notification sent to site supervisors phone • Site supervisor to immediately evaluate conditions and implement contingency measures
24 hour average Corrective Action Alert	40	• Flashing light triggered on top of monitoring unit • Alarm notification sent to site supervisors phone • Site supervisor to immediately evaluate conditions and implement contingency measures
1 hour average Alarm	1000	• In addition to SMS alarm to supervisor and flashing light, SMS is also sent to Stephen Elliot or the site environmental consultant • If condition persists for more than 3 hours, then work to cease on site
24 hour average Alarm	50	• In addition to SMS alarm to supervisor and flashing light, SMS is also sent to Stephen Elliot or the site environmental consultant • Dust controls for the site to be re-evaluated and upgraded as required to prevent a recurrence

8. Monitors will be deployed in the locations shown on the attached plan and will operate continuously 24 hours per day.

9. Regular monitoring of Bureau of Meteorology weather forecasts to take into account predicted conditions that may present an increased risk to site operations and potential for dust generation off the site. Appropriate contingency measures to be put in place including the cessation of works that may contribute to increased dust emissions off site during adverse weather/wind conditions. Preventative measures may also be required to be put in place outside of normal working hours.

10. Dust will be visually monitored daily during operations to ensure control measures are effective.

11. Any complaints generated due to dust will be directed to the site supervisor and stabilization will occur within 18 hours of receiving the initial complaint. The C.A.R Procedure and complaints is in place to record complaints and ensure complaints are acted on promptly.

Urban Resources

Unit 4, 127 Melville Pde
Como WA 6152

PO Box 739
Como WA 6952

Phone: 08 9368 1299
Mobile: 0418 950 222
Fax: 08 9368 1399
E-mail: stephen@urbanresources.com.au
Web: www.urbanresources.com.au

ADVISORY NOTICE TO RESIDENTS

253 Yangedi Road

Excavation of sand of the above land is being planned. There will be progressive stages starting TBA. The development is being carried out by Urban Resources Pty Ltd and the works are scheduled to commence following all statutory approvals. A twenty to forty metre vegetated buffer will be retained around the boundary of the property by Urban Resources in order to minimise inconvenience to residents.

It is a requirement that this development must adopt adequate measures to prevent the generation of unacceptable levels of dust.

You are advised that Urban Resources has agreed to implement the provisions as outlined in the Department of Environmental Regulations publication "*A guideline for the prevention of dust and associated contaminants from land development sites, contaminated sites remediation and other related activities*" March 2011 (A copy of this guideline may be obtained from http://www.der.wa.gov.au/).

Should you feel that excessive dust is being generated due to this development, you are advised to contact the Site Supervisor for Urban Resources, TBA by telephoning TBA to discuss the issue.

Dust Management Plan

Site Register of Complaints Received

Complainants Name	Address	Contact Details	Date & Time of Complaint	Date & Time of Occurrence	Details of Complaint and Effect on Property

Urban Resources Site Supervisor: **TBA**

A Complaint Register will be maintained by the Site Supervisor.

The Site Supervisor is to ensure that any complaints from local residents are acted upon immediately and corrective actions are discussed and reviewed with the complainants in a courteous cooperative manner. The review is to be conducted within 24 hours of the complaint.

All efforts are to be made to prevent further occurrences.

All complaints must be reported immediately to the Project Manager and OHS&E Manager for consideration and rectification. No liability will be admitted. The incident will be fully investigated and assessed by Urban Resources' insurance providers before a decision is made.

APPENDIX A

- **Classification 3 (score between 400 and 799, considered medium risk)**

Provisions:
- Appropriate wind fencing of a length specified in the air quality management programme needs to be stored on site or available within one hour of being required by the engineer for the developer/local government/DEC.
- All areas of disturbed land should be stabilised to ensure that the disturbed area exposed at any time is kept to a practical minimum to prevent exceedence of dust standards (see Section 4.4.2).
- The engineer for the developer shall maintain close control of works with dust creating potential (for example, allowable length of open trenching).
- After all siteworks are completed, and before the contractor has vacated the site, the developer should ensure that the entire site is stable. The developer then retains responsibility for site stability until change of ownership/control takes place. After the change of ownership/control has taken place, the new owner or controlling party will inherit responsibility for site stabilisation.

Contingency arrangements:
- Suitable water-carts in good working condition and of not less than 10,000 litres capacity per 7.5 hectares of disturbed site, or other suitable alternatives, shall be available to commence watering on the site within 18 hours of being required to do so by the engineer for the developer/local government/DEC.
- Surface stabilisation equipment shall be available to commence operation on site within 48 hours of being required to do so by the engineer for the developer/local government/DEC and with sufficient capacity to cover the disturbed site area within a further 48 hours.
- Wind fencing shall be erected within 18 hours of the contractor being required to do so by the engineer for the developer/local government/DEC. Dust generating works on the site shall cease in the interim.
- If dust-related complaints are generated due to activities on the site, the developer may be required by the local government or an authorised DEC officer to distribute advisory notices to adjoining land occupiers within 48 hours. A notice form is provided in Sheet 5 of Appendix 1.
- If dust-related complaints are generated due to material which has been excavated for trenching, the developer shall ensure this material is stabilised within 48 hours of being requested to do so by the engineer for the developer, local government or an authorised DEC officer.
- Include an allowance for water-cart operation, wind fencing and surface stabilisation during the construction period for the purposes of dust and wind-borne material suppression.
- Include an allowance for surface stabilisation for the purposes of dust and wind-borne material suppression to be maintained after the construction period and until change of ownership/control takes place.

Monitoring requirements
- Site dust management system in place.
- On-site dust monitoring against short term criteria.
- Off-site (compliance) dust monitoring at site boundary (if close to sensitive receptors) or at sensitive receptors. See Section 4 and Appendix 4.
- Complaints management system in place (complaints recorded and acted on promptly).
- Exceedences to be reported to the relevant authority – DEC, Local Government or DOH.
- Notice to be erected at the site, providing contact details of the person to be contacted regarding the works.

Site Classification Assessment Chart –

Part A. Nature of Site

Item	Score Options				Allocated Score
1. Nuisance potential of soil when disturbed	very low 1	low 2	medium 4	High 6	4
2. Topography and protection provided by undisturbed vegetation	sheltered and screened 1	medium screening 6	little screening 12	Exposed and wind prone 18	6
3. Area of site disturbed by the works	under 1ha 1	between 1 and 5ha 3	between 5 and 10ha 6	Over 10ha 9	3
4. Type of work being done	roads or shallow trenches 1	roads, drains and medium depth sewers 3	roads, drains, sewers and partial earthworks 6	Bulk earthworks, deep trenches 9	9
				Total score for Part A	**22**

Part B. Proximity of site to other land uses

Item	Score Options				Allocated Score
1. Distance of other land uses from site	over 1km 1	between 1km and 500m 6	between 100m and 500m 12	Under 100m 18	18
2. Effect of prevailing winds (at time of construction) on other land uses	not affected 1	isolated Land uses affected by one wind direction 3	dense land uses affected by one wind direction 6	Dense/sensitive land uses highly affected by prevailing winds 9	3
				Total score for Part B	**21**

0 - 199	Class 1
200 – 399	Class 2
400 – 799	Class 3
800 +	Class 4

SITE CLASSIFICATION SCORE (A x B) =	**462**
SITE CLASSIFICATION 3	

Dust and wind-borne material
Site Classification Assessment Chart

Consulting Engineer	TBA
Site Detail	253 Yangedi Road, Hopeland
Local Authority	Shire of Serpentine-Jarrahdale
Location of works (use AMG grid references from MS directory and nearest main street)	253 Yangedi Road, Hopeland
Project Name/Stage	253 Yangedi Road, Hopeland
Description of Works	Sand Excavation
Contract Dates (starting/completion dates, period in weeks)	TBA
Score from Assessment Chart	462
Special Considerations	See Dust Management Plan
Site Classification	3

Comments at Completion of Construction
(to include details of dust-related problems and provisions and contingency arrangements which were actually carried out)

.

(copy of completed sheet to be returned to the Department of Environmental Conservation)

Government of Western Australia
Department of Water and Environmental Regulation

Your ref: W6347/2020/1
Our ref: DER2019/000617
Enquiries: Jamie Piotrowski
Phone: 9726 4196
Email: info@dwer.wa.gov.au

Mr Stephen Elliot
Urban Resources Pty Ltd

via email: stephen@urbanresources.com.au; planning@sers.net.au
Attn: Sarah Poulton

Dear Mr Elliot

APPLICATION FOR A WORKS APPROVAL UNDER THE *ENVIRONMENTAL PROTECTION ACT 1986*) – NOTICE OF DECISION TO GRANT

I refer to your application for a works approval, under Part V Division 3 of the *Environmental Protection Act 1986* (EP Act), at 253 Yandegi Road, Hopeland, for a sand screening operation. The application was received by the Department of Water and Environmental Regulation (DWER) on 14 October 2019.

A draft works approval was provided to you on 18/02/2020. I have now granted the attached works approval subject to conditions. The attached Decision Report sets out the reasons for my decision.

In accordance with section 102(1)(c) of the EP Act, if you are aggrieved by my decision to issue the works approval, you may lodge an appeal with the Minister for Environment in writing, setting out the grounds of that appeal, within 21 days of this notification. Should you wish to lodge an appeal, please contact the Office of the Appeals Convenor on (08) 6364 7990 or by email at admin@appealsconvenor.wa.gov.au.

Under section 102(3)(a) of the EP Act, third parties aggrieved by this decision are also entitled to lodge an appeal against the conditions of a works approval. Under section 102(4), the conditions of the works approval remain in effect pending the determination of any third party appeals.

If you have any queries, please contact the Environmental Officer listed above.

Yours sincerely

Tim Gentle
Manager, Resource Industries
REGULATORY SERVICES

Officer delegated under section 20
of the Environmental Protection Act 1986

19/02/2020

Att: Decision Report
Final Instrument

SERS
Site Environmental and Remediation Services

APPLICATION FOR WORKS APPROVAL AND LICENCE

253 Yangedi Road, Hopeland WA

Prepared on behalf of:

Urban Resources

Urban Resources Pty Ltd

33 Cocos Drive Bibra Lake WA 6163

Ph: +61 89368 1299

Document Control Sheet

Issued by: Site Environmental & Remediation Services Pty Ltd
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Client: Urban Resources

Project: 253 Yangedi Road, Hopeland WA

Title: **157281_Application_SP**

Reference: 157281

Status: Final

Report Date: 14th October 2019

Document Production Record

Issue Number	3	Name	Signature
Prepared By		Sarah Poulton	
Checked By		Rod Manning	
Approved By		Rod Manning	

Document Revision Record

Issue Number	Date	Revision Details
1	23rd August 2019	First report
2	27th August 2019	Client Review
3	14th October 2019	Final

CONTENTS

1 INTRODUCTION

SERS has been engaged by Urban Resources Pty Ltd (hereby known as 'the client') to produce and submit an application for a works approval and license for a proposed operation at 253 Yangedi Road North, Hopeland (Hereby known as 'the site'). The site boundary and aerial of the site are within **Figure 1**. The following information contained in this report is in support of the application to Department of Water and Environment Regulation (DWER) for a Category 12 Screening Licence.

1.1 THE PROPONENT

Urban Resources Pty Ltd is the holder of the current Shire and Government approval for this property. The Client is seeking a Category 12 Screening licence to allow for the screening of basic raw materials to remove impurities from product.

Address: 33 Cocos Drive

Bibra Lake WA 6163

P: +61 8 9368 1299

1.2 THE CONSULTANT

Site Environmental and Remediation Services (SERS) is a national environmental consultancy specialising in Environmental approvals, development approvals, site remediation and soil and water testing. SERS are assisting the proponent in the preparation of relevant development reports to gain approval for a works approval and Category 12 Screening Licence.

Address: 281 Newcastle Street, Northbridge WA 6003

P: +61 8 9220 2000

Contact: Sarah Poulton

Graduate Environmental Planner

planning@sers.net.au

1.3 PROPOSED OPERATIONS

SAGH Pty Ltd, a related entity to the client, has already successfully gained a Planning and Development Application from the Shire of Serpentine-Jarrahdale, to extract a basic raw material on the site. It is proposed that approximately 200,000 tonnes of material will be screened onsite during the annual period. The Development Application Approval (number PA18/475) has additionally been given an extension on 18/02/2019, refer to **Appendix D**. Under SAGH Pty Ltd, a Native Vegetation Clearance Permit has also been approved and provided in **Appendix E**. All clearing for the site has been completed and the only remaining ground disturbance will be the extraction of the resource.

Whilst the two approvals stated above have been granted in the name of SAGH Pty Ltd, the actual excavation of sand will be conducted by Urban Resources, the owner of the site (**Appendix C**). Under permission of SAGH Pty Ltd, Urban Resources is seeking to gain approval for the screening process required on the site, to best utilise the sand available in the approved resource area. A letter from SAGH authorising these works has been provided in **Appendix H**. The Client has also been granted the Offset Agreement by the Federal EPA, which has been provided in **Appendix F**.

The site layout of the processes to be conducted have been illustrated in **Figure 2**.

Stage 1 – Extraction of basic raw materials (sand) from site and use of a Finlay 683 screening plant for basic raw materials.

Stage 2 – Use of a Terex FM120 wet screening plant to remove impurities (water used will be recycled in two small dams).

1.4 EQUIPMENT USED ONSITE

The proponent intends to use the following machinery onsite to aid the onsite processes:

- Screening plant - Finlay 683 and Terex FM120;
- Water Truck; and
- Front End Loader - Volvo 150F.

The 683-screening plant will be used for the loading, conveying and screening of sand excavated from the site. The plant will be operating for dry screening, however, when fine material is required to be removed, the FM120 will be used. All equipment is portable and displayed in **Figures 1.1** and **1.2**, respectively.

A groundwater assessment was undertaken for the two proposed excavated dams as part of the wet screening plant. This report has been attached as **Appendix A**. Additionally, an acoustic assessment was undertaken which considered the cumulative noise levels of sand extraction and transport off-site. This report has been attached as **Appendix B**.

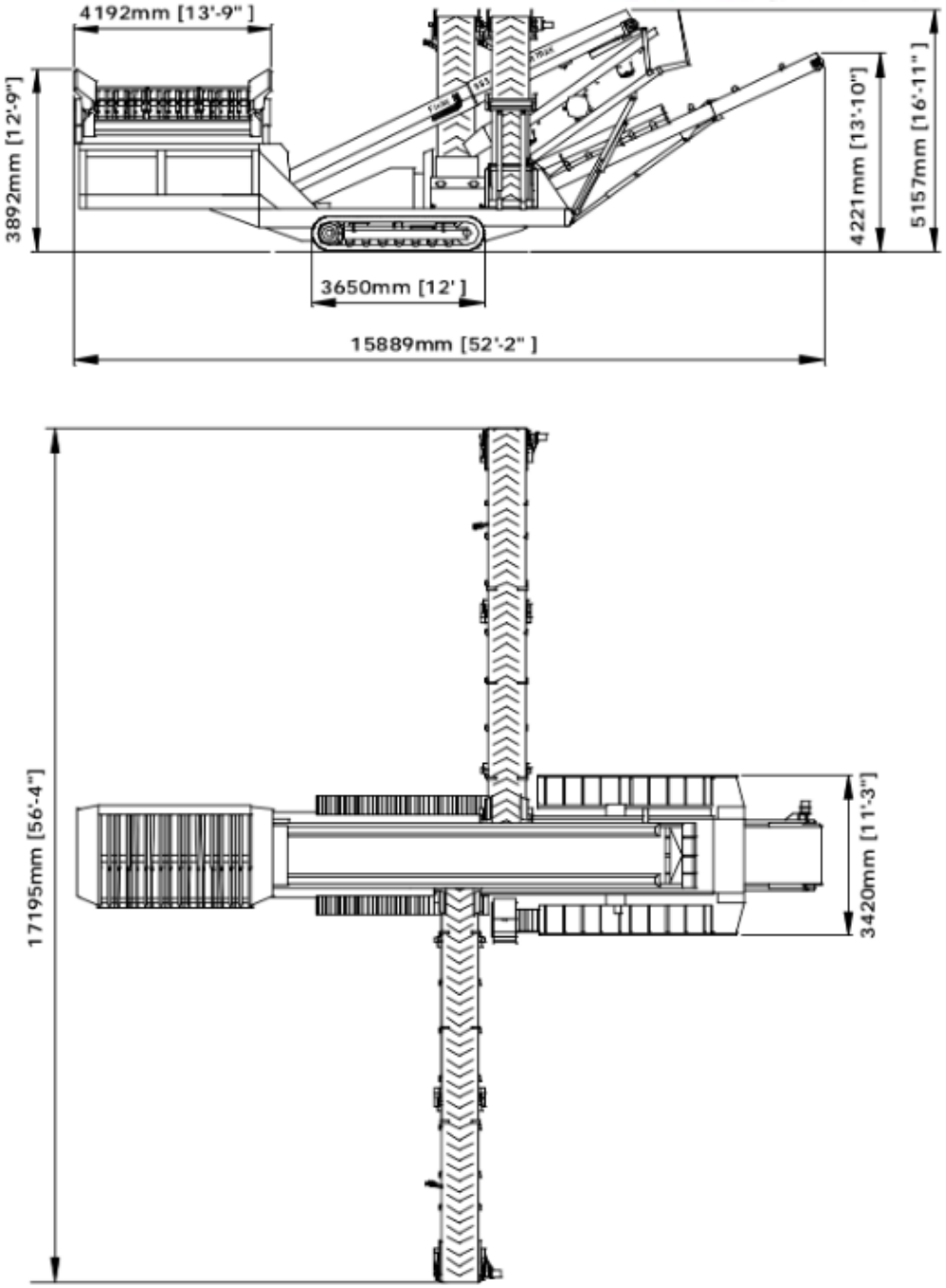

Figure 1.1. 683 Hydrascreen used for the (dry and wet) screening of sand. Image taken from Finlay Hydrascreen (2008).

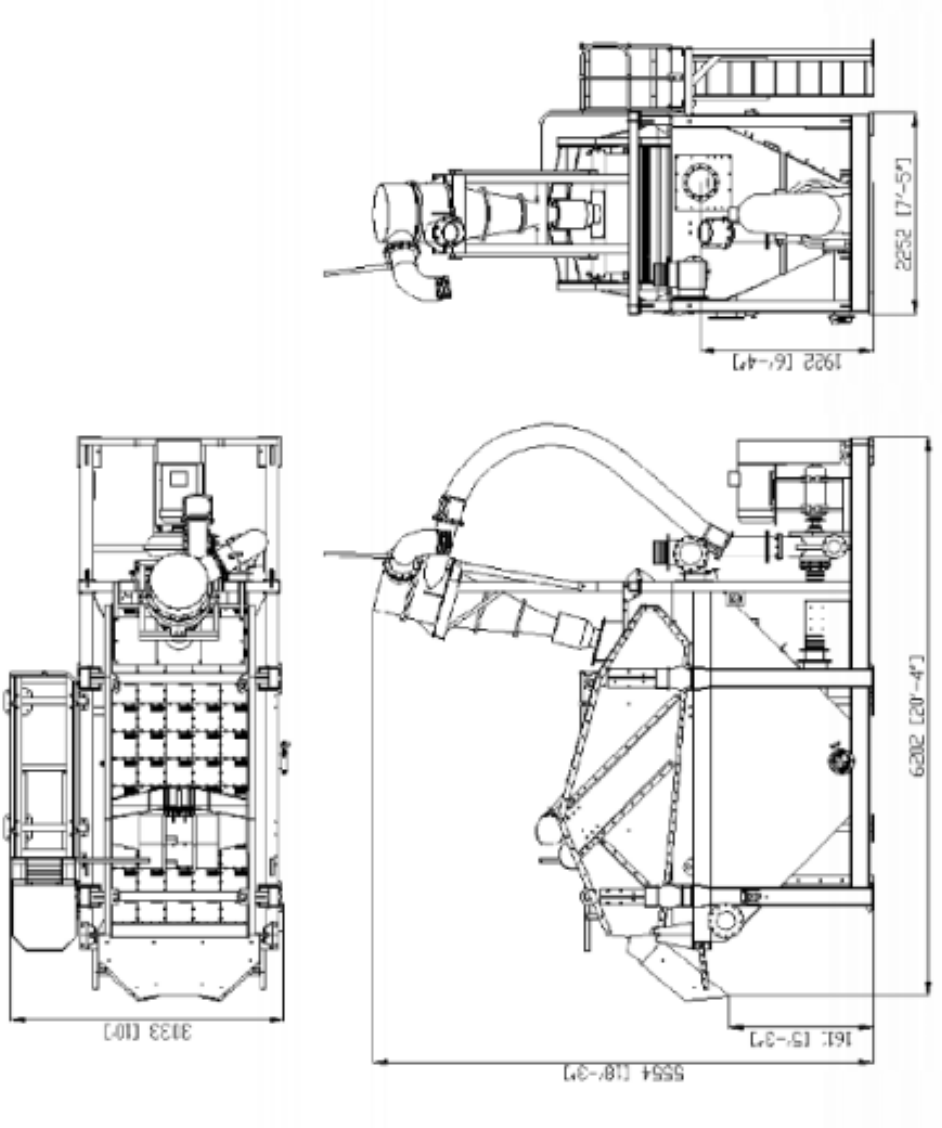

Figure 1.2. Complete Assembly Single 824 Cyclone (working). Image taken from Terex FM120 (2012).

2 PROXIMITY TO SPECIFIED ECOSYSTEMS

It is a requirement when applying for licenses and works approvals from DWER, that specified ecosystems within 1km of the area (or in close proximity) of the site must be identified. Specified Ecosystems are defined under former Department of Environment Regulation (DER), currently the Department of Water and Environmental Regulation (DWER*), Guidance Statement: Environmental Sitting* (2016) as areas of high conservation value and special significance that may be impacted as a result of activities upon or emissions and discharges from prescribed premises. Specified ecosystem presence within a 1km radius of the site is detailed in Table 2-1 below.

Table 2-1 Specified Ecosystems within 1km of the site

The site resides within this specified ecosystem

The site is in proximity to this specified ecosystem

The site is not located within or in proximity to this specified ecosystem

Specified Ecosystem	Site located within/proximity	Details
Public Drinking Water Source Area (PDWSA)		
Acid Sulfate Soils Risk Map		See **Figure 3**.
Contaminated Sites		
Threatened Priority Flora		
Threatened Priority Fauna		Naturemap Report Identified that *Calytorhynchus latirostris* (Carnaby's Cockatoo, White tailed Short-billed Black Cockatoo) within 1km of the Site (Rare or Likely to become extinct). See **Figure 4**.
Threatened Ecological Communities		Naturemap Report Identified that *Calytorhynchus latirostris* (Carnaby's Cockatoo, White tailed Short-billed Black Cockatoo) within 1km of the Site (Rare or Likely to become extinct). See **Figure 4**.
Fish Habitat Protection Zones		
Waterways Conservation Areas		
Parks and Wildlife Managed Lands and Waters		
Bush Forever		
Western Swamp Tortoise Habitat		
Regional Parks		
Ramsar Sites		
Important Wetlands		
Geomorphic Wetlands (Swan Coastal Plain management)		Two geomorphic wetlands occur within 1km of the site. See **Figure 5**.

2.1 ACID SULFATE SOILS RISK MAP

The Acid Sulfate Soils (ASS) risk map is a broad scale map encompassing several coastal regions of Western Australia. The map displays two classifications, including:

- Class 1: high to moderate risk of ASS occurring within 3m of the natural soil surface; and
- Class 2: moderate to low risk of ASS occurring within 3m of the natural soil surface.

The site primarily is allocated a Class 1 classification, with the exception of a small portion of the site adjacent to the wetland, which is mapped as a Class 2. The area is not subject to being part of the operational area and therefore will not be impacted throughout works. As such, there is no need to further investigate the area. Refer to **Figure 3**.

2.2 THREATENED PRIORITY FAUNA AND ECOLOGICAL COMMUNITIES

Threatened Priority Fauna and Ecological Communities data has been sourced from the WA Threatened and Priority Fauna Database, which contains observations of any fauna listed as threatened under the Wildlife Conservation Act 1950 or listed on the Department of Biodiversity, Conservation and Attractions (DBCA) Priority Fauna List. Additionally, data has been taken from the DBCA Fauna Survey Database which contains records of Western Australia fauna from sources including historical reports, DBCA staff, survey data from major projects, consultants, and the general public that are licence holders.

A further search of NatureMap (2019) indicated that the threatened priority species and ecological community within 1.0km of the site was the *Calytorhynchus latirostris* (Carnaby's Cockatoo, White tailed Short-billed Black Cockatoo). The NatureMap (2019) results have been included as Appendix C at the rear of this report. The area has been identified as suitable foraging habitat and potential breeding habitat for Carnby's Black Cockatoo and Forest Red-tailed Black Cockatoos.

A clearing permit (6417/1, copy attached) for 13.063ha was granted and undertaken in 2017 taking into account the suitability of the vegetation onsite for foraging and breeding purposes. The retained vegetation onsite consists of approximately 5.4ha of pasture and isolated trees. Proposed works are to be undertaken in areas where clearing has been authorised.

The site was also assessed under a controlled action from the Federal EPA (copy attached) and an offset plan was approved with the first stage of offset plan already completed.

A Black Cockatoo Assessment was conducted by PGV Environmental in October 2014. The assessment concluded the following:

- Approximately 12 ha of foraging habitat is found on the site (prior to clearing);
- The site does not contain known breeding habitat and no evidence of breeding was recorded during the assessment;
- The site contains (prior to clearing) 28 Jarrah Trees with a diameter at breast height of 500mm or greater. Seven of these trees were recorded as containing hollows or spouts, however only 2 trees contained spouts large enough for breeding by Black Cockatoos; and
- The site does not contain a known roosting site and no evidence was observed that the site has been used as roosting habitat.

Figure 4 contains the Threatened Ecological Communities overlay.

2.3 GEOMORPHIC WETLANDS

The Geomorphic Wetlands dataset contains wetlands on the Swan Coastal Plain representing two main aspects, physical classification and environmental evaluation. The wetlands of the Swan Coastal Plain have been evaluated and assigned a management category. Wetland management categories provide guidance on how they should be managed and protected.

Wetland management categories include:

- Conservation: Wetlands which support a high level of attributed and functions;
- Resource Enhancement: Wetlands which may have been partially modified but still support substantial ecological attributed and functions; and
- Multiple Use: Wetlands with few remaining important attributed and functions.

Wetlands onsite have been identified as Conservation and Multiple Use. Works associated with this proposal will not be undertaken in the areas as identified as being a wetland within the Geomorphic Wetlands dataset. The extents of the Geomorphic Wetlands onsite have been indicated within Figure 5.

Management strategies to be implemented onsite in regard to wetland protection include:

- Staff inductions;
- Implementation of a 50m wetland buffer;
- Maximum speed limit of 50kph on internal roads;
- Warning signs;
- No clearing within the wetland buffer area;
- Staff reporting on death of fauna; and
- Groundwater levels, groundwater quality and surface water levels will be monitored throughout works.

3 POTENTIAL ENVIRONMENTAL EMISSIONS

As outlined in the DWER Application form for works approvals and prescribed premises licenses, there is a small potential that without management this project may cause potential environmental emissions. Of those outlined in the Emission Table in the application form, it is predicted that dust and noise may be created from the operational portion of the activities. The proponent intends to implement strict management methods below to ensure environmental emissions don't cause harm on the surrounding environment.

3.1 DUST

Without the implementation of dust management methods, dust has the potential to be a nuisance to surrounding receptors. Nuisance dust has a larger particle size causing it to settle outside of the air. It is possible for dust to impact amenity by becoming suspended in the air, influencing visibility. The Site will be managed according to *A guideline for managing the impacts of dust and associated contaminants from land development sites, contaminated sites remediation and other related activities*, published by the Department of Environment and Conservation (now the Department of Water and Environmental Regulation, DWER) Perth, Western Australia, January 2011.

Please refer to original Development Application for information regarding:

- Dust Management Methodology
- Dust Monitoring Programme
- Dust Alarm Trigger Values

3.2 NOISE

Noise has the potential to impact the surrounding natural environmental, human health of surrounding sensitive receptors and amenity. The client will ensure that noise complies with the *Environmental Protection (Noise) Regulations 1997* throughout the works. The management methods adopted to ensure this have been outlined in the Development Application.

3.3 COMPLAINTS MANAGEMENT

Should any complaints arise in relation to the activities undertaken on site in relation to dust and noise generation a note will be made in the complaints register established for the site. All complaints will be treated promptly by the proponent and issues resolved in accordance to the complaints management system and issue resolution procedure. The procedure for managing complaints shall be followed as originally set out in the Development Application.

4 SUMMARY

It is proposed that the screening plant be installed and utilised as part of the extractive industries process onsite to screen out undesirable material from basic raw materials. There will be a setback of at least 40m implemented from Yangedi Road, and a setback of 50m from the wetlands onsite. Basic raw material extraction has been granted by the Shire of Serpentine-Jarrahdale for a portion of the site which includes the proposed screening area.

The site contains a Conservation Category Wetland, which will not be disturbed as a result of the screening works onsite. Previous investigations have determined that where sensitive ecological receptors have been deemed a buffer area onsite, there is negligible risk of impacting them from site operations.

Management systems will be in place throughout the works to prevent unnecessary noise and dust emissions. As the screening works are designed to be through a wet screen it is expected that negligible dust will be produced as a result of the works. The noise assessment completed by Herring Storer Acoustics (2015) determined that operations onsite will comply with criteria as outlined within the *Environmental Protection (Noise) Regulations 1997*. The dust monitoring methodology to be implemented onsite ensures that where exceedances occur onsite, they are rectified within an appropriate timeframe.

REFERENCES

Department of Planning, Lands and Heritage (DPLH) (2018) Current combined MRS/PRS Map - 1:125 000 Western Australian Planning Commission Government of Western Australia Perth WA

Department of Water and Environment Regulation (DWER) (2016) Water quality protection note no. 25 Land use compatibility tables for public drinking water source areas.

Department of Water and Environment Regulation (DWER) (2019) Perth Groundwater Map Government of Western Australia Perth WA

Department of Environment and Conservation (now the Department of Water and Environmental Regulation, DWER) *A guideline for managing the impacts of dust and associated contaminants from land development sites, contaminated sites remediation and other related activities*, published by the Perth, Western Australia, January 2011

Department of Water and Environmental Regulation (2019) Clearing Permit System SLIP (Landgate)

Finlay Hydrascreens (2008) 683 English Operation Manual, Issue number 010608/11. Louisville, USA.

PGV Environmental (2014) 253 Yangedi Road Hopelands Application for Development Approval Report No. 2014-178.

PGV Environmental (2014) 253 Yangedi Road Hopelands Black Cockatoo Assessment

Terex FM 120 (2012) Static Sand Recovery Unit: Operations Manual, Issue date 10/09/2012. North Ireland.

Western Australia Land and Groundwater Association (WALGA) (2019) Environmental Planning Tool.

Western Australian Land Information Authority (2019) Acid Sulfate Soil Risk Map, Swan Coastal Plain (DWER-055) Web Mapping Service

Western Australian Land Information Authority (2019) Geomorphic Wetlands Dataset

FIGURE 1 – SITE LOCATION

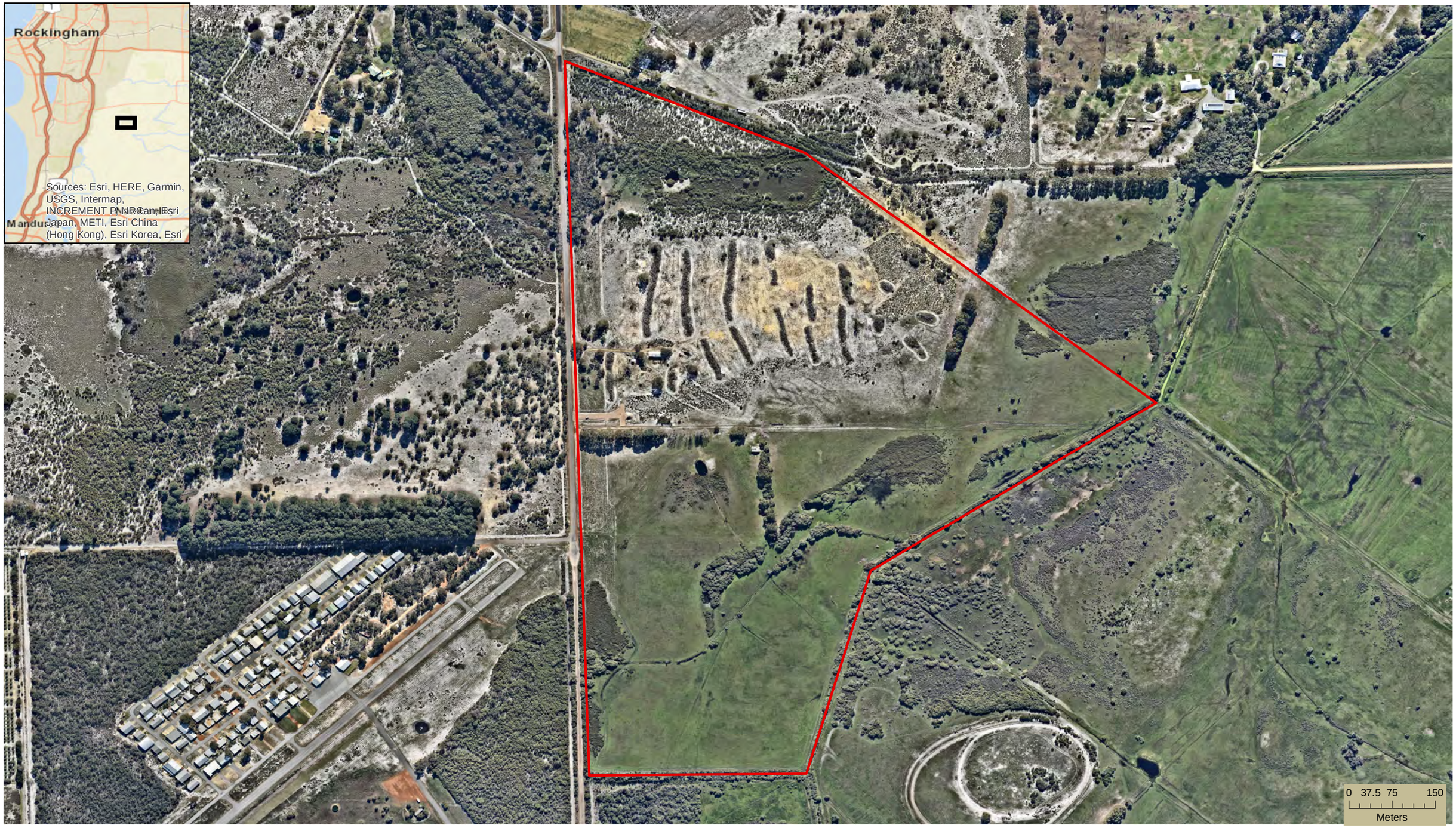

Figure 1: Site Location

SERS
Site Environmental and Remediation Services
Head Office: 281 Newcastle Street Northbridge WA 6003
Postal: PO Box 377 Northbridge Perth WA 6865
T: +61 8 92202000 F: +61 8 92202010
E: admin@sers.net.au W: www.sers.net.au

Job No: 157281
Client: Urban Resources
Address: Lot 810 Yangedi Road, Hopelands

Scale: 1: 6,371
Original size: A3
Imagery from: 16/07/2019
Source: Nearmaps

Date drawn: 30/07/2019
Revision: 0
Drawn by: AC
Checked by: RM

N

File: N:\A SERS\GIS\Projects\ MXD\

Legend

Site Boundary

FIGURE 2 – SITE LAYOUT

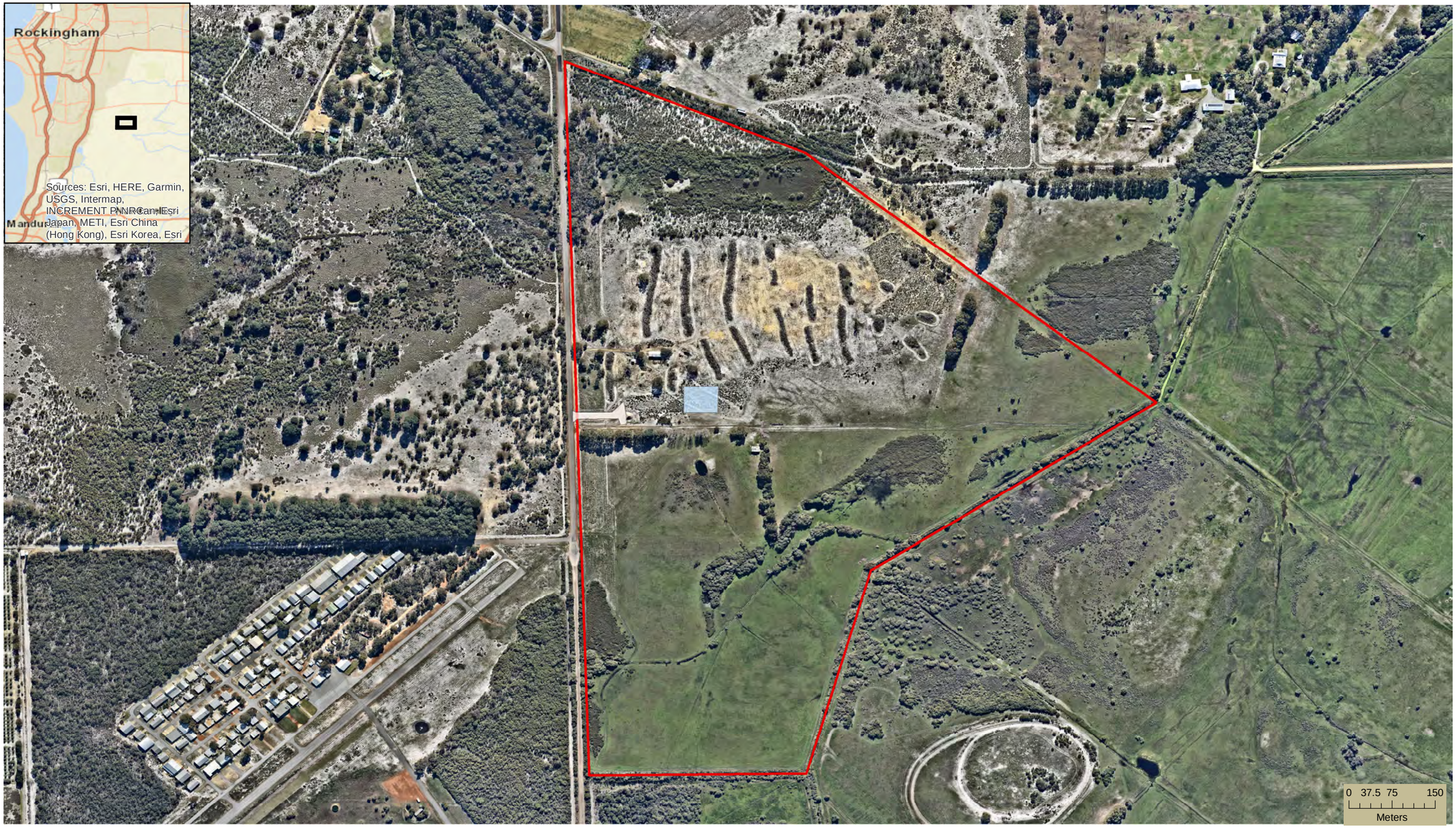

Figure 2: Site Layout

SERS
Site Environmental and Remediation Services
Head Office: 281 Newcastle Street Northbridge WA 6003
Postal: PO Box 377 Northbridge Perth WA 6865
T: +61 8 92202000 F: +61 8 92202010
E: admin@sers.net.au W: www.sers.net.au

Job No: 157281
Client: Urban Resources
Address: Lot 810 Yangedi Road, Hopelands

Scale: 1: 6,371
Original size: A3
Imagery from: 16/07/2019
Source: Nearmaps

Date drawn: 30/07/2019
Revision: 0
Drawn by: AC
Checked by: RM

N

File: N:\A SERS\GIS\Projects\ MXD\

Legend

Access and Egress
Dams & Screener Location
Site Boundary

FIGURE 3 – ACID SULFATE SOIL RISK MAP

Figure 3: Acid Sulfate Soil Risk Map

SERS
Site Environmental and Remediation Services
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Checked by: RM

N

File: N:\A SERS\GIS\Projects\ MXD\

Legend

Site Boundary

Risk Class
1 - High to moderate risk of ASS occurring within 3m of natural soil surface
2 – Moderate to low risk of ASS occurring within 3m of natural soil surface but high to moderate risk of ASS beyond 3m of natural soil surface

FIGURE 4 – ENVIRONMENTALLY SENSITIVE AREAS

Figure 4: Environmentally Sensitive Areas

SERS
Site Environmental and Remediation Services
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Address: Lot 810 Yangedi Road, Hopelands

Scale: 1: 6,371
Original size: A3
Imagery from: 16/07/2019
Source: Nearmaps

Date drawn: 30/07/2019
Revision: 0
Drawn by: AC
Checked by: RM

N

Legend

Site Boundary

Environmentally Sensitive Areas

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FIGURE 5 – GEOMORPHIC WETLANDS

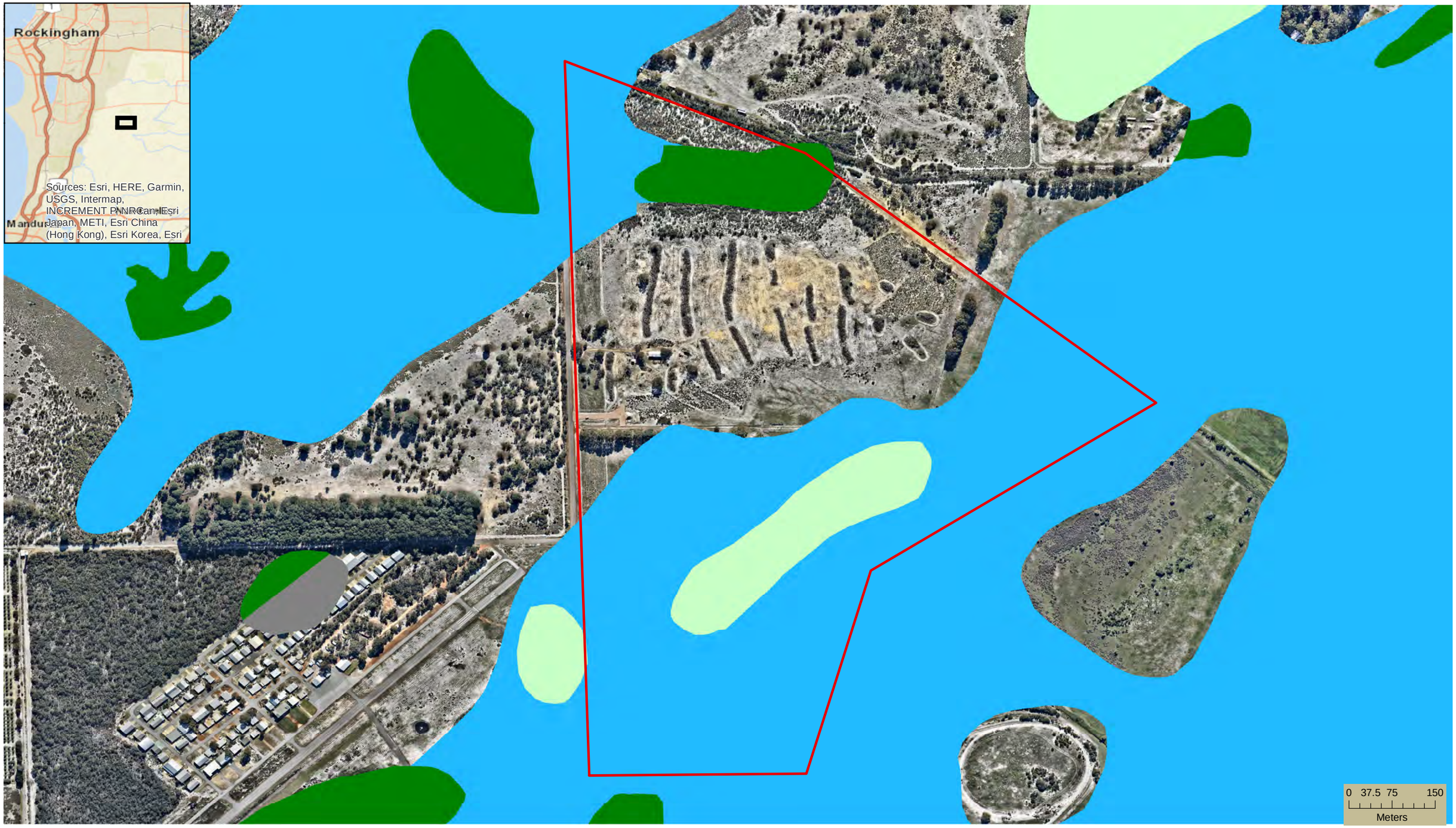

Figure 5: Geomorphic Wetlands

SERS
Site Environmental and Remediation Services
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Postal: PO Box 377 Northbridge Perth WA 6865
T: +61 8 92202000 F: +61 8 92202010
E: admin@sers.net.au W: www.sers.net.au

Job No: 157281
Client: Urban Resources
Address: Lot 810 Yangedi Road, Hopelands

Scale: 1: 6,371
Original size: A3
Imagery from: 16/07/2019
Source: Nearmaps

Date drawn: 30/07/2019
Revision: 0
Drawn by: AC
Checked by: RM

N

Legend

Site Boundary

WGS_WETLANDMANAGEMENTCA
- Conservation
- Multiple Use
- Not Applicable
- Not Assessed
- Resource Enhancement

File: N:\A SERS\GIS\Projects\ MXD\

APPENDIX A – WATER REPORT

19 September 2019

Your Ref:
Our Ref: H19051Av1

Urban Resources
PO Box 1528
Bibra Lake DC WA 6965
ATTENTION: Stephen Elliott

Dear Stephen,

LOT 810 YANGEDI RD HOPELANDS, GROUNDWATER ASSESSMENT OF PROPOSED DAMS

Please find below Hyd2o's report providing a hydrological assessment of the two proposed excavated dams for Lot 810 Yangedi Rd Hopelands.

Hyd2o understands the proposed dams will be part of a wet screening plant to form part of the sand mining process. The process will effectively draw groundwater directly from the dams and will contribute to total water usage at the site.

This report details calculations that estimate the water usage from the excavated dams for the wet screening plant based on estimates of the quantity of washed sand and evaporation. The report also assesses whether there may be any possible impacts to the site wetlands due to the introduction of the excavated dams.

1. EXCAVATED DAMS AND WATER USE

Figure 1 shows the location of the dams relative to the overall site and the wetlands. The proposed dams will be approximately 35m x 20m and 35m x 30m in size.

Based on advice provided by Urban Resources, Hyd2o understands the dams will be excavated to a maximum depth of approximately 2.5 m in the middle of each dam. In terms of operation, water is pumped from the dams to wash sand after excavation /prior to sale, and then the water and any fine material is recirculated. Replenishment of the dams (if/when required) is done from the bore on site.

Additional water use from the superficial aquifer which occurs as a result of the two excavated dams and sand washing process is:

- The evaporation from washed sand prior to sale.
- The evaporation from the exposed water surface area of the dams.

2. ESTIMATION OF EVAPORATED WATER

The annual washed amount of sand is estimated by Urban Resources to be 50,000 to 100,000 tonnes. Based on a density of dry sand of approximately 1.6 tonnes/m^3, this equates to a volume of sand between 31,250 m^3 to 62,500 m^3.

Given a density difference between wet sand (1.9 tonnes/m^3) and dry sand (1.6 tonnes/m^3), the volume of residual water in the sand following washing is estimated as 0.3 kg/m^3 .This represents the water use via evaporation as sand is dried out prior to sale.

Estimated water use via sand washing for various sand quantities between 50,000 and 100,000 tonnes are shown in Table 1.

An estimate of additional evaporation loss from the water surface of the dams is contained in Attachment 1. This estimate is based on a combined dam surface area of 1,750 m^2, Hopelands rainfall data, Luke et al (1987) Class A pan evaporation data, and considering a pan to lake evaporation factor of 0.85.

The total evaporation loss from the surface of the dams is estimated as 1,552 kl/yr (Table 1). Note that this volume remains constant irrespective of the annual throughput of sand.

On the basis of the above calculations, the total water use from the superficial aquifer as a result of the dams and their operation ranges from 10,927 to 20,302 kL/yr (Table 1), based on an estimated 50,000 to 100,000 tonnes of sand washing per annum.

Table 1: Estimated Excavated Dam Water Use

Sand Quantity (Tonnes)	Annual Sand Washing Evaporation Loss (kL/yr)	Annual Dam Evaporation Loss (kL/yr)	Annual Water Use (kL)
50,000	9,375	1,552	10,927
60,000	11,250	1,552	12,802
70,000	13,125	1,552	14,677
80,000	15,000	1,552	16,552
90,000	16,875	1,552	18,427
100,000	18,750	1,552	20,302

3. WETLAND IMPACT ASSESMENT

3.1 Wetland Identification

Two wetlands are identified within the site. The wetland to the north of the proposed dams is categorised as a conservation category wetland while the wetland to the southeast is categorised as a resource enhancement wetland. The location of the proposed excavated dams relative the wetlands are shown in Figure 1. The dams will be located approximately 315 and 170 meters from the conservation and resource enhancement wetland respectively.

Sections 3.2 and 3.3 assess the potential wetland impacts as a result of this location.

3.2 Wetland Groundwater Levels

Four groundwater monitoring bores were installed via drill rig into the superficial aquifer at the site in May 2015 for the purpose of monitoring prior to mining works. A Department of Water and Environmental Regulation (DWER) bore within the site was also monitored in the same programme.

Initially the monitoring program consisted of groundwater level readings at a monthly interval for a 12 month period. The program then operated at a quarterly frequency from January 2017.

Two of the monitoring bores (MW4 and SSB15) are located adjacent to the conservation wetland while one monitoring bore (MW2) is located on the edge of the resource enhancement wetland (Figure 1).

Water level data for bores located near each wetland are plotted in Figure 2 and Figure 3 for the conservation and resource enhancement wetland respectively. Water levels at all bores are broadly consistent with previous groundwater mapping at the site, with 2018 winter peaks slightly above the previously estimated average annual maximum groundwater levels (AAMGL) for the site. This is considered likely to be due to the above average rainfall in 2017 and 2018, and recent clearing of vegetation in elevated areas.

Monitoring of site bores is continuing and will identify any changes in groundwater levels in the vicinity of the wetland as the dams are implemented and mining proceeds.

3.3 Groundwater Level Drawdown

The use of water for sand washing and surface evaporation from the excavated dams will a provide drawdown effect on the groundwater level locally where the water is being extracted.

Attachment 2 details calculations of the local drawdown and cone of depression, based on the likely abstraction rate and volume at the dam, and aquifer characteristics and such as groundwater levels, base of the superficial, storage coefficient, and transmissivity.

The calculations use an abstraction volume over a given day to estimate the drawdown in the vicinity of the dam and an extent of impact (the radius of cone of depression).

Modelling was conservatively undertaken considering the month of January where the largest effective abstraction would occur due to the high evaporation, and assuming a daily sand wash based on the maximum estimate of 100,000 tonnes of sand washed per year (and 5 days/week operation). This equates to 13.2 m^3/day of evaporation and 71.9 m^3/day of sand wash, to provide a total groundwater extraction of 85.1 m^3/day.

The results indicate a maximum likely drawdown at the dam of 0.11 m, and an extent of drawdown of 62 m. Given the distances of the wetlands from the dam (170m and 315m respectively), the reductions in groundwater level at the wetlands are therefore considered likely to be negligible.

4. CONCLUSIONS

- The proposed excavated dams as part of a wet screening plant for sand mining at Yangedi Rd will effectively draw directly from the superficial aquifer.
- Water use from the superficial aquifer will occur via evaporation as a result of the two excavated dams and sand washing process.

- The estimated annual removal of water from the superficial aquifer from these dams is estimated to range from 10,927 kL for 50,000 tonnes washed sand per year, to 20,302 kL for 100,000 tonnes washed sand per year
- Conservative modelling indicates a maximum likely drawdown at the dam of 0.11 m and an extent of drawdown of 62 m at times of maximum water use. Given the distances of the wetlands from the dam (170m and 315m respectively), the reductions in groundwater level at the wetlands are therefore considered likely to be negligible.
- Monitoring of site bores is continuing and will identify any changes in groundwater levels in the vicinity of the wetland as the dams are implemented and mining proceeds.

5. REFERENCES

Luke GJ, Burke KL, O'Brien TM (1987), Evaporation Data for Western Australia, Department of Agriculture Resource Management Technical Report No. 65

Should you have any queries regarding this report, please do not hesitate to contact Sean O'Sullivan or Sasha Martens of this office.

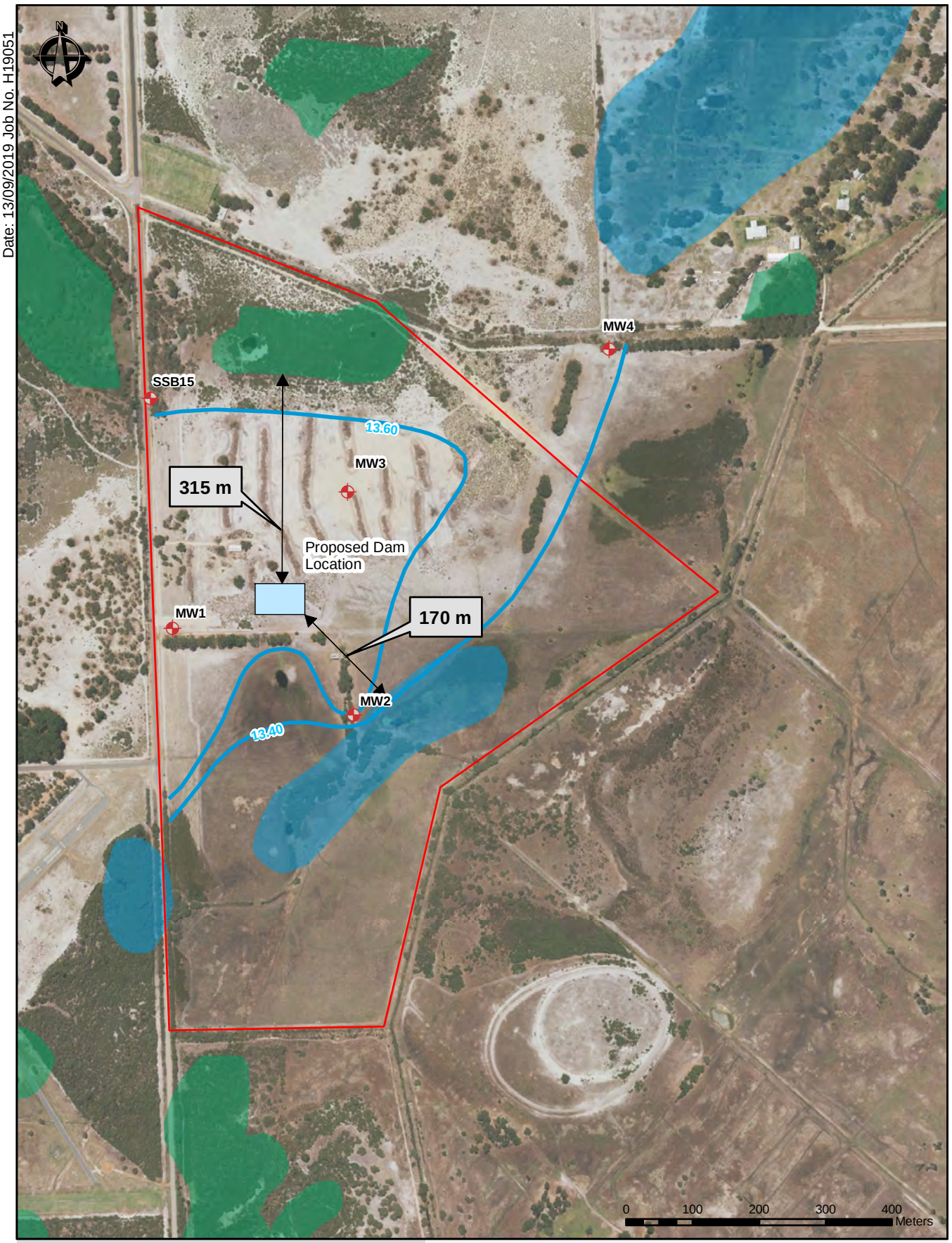
Yours sincerely,

Sean O'Sullivan, Engineering Hydrologist

Attachments

Figure 1: Site Plan
Figure 2: Bores near Conservation Category Wetland Hydrograph
Figure 3: Bores near Resource Enhancement Wetland Hydrograph
Attachment 1: Calculation of Net Evaporation from Dam Surface Area
Attachment 2: Calculation of Cone of Depression from Dam Groundwater Extraction

Date: 13/09/2019 Job No. H19051



Site

Monitored Groundwater Bores

Groundwater AAMGL Contour

Conservation Wetland

Resource Enhancement Wetland

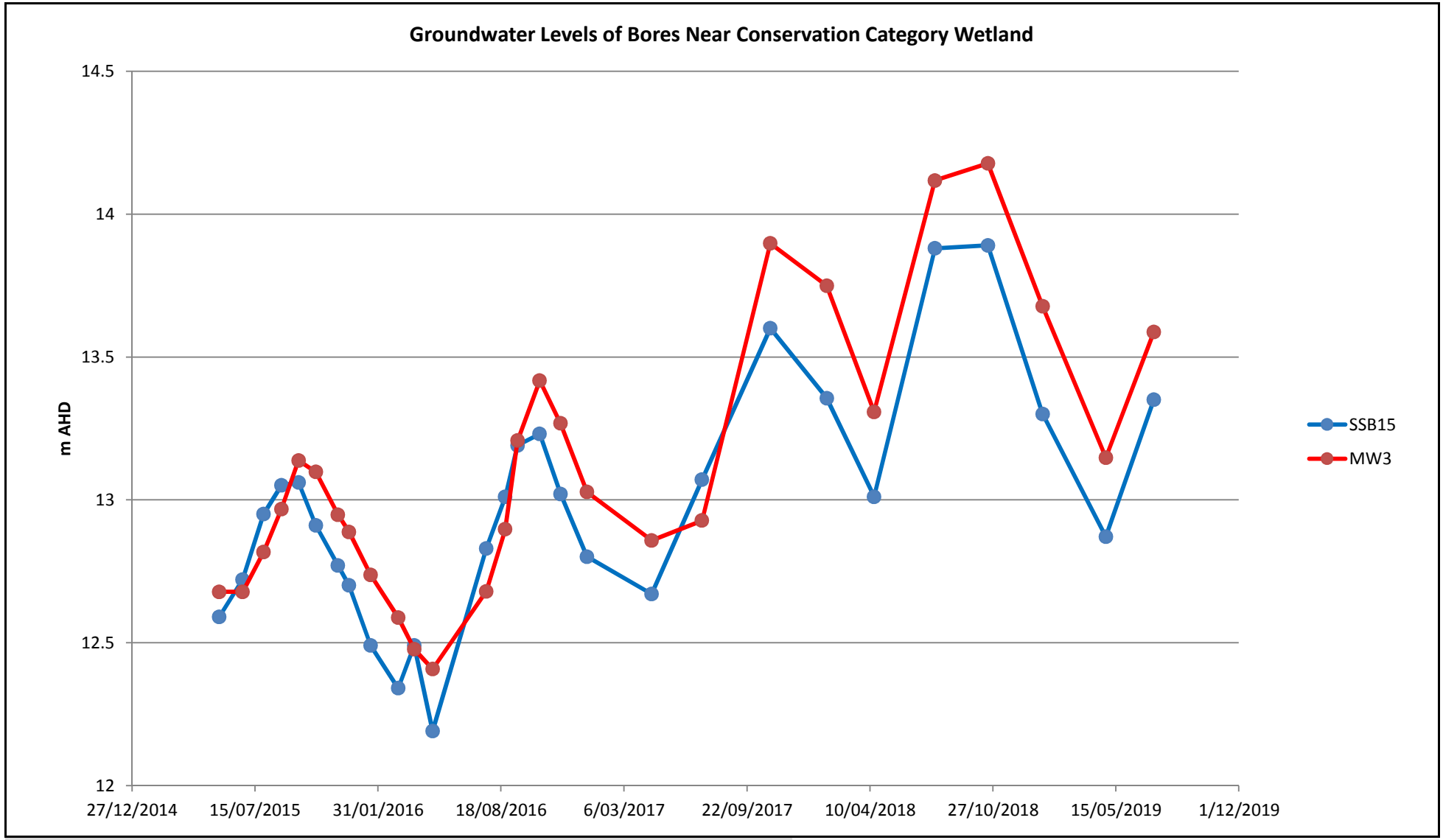
hyd2o

Lot 810 Yangedi Road Hopelands

Site Plan

Figure 1

Date : 13/09/2019 Job No: H19051



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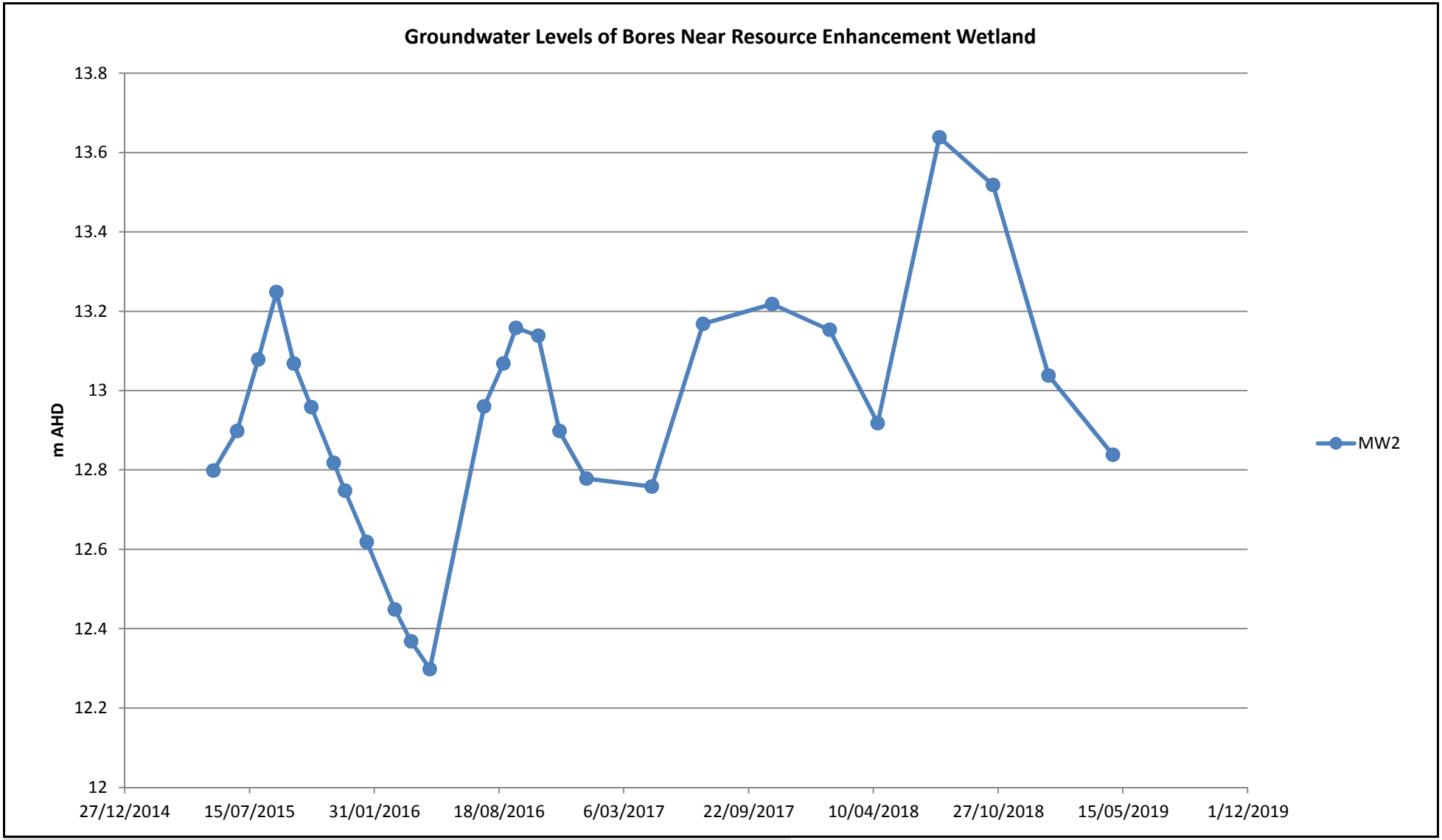
Lot 810 Yangedi Rd Hopelands

Bores Near Conservation Category Wetland Hydrograph

Figure 2

Date : 13/09/2019 Job No: H19051



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Lot 810 Yangedi Rd Hopelands

Bores Near Resource Enhancement Wetland Hydrograph

Figure 3

Attachment 1

Lot 810 Yangedi Rd Hopelands : Calculation of Net Evaporation from Dam Surface Area

Lake to Pan Evap Coefficient	0.85	converts pan evap to dam evap
Dam 1 Estimated Area	700	(m2) via client advice
Dam 2 Estimated Area	1050	(m2) via client advice

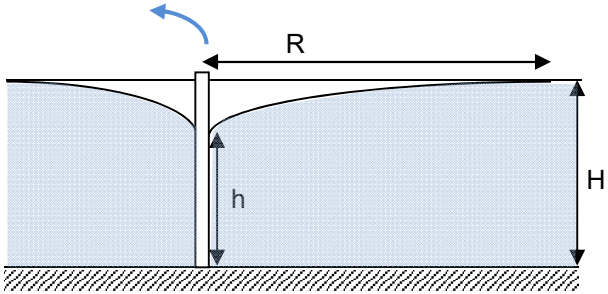
	Avg Monthly Rainfall 2000- (mm)	Pan Evap Luke et al (mm)	Dam Evap (mm)	Net Evap (inc rainfall) (mm)	Total Dam Area (ha)	Total Evap from Surface (m3)
Jan	19.4	297	252	233	0.175	408
Feb	16.0	257	218	202	0.175	354
Mar	17.9	224	190	173	0.175	302
Apr	43.3	123	105	61	0.175	107
May	87.4	87	74	-13	0.175	-24
Jun	124.9	59	50	-75	0.175	-131
Jul	139.7	60	51	-89	0.175	-155
Aug	127.0	69	59	-68	0.175	-120
Sep	76.5	106	90	14	0.175	24
Oct	36.1	154	131	95	0.175	166
Nov	25.1	203	173	147	0.175	258
Dec	12.9	259	220	207	0.175	363
					Total Annual Evaporation (m3)	**1552**

Attachment 2

Lot 810 Yangedi Rd Hopelands : Calculation of Cone of Depression from Dam Groundwater Abstraction

Groundwater Abstraction : Cone of Depression Calculator

Aquifer Base	0.0	mAHD
Static Water Level	13.6	mAHD
Saturated Thickness, H	13.6	m
Hydraulic Conductivity, K	8.0	m/d*
Storage Coefficient, S	0.25	
Transmissivity, T (K×H)	108.8	m^2/d
Water Level at Bore	13.494	mAHD
Drawdown	0.106	m
WL Above Aquifer Base, h	13.5	m
Approx Radius of Extraction Area, r	42.0	m
Length of Time Pumped, t	0.5	days
Radius of Cone of Depression, R	64	m
Groundwater Abstraction	170.5	m^3/d (for a 24 hour period)
	85.3	m^3 total for period of pumping



The potential radial drawdown from the proposed abstraction was calculated using the following distance-drawdown equation (Driscoll, 1986):

Radius of Cone of Depression =
((2.25 x Transmissivity x Time Pumped)/Storage Coefficient)$^{0.5}$

* Based on a typical hydraulic conductivity for medium grained sand as estimated by Davidson (1995)

APPENDIX B – NOISE SURVEY REPORT

Rochdale Holdings Pty Ltd A.B.N. 85 009 049 067 trading as:
HERRING STORER ACOUSTICS
Suite 34, 11 Preston Street, Como, W.A. 6152
P.O. Box 219, Como, W.A. 6952
Telephone: (08) 9367 6200
Facsimile: (08) 9474 2579
Email: hsa@hsacoustics.com.au

SAGH PTY LTD

SAND EXTRACTION OPERATIONS

LOT 810 YANGEDI ROAD, HOPELAND

ACOUSTIC ASSESSMENT

FEBRUARY 2015

OUR REFERENCE: 18801-1-15030

DOCUMENT CONTROL PAGE

ACOUSTIC ASSESSMENT

HOPELAND

Job No: 15030

Document Reference: 18801-1-15030

FOR

SAGH PTY LTD

DOCUMENT INFORMATION			
Author:	Paul Daly	**Checked By:**	Tim Reynolds
Date of Issue :	4 February 2015		

REVISION HISTORY

Revision	Description	Date	Author	Checked

DOCUMENT DISTRIBUTION

Copy No.	Version No.	Destination	Hard Copy	Electronic Copy
1	1	Urban Resources		✓

CONTENTS

APPENDICIES

1. INTRODUCTION

Herring Storer Acoustics was commissioned by Urban Resources, on behalf of SAGH Pty Ltd to undertake an acoustic assessment of noise emissions from a proposed sand extraction operation site located at Lot 810 Yangedi Road, Hopeland.

The sand extraction component of the operation entails the usage of a front end loader and screen.

This assessment takes into account the cumulative noise level of both the sand extraction in each of the stages, and the transport of sand off site via semi-trailer. The assessment is provided to support the works approval process.

Operational hours for the site are proposed to be Monday to Saturday 07:00 to 17:00 hours (excluding Public Holidays).

As part of the study, the following was carried out:

- Identification of individual operations and the associated noise levels.
- Assess the predicted noise levels at the nearest surrounding noise sensitive premises for compliance with the appropriate criteria.
- If exceedances are predicted, comment on possible noise amelioration options for compliance with the appropriate criteria.

For information, a locality plan is shown in Appendix A.

2. SUMMARY

Assessment has been conducted on the proposed sand extraction operation at Lot 810 Yangedi Road, Hopeland.

The applicable criterion for this assessment is 45 dB(A) for the nearest residential locations.

Noise received at the nearest residential premises has been determined, to be 36 dB(A) for the sand extraction operations, throughout the various stages.

The above noise levels have been considered to contain tonal characteristics, therefore contain a +5 dB(A) penalty. Thus, the assessable noise level at the worst case receiver location (i.e. Location A) would be 41 dB(A).

Given these operating parameters, noise levels received at the nearest premises has been calculated to comply with the *Environmental Protection (Noise) Regulations 1997* for the operating times as outlined in this assessment.

3. CRITERIA

The allowable noise level at the surrounding locales is prescribed by the *Environmental Protection (Noise) Regulations 1997*. Regulations 7 & 8 stipulate maximum allowable external noise levels determined by the calculation of an influencing factor, which is then added to the base levels shown below. The influencing factor is calculated for the usage of land within two circles, having radii of 100m and 450m from the premises of concern.

TABLE 1 - BASELINE ASSIGNED OUTDOOR NOISE LEVEL

Premises Receiving Noise	Time of Day	Assigned Level (dB)		
		$L_{A\ 10}$	$L_{A\ 1}$	$L_{A\ max}$
Noise sensitive premises	0700 - 1900 hours Monday to Saturday (Day)	45 + IF	55 + IF	65 + IF
	0900 - 1900 hours Sunday and Public Holidays (Sunday / Public Holiday Day Period)	40 + IF	50 + IF	65 + IF
	1900 - 2200 hours all days (Evening)	40 + IF	50 + IF	55 + IF
	2200 hours on any day to 0700 hours Monday to Saturday and 0900 hours Sunday and Public Holidays (Night)	35 + IF	45 + IF	55 + IF
Industrial and Utility Premises	All Hours	65	80	90

Note: L_{A10} is the noise level exceeded for 10% of the time.
L_{A1} is the noise level exceeded for 1% of the time.
L_{Amax} is the maximum noise level.
IF is the influencing factor.

It is a requirement that received noise be free of annoying characteristics (tonality, modulation and impulsiveness), defined below as per Regulation 9.

"impulsiveness" means a variation in the emission of a noise where the difference between L_{Apeak} and $L_{Amax\ Slow}$ is more than 15 dB when determined for a single representative event;

"modulation" means a variation in the emission of noise that –

(a) is more than 3dB $L_{A\ Fast}$ or is more than 3 dB $L_{A\ Fast}$ in any one-third octave band;
(b) is present for more at least 10% of the representative assessment period; and
(c) is regular, cyclic and audible;

"tonality" means the presence in the noise emission of tonal characteristics where the difference between –

(a) the A-weighted sound pressure level in any one-third octave band; and
(b) the arithmetic average of the A-weighted sound pressure levels in the 2 adjacent one-third octave bands,

is greater than 3 dB when the sound pressure levels are determined as $L_{Aeq,T}$ levels where the time period T is greater than 10% of the representative assessment period, or greater than 8 dB at any time when the sound pressure levels are determined as $L_{A\ Slow}$ levels.

Where the noise emission is not music, if the above characteristics exist and cannot be practicably removed, then any measured level is adjusted according to Table 2 below.

TABLE 2 - ADJUSTMENTS TO MEASURED LEVELS

Where **tonality** is present	Where **modulation** is present	Where **impulsiveness** is present
+5 dB(A)	+5 dB(A)	+10 dB(A)

Note: These adjustments are cumulative to a maximum of 15 dB.

The nearest potential noise sensitive premises to the proposed development have been identified using the area map in Figure 1. Due to location of the premises the influencing factor has been assessed as 0 dB(A).

FIGURE 1 – RECEIVER LOCATIONS

Therefore, the assigned noise level is as noted in Table 1.

4. CALCULATED NOISE LEVELS

Noise imissions[1] at the nearest neighbouring residential premises, due to noise associated with the proposed sand extraction operations, were modelled with the computer programme SoundPlan. Sound power levels used for the calculations are based on measured sound pressure levels of similar equipment proposed for use on site.

The modelling of noise levels has been based on noise sources and sound power levels shown in Table 3.

1 Immissions – noise received at a source
2 Emissions – noise emanating from a source and / or location

TABLE 3 – SOUND POWER LEVEL - NOISE SOURCES dB(A)

Element name	Unit	Frequency Hz										dB(A)
		31.5	63	125	250	500	1k	2k	4k	8k	16k	Sum
Screening Plant	dB(A)/unit	66	80	84	90	93	95	95	95	87	-	101
Truck and Water Truck	dB(A)/unit	42	60	62	66	72	81	85	90	70	62	95
		45	59	61	73	76	82	84	76	68	59	
		54	58	63	71	78	84	86	73	66	53	
Loader WA430	dB(A)/unit	46	72	73	80	86	93	90	87	82	69	105
		48	60	70	81	89	93	91	86	78	63	
		58	68	76	85	91	91	89	88	73	54	

Based on noise emissions[2] from the above equipment, an overall, worst case operating scenario has been developed. This scenario allows for all equipment to be operating at the same time, within the centre of the proposed pit. Note, no barriers other than the sides of the extraction pit were included in the modelling.

The design layout and site configuration, including source location is shown in Appendix A. Figure 2.

This is understood to be representative of the maximum noise levels associated with the proposed sand extraction site.

The following input data was used in the calculations:

a) Provided backgrounds.
b) Sound Power Levels listed in Table 4.
c) Ground contours and receiver point provided by client

Weather conditions for modelling were as stipulated in the Environmental Protection Authority's "*Draft Guidance for Assessment of Environmental Factors No. 8 - Environmental Noise"* and for the day period are as listed in Table 4.

TABLE 4 – WEATHER CONDITIONS

Condition	Day
Temperature	20°C
Relative humidity	50%
Pasquill Stability Class	E
Wind speed	4 m/s*

* From sources, towards receivers.

5. RESULTS

Calculated noise levels associated with the noise emissions from the proposed sand extraction for the assumed scenario is summarised below in Table 5. Appendix B contains the noise contour plot.

TABLE 5 – CALCULATED NOISE LEVEL

Receiver	Scenario 1
	All Equipment Operating
A	36
B	34
C	28
D	28
E	24
F	28

6. ASSESSMENT

Based on calculated noise levels at the nearest premises, noise levels could be considered as being tonal in characteristics. Therefore, a +5 dB(A) penalty has been included to allow for a tonal component.

Hence, Table 6 summarises the applicable Assigned Noise Levels, and assessable noise level emissions, for the scenario considered.

TABLE 6 – ASSESSMENT OF NOISE LEVELS

Receiver	Scenario 1
	All Equipment Operating
A	36 (41)
B	34 (39)
C	28 (33)
D	28 (33)
E	24 (29)
F	28 (33)

( ) include a +5 dB(A) penalty for tonal characteristics.

Based on the assessable noise level above, comparison against the relevant assigned noise level is contained in Table 7.

TABLE 8A – ASSESSMENT OF NOISE LEVELS STAGE 1

Premises Receiving Noise	Assessable Noise Level dB(A)	Time of Day	Assigned Level (dB)	Compliance
A	41	0700 - 1900 hours Monday to Saturday (Day)	45	Complies
B	39			Complies
C	33			Complies
D	33			Complies
E	29			Complies
F	28			Complies

7. CONCLUSION

Assessment has been conducted on the proposed sand extraction operation at Lot 810 Yangedi Road, Hopeland.

The applicable criterion for this assessment is 45 dB(A) for the nearest residential locations.

Noise received at the residential premises has been determined, to be 36 dB(A) for the sand extraction operations, for the worst case operating scenario.

The above noise levels have been considered to contain tonal characteristics, therefore contains a +5 dB(A) penalty. Thus, the assessable noise level at the worst case receiver location (i.e. Location A) would be 41 dB(A).

Given these operating parameters, noise levels received at the nearest premises has been calculated to comply with the *Environmental Protection (Noise) Regulations 1997* for the operating times as outlined in this assessment.

APPENDIX A

FIGURE A1 – LOCATION MAP
FIGURE A2 – RECEIVER LOCATION

FIGURE A1 – SITE LAYOUT

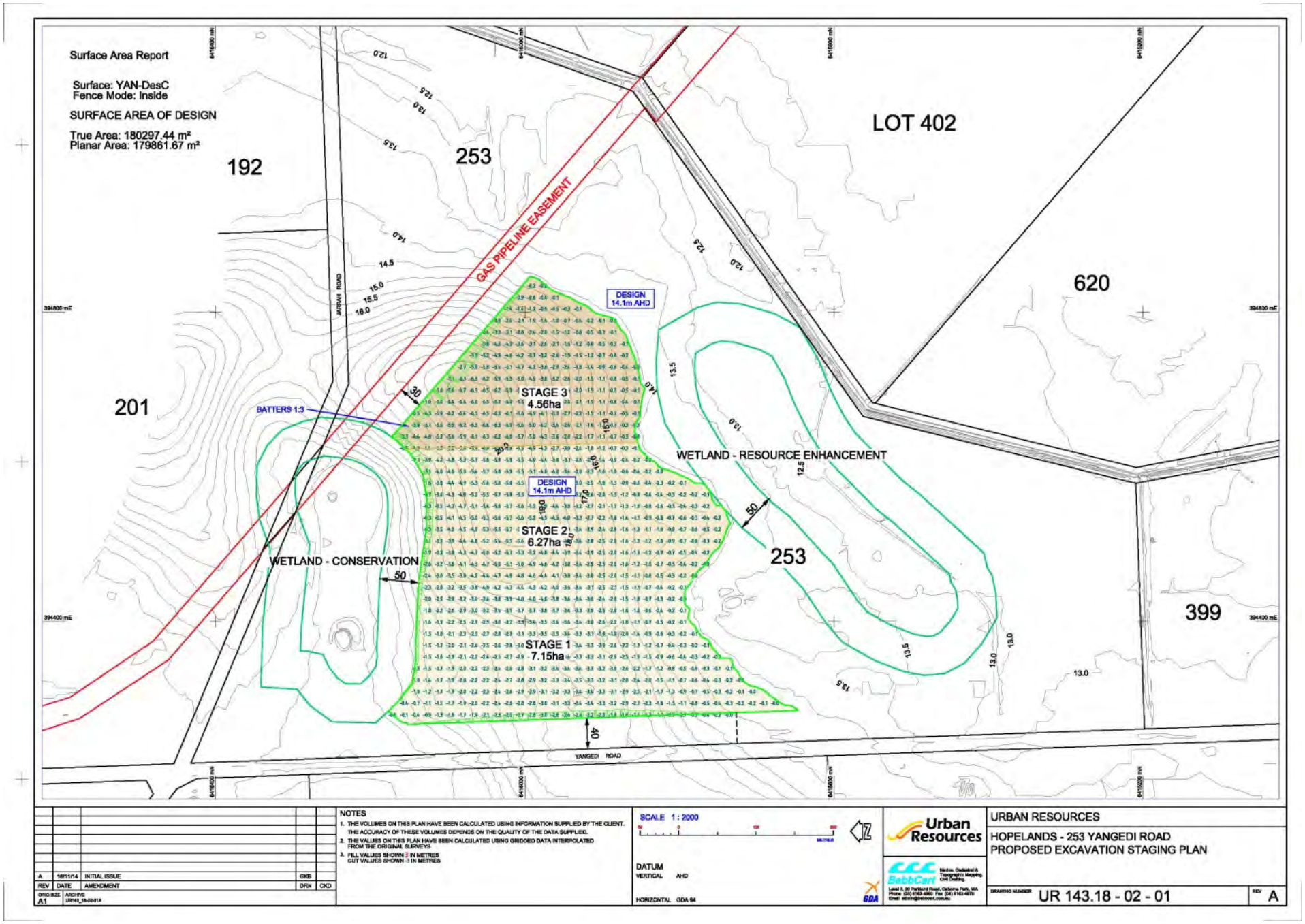
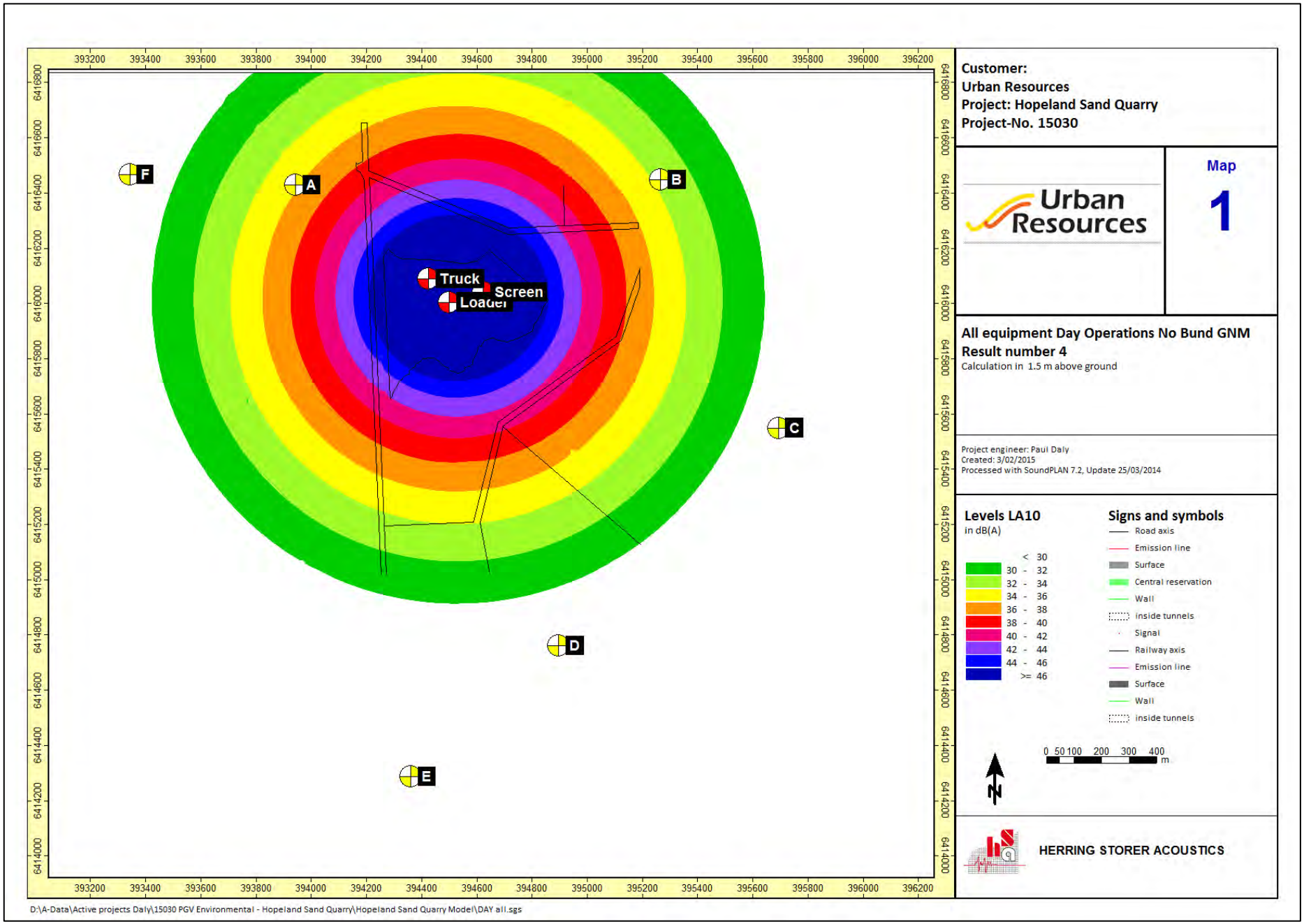


FIGURE A2 – RECEIVER LOCATION

APPENDIX B

Noise Contours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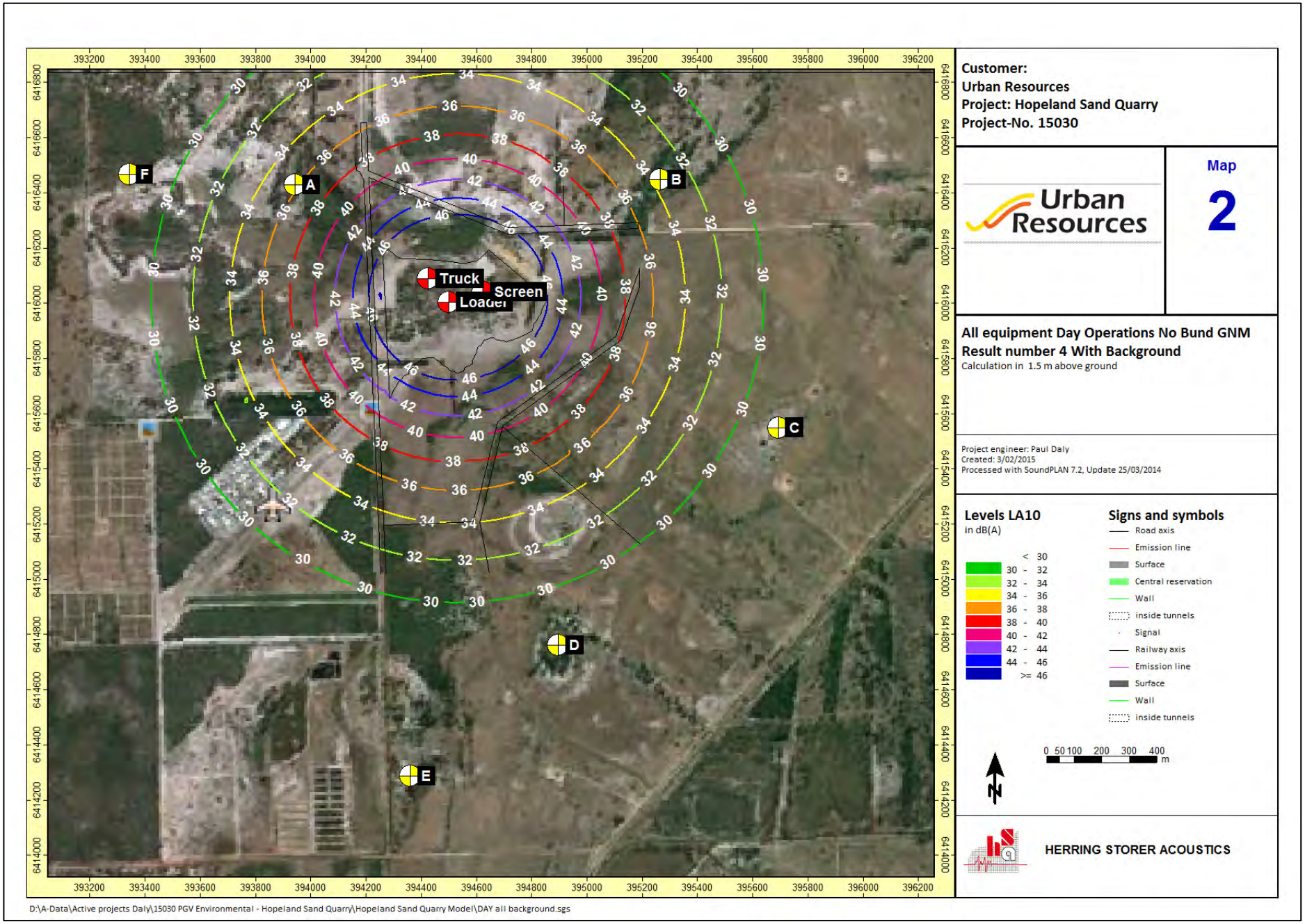
Urban Resources
Project: Hopeland Sand Quarry
Project-No. 15030
Urban Resources
Map
1
All equipment Day Operations No Bund GNM
Result number 4
Calculation in 1.5 m above ground
Project engineer: Paul Daly
Created: 3/02/2015
Processed with SoundPLAN 7.2, Update 25/03/2014
Levels LA10
in dB(A)
< 30
30 - 32
32 - 34
34 - 36
36 - 38
38 - 40
40 - 42
42 - 44
44 - 46
>= 46
Signs and symbols
Road axis
Emission line
Surface
Central reservation
Wall
inside tunnels
Signal
Railway axis
Emission line
Surface
Wall
inside tunnels
0 50 100 200 300 400 m
N
HERRING STORER ACOUSTICS


Customer:
Urban Resources
Project: Hopeland Sand Quarry
Project-No. 15030
Map
2
Urban Resources
All equipment Day Operations No Bund GNM
Result number 4 With Background
Calculation in 1.5 m above ground
Project engineer: Paul Daly
Created: 3/02/2015
Processed with SoundPLAN 7.2, Update 25/03/2014
Levels LA10
in dB(A)
< 30
30 - 32
32 - 34
34 - 36
36 - 38
38 - 40
40 - 42
42 - 44
44 - 46
>= 46
Signs and symbols
Road axis
Emission line
Surface
Central reservation
Wall
inside tunnels
Signal
Railway axis
Emission line
Surface
Wall
inside tunnels
0 50 100 200 300 400 m
N
HERRING STORER ACOUSTICS
Truck
Screen
Loader
A
B
C
D
E
F
D:\A-Data\Active projects Daly\15030 PGV Environmental - Hopeland Sand Quarry\Hopeland Sand Quarry Model\DAY all background.sgs

APPENDIX C – CERTIFICATE OF TITLE

WESTERN AUSTRALIA

REGISTER NUMBER	
810/DP202726	
DUPLICATE EDITION **2**	DATE DUPLICATE ISSUED **24/1/2011**

VOLUME **1730** FOLIO **354**

RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

REGISTRAR OF TITLES

LAND DESCRIPTION:

LOT 810 ON DEPOSITED PLAN 202726

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

URBAN RESOURCES PTY LTD OF UNIT 2/127 MELVILLE PARADE, COMO

(T N001097) REGISTERED 18/5/2015

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)

1. C518071 EASEMENT TO THE STATE ENERGY COMMISSION OF WESTERN AUSTRALIA. SEE INSTRUMENT C518071. REGISTERED 22/3/1983.
   H632795 SUNDRY. THE GRANTEE OF TRANSFER C518071 IS NOW THE DBNGP LAND ACCESS MINISTER PURSUANT TO THE DAMPIER TO BUNBURY PIPELINE ACT 1997. REGISTERED 27/12/2000.
2. H632795 SUNDRY. PORTION OF THE LAND HEREIN IS WITHIN THE DBNGP CORRIDOR PURSUANT TO THE DAMPIER TO BUNBURY PIPELINE ACT 1997. SEE LAND ADMINISTRATION PLAN 15582. REGISTERED 27/12/2000.
3. K830535 SUNDRY. PORTION OF THE LAND HEREIN IS WITHIN THE DBNGP CORRIDOR PURSUANT TO THE DAMPIER TO BUNBURY PIPELINE ACT 1997. SEE DEPOSITED PLAN 39027. REGISTERED 20/1/2009.
4. *K830536 TAKING ORDER. THE DESIGNATED PURPOSE OF THE INTEREST TAKEN IS STATE CORRIDOR RIGHTS TO THE DBNGP LAND ACCESS MINISTER UNDER THE PROVISIONS OF THE DAMPIER TO BUNBURY PIPELINE ACT 1997. AS TO THE PORTION SHOWN ON DEPOSITED PLAN 39027 ONLY. REGISTERED 20/1/2009.
5. *N499477 MEMORIAL. SOIL AND LAND CONSERVATION ACT 1945. AS TO PORTION ONLY AS SHOWN ON DEPOSITED PLAN 410611. REGISTERED 2/12/2016.
6. *O156288 MORTGAGE TO AUSTRALIA & NEW ZEALAND BANKING GROUP LTD REGISTERED 22/5/2019.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required.
* Any entries preceded by an asterisk may not appear on the current edition of the duplicate certificate of title.
Lot as described in the land description may be a lot or location.

----------END OF CERTIFICATE OF TITLE----------

END OF PAGE 1 - CONTINUED OVER

STATEMENTS:

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

SKETCH OF LAND:	1730-354 (810/DP202726)
PREVIOUS TITLE:	1199-650
PROPERTY STREET ADDRESS:	253 YANGEDI RD, HOPELAND.
LOCAL GOVERNMENT AUTHORITY:	SHIRE OF SERPENTINE-JARRAHDALE

NOTE 1: DUPLICATE CERTIFICATE OF TITLE NOT ISSUED AS REQUESTED BY DEALING N1098

NOTE 2: N445366 DEPOSITED PLAN 410611 LODGED (INTEREST ONLY)

APPENDIX D – APPLICATION FOR DEVELOPMENT APPROVAL (ORIGINAL AND APPROVED EXTENSION)

6 Paterson Street, Mundijong WA 6123 | 08 9526 1111 | f 08 9525 5441 | e info@sjshire.wa.gov.au | www.sjshire.wa.gov.au

All enquiries to Planning Services on 9526 1131
Our ref: P01495/01: RT:bo
Electronic Ref: OC15/9695

Shire of Serpentine Jarrahdale

Sustainable. Connected. Thriving!

21 May 2015

SAGH Pty Ltd
PO Box 739
COMO WA 6952

Dear Sir/Madam

Re: Industry (Extractive) Application – Lot 810 (No.253) Yangedi Road, Hopeland

I refer to your application for development approval in respect of the above property. The Shire is pleased to advise that the application has been carefully considered and the Shire has been able to support the proposal, with an approval decision notice attached for your information and future reference.

Should you wish to proceed with the development, it is important that you review the various conditions that have been imposed. The conditions have been imposed due to the various regulatory requirements that exist in Western Australia and ultimately to ensure that the expectations of the community will be achieved into the future. While every effort has been made to ensure that the requirements are clear, please do not hesitate contact the relevant officers of the Shire should you require any additional information or wish to clarify the requirements of the conditions.

Should you be aggrieved by any of the conditions, you may have the right under the Planning and Development Act 2005 to have the decision reviewed by the State Administrative Tribunal. Applications for review must be submitted to the Tribunal within 28 days of the date on the decision notice. Further information can be obtained by calling the Tribunal on (08) 9219 3111 or by visiting their website at www.sat.justice.wa.gov.au

The Shire is endeavouring to provide a high level of customer service and is always keen to receive feedback on how we can improve our services. Should you have any feedback that you would like to provide to the Shire, please do not hesitate to send us an email to planning@sjshire.wa.gov.au.

Thank you again for lodging a development application with the Shire and we look forward to working with you again in the future.

Yours faithfully

Leonard Long
Statutory Planning Coordinator

6 Paterson Street
Mundijong 6123
Western Australia

Shire of Serpentine Jarrahdale

Telephone: 9526 1111
Facsimile: 9525 5441
Web: www.sjshire.wa.gov.au
Email: info@sjshire.wa.gov.au

FORM 2
PLANNING APPROVAL
TOWN PLANNING SCHEME NO. 2

PROPERTY FILE:	P01495/01	**DOCUMENT NO:**	OC15/9695
APPLICANT:	SAGH Pty Ltd		
OWNER:	Rich Vista Pty Ltd 66 Bourke Drive ATTADALE WA 6156 De Evergrace Pty Ltd 11 Meadowbank Terrace SOUTH LAKE WA 6164		
PROPERTY:	Lot 810 (No.253) Yangedi Road, Hopeland		
DEVELOPMENT:	Industry – Extractive		
USE CLASS:	Industry – Extractive		
APPROVAL DATE:	21 May 2015		
AUTHORITY:	OCM043/04/15		

Application for approval to commence development as per application form **dated 3 December 2014** and accompanying plans is **APPROVED** under the above authority subject to the following conditions:

CONDITIONS

1. This approval is valid for a period of five years expiring on 12 April 2020.

2. Except to the extent inconsistent with any other conditions set out hereunder, all development on the site shall comply with the Extractive Industry Licence Application as approved by the Shire and any subsequent amendments as may be agreed in writing between the Shire and the applicant from time to time.

3. The applicant shall undertake the extractive industry operations in accordance with the Shire of Serpentine Jarrahdale's Extractive Industries Local Law.

4. The landowner shall submit an Annual Compliance Assessment Report to the Shire by 31 December each year. The Annual Compliance Assessment Report shall include an internal compliance audit of the Community Consultation Framework and all the development and licence approval conditions and management plans, complaints and complaint responses.

5. Operating hours are restricted to 7:00am to 5:00pm Monday to Friday.

6. Any buildings/structures associated with the excavation activities such as site office, equipment store and vehicle parking area are to be located so that they are screened from view from any adjacent roads or properties to the satisfaction of the Shire.

7. Outside lighting should be angled to minimise light impacts on neighbouring properties.

8. Within 3 months of the date of this approval, and before pre-excavation works commence, the landowner is to submit to the Shire a plan for Community Consultation Framework. The plan shall feature, but not be limited to, formation of a committee comprising the relevant landowner, community representatives from the Shire and government agency representatives, terms of reference for the committee and the frequency of committee meetings. Once approved the plan is to be implemented in its entirety.

9. At the completion of each stage of mining operations, the landowner shall ensure that all sand faces, non-operational stock piles and bund walls are safe and stable and must provide a report from a certified Geotechnical Engineer to verify their short, medium and long term stability to the satisfaction of the Shire.

10. Prior to the commencement of pre-excavation works, a Traffic Management Plan shall be submitted to and approved by the Shire and thereafter implemented.

11. Prior to the commencement of pre-excavation works, a Wetland Management Plan shall be submitted to and approved by the Shire and thereafter implemented.

12. Prior to commencement of operations, a Water and Drainage Management Plan that addresses surface and groundwater quality and quantity (including a suitable network of groundwater monitoring bores) is to be submitted to and approved by the Shire and thereafter implemented. The maximum depth of excavation shall facilitate a 2 metre separation to groundwater.

13. Prior to commencement of operations, a Landscape Rehabilitation Plan is to be submitted to and approved by the Shire and thereafter implemented. Within two years from the cessation of the extraction form the final stage of sand extraction, the land must be rehabilitated and revegetated to the satisfaction of the Shire.

14. Prior to commencement of operations, an Acoustic Assessment is to be submitted to and approved by the Shire and thereafter implemented so as to ensure noise levels comply with the allowable noise levels.

15. Prior to the commencement of pre-excavation works, a Dust Management Plan shall be submitted and approved by the Shire and thereafter implemented so as to minimise dust emissions and ensure that visible dust is not emitted beyond the boundaries of the development site.

16. The applicant shall operate in accordance with the Unauthorised Discharge Regulations to minimise the risks of fuel spills or leaks of chemicals including fuel, oil or other hydrocarbons, and shall ensure that no chemicals or potential liquid contaminants are disposed of on site.

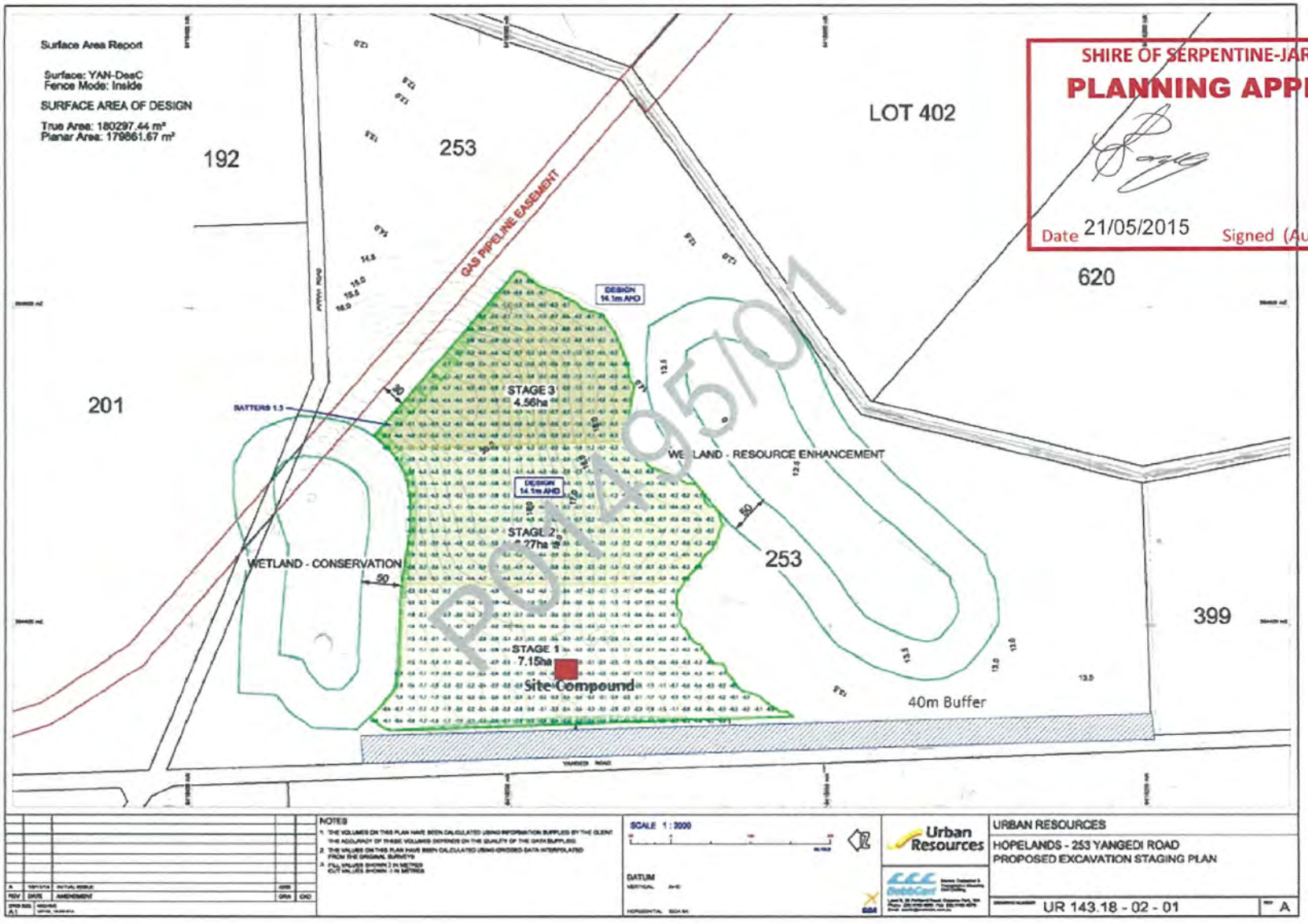
17. Prior to commencement of operations, a Fire and Emergency Management Plan is to be submitted to and approved by the Shire and thereafter implemented.

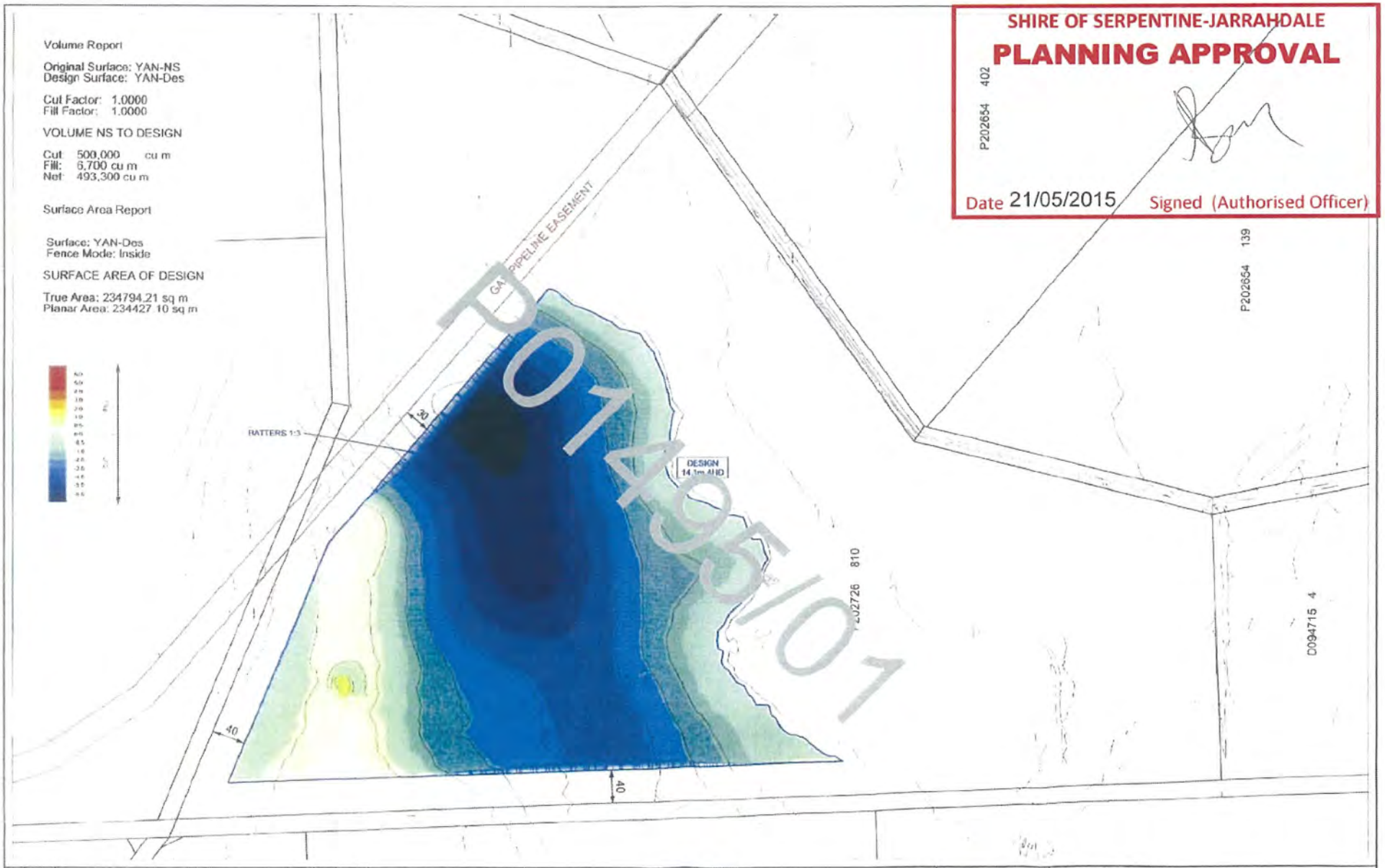
18. Prior to the commencement of works a Staging Plan is to be submitted to and approved by the Shire and thereafter implemented.

APPEAL RIGHTS

The applicant may have the right under the Planning and Development Act 2005 to have the decision reviewed by the State Administrative Tribunal (SAT). Applications for review must be submitted to the SAT within 28 days of the date on the decision notice. Further information can be obtained by calling SAT on (08) 9219 3111 or by visiting their website at www.sat.justice.wa.gov.au

Leonard Long
Statutory Planning Coordinator


Surface Area Report
Surface: YAN-DesC
Fence Mode: Inside
SURFACE AREA OF DESIGN
True Area: 180297.44 m²
Planar Area: 179861.67 m²
192
253
LOT 402
620
201
399
GAS PIPELINE EASEMENT
YANGEDI ROAD
DESIGN 14.1m AHD
STAGE 3 4.56ha
STAGE 2
STAGE 1 7.15ha
Site Compound
BATTERS 1:3
WETLAND - CONSERVATION
50
WETLAND - RESOURCE ENHANCEMENT
40m Buffer
SHIRE OF SERPENTINE-JARRAHDALE
PLANNING APPROVAL
Date 21/05/2015
Signed (Authorised Officer)
NOTES
SCALE 1 : 2000
DATUM
URBAN RESOURCES
HOPELANDS - 253 YANGEDI ROAD
PROPOSED EXCAVATION STAGING PLAN
UR 143.18 - 02 - 01
A



NOTES

1. THE VOLUMES ON THIS PLAN HAVE BEEN CALCULATED USING INFORMATION SUPPLIED BY THE CLIENT.
2. THE ACCURACY OF THESE VOLUMES DEPENDS ON THE QUALITY OF THE DATA SUPPLIED.
3. THE VALUES ON THIS PLAN MAY BE CALCULATED USING GRIDDED DATA INTERPOLATED FROM THE ORIGINAL SURVEYS.
4. ALL VALUES SHOWN ARE METRES.

REV	DATE	AMENDMENT	DRN	CHK
A	15/05/15	INITIAL ISSUE	CA	

SCALE 1 2000

DATUM
VERTICAL AHD
HORIZONTAL GDA 94

Urban Resources

BebbCart

URBAN RESOURCES
HOPELANDS - 253 YANGEDI ROAD
BULK EARTHWORKS
NATURAL SURFACE TO DESIGN
COLOUR CODED DIFFERENCES

UR 143.18 - 01 - 02 REV A

SJS TRIM - IN14/23657

6 Paterson Street
Mundijong 6123
Western Australia

Telephone: 9526 1111
Facsimile: 9525 5441
Web: www.sjshire.wa.gov.au
Email: info@sjshire.wa.gov.au

Planning and Development Act 2005
Shire of Serpentine Jarrahdale
Notice of Determination on Application for Development Approval

Property File:	A16300	Application No:	PA18/475
Location:	253 Yangedi Road, Hopeland		
Lot:	810	Plan/Diagram:	202726
Vol. No:	1730	Folio No:	354
Application Date:	4 July 2018	Received On:	4 July 2018

Description of Proposed Development: Extension to Existing Approval

Use Class: Industry - Extractive

Date of Determination: 18 February 2019

That Council GRANTS Development Approval pursuant to Clause 68(2) of the Deemed Provisions of *Planning and Development (Local Planning Schemes) Regulations 2015* for an Industry – Extractive subject to compliance with the following conditions:

Conditions:

a. The development is to be carried out in compliance with the plans and documentation listed below and endorsed with the Shire of Serpentine Jarrahdale stamp, except where amended by other conditions of this consent.

Plans and Specifications	P1 – P2 received at the Shire's Offices on 5 July 2018 and the following: Acoustic Assessment dated February 2015, Traffic Management Plan dated 22 January 2015, Dust Management Plan dated 29 January 2015, Fire and Emergency Management Plan dated July 2015, Community Consultation Framework dated October 2015, Landscape and Rehabilitation Management Plan dated July 2015, and Water and Drainage Management Plan dated July 2015.

b. This approval expires on 12 April 2025.

c. Except to the extent inconsistent with any other conditions set out hereunder, all development on the site shall comply with the Extractive Industry Licence Application as approved by the Shire and any subsequent amendments as may be agreed in writing between the Shire and the Applicant from time to time.

d. The applicant shall undertake the Extractive Industry operations in accordance with the Shire of Serpentine Jarrahdale's Extractive Industries Local Law.

e. The landowner shall submit an Annual Compliance Assessment Report to the Shire by 31 December each year. The Annual Compliance assessment Report shall include an internal compliance audit of the Community Consultation Framework and all the development and licence approval conditions and management plans, complaints and complaint responses.

f. Operating hours are restricted to 7:00am to 5:00pm Monday to Friday.

g. Any buildings/structures associated with the excavation activities such as site office, equipment store and vehicle parking area are to be located so that they are screened from view from any adjacent roads or properties to the satisfaction of the Shire.

h. Outside lighting should be angled to minimise impacts on neighbouring properties.

i. At the completion of each stage of mining operation, the landowner shall ensure that all sand faces, non-operational stock piles and bund walls are safe and stable and must provide a report from a certified Geotechnical Engineer to verify their short, medium and long term stability to the satisfaction of the Shire.

j. Prior to the commencement of pre-excavation works, a Wetland Management Plan shall be submitted to and approved by the Shire and thereafter implemented.

k. The applicant shall operate in accordance with the *Environmental Protection (Unauthorised Discharges) Regulations 2004* to minimise the risks of fuel spills or leaks of chemicals including fuel, oil or other hydrocarbons, and shall ensure that no chemicals or potential liquid contaminants are disposed of on site.

l. The first 50 metres of the access road / driveway into the property from Yangedi Road shall be surfaced with non-dust generating material to the specification and satisfaction of the Director Infrastructure Services.

NOTE 1: If the development the subject of this approval is not substantially commenced within a period of 2 years, or another period specified in the approval after the date of the determination, the approval will lapse and be of no further effect.

NOTE 2: Where an approval has so lapsed, no development must be carried out without the further approval of the local government having first been sought and obtained.

NOTE 3: If an applicant or owner is aggrieved by this determination there is a right of review by the State Administrative Tribunal in accordance with the *Planning and Development Act 2005* Part 14. An application must be made within 28 days of the determination.

Signed:  Dated: 18 February 2019

For and on behalf of the Shire of Serpentine Jarrah

APPENDIX E – CLEARING PERMIT

29 NOV 2016

Government of **Western Australia**
Department of **Environment Regulation**

Your ref:
Our ref: CPS 6417/1
Enquiries: Ray Carvalho
Phone: 9333 7498
Email: nvp@der.wa.gov.au

Mr Stephen Elliott
Director
SAGH Pty Ltd
PO Box 739
COMO WA 6952

Dear Mr Elliott

APPLICATION TO CLEAR NATIVE VEGETATION UNDER THE *ENVIRONMENTAL PROTECTION ACT 1986*

I refer to SAGH Pty Ltd's application to clear 13 hectares of native vegetation within Lot 810 on Deposited Plan 202726, Hopeland, for the purposes of sand extraction, cropping and grazing (reference CPS 6417/1).

In email of 23 September 2016, Ms Danielle White (Strategen) provided additional information, including an Environmental Offset Plan and a copy of the referral decision from the Department of the Environment and Energy. Mr Dale Newsome (Strategen) provided a further email of 17 October 2016 with attached revised Environmental Offset Plan.

Please find enclosed SAGH Pty Ltd's permit to clear native vegetation granted under s.51E of the *Environmental Protection Act 1986*. This permit authorises SAGH Pty Ltd to clear, subject to certain terms, conditions or restrictions. A copy of the permit is now available for the public to view, as required by the regulations.

A copy of the Decision Report is attached for your information. The Decision Report is also available for the public to view.

Please read the permit carefully. If you wish to discuss the permit, please contact the Department of Environment Regulation (DER) immediately. Be aware that there are penalties for failing to comply with the requirements of a permit.

Please note condition 4 of the permit, which requires a Conservation Covenant under Section 30B of the *Soil and Land Conservation Act 1945* to be executed prior to the commencement of clearing and no later than 19 November 2017.

If you are aggrieved by this decision an appeal may be lodged with the Minister for Environment. If you choose to appeal, it must be in writing, clearly set out the grounds of your appeal, and be received by the Minister within 21 days of being notified of the decision. More information on lodging an appeal is available from the Office of the Appeals Convenor on telephone 6467 5190. Completed appeals should be posted or delivered to:

Office of the Appeals Convenor
Level 22 Forrest Centre
221 St George's Terrace, PERTH WA 6000
Tel: 6467 5190 Fax: 6467 5199
Email: admin@appealsconvenor.wa.gov.au
Web: www.appealsconvenor.wa.gov.au

Third parties may also appeal against the grant of this permit or its conditions.

Please note that clearing must not commence until the date stated on the permit and all pre-clearing condition requirements have been met, or in the event of an appeal, after the appeal has been determined and you have been notified.

Please also note that in determining the amount of native vegetation authorised to be cleared under this permit, the Permit Holder is to have regard to avoiding clearing, minimising clearing, and reducing the impacts of clearing on any environmental value.

Compliance with the terms, conditions or restrictions of this permit does not absolve the Permit Holder from responsibility for compliance with the requirements of all Commonwealth, State and Local Government legislation.

If you have any queries regarding this approval, please contact Clearing Regulation Officer Mr Ray Carvalho on 9333 7498.

Yours sincerely

James Widenbar
MANAGER
CLEARING REGULATION

Officer delegated under Section 20
of the Environmental Protection Act 1986

17 November 2016

Attached: Clearing Permit (CPS 6417/1), Plan 6417/1(a), Plan 6417/1(b), Plan 6417/1(c) and Decision Report.
Fact Sheet: Complying with your Clearing Permit

GOVERNMENT OF
WESTERN AUSTRALIA

CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

PERMIT DETAILS

Area Permit Number: 6417/1
File Number: DER 2014/003264-1
Duration of Permit: From 17 December 2016 to 12 April 2025

PERMIT HOLDERS

SAGH Pty Ltd

LAND ON WHICH CLEARING IS TO BE DONE

Lot 810 on Deposited Plan 202726, Hopeland.

AUTHORISED ACTIVITY

The Permit Holder shall not clear more than 13 hectares of native vegetation within the area cross hatched yellow on the attached Plan 6417/1(a).

CONDITIONS

1. **Avoid, minimise etc clearing**
   In determining the amount of native vegetation to be cleared authorised under this Permit, the Permit Holder must have regard to the following principles, set out in order of preference:
   (a) avoid the clearing of native vegetation;
   (b) minimise the amount of native vegetation to be cleared; and
   (c) reduce the impact of clearing on any environmental value.

2. **Type of clearing authorised**
   Clearing shall be conducted in a progressive manner from south to north.

3. **Period in which clearing is authorised**
   The Permit Holder shall not clear native vegetation unless undertaking extractive activities within three months of the authorised clearing being undertaken.

4. **Dieback and weed control**
   When undertaking any clearing or other activity authorised under this Permit, the Permit Holder must take the following steps to minimise the risk of the introduction and spread of *weeds* and *dieback*:
   (a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
   (b) ensure that no *dieback* or *weed*-affected soil, *mulch*, *fill* or other material is brought into the area to be cleared; and
   (c) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

5. **Offsets – conservation covenant**
   Prior to undertaking any clearing authorised under this Permit, and no later than 17 December 2017 the Permit Holder shall:
   (a) give a conservation covenant under section 30B of the *Soil and Land Conservation Act 1945* setting aside the *covenant area* for the protection and management of vegetation in perpetuity; and
   (b) provide to the CEO a copy of the executed conservation covenant.

6. **Revegetation and Rehabilitation**
   (a) The Permit Holder must implement the document 'Lot 810 Yangedi Road Hopeland-Environmental Offset Plan-October 2016';
   (b) The Permit Holder shall *revegetate* and *rehabilitate* an area of at least 4.9 hectares within the area cross-hatched red on attached Plan 6417/1c;
   (c) *Revegetation* and *rehabilitation* identified under condition 6(b) must commence within 12 months following the beginning of clearing authorised under this permit;

(d) The Permit Holder shall establish three 10x10 metre quadrats and monitor annually for a period of 10 years areas *revegetated* and *rehabilitated* to determine vegetation cover, density, diversity, structure and weed cover and to assess areas *revegetated* and *rehabilitated* under this Permit against the completion criteria identified at condition 6(e);

(e) The Permit Holder shall achieve the following completion criteria after the 10 year monitoring period for areas *revegetated* and *rehabilitated* under this Permit; and

Completion criteria	**Minimum to be achieved**
Species richness	12 native species
Trees with a mature height of >5 metres	50%
Foraging species for *Calyptorhynchus baudinii*, *Calyptorhynchus latirostris* and *Calyptorhynchus banksii* subsp. *naso*	60%
Overstorey density	1000 stems per hectare
Overstorey species	Known to have the potential to develop suitable nesting hollows for *Calyptorhynchus baudinii*, *Calyptorhynchus latirostris* and *Calyptorhynchus banksii* subsp. *naso*
Weeds	No introduction of new weed species and existing weed density contained

(f) The Permit Holder shall undertake the following remedial actions for areas *revegetated* and *rehabilitated* where remedial triggers are met during the 10 year monitoring period.

Contingency trigger	**Contingency action**
Mean weed foliage cover >20%	• Map the extent of weed foliage cover; and • Implement revised hygiene control measures
Mean number of stems per hectare <1500 Species diversity <8 Structure – overstorey <37.5% Structure – midstorey <15% Structure – understorey <15%	• Re-treat the area *revegetated* and *rehabilitated* with stockpiled topsoil from the area hatched yellow on attached Plan 6417/1 (a); • Undertake direct seeding; and • Procure or propagate additional seedlings and undertake infill planting

7. Records must be kept

The Permit Holder must maintain the following records for activities done pursuant to this Permit:

(a) In relation to the clearing of native vegetation authorised under this Permit:
- (i) the vegetation cover, density, diversity, structure and weed cover of the cleared area;
- (ii) the location where the clearing occurred, recorded as a *shapefile*;
- (iii) the date(s) that the area was cleared; and
- (iv) the size of the area cleared (in hectares).

(b) In relation to the revegetation of areas pursuant to condition 6 of this Permit:
- (i) the location of any area *revegetated* and *rehabilitated* recorded as a *shapefile*;
- (ii) a description of the *revegetation* and *rehabilitation* activities undertaken;
- (iii) the size of the area *revegetated* and *rehabilitated* (in hectares);
- (iv) the date that the area was *revegetated* and *rehabilitated*; and
- (v) a copy of a report(s), prepared by an *environmental specialist*, detailing the *revegetation* and *rehabilitation* activities undertaken and results for the monitoring of vegetation cover, density, diversity, structure and weed cover.

8. Reporting

(a) The Permit Holder must provide to the CEO on or before 30 June of each year, a written report:
- (i) of records required under condition 7 of this Permit; and
- (ii) concerning activities done by the Permit Holder under this Permit between 1 January to 31 December of the preceding calendar year.

(b) If no clearing authorised under this Permit was undertaken between 1 January to 31 December of the preceding calendar year, a written report confirming that no clearing under this permit has been carried out, must be provided to the CEO on or before 30 June of each year.

(c) Prior to 12 January 2025, the Permit Holder must provide to the CEO a written report of records required under condition 6 of this Permit where these records have not already been provided under condition 8(a) of this Permit.

DEFINITIONS

The following meanings are given to terms used in this Permit:

covenant area means the area of land shaded red on attached Plan 6417/1(b);

dieback means the effect of *Phytophthora* species on native vegetation;

direct seeding means a method of re-establishing vegetation through the establishment of a seed bed and the introduction of seeds of the desired plant species;

environmental specialist means a person who holds a tertiary qualification in environmental science or equivalent, and has experience relevant to the type of environmental advice that an environmental specialist is required to provide under this Permit, or who is approved by the CEO as a suitable environmental specialist;

fill means material used to increase the ground level, or fill a hollow;

local provenance means native vegetation seeds and propagating material from natural sources within 100 kilometres and the same Interim Biogeographic Regionalisation for Australia (IBRA) subregion of the area cleared.

mulch means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation;

planting means the re-establishment of vegetation by creating favourable soil conditions and planting seedlings of the desired species;

regenerate/ed/ion means re-establishment of vegetation from in situ seed banks and propagating material (such as lignotubers, bulbs, rhizomes) contained either within the topsoil or seed-bearing *mulch*;

rehabilitate/ed/ion means actively managing an area containing native vegetation in order to improve the ecological function of that area;

revegetate/ed/ion means the re-establishment of a cover of *local provenance* native vegetation in an area using methods such as natural *regeneration*, *direct seeding* and/or *planting*, so that the species composition, structure and density is similar to pre-clearing vegetation types in that area.

shapefile means an ESRI shapefile consisting of polygons using the Geocentric Datum of Australia 1994 (GDA94);

weed/s means any plant -

(a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*; or

(b) published in a Department of Parks and Wildlife Regional Weed Rankings Summary, regardless of ranking; or

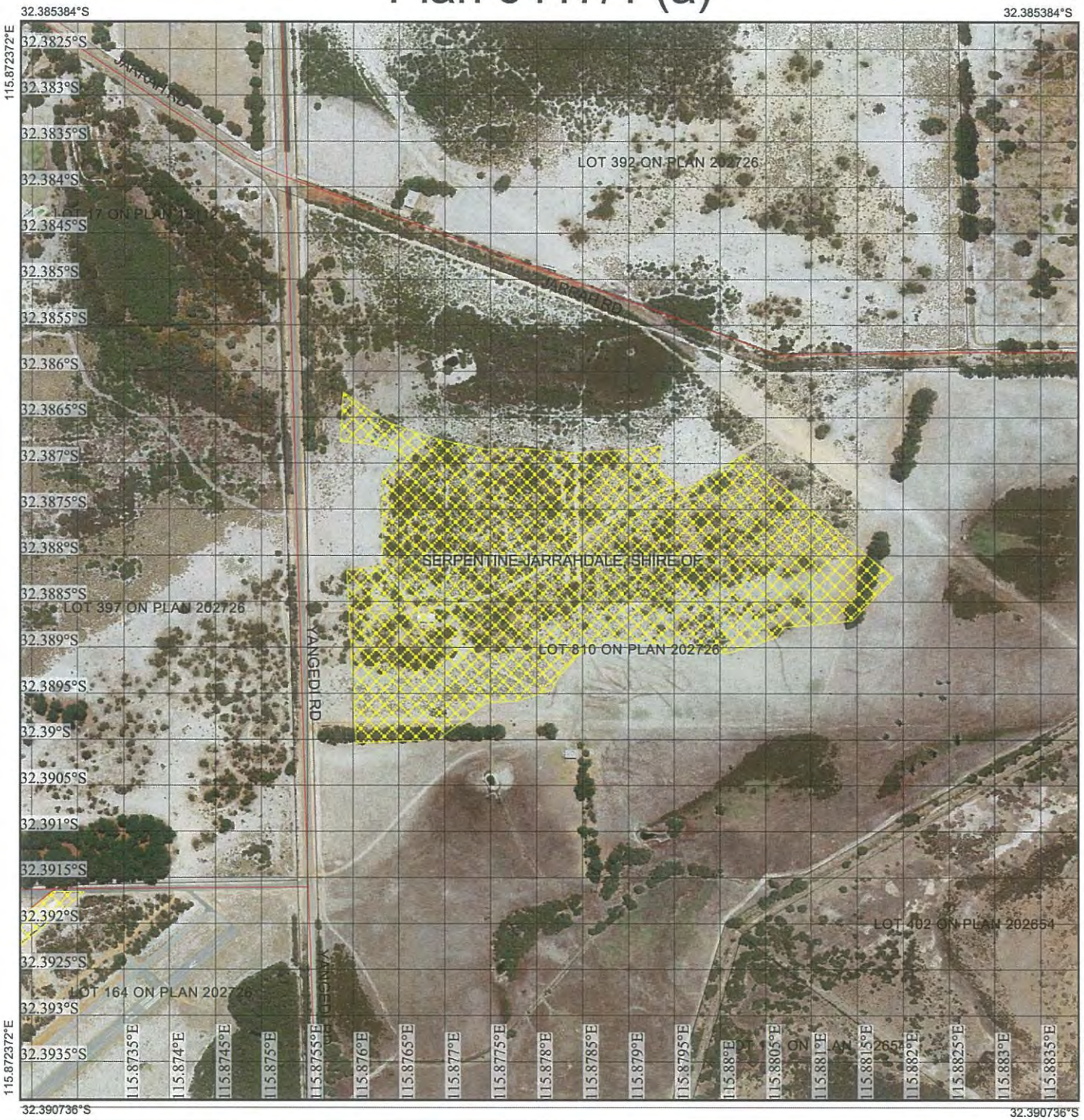
(c) not indigenous to the area concerned.

James Widenbar
MANAGER
CLEARING REGULATION

Officer delegated under Section 20
of the Environmental Protection Act 1986

17 November 2016

Plan 6417/1 (a)



Legend

- Roads
- Imagery
- Clearing Instruments Activities
- Local Government Authority

N

0 200m

1:5,752

(Approximate when reproduced at A4)

GDA 94 (Lat/Long)

Geocentric Datum of Australia 1994

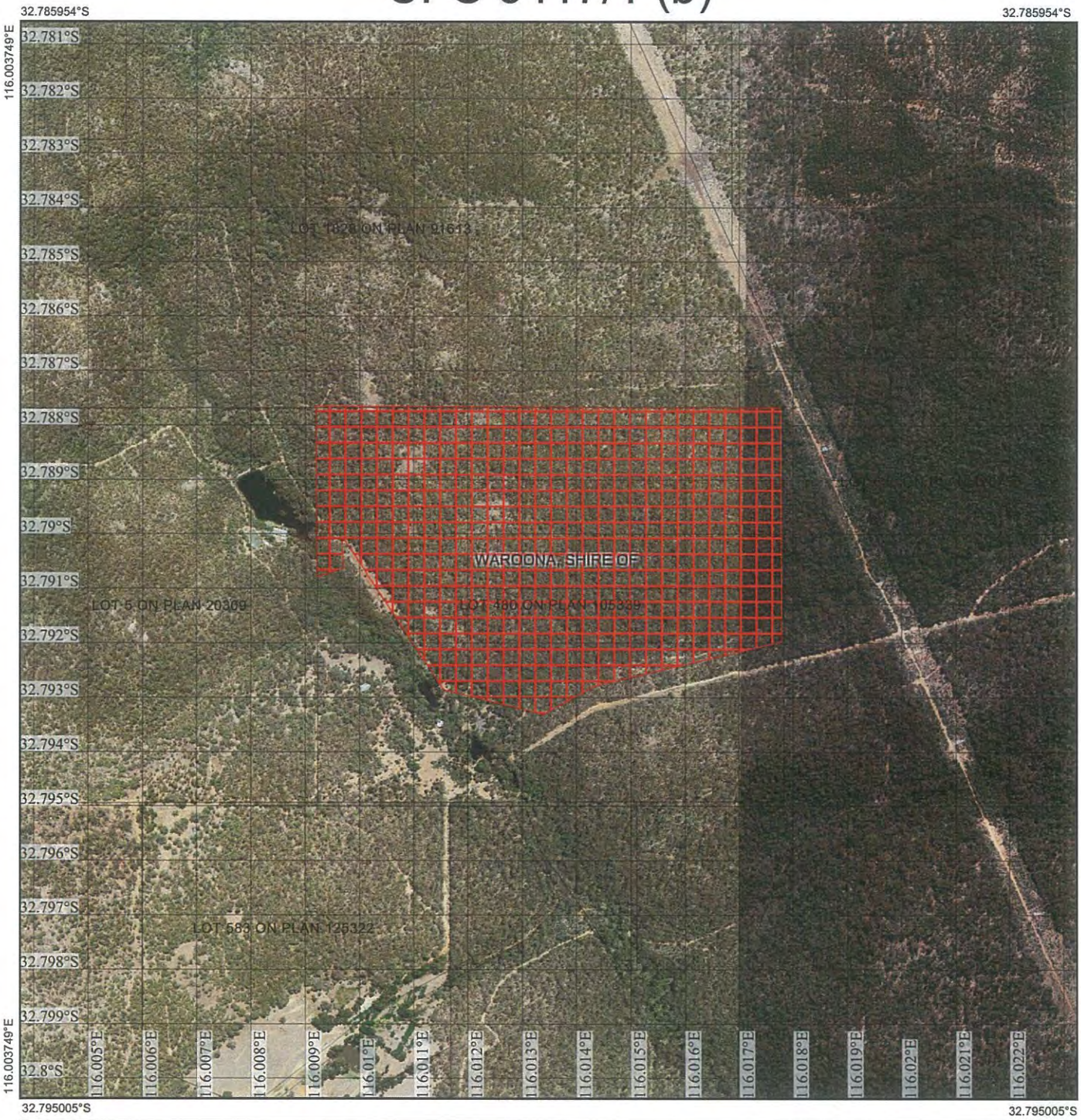
..... Date 17/1/16

JAMES WISPENSAR

Officer with delegated authority under Section 20 of the Environmental Protection Act 1986

GOVERNMENT OF WESTERN AUSTRALIA

CPS 6417/1 (b)



Legend

- Imagery
- Local Government Authority
- Clearing Instruments Conditions

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(Approximate when reproduced at A4)

GDA 94 (Lat/Long)

Geocentric Datum of Australia 1994

..... Date 12/1/2016

JAMES WIDENBAR

Officer with delegated authority under Section 20 of the Environmental Protection Act 1986

GOVERNMENT OF WESTERN AUSTRALIA

Plan 6417/1 (c)

Legend

- Imagery
- Local Government Authority
- Clearing Instruments Conditions

N

0 500m

1:11,504

(Approximate when reproduced at A4)

GDA 94 (Lat/Long)

Geocentric Datum of Australia 1994

..... Date 12/11/16.

JAMES WIDENBAR

Officer with delegated authority under Section 20 of the Environmental Protection Act 1986

GOVERNMENT OF WESTERN AUSTRALIA

Government of **Western Australia**
Department of **Environment Regulation**

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 6417/1
Permit type: Area Permit

1.2. Applicant details

Applicant's name: SAGH Pty Ltd

1.3. Property details

Property: LOT 810 ON PLAN 202726, HOPELAND
Local Government Authority: SERPENTINE-JARRAHDALE, SHIRE OF
DER Region: Greater Swan
DPaW District: SWAN COASTAL
LCDC: SERPENTINE - JARRAHDALE
Localities: HOPELAND

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
13		Mechanical Removal	Extractive industry

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 17 November 2016
Reasons for Decision:

The clearing permit application has been assessed against the clearing principles, planning instruments and other matters in accordance with s51O of the *Environmental Protection Act 1986*, and has concluded that the proposed clearing is at variance to Principles (a), (b) and (f), may be at variance to Principles (g), (h) and (i) and is not likely to be at variance to the remaining clearing principles.

The Delegated Officer determined that the proposed clearing will lead to the loss of 12.6 hectares of native vegetation that forms part of an ecological linkage, provides breeding habitat and significant foraging habitat for Carnaby's cockatoo (*Calyptorhynchus latirostris*), Baudin's cockatoo (*Calyptorhynchus baudinii*), and forest red-tailed black-cockatoo (*Calyptorhynchus banksii* subsp. *naso*) (collectively known as black cockatoos) and provides suitable habitat for chuditch. It has also been determined that the proposed clearing will impact on a small portion of vegetation growing in association with a wetland, and may result in land degradation in the form of wind erosion and sedimentation.

The Delegated Officer noted the results of the hydrological study commissioned by the applicant, which identified that the proposed clearing and end land use is unlikely to significantly alter the hydrological regime of the nearby conservation category wetland (CCW) or surrounding wetlands. The application area retains a 50 metre buffer from the mapped CCW.

The Permit Holder is required to undertake staged clearing, to assist in minimising the risk of wind erosion, and subsequent land degradation and sedimentation.

The Permit Holder is required to clear in a slow progressive manner from north to south to minimise impacts to quenda (*Isoodon obesulus* subsp. *Fusciventer*).

The Permit Holder is required to undertake weed and dieback management measures to minimise the spread of weeds and dieback into adjacent vegetated areas.

On 2 March 2015 the project was determined to be a controlled action under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) for the following controlling provision: Listed Threatened Species and Communities. The controlled action is likely to have a significant impact on Carnaby's cockatoo, Baudin's cockatoo, and forest red-tailed black-cockatoo, which are listed under the EPBC Act.

Consistent with the WA Environmental Offset Policy (2011) and WA Environmental Offsets Guidelines (2014), and pursuant to section 51I(2)(b) of the EP Act, in order to mitigate the significant environment impacts described above the Permit Holder is required to place a conservation covenant, issued under section 30B of the Soil and Land Conservation Act (SLC Act), over 41 hectares of native vegetation that is in a better condition than the application area and provides suitable breeding and foraging habitat for black cockatoos.

The applicant will also be required to rehabilitate a linear area of 4.9 hectares within Lot 810 immediately west of the application area. The rehabilitated area will be set aside for the protection and management of vegetation in perpetuity under a conservation covenant, also to be issued under the SLC Act and will help to maintain an ecological linkage.

The proposed offset described above is consistent with the EPBC Act Environmental Offsets Policy (October 2012) and Offsets Assessment Guide.

The Delegated Officer notes that the Shire of Serpentine Jarrahdale granted conditional Development Approval for the proposed extractive industry. The Delegated Officer considers that the requirement to prepare a wetland management plan, dust management plan and water and drainage management plan for approval prior to the commencement of pre-excavation works will assist to minimise impacts from wind erosion and sedimentation.

The Delegated Officer took into consideration the Development Approval and offset proposal requirements in the decision to grant a clearing permit.

2. Site Information

2.1. Existing environment and information

2.1.1. Description of the native vegetation under application

Vegetation Description	Clearing Description	Vegetation Condition	Comment
The vegetation under application is mapped as Beard vegetation association 1000 which is described as mosaic; medium forest; jarrah-marri / low woodland; *Banksia* / low forest; teatree (*Melaleuca* spp.)(Shepherd et al., 2001). The vegetation under application is mapped as Heddle vegetation Southern River complex which is described as open woodland of *Corymbia calophylla* (marri) - *Eucalyptus marginata* (jarrah) - *Banksia* species with fringing woodland of *Eucalyptus rudis* (flooded gum) and *Melaleuca* (Heddle et al., 1980). A flora survey undertaken by PGV Environmental (2014a) described three vegetation types within the application area: EmBi (approximately three hectares): *Eucalyptus marginata/Banksia ilicifolia* low open forest over *Hibbertia hypericoides* open low heath. BmBaEm (approximately 9.5 hectares): *Banksia menziesii/Banksia attenuata/ Eucalyptus marginata* low open woodland over *Hibbertia hypericoides/ Allocasuarina humilis* open low heath. Kg (approximately 0.5 hectares): *Kunzea glabrescens* tall open scrub over bare ground.	The applicant proposes clear 13 hectares of native vegetation within Lot 810 on Deposited Plan 202726, Hopeland, for the purposes of sand extraction prior to cropping and grazing.	Very Good; Vegetation structure altered; obvious signs of disturbance (Keighery, 1994). To Degraded: Structure severely disturbed; regeneration to good condition requires intensive management (Keighery, 1994)	The condition of the application area was determined via a flora and vegetation survey undertaken by PGV Environmental (2014a) and a site inspection undertaken by the Department of Environment Regulation (DER) on 23 February 2015. Approximately six hectares of the application area is in a very good (Keighery, 1994) condition, approximately 4.5 hectares is in a good to degraded (Keighery, 1994) condition and approximately 2.5 hectares is in a degraded (Keighery, 1994) condition (PGV Environmental, 2014a; DER, 2015).

3. Assessment of application against clearing principles

(a) Native vegetation should not be cleared if it comprises a high level of biological diversity.

Comments

Proposed clearing is at variance to this Principle

The applicant proposes to clear 13 hectares of native vegetation within Lot 810 on Deposited Plan 202726, Hopeland, for the purpose of sand extraction prior to cropping and grazing.

A flora and vegetation survey of Lot 810 undertaken by PGV Environmental (2014a) recorded 80 native flora species and identified three vegetation types within the application area, these being:

- EmBi (approximately three hectares) which comprises *Eucalyptus marginata/Banksia ilicifolia* low open forest over *Hibbertia hypericoides* open low heath;
- BmBaEm (approximately 9.5 hectares) which comprises *Banksia menziesii/Banksia attenuata/Eucalyptus marginata* low open woodland over *Hibbertia hypericoides/Allocasuarina humilis* open low heath; and

- Kg (approximately 0.5 hectares) which comprises *Kunzea glabrescens* tall open scrub over bare ground.

The flora and vegetation survey identified that approximately six hectares of the application area is in a very good (Keighery, 1994) condition, approximately 4.5 hectares is in a good to degraded (Keighery, 1994) condition and approximately 2.5 hectares is in a degraded (Keighery, 1994) condition (PGV Environmental, 2014a).

The flora and vegetation survey of Lot 810 did not identify any threatened or priority ecological communities, rare flora or priority flora (PGV Environmental, 2014a).

The local area (10 kilometre radius surrounding the application area) retains approximately 15 per cent native vegetation.

The application area has been identified as part of an ecological linkage under the Perth Greenways Plan and the Shire of Serpentine-Jarrahdale Local Biodiversity Strategy (Del Marco and Penna, 2007). Ecological linkages have been defined as "a series of (both contiguous and non-contiguous) patches of native vegetation which, by virtue of their proximity to each other, act as stepping stones of habitat which facilitate the maintenance of ecological processes and the movement of organisms within, and across, a landscape" (Molloy et al, 2009). The application area forms part of a chain of remnants linking conservation areas to the north and south of the application area.

Sixteen fauna species of conservation significance have been recorded within the local area (Department of Parks and Wildlife (Parks and Wildlife), 2007-). Of these species, the application area provides suitable habitat for Baudin's cockatoo (*Calyptorhynchus baudinii*), Carnaby's cockatoo (*Calyptorhynchus latirostris*), forest red-tailed black-cockatoo (*Calyptorhynchus banksii* subsp. *naso*) (collectively known as black cockatoos), chuditch (*Dasyurus geoffroii*) and quenda (*Isoodon obesulus* subsp. *fusciventer*).

A black cockatoo habitat assessment identified that 12.58 hectares of the application area provides good to very good foraging habitat for black cockatoos (PGV Environmental, 2014b). The assessment recorded 28 potential nesting trees (diameter at breast height of greater than 500 millimetres) within the application area. Of these, six trees were observed to have hollows suitable for Carnaby's cockatoo or forest red-tailed black cockatoo breeding (PGV Environmental, 2014b). Although the application area is outside of the modelled breeding distribution of Baudin's cockatoo, the application area contains suitable foraging and roosting habitat for this species.

While the application area contains suitable habitat for quenda, it is not likely to provide significant habitat for this species as quenda are more likely to inhabit the denser understorey vegetation within the conservation category wetland located 50 metres north of the application area. However, there is the potential for quenda deaths should any individuals occur within the application area at the time of clearing. To prevent quenda deaths, the applicant will be required to clear in a slow progressive manner form the southern portion of the site to the northern portion, to allow quenda to distribute into the wetland vegetation to the north.

The application area provides suitable habitat for chuditch (DER, 2015). The retention of vegetation corridors is an important requirement of this species, whereby this requirement is considered to be critical for the conservation of this species (DEC, 2012b). Given that the application area forms part of an ecological linkage, it may contain significant habitat for this species

The application area contains vegetation in a very good (Keighery, 1994) condition that provides significant habitat for conservation significant fauna and forms part of an ecological linkage, therefore, the proposed clearing is at variance to this Principle.

Methodology

References:
Del Marco and Penna (2007)
DEC (2012b)
DER (2015)
Keighery (1994)
Molloy et al., (2009)
Parks and Wildlife (2007-)
PGV Environmental (2014a)
PGV Environmental (2014b)
Strategen (2016)

GIS Databases:
SAC Bio Datasets (Accessed October 2016)

(b) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.

Comments

Proposed clearing is at variance to this Principle

A flora and vegetation survey of Lot 810 undertaken by PGV Environmental (2014a) recorded 80 native species and identified three vegetation types within the application area, these being:

- EmBi (approximately three hectares) which comprises *Eucalyptus marginata/Banksia ilicifolia* low open forest over *Hibbertia hypericoides* open low heath;

- BmBaEm (approximately 9.5 hectares) which comprises *Banksia menziesii/Banksia attenuata/Eucalyptus marginata* low open woodland over *Hibbertia hypericoides/Allocasuarina humilis* open low heath; and
- Kg (approximately 0.5 hectares) which comprises *Kunzea glabrescens* tall open scrub over bare ground.

According to available datasets, 16 fauna species of conservation significance have been recorded within the local area (Parks and Wildlife, 2007-). Based on the habitat preferences of these species, the application area provides suitable habitat for the forest red-tailed black-cockatoo, Baudin's cockatoo, Carnaby's cockatoo, chuditch and quenda (DER, 2015).

The application area has been identified as part of an ecological linkage under the Perth Greenways Plan and the Shire of Serpentine-Jarrahdale Local Biodiversity Strategy (Del Marco and Penna, 2007). Ecological linkages have been defined as "a series of (both contiguous and non-contiguous) patches of native vegetation which, by virtue of their proximity to each other, act as stepping stones of habitat which facilitate the maintenance of ecological processes and the movement of organisms within, and across, a landscape" (Molloy et al, 2009). The application area forms part of a chain of remnants linking conservation areas to the north and south. Given this, the application area is considered significant in the movement of local fauna within the local landscape.

The chuditch is listed as rare or likely to become extinct under the *Wildlife Conservation Act 1950* (WC Act). This species has a preference for eucalypt forest (especially *Eucalyptus marginata*), dry woodland and shrublands and utilise horizontal hollow logs or earth burrows as dens or refuge (DotE, 2014).

There are nine records of this species within the local area and a site inspection of the application area identified suitable habitat for this species (DER, 2015). This species has a large home range and the retention of vegetation corridors is an important requirement of this species and is considered to be critical for the conservation of this species (DEC, 2012b).

Carnaby's cockatoo, Baudin's cockatoo and forest red-tailed black-cockatoo's are all listed as rare or likely to become extinct under the WC Act. These species nest in large hollows of *Eucalyptus* trees and forage on the seeds, nuts and flowers of a large variety of plants including Proteaceous species (*Banksia*, *Hakea*, *Grevillea*), *Eucalyptus* species, *Corymbia* species and a range of introduced species, especially seeds from cones of Pinus species (Shah, 2006; Valentine and Stock, 2008). Clearing of feeding habitat on the Swan Coastal Plain poses a significant threat to the long term survival of Carnaby's cockatoos (Shah, 2006).

Carnaby's cockatoo was once abundant in Western Australia. Since the late 1940s the species has suffered a 30 percent contraction in range, a 50 percent decline in population, and between 1968 and 1990 disappeared from more than a third of its breeding range. Basic ecological theory, expert opinion and recent evidence, suggests that the remaining native and pine plantation foraging habitat on the Swan Coastal Plain is just sufficient to support the current population of Carnaby's cockatoo. Therefore any reduction in the amount of food source will result in a reduction in the carrying capacity of the region and therefore a decline in the population of the species (Saunders 1990; Johnstone and Storr 1998; Saunders and Ingram 1998; Garnett et al. 2011).

A black cockatoo habitat assessment identified that 12.58 hectares of the application area provides good to very good foraging habitat for black cockatoos (PGV Environmental, 2014b). The assessment identified six trees with hollows, two of which were classified as current potential nesting sites for Carnaby's cockatoo or red-tailed black cockatoo. Twenty eight trees with a diameter at breast height of 500 millimetres or greater were recorded within the application area, indicating that these may develop suitable hollows within the foreseeable future (PGV Environmental, 2014b).

The vegetation under application provides suitable habitat for quenda, which is listed as a Priority 4 species by Parks and Wildlife. Quenda have a preference for wet or dry schlerophyll forest through to open woodland and scrubby vegetation on sandy soils. Dense undergrowth and low ground cover are particularly important in providing cover for quenda (DEC, 2010). A site inspection of the application area identified suitable habitat for this species (DER, 2015).

While the application area contains suitable habitat for quenda, it is not likely to provide significant habitat for this species as quenda are more likely to inhabit the denser understorey vegetation within the conservation category wetland located 50 metres north of the application area. However, quenda deaths may occur as a result of clearing. To prevent quenda deaths, the applicant will be required to clear in a slow progressive manner form the southern portion of the site to the northern portion to allow quenda to distribute into the wetland vegetation to the north.

As the application area is significant in the movement of fauna through the landscape, contains habitat critical to the survival of Carnaby's cockatoo, contains habitat for Baudin's cockatoo, forest red-tailed black-cockatoo and chuditch, the proposed clearing is at variance to this clearing Principle.

Methodology

References:
Del Marco and Penna (2007)
DEC (2010)
DEC (2012a)
DEC (2012b)

DER (2015)
DotE (2014)
EPA (2006)
Garnett et al. (2011)
Johnstone and Storr (1998)
Molloy et al. (2009)
PGV Environmental (2014b)
Saunders (1990)
Saunders and Ingram (1998)
Shah (2006)
Strategen (2016)
Valentine and Stock (2008)

(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.

Comments

Proposed clearing is not likely to be at variance to this Principle

According to available datasets, seven rare flora species have been recorded within the local area. The closest of these is located approximately 2.3 kilometres north of the application area.

A spring flora and vegetation survey of the application area undertaken in 2014 (PGV Environmental, 2014a) did not record any rare flora species. The site was surveyed through quadrats and by traversing the application area on foot. No constraints to the survey were identified (PGV Environmental, 2014a).

Given the above, the application area is not likely to contain rare flora and the proposed clearing is not likely to be at variance to this Principle.

Methodology

References:
PGV Environmental (2014a)

GIS Databases:
SAC Bio Datasets (Accessed October 2016)

(d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.

Comments

Proposed clearing is not likely to be at variance to this Principle

According to available datasets, ten threatened ecological communities (TEC) have been recorded within the local area. The closest TEC to the application area is the shrublands on dry clay flats, located approximately 6.7 kilometres north east.

A spring flora and vegetation survey of the application area undertaken in 2014 did not record any vegetation consistent with a TEC (PGV Environmental, 2014a). The site was surveyed through quadrats and be traversing the application area on foot.

Given the above, the application area is not likely to comprise the whole or part of, or be necessary for the maintenance of a threatened ecological community. Therefore, the proposed clearing is not likely to be at variance to this Principle.

Methodology

References:
PGV Environmental (2014a)

GIS Databases:
SAC Bio Datasets (Accessed October 2016)

(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.

Comments

Proposed clearing is not likely to be at variance to this Principle

The national objectives and targets for biodiversity conservation in Australia has a target to prevent clearance of ecological communities with an extent below 30 per cent of that present pre-1750, below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia, 2001).

There is approximately 15 per cent native vegetation remaining within the local area.

Within constrained areas (areas of urban development in cities and major towns) on the Swan Coastal Plain, the threshold for representation of the pre-clearing extent of a particular native vegetation complex is 10 per cent (EPA, 2006). The area under application is classified as a constrained area.

The Swan Coastal Plain Interim Biogeographic Regionalisation of Australia (IBRA) bioregion and Shire of Serpentine Jarrahdale retain approximately 38.5 and 52 per cent of their pre-European vegetation extents respectively (Government of Western Australia, 2015).

The application area is mapped as Beard vegetation association 1000 and Heddle vegetation Southern River complex, which retain 25 and 18 per cent of their pre-European vegetation extents within the Swan Coastal Plain respectively (Government of Western Australia, 2015). The application area is considered to be representative of these two vegetation types.

The application area has been identified as part of an ecological linkage under the Perth Greenways Plan and the Shire of Serpentine-Jarrahdale Local Biodiversity Strategy (Del Marco and Penna, 2007). Ecological linkages have been defined as "a series of (both contiguous and non-contiguous) patches of native vegetation which, by virtue of their proximity to each other, act as stepping stones of habitat which facilitate the maintenance of ecological processes and the movement of organisms within, and across, a landscape" (Molloy et al, 2009). The application area forms part of a chain of remnants linking conservation areas to the north and south.

The application area contains significant habitat for black cockatoos, provides suitable habitat for ground dwelling indigenous fauna, and contributes towards a north south regional ecological linkage.
Therefore the application area is considered to be a significant remnant. However, given that the local area, Shire, bioregion and two represented vegetation types retain greater than the abovementioned 10 per cent vegetation threshold, the proposed clearing is not likely to be at variance to this Principle.

	Pre-European (ha)	Current Extent (ha)	Remaining (%)	Extent in Parks and Wildlife Managed Lands (%)
IBRA Bioregion				
Swan Coastal Plain	1,501,222	579,162	38.5	38
Shire				
Shire of Serpentine Jarrahdale	90,048	47,052	52	85
Beard Vegetation Association within Bioregion				
1000	94,175	23,768	25	19
Heddle Vegetation Complex				
Southern River Complex	57,970	10,698	18	1.5

Methodology

References:
Commonwealth of Australia (2001)
EPA (2006)
Government of Western Australia (2015)
Parks and Wildlife (2015)

GIS Databases:
NLWRA, Current Extent of Native Vegetation

(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

Comments

Proposed clearing is at variance to this Principle

The mapped boundary of a multiple use wetland overlaps approximately 0.17 hectares of the application area. The application area is 50 metres from a mapped conservation category wetland (sumpland). The application area is also 100 metres from a resource enhancement wetland. The application area occurs on a low ridge/dune surrounded by wetland environments of the Bennett Brook wetland group.

The conservation category wetland within Lot 810 forms part of a larger sumpland extending across the adjacent Yangedi Road and is 2.76 hectares in size. A wetland hydrological review of the application area determined that the proposed clearing and sand extraction is unlikely to significantly alter the hydrological regime of the conservation category sumpland. This is due to the system being driven by groundwater recharge and lack of observed surface water inputs from the dune in which the application area occurs (PGV Environmental, 2015).

A condition of the development approval issued by the Shire of Serpentine Jarrahdale for the proposed extractive industry requires the applicant to prepare a wetland management plan for approval prior to the commencement of pre-excavation works (Shire of Serpentine Jarrahdale, 2015). This will assist to minimise potential impacts to the hydrological regime of the aforementioned conservation category sumpland.

While a 50 metre buffer has been maintained to the conservation category sumpland, site inspections of the application area recorded a small portion of vegetation growing in association with wetland environments, largely in the form of *Kunzea glabrescens* tall open scrub (PGV Environmental, 2014a; DER, 2015).

Given the above, the proposed clearing will impact on a small portion of vegetation growing in association with a multiple use wetland and the proposed clearing is at variance to this Principle. Given the extent of clearing proposed within the multiple use wetland, the proposed clearing is not likely to significantly impact on the mapped wetland.

Methodology References:
DER (2015)
PGV Environmental (2014a)
PGV Environmental (2015)
Shire of Serpentine Jarrahdale (2015)

GIS Databases:
Geomorphic Wetlands, Swan Coastal Plain

(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.

Comments

Proposed clearing may be at variance to this Principle

Landform and soil mapping indicates that the application area largely comprises Bassendean B1 map unit 212Bs_B1, described as extremely low to very low relief dunes, undulating sandplain and discrete sand rises with deep bleached grey sands sometimes with a pale yellow B horizon or a weak iron-organic hardpan at depths generally greater than two metres.

Sandy soils are prone to wind erosion and given that the application area occurs on a low ridge/dune, wind erosion has the potential to occur post clearing. The applicant will be required to undertake staged clearing to minimise the potential for land degradation in the form of wind erosion. Further, a condition of the development approval issued by the Shire of Serpentine Jarrahdale for the proposed extractive industry requires the applicant to implement a dust management plan to stabilise soils and minimise dust emissions (Shire of Serpentine Jarrahdale, 2015). This will also assist to minimise the potential for land degradation in the form of wind erosion.

The application area occurs on a low dune surrounded by wetland environments of the Bennett Brook wetland group. While there is some potential for water erosion to occur as a result of dune run-off during high rainfall events, a hydrological study of the application area identified a lack of observed surface water inputs from the dune (application area) to the surrounding wetlands (PGV Environmental, 2015), therefore water erosion is not likely to result in appreciable land degradation.

A condition of the development approval issued by the Shire of Serpentine Jarrahdale for the proposed extractive industry requires the applicant to implement a water and drainage management plan that addresses surface and groundwater quality and quantity (Shire of Serpentine Jarrahdale, 2015). The implementation of this plan will help to minimise the potential for water erosion.

Given the above, the proposed clearing may be at variance to this clearing Principle. However the requirement to implement dust management and water and drainage management plans will assist in mitigating the potential for land degradation.

Methodology References:
PGV Environmental (2015)
Shire of Serpentine Jarrahdale (2015)

GIS Databases:
DAFWA Subsystems

(h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.

Comments

Proposed clearing may be at variance to this Principle

The application area is located approximately 300 metres (south west) from Bush Forever site 378 and approximately four kilometres from Bush Forever sites 372 (north), 959 (north-east), 971 (north-east), 985 (south), 394/277 (south-west) and 976/376 (west).

The application area has been identified as part of an ecological linkage under the Perth Greenways Plan and the Shire of Serpentine Jarrahdale Local Biodiversity Strategy (Del Marco and Penna, 2007). Ecological linkages have been defined as "a series of (both contiguous and non-contiguous) patches of native vegetation which, by virtue of their proximity to each other, act as stepping stones of habitat which facilitate the maintenance of ecological processes and the movement of organisms within, and across, a landscape" (Molloy et al, 2009). Given this, and the size and condition of the application area, it is considered to be significant in facilitating the movement of local fauna and biological material across the landscape and potentially between conservation areas, including the Bush Forever Sites referred to above. The degradation of this linkage may impact on the environmental values of these conservation areas and on the viability of the species that utilise these areas.

Given the above, the proposed clearing may be at variance to this Principle.

Methodology References:
Del Marco and Penna (2007)
Molloy et al. (2009)

GIS Databases:
Parks and Wildlife Tenure

(i) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.

Comments

Proposed clearing may be at variance to this Principle

Groundwater salinity mapped within the application area is between 500 and 1000 milligrams total dissolved solids per litre (marginal). Given this low salinity level it is considered that the proposed clearing is unlikely to lead to a perceptible rise in the watertable and thus an increase in ground or surface water salinity levels.

The mapped boundary of a multiple use wetland partially overlaps the application area. The application area is 50 metres from a conservation category wetland and 100 metres from a resource enhancement wetland. The application area occurs on a low ridge/dune surrounded by wetland environments of the Bennett Brook wetland group.

While there is the potential for some increased sedimentation post rainfall, a hydrological study of the application area identified a lack of observed surface water inputs from the dune (application area) to the surrounding wetlands (PGV Environmental, 2015). Therefore while minor sedimentation may occur, this is not expected to significantly impact water quality of the nearby wetlands.

Sandy soils are prone to wind erosion and given that the application area occurs on a low ridge/dune, wind erosion has the potential to occur post clearing, which may cause increased sedimentation of the adjoining wetlands, particularly immediately post clearing. The applicant will be required to undertake staged clearing to minimise the potential for wind erosion and subsequent sedimentation.

Given the above, the proposed clearing may be at variance to this Principle.

A condition of the development approval requires the applicant to prepare a wetland management plan, dust management plan and Water and drainage management plan for approval prior to the commencement of pre-excavation works (Shire of Serpentine Jarrahdale, 2015). The implementation of these plans should assist to minimise the impact of surface water sedimentation on the aforementioned wetlands.

Methodology

References:
PGV Environmental (2015)
Shire of Serpentine Jarrahdale (2015)

GIS Databases:
DAFWA Subsystems
Geomorphic Wetlands, Swan Coastal Plain

(j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.

Comments

Proposed clearing is not likely to be at variance to this Principle

Landform and soil mapping indicates that the application area largely comprises Bassendean B1 map unit 212Bs_B1, described as extremely low to very low relief dunes, undulating sandplain and discrete sand rises with deep bleached grey sands sometimes with a pale yellow B horizon or a weak iron-organic hardpan at depths generally greater than 2 metres.

Given the highly permeable nature of the soil type mapped within the application area, the proposed clearing is not likely to cause or exacerbate flooding and is not likely to be at variance to this clearing Principle.

Methodology

GIS Databases:
DAFWA Subsystems

Planning instruments and other relevant matters.

Comments

The primary purpose of the clearing permit application is resource extraction, however grazing is proposed at the completion of extraction operations.

The application was referred to the Environmental Protection Authority (EPA) for assessment. On 2 February 2015 the EPA determined to not assess the proposal under Part IV of the *Environmental Protection Act 1986* (EP Act) and recommended that the proposal be dealt with under Part V Division 2 of the EP Act. The corresponding public advice recommended:

- The development of a wetland management plan in consultation with the Department of Parks and Wildlife and developed in accordance with EPA Guidance statement Number 33 – Environmental Guidance for Planning and Development and Position Statement 4 – Environmental Protection of Wetlands;
- Maintaining a minimum 50 metre buffer surrounding wetlands of conservation significance; and
- Restricting extraction to two metres above the groundwater table.

On 31 March 2015 a Delegated Officer of DER wrote to the applicant advising that the preliminary assessment had identified a number of environmental impacts associated with the proposed clearing and invited the applicant to provide further information in respect of these matters. The applicant responded to the Delegated Officer's letter on 3 April 2015 and 23 September 2016, providing hydrological information to address concerns relating to nearby wetlands and providing an Environmental Offset Plan to address the environmental impacts of the proposed clearing, specifically impacts to conservation significant fauna and an ecological linkage.

The Environmental Offset Plan includes a commitment to placing a conservation covenant, issued under section 30B of the *Soil and Land Conservation Act 1945* (SLC Act), over 41 hectares of native vegetation in a better condition than the application area and provides suitable breeding and foraging habitat for black cockatoos. As part of the Environmental Offset Plan, the applicant will also rehabilitate a linear area of 4.9 hectares within Lot 810 immediately west of the application area. The rehabilitated area will be set aside for the protection and management of vegetation in perpetuity under a conservation covenant, also to be issued under the SLC Act and will help to maintain an ecological linkage.

The applicant has received Development Approval for the proposed extractive industry from the Shire of Serpentine-Jarrahdale. The approval is subject to a number of conditions, including the requirement to prepare a wetland management plan, dust management plan and water and drainage management plan for approval prior to the commencement of pre-excavation works (Shire of Serpentine Jarrahdale, 2015).

The application was referred to the former Department of the Environment (DotE) (now Department of the Environment and Energy (DotEE)) due to its potential impacts to black cockatoos. DotE assessed the impact of the proposed development and granted approval (EPBC 2015/7429) with conditions on 9 November 2015. The approval was for the clearing of 12.6 hectares of black cockatoo habitat and required that an offset be provided. DotEE approved the applicants 'Lot 810 Yangedi Road, Hopeland, Environmental Offset Plan' on 19 September 2016.

No Aboriginal Sites of Significance are mapped within the application area.

The application was advertised in *The West Australian* newspaper on 19 January 2015 for a 21 day submission period. No public submissions have been received in relation to this application.

Methodology

References:
Shire of Serpentine Jarrahdale (2015)
Strategen (2016)

GIS Databases:
Aboriginal Sites of Significance

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Government of Western Australia
Department of Environment Regulation

CLEARING REGULATION FACT SHEET

Complying with your permit to clear native vegetation

Environmental Protection Act 1986

Purpose

This fact sheet provides information about clearing permits granted under the *Environmental Protection Act 1986* (EP Act).

Clearing permits

A clearing permit allows for legal clearing of native vegetation.

Clearing permit holders are responsible for ensuring the requirements of the clearing permit are followed.

Clearing permits should be stored in a secure place which can be accessed if details need to be checked.

If there are any particulars of the clearing permit that are unclear, please contact the Department of Environment Regulation (DER) on +61 8 6467 5000. If the clearing permit is for a mining or petroleum project please contact the Department of Mines and Petroleum (DMP) on +61 8 9222 3333.

Types of clearing permits

Clearing permits either allow the clearing of a specific area (area permit) or for a specific purpose (purpose permit):

Area permits

An area permit specifies how and where the clearing will be undertaken.

- **Land on which clearing is to be done**— describes the land covered by the clearing permit. The clearing permit plan will show where on this land clearing is allowed.
- **Authorised activity**: Describes how the clearing is to be carried out.

Purpose permits

Conditions set within the clearing permit will describe for what purpose and areas where clearing is allowed.

Clearing permits may contain conditions

Area permits and purpose permits may be subject to conditions. The types of conditions that are placed on a clearing permit depend on the outcome of the environmental impact assessment. Conditions are used to prevent, control, abate or mitigate environmental harm or to offset the loss of the cleared vegetation.

Conditions may relate to record keeping, reporting, revegetating or other actions.

- **Record keeping and submitting reports:** If the clearing permit requires the holder to keep records or submit reports, they must be submitted by the due date. If this is not possible DER or DMP should be notified.
- **Revegetating**: Some clearing permits require land to be revegetated. A range of companies and organisations provide advice and services to achieve this.

Some clearing permits will have no conditions attached.

Definitions of terms specific to the conditions may be included to clarify what is required. Additional terms may be defined separately in the EP Act.

DER or DMP can be contacted for more information about the terms used in clearing permits.

When can you start clearing?

Check the commencement date on the clearing permit. Generally the start date is set a month after the permit is issued.

Holders with clearing permits subject to an appeal will be notified by the Appeals Convenor. Clearing must not commence until notice of the outcome is provided.

Clearing permits have an expiry date and clearing must not continue past the expire date.

If additional time is needed:

- apply to amend the clearing permit before it expires; or
- apply for a new clearing permit if your clearing permit has expired.

Are clearing permits publically available?

The EP Act clearing provisions require that the details of clearing permits are published on DER's website. Copies of clearing permits and the decision report can be requested by the public.

Ensuring compliance

Monitoring compliance—a range of technologies exist to monitor changes in vegetation. This information is cross analysed with clearing permits.

Compliance inspections—may be conducted to audit clearing permits (fact sheet, Compliance inspections and clearing laws).

Breach of requirements or conditions of clearing permits (or clearing an area or in a way not permitted)

If a breach has occurred, permit holders should:

- correct the breach as soon as possible to minimise the level of environmental harm;
- notify DER/DMP immediately; and
- review operating procedures to ensure that the breach does not occur again.

Prompt notification will be considered as a mitigating factor if enforcement action is taken. Refer to DER's *Enforcement and Prosecution Policy (2013)* for further information about voluntary disclosure.

Will the clearing permit be affected by a breach?

Enforcement action may lead to clearing permits being suspended or revoked.
A vegetation conservation notice may be given to the responsible person (such as the permit holder or land owner). The notice may specify measures to be undertaken to rectify the environmental impact caused by the breach.

Can clearing permits be amended, transferred or surrendered during the duration of the clearing permit?

Clearing permits can be amended to correct issues such as clerical mistakes, administrative changes, the size of the areas to be cleared, and dates to comply with permit conditions. Applications (Form C4) for an amendment are assessed.

The clearing permit holder, or any person, may appeal to the Minister for Environment against an amendment. The appeal must be lodged within 21 days of the clearing permit holder being notified of the amendment. Information on the appeal process and how to

lodge an appeal can be found on the Office of the Appeals Convenor's website.

Area permits may be transferred to a new property owner by submitting a 'Notification of change of land ownership' (Form C5). The clearing permit will not be valid until this transfer is completed.

Permit holders who no longer wish to clear or have completed clearing before the end of the permitted period may submit an 'Application to surrender a clearing permit' (Form C6) to end the clearing permit and any conditional requirements.

On completion of clearing or expiry of the clearing permit, ensure all required records have been submitted.

More information

For advice on native vegetation clearing, or related matters, please contact DER on +61 8 6467 5000 and for State Agreements, mining or petroleum contact DMP on +61 8 9222 3333.

This document is available in alternative formats and other languages on request.

Related documents

More guidelines and fact sheets on native vegetation clearing processes are available from DER's website.

Legislation

This document is provided for guidance only. It should not be relied upon to address every aspect of the relevant legislation. Please refer to the State Law Publisher (SLP) for copies of the relevant legislation, available electronically from the SLP website.

Disclaimer

The information contained in this document is provided by DER in good faith as a public service. However, DER does not guarantee the accuracy of the information contained in this document and it is the responsibility of recipients to make their own enquiries as to its accuracy, currency and relevance. The State of Western Australia, DER and their servants and agents expressly disclaim liability, in negligence or otherwise, for any act or omission occurring in reliance on the information contained in this document or for any consequence of such act or omission.

Limitation

The Western Australian Government is committed to providing quality information to the community and makes every attempt to ensure accuracy, currency and reliability of the data contained in this document. However, changes in circumstances after the time of publication may impact on the quality of information. Confirmation of the information may be sought from the relevant originating bodies or the department providing the information. DER and the State of Western Australia reserve the right to amend the content of this document at any time without notice.

Legal advice

The information provided to you by DER in relation to this matter does not constitute legal advice. Due to the range of legal issues potentially involved in this matter, DER recommends that you obtain independent legal advice.

APPENDIX F – EPBC OFFSET AGREEMENT (LETTER AND PLAN)

Australian Government
Department of the Environment and Energy

Mr Stephen Elliot
Urban Resources Pty Ltd
Po Box 739
COMO WA 6952

Sand extraction, Lot 810 Yangedi Road, Hopeland, WA (EPBC 2015/7429): extension to period of effect of approval and approval of Offset Plan

Dear Mr Elliot

I refer to emails dated 31 August and 8 September 2016 from Mr Dale Newsome at Strategen to the Department requesting an extension to the period of effect of approval. I note you have also sought approval of the offset plan required under Condition 2 of EPBC approval 2015/7429.

Officers of the Department have assessed and advised me on your request to extend the period of effect of approval. As a delegate of the Minister for the Environment and Energy, and in accordance with section 145D of the *Environment Protection and Biodiversity Conservation Act 1999*, I have extended the period of effect of approval by nine (9) months until 30 September 2021.

Officers of this Department have also reviewed the *Environmental Offset Plan* and have advised me that the plan satisfies the requirements for an Offset Plan specified under condition 2 of the approval. On this basis, and as delegate of the Minister for the Environment and Energy, I have decided to approve the *Lot 810 Yangedi Road, Hopeland, Environmental Offset Plan* (Revision 5), dated 8 September 2016. You must now act in accordance with the approved plan.

Condition 3 of the approval allows you, under certain circumstances, to implement a revised Plan without seeking the Minister's approval. I have attached a fact sheet which provides guidance on 'new or increased impact' and changes to approved management plans under EPBC Act environmental approvals. In accordance with condition 12 of approval, the Plan must be published on your website within one month of approval and must remain on the website for the period the EPBC approval has effect.

Should you require any further information, including whether to submit a revised Plan for approval, please contact Vaughn Cox on 02 6274 2005 or by email: post.approvals@environment.gov.au.

Yours sincerely

S. Gaddes

Shane Gaddes
Assistant Secretary
Compliance & Enforcement Branch
Environmental Standards Division

19 September 2016

Encls: Extension of the period of effect of approval - decision instrument; Guidance on revised plans
Cc : Mr Dale Newsome, Strategen

intelligent outcomes | respected experience

Lot 810 Yangedi Road, Hopeland

Environmental Offset Plan

Prepared for
Urban Resources Pty Ltd
by Strategen

June 2016

strategen
ENVIRONMENTAL

Lot 810 Yangedi Road, Hopeland

Environmental Offset Plan

Strategen is a trading name of
Strategen Environmental Consultants Pty Ltd
Level 1, 50 Subiaco Square Road Subiaco WA 6008
ACN: 056 190 419

June 2016

Limitations

Scope of services

This report ("the report") has been prepared by Strategen Environmental Consultants Pty Ltd (Strategen) in accordance with the scope of services set out in the contract, or as otherwise agreed, between the Client and Strategen. In some circumstances, a range of factors such as time, budget, access and/or site disturbance constraints may have limited the scope of services. This report is strictly limited to the matters stated in it and is not to be read as extending, by implication, to any other matter in connection with the matters addressed in it.

Reliance on data

In preparing the report, Strategen has relied upon data and other information provided by the Client and other individuals and organisations, most of which are referred to in the report ("the data"). Except as otherwise expressly stated in the report, Strategen has not verified the accuracy or completeness of the data. To the extent that the statements, opinions, facts, information, conclusions and/or recommendations in the report ("conclusions") are based in whole or part on the data, those conclusions are contingent upon the accuracy and completeness of the data. Strategen has also not attempted to determine whether any material matter has been omitted from the data. Strategen will not be liable in relation to incorrect conclusions should any data, information or condition be incorrect or have been concealed, withheld, misrepresented or otherwise not fully disclosed to Strategen. The making of any assumption does not imply that Strategen has made any enquiry to verify the correctness of that assumption.

The report is based on conditions encountered and information received at the time of preparation of this report or the time that site investigations were carried out. Strategen disclaims responsibility for any changes that may have occurred after this time. This report and any legal issues arising from it are governed by and construed in accordance with the law of Western Australia as at the date of this report.

Environmental conclusions

Within the limitations imposed by the scope of services, the preparation of this report has been undertaken and performed in a professional manner, in accordance with generally accepted environmental consulting practices. No other warranty, whether express or implied, is made.

Client: Urban Resources Pty Ltd

Report Version	Revision No.	Purpose	Strategen author/reviewer	Submitted to Client	
				Form	Date
Preliminary Draft Report	0	Submission to DotE	S Isbister / D Newsome	Electronic	18 Dec 2015
Draft Report	1	Submission to DotE	S Isbister / D Newsome	Electronic	12 Feb 2016
Final Draft Report	2	Submission to DotE	P Molinari / D Newsome	Electronic	27 May 2016
Final Report	3	Submission to DotE	D Newsome	Electronic	27 June 2016

Filename: URE15098.01 R001 Rev 3 - 28 June 2016

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1. Introduction

Urban Resources Pty Ltd (Urban Resources) is proposing to develop a portion of Lot 810 Yangedi Road, Hopeland (the Project Area), for a sand extraction operation which is anticipated to have a lifetime of three years, dependent on market conditions.

The Project Area is located within the Shire of Serpentine-Jarrahdale (SoSJ) approximately 20 km north east of Mandurah and 50 km south of the Perth City Centre (Figure 1). The Project Area is bound by Yangedi Road (and Serpentine Airport) to the west, unconstructed Jarrah Rd road reserve to the north, a drainage reserve to the east, and rural land to the south (Figure 2).

The project was referred and assessed under the ***Environment Protection and Biodiversity Conservation Act 1999*** (EPBC Act) by Preliminary Documentation for its anticipated impact on listed Threatened species and communities (s18 and s18a), resulting from Urban Resources proposed action to clear native vegetation to undertake sand extraction. The proposed action was approved subject to conditions of the EPBC Act approval 2015/7429 (EPBC 2015/7429) for the Project.

1.1 Purpose and scope

This Environmental Offset Plan (EOP) has been prepared in accordance with the EPBC Act ***Environmental Offsets Policy*** (Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) 2012a), to satisfy condition 2 of EPBC 2015/7429.

The purpose of this EOP is to develop a plan to maximise habitat suitability of selected offset sites for use by threatened black cockatoos (Carnaby's Black Cockatoo [CBC], Baudin's Black Cockatoo [BBC] and Forest Red-tailed Black Cockatoo [FRTBC]). This is to be achieved through revegetation of a selected area within Lot 810 Yangedi Road, with foraging species such as ***Eucalyptus marginata***, ***Corymbia calophylla*** and ***Banksia*** sp., of which ***E. marginata*** and ***C. calophylla*** will provide roosting and potential breeding habitat once fully grown. Furthermore, the EOP will ensure the conservation of excellent foraging, roosting and potential breeding habitat within existing vegetation at a second offset site within Lot 480 at Waroona.

The ***Offsets Assessment Guide*** (DSEWPaC 2012a) and associated offset calculator, was used to assess the suitability of the selected offset sites to compensate for the loss of 12.6 ha of identified black cockatoo habitat within Lot 810 Yangedi Road.

Table 1 outlines conditions of EPBC 2015/7429 relevant to the EOP and identifies the section of the EOP that addresses each condition.

Table 1: EPBC 2015/7429 condition 2

Condition number	Requirement	EOP section
Condition 2: The approval holder must prepare and submit an Offset Plan (Plan) for the approval of the Minister to offset the loss of 12.6 ha of black cockatoo habitat. The approval holder must not commence clearing unless the Minister has approved the Plan.		
The Plan must include but is not limited to the following:		
Revegetation		
(i)	Revegetation of 4.9 ha of black cockatoo habitat within the Project Area.	Section 1.2 - Figure 2
(ii)	Objectives, targets and completion criteria for the revegetation, including site preparation works, seed broadcast and seedling planting programs, success rates and details of replanting requirements if success rates are not achieved.	Section 2
(iii)	Management measures including fencing and access, control of fire, weeds, Phytophthora dieback, and erosion.	Section 2.5.5 – Table 3

Condition number	Requirement	EOP section
(iv)	Conservation arrangements for the Revegetation area.	Section 2.1.1 and Table 3
(v)	Timeframes and implementation for the above measures.	Section 2.4 - 2.9.2 and Tables 2 - 4
(vi)	Descriptions of the roles and responsibilities of personnel associated with implementation of each of the above measures.	Section 2.4 - 2.9.2 and Tables 2 - 6
Offset Site		
(i)	Objectives and goals.	Section 3.2 and Section 3.3
(ii)	The size (ha) and location, including diagrams, of the offset sites(s) required to offset the loss of 12.6 ha of black cockatoo habitat and discussion of how this is consistent with the ***Environmental Protection and Biodiversity Conservation Act 1999*** Environmental Offsets Policy (October 2012).	Section 3.1.1, Section 3.1.3 & Figure 3
(iii)	A completed Offsets Assessment Guide with a table justifying the figures used. The Offsets Assessments Guide must be approved by the Department, prior to the submission of the Plan for approval by the Minister.	Section 4, Table 9, Appendix 1
(iv)	Conservation arrangements to ensure the offset site(s) are permanently protected, including timeframes for implementation.	Section 3.1.2
(v)	Within 12 months of the commencement of the action (or otherwise agreed by the Department in writing), the approval holder must provide the Department with offset attributes and a shapefile.	Section 5
If the Minister approves the Plan then the approved Plan must be implemented.		

1.2 Project overview

The Project Area is 72 ha in size and the portion of the site that is proposed to be mined is 18 ha in size. A large portion of the Project Area was cleared of native vegetation in the mid-1970s and heavily grazed until the mid-1990s. The Project Area is still partially grazed; however, native vegetation has regrown across some of the site that is proposed for sand extraction. The majority of Lot 810, with the exception of a 40 m buffer strip on the western boundary that is proposed to be revegetated, will be returned to pasture cropping and stock grazing post sand extraction.

The Proposal will require the clearing of 12.6 ha of regrowth vegetation that contains foraging and potential breeding habitat for Carnaby's Black Cockatoo and Forest Red-tailed Black Cockatoos.

1.3 Location and description of offset sites

The EPBC Act ***Environmental Offsets Policy*** (DSEWPaC 2012a) was used to guide the selection of two sites to cumulatively offset the loss of 12.6 ha of identified black cockatoo habitat proposed to be cleared within a portion of Lot 810, Yangedi Road.

The first site, a 4.9 ha area adjacent to Yangedi Road, on the western boundary of the Project Area (hereafter referred to in this EOP as the Revegetation Area) has been selected for on-site rehabilitation. The revegetated area will provide a screen from the proposed works to Yangedi Road, as well as a north-south linkage for black cockatoos to move between adjacent areas with suitable habitat. Lot 810 will ultimately be subdivided into 40 ha rural pursuit lots, with the Revegetated Area being protected by a notification on title requiring the retention of the vegetation.

An additional site within existing bushland at Waroona was identified as containing excellent habitat for black cockatoo species, including foraging and roosting species, as well as potential breeding trees. It is proposed that 41 ha of the site is conserved in perpetuity under s30 of the ***Soil and Land Conservation Act 1945.***

The ***Offsets Assessment Guide*** (DSEWPaC 2012a) was used to estimate the ability of each selected site to offset black cockatoo habitat loss within Lot 810 Yangedi Road (Appendix 1). The offsets calculator determined that the revegetation of 4.9 ha will contribute towards 16 % of the overall offset required, while the remaining 84 % will be met through conservation of a selected 41 ha site within Lot 480 at Waroona (hereafter referred to in this EOP as the Waroona Offset Site).

Figure 1: Regional location

Scale 1:350,000 at A4

0 2 4 6 8 10 km

Coordinate System: GDA 1994 MGA Zone 50
Note that positional errors may occur in some areas
Date: 4/12/2015
Author: JCrute
Source: Topography: Geoscience Australia 2011.

Legend

- Town
- Major road
- Minor road
- Major river
- Lakes
- Native vegetation
- Lot boundary

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www.strategen.com.au

Path: Q:\Consult\2015\URE\URE15098\ArcMap_documents\R001\URE15098_01_R001_RevA_F001.mxd

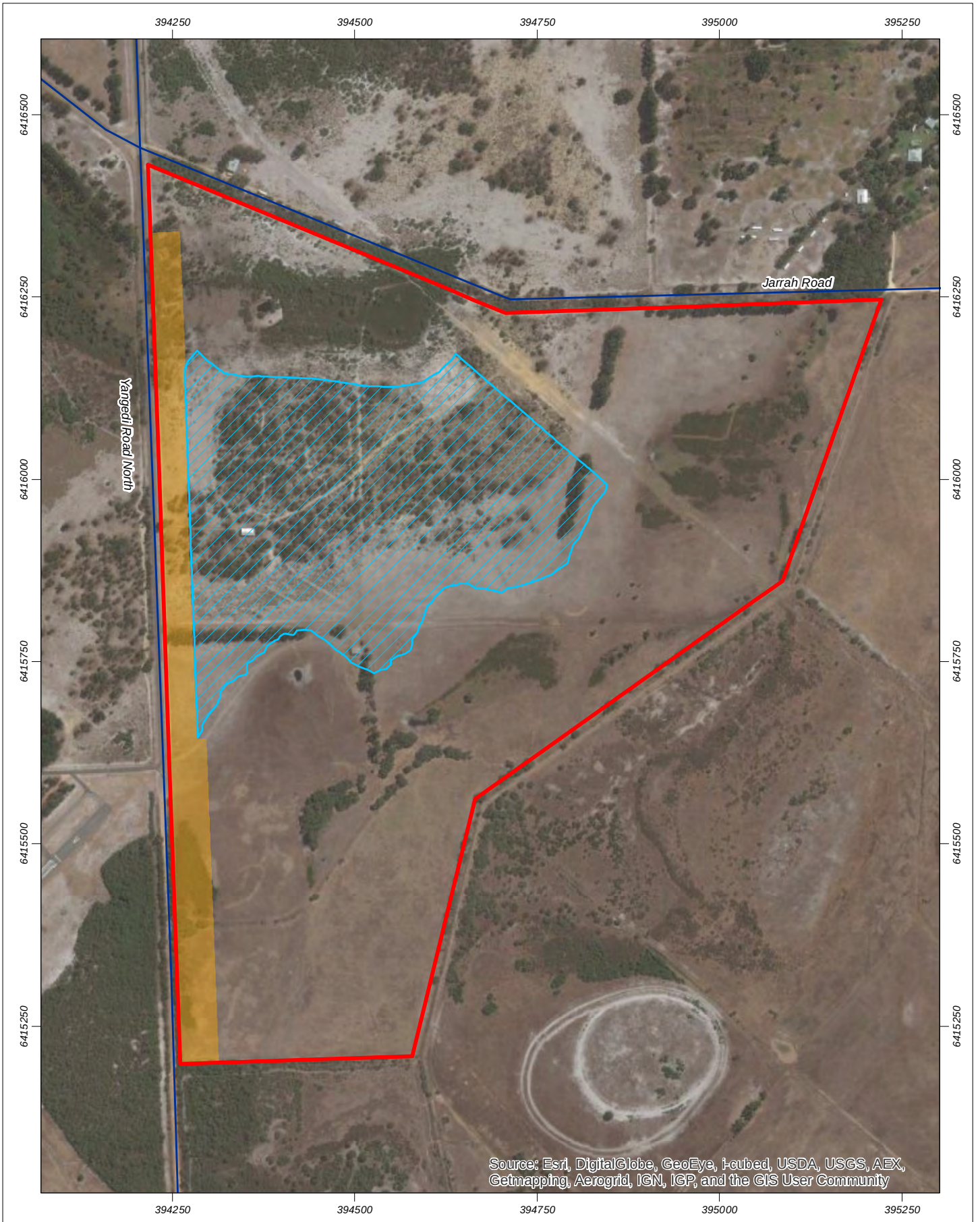

Figure 2: The Project Area

Scale 1:7,000 at A4

0 50 100 150 200 250 m

N

Legend

- Road
- Lot boundary
- Mining area
- 4.9 ha offset Revegetation Area

Coordinate System: GDA 1994 MGA Zone 50
Note that positional errors may occur in some areas
Date: 4/12/2015
Author: JCrute
Source: Aerial image: ESRI online approx. 2010. Roads: Main Roads WA 2012.

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2. Revegetation offset - Lot 810 Yangedi Road

2.1 Site location and description

Urban Resources has committed to revegetating 4.9 ha within Lot 810 Yangedi Road, identified as containing areas of valuable habitat for black cockatoo. The revegetation will extend in a 40 m buffer strip adjacent to Yangedi Road, on the western boundary of the Project Area, with the exclusion of small areas to accommodate access for mining vehicles, a stock run and a firebreak.

Based on the calculation of the site as an offset area (Section 4) revegetation of this 4.9 ha area is expected to achieve 16% of the offset requirement (Appendix 1).

Figure 2 illustrates the location of the Revegetation Area within Lot 810 Yangedi Road.

2.1.1 Conservation arrangements

Urban Resources retains private ownership of Lot 810. Urban Resources are committed to protecting the Revegetation Area. The Revegetation Area will be fenced and managed by Urban Resources for a period of five years in order to meet the defined completion criteria.

Lot 810 and therefore the Revegetation Area is currently privately owned and zoned rural under the Shire of Serpentine Jarrahdale Town Planning Scheme No 2. At the completion of sand mining operations the site will be retained for rural purposes and ultimately subdivided into 'Rural Pursuit' Lots. Under the Shire of Serpentine Jarrahdale Town Planning Scheme, Rural Pursuit Lots have a minimum size of 40 ha, with the retention of vegetation being a propriety outcome of rural subdivision. A notice will be placed on the title(s) associated with the Revegetation Area informing future owners that the revegetation cannot be removed. This is consistent with the requirements of the Shire of Serpentine Jarrahdale. The revegetation has been designed to support this future land use and the location of the revegetation provides for its retention post subdivision.

The Revegetation Area is also required to be retained under the planning approval granted by the Shire of Serpentine Jarrahdale (Appendix 2).

2.2 Objectives

The overall aim of undertaking revegetation on-site is to restore a strip of existing vegetation to a level that reinstates as best as possible, the former habitat value of the area and where possible enhances the black cockatoo value of the vegetation.

Once revegetated it is expected this area will provide excellent foraging and breeding/roosting habitat for Carnaby's Black Cockatoo and Forest Red-tailed Black Cockatoos. Reinstating vegetation within the Revegetation Area will provide a better linkage for fauna movement between Bush Forever Site No. 378 (Henderson Road Bushland, Peel Estate) and isolated remnants of vegetation on neighbouring properties to the west and north of the Proposal Area.

The Revegetation Area will contribute towards offsetting the impact from clearing 12.6 ha of regrowth vegetation within the Project Area.

2.3 Targets

The target density will be an average of 2000 plants/ha of understorey/overstorey, measured at two years after establishment, including a minimum average of 1000 plants/ha of overstorey.

Reflecting the primary objective of establishing black cockatoo habitat revegetation works will aim to achieve species richness of 50% of vegetation type EmBi – ***Eucalyptus marginata/Banksia ilicifolia*** low open forest (i.e. 12 species).

Species richness for lower lying areas (e.g. that may have included veg type ErAf - ***E. rudis*** low open forest over ***Astartea fascicularis*** shrubland) will aim to exceed the species richness recorded within the pre-revegetation quadrats.. Revegetation will achieve a representation of species for each vegetation type. Lists of species recorded within the Project Area are provided in Appendix 3.

For each community type, species of black cockatoo habitat value with a mature height of >5m will comprise 50% of the species planted. This criteria reflects the proximity of Yangedi Road to the proposed Revegetation Area. Increasing the average height of the Revegetation Area is designed to reduce the risk of black cockatoo bird strike by vehicles.

2.4 Revegetation program

Urban Resources proposes to return former habitat values to the revegetation site by:

- reintroducing vegetation types appropriate for existing topographic features
- improving and maintaining habitat suitable for foraging, breeding and roosting by black cockatoo species
- managing introduced flora species (weeds)
- controlling access by pedestrians and vehicles.

All revegetation of the offset site will be undertaken in line with principles and measures outlined in Local Planning Policy No. 4 ***Revegetation*** (Shire of Serpentine-Jarrahdale 2014) (Appendix 4).

To achieve the objective and targets of the offset site, details of site preparation actions required and a targeted planting program are included below.

2.4.1 Site preparation

Staging and topsoil management

The proposed 12.6 ha clearing within the Project area will be undertaken in three stages commencing from the southern end of the Project Area (Figure 2).

Topsoil from vegetation communities in Stage 1 will be matched to revegetation zones in the Revegetation Area and spread where existing vegetation permits. This approach is consistent with the Required Procedures of Local Planning Policy No. 4 ***Revegetation*** ((Shire of Serpentine-Jarrahdale 2014).

For example, topsoil from vegetation with ***B. ilicifolia*** present (type EmBi – ***E. marginata/B. ilicifolia*** low open forest) will be used in the lowest lying areas and topsoil from vegetation containing ***B. menziesii*** / ***B. attenuata / E. marginata*** (type BmBaEm), which is the dominant type, will be used for the remainder. This direct transfer technique will ensure that a diverse range of understorey species from these two vegetation types have the best possible opportunity to establish.

Mulching

Vegetation from appropriate vegetation types will be mulched and incorporated into the topsoil to add seed, increase soil carbon and to act as a stabilising agent post-spreading.

2.4.2 Planting program

Seed collection

Seed collection will be undertaken within the Project Area prior to clearing, with a particular focus on obtaining seed from species suitable as black cockatoo foraging or nesting habitat (e.g. ***E. marginata***, ***C. Calophylla***, ***Banksia*** spp.). This will enable habitat creation within the Revegetation Area consistent with Local Planning Policy No. 4 ***Revegetation***.

Seed will be utilised for direct seeding or propagated into seedlings, focussing on species that are required to achieve the revegetation offset targets, difficult to grow from seed and/or dominant species for the vegetation type. Seedlings will be propagated at certified dieback-free nurseries, or nurseries approved by the Department of Parks and Wildlife.

Weed Control

Weed control measures appropriate for the weed suite on site (to be determined by revegetation contractor) will be applied as required (see Section 2.5). Weed control measures may include mechanical e.g. scalping and/or chemical. Where deemed necessary, or if possible, weed control may commence 12 months before seeding/planting.

Direct seeding

Area to be direct seeded will prepared for seeding by scarification just prior to seed broadcast. Seeds will be broadcast mechanically or by hand depending on the site circumstance and contractor appointed. The seed rate will be determined on the species mix, availability and price. The seed rate will also be determined by the specific site circumstances that exist within the Revegetation Area (i.e. some areas support existing vegetation). A seed rate in the order of 5 - 10 kg / ha is anticipated.

In line with the procedures Local Planning Policy No. 4 ***Revegetation***, planting will occur during winter months following topsoil transfer.

Seedling planting

Overstorey species to be planted include ***E. Marginata, B. menziesii***, ***B. attenuata***, ***B. ilicifolia*** and ***Allocasuarina fraseriana. B. ilicifolia*** seedlings will be planted in low-lying areas. Other common overstorey (black cockatoo foraging) species from the Bassendean Central and South Vegetation Complex that are suited to low-lying areas (e.g. ***E. rudis***, ***Corymbia calophylla***) will be included in the planting program for low lying areas.

In line with the Required Procedures of Local Planning Policy No. 4 ***Revegetation***, planting will occur during winter months following topsoil transfer.

Overstorey seedling planting will be at 1350 plants/ha with a success target of 75 % (1000 plants/ha). Overstorey species establishment success will be initially monitored at the end of the first summer following planting and remediation plans developed and implemented for significant areas of failure.

Remedial measures will consider all potential factors contributing to the failure. Remedial measures may include increased weed management, mulching and secondary planting or direct seeding, or a combination of these measures.

Table 2: Site preparation actions for the Revegetation Area

Parameter	Action	Timing	Responsibility
Seed collection	Compile list of species to be planted/seeded in Revegetation Areas based on: surveys by PGV (2014a); black cockatoo habitat species; species suitable to vegetation types identified; site soil characteristics; and seed availability / viability.	Prior to seed collection	Seed collection contractor
	Prior to clearing Project Area, collect seed from suitable species (i.e., black cockatoo habitat species and species suitable to the vegetation types being targeted.	Sep – May, prior to planting	Seed collection contractor
	Appropriate licences to be obtained from Parks and Wildlife for seed collection within any Crown land.	Prior to seed collection	Seed collection contractor
Site preparation	Undertake site preparations within the Revegetation Area (e.g. cultivation/scarification in compacted bare areas, pre-planting weed management, placement of topsoil, placement of habitat logs, placement of brushing for erosion control).	Feb – Apr, prior to planting	Land manager

	Except where cultivation/scarification is required, ensure soil disturbance is minimised to prevent weed germination.	Prior to/during planting	Land manager
Planting	Undertake direct seeding (in sections of Revegetation Area in Completely Degraded condition). Seeding rate (kg/ha) will be based on quantum required to achieve target density, allowing for seed viability.	May – Jun, subsequent to topsoil transfer	Land manager
	Plant seedlings in areas where existing overstorey open or non-existent.	May – Jun, subsequent to topsoil transfer	Land manager
	Procure or propogate seedlings of key plant species from certified dieback-free nurseries.	Prior to planting	Land manager
	Protect seedlings with tree guards.	During planting	Land manager

2.5 Management measures

2.5.1 Weed and Dieback management

Weed and dieback management measures will be implemented prior to, during and after construction works to minimise spread of potential infestations into the proposed Revegetation Area. All machinery to be used within the Revegetation Area will be free of soil and plant material prior to entry in order to prevent introduction of weeds and pathogens.

Areas of vegetation in Completely Degraded condition within the Revegetation Area will be treated by scalping or spraying and ripping to remove the majority of weeds prior to topsoil transfer. Spot spraying will be undertaken, if emergent weeds are recorded during spot checks, subsequent to topsoil transfer and planting. Where ripping is determined to be the most appropriate approach soil will be deep ripped to 0.5 m in line with Required Procedures of Local Planning Policy No. 4 ***Revegetation***.

Monitoring via inspection of the Revegetation Area will be undertaken at least twice yearly in autumn and spring. This will ensure that weed control is arranged in a timely manner as required, to avoid weed species outcompeting native germinants.

Management actions for weeds and dieback for the Revegetation Area, are provided in Table 3.

2.5.2 Access management

Uncontrolled access to the Revegetation Area may result in the degradation of flora and fauna through trampling, predation by domestic pets, introduction of weeds and pathogens, incorrect disposal of waste and unwanted access.

Management actions to minimise impacts to the Revegetation Area through control of access are provided in Table 3.

2.5.3 Fire management

Fire management for the Revegetation Area will include a Local Government compliant fire break around the perimeter of the offset rehabilitation area. Unless necessary for site works, vehicles will be encouraged to utilise designated tracks to enable a quick exit from site in the case of a fire emergency. Vehicles shall only be parked within the site works area and away from vegetation.

Management actions to support the safety of workers on-site in the event of a fire and are provided in Table 3.

2.5.4 Erosion management

The potential for erosion is limited by the site's generally flat topography. Erosion within the Revegetation Area will be managed through incorporating mulched vegetation into the topsoil to stabilise soils post-spreading. This will reduce wind and water erosion while vegetation is becoming established. Larger branches and logs will be positioned around the perimeter and within the Revegetation Area to decrease the potential for wind and water erosion and enhance habitat values of the Revegetation Area.

Visual inspections will be undertaken in the Revegetated Area coincident with weed monitoring to identify any areas of erosion. In the event that erosion is occurring management actions will be implemented by the Project Manager to stabilize the soil profile.

Management actions to minimise the potential for erosion within the Revegetation Area are provided in Table 3.

2.5.5 Access / Fencing

Stock exclusion fencing will be installed around the perimeter of the offset Revegetation Area. The fencing will be inspected opportunistically for breaks and repaired as required. See Table 3 for details.

Table 3: Management actions for the Revegetation Area

Parameter	Action	Timing	Responsibility
Weed and Dieback Management	Appoint an experienced contractor to identify, map and manage weeds within the offset rehabilitation area.	Prior to commencement of works on site, then biannually during and post works for a period of 2 years	Project manager
	Blanket weed control to be undertaken to remove pasture plants. Weed control to include mechanical or chemical means on advice from contractor.	Prior to topsoil transfer	Revegetation contractor
	Weed monitoring undertaken via inspection of Revegetation Area.	Biannually - Autumn and Spring	Revegetation contractor
	Spot spraying to be undertaken in areas where weed cover is greater than 20% or where new weed infestations are detected.	As required following biannual weed monitoring, after topsoil transfer and planting	Revegetation contractor
	Control methods for any weeds listed as Declared Plants to be undertaken in accordance with guidelines of DAFWA.	During weed control	Revegetation contractor
	Induct all personnel in relation to weed and dieback risk, potential impacts and management.	Prior to personnel commencing work on-site	Revegetation contractor
	Ensure vehicles used in clearing and removing topsoil, excavation or transport are clean and free from soil or plant material prior to arriving on site. Cleaning should be conducted off site on bitumen areas surrounding the project area. In dry weather, this will be achieved by brush-down. Wash-down with water and an appropriate reagent will be required during wet weather.	During clearing, topsoil transfer and rehabilitation.	Revegetation contractor
	Ensure all plants; seeds and other material used in rehabilitation are free of dieback and weeds.	During revegetation	Revegetation contractor
	Ensure vehicles, machinery, equipment and footwear are free of mud and soil when entering rehabilitation area.	During revegetation	Revegetation contractor
Access Management	GPS coordinates of the Revegetation Area to be provided to the contractor. Induct construction personnel in relation to location of vegetation to be retained and appropriate management measures.	Prior to clearing	Project manager

	Install temporary highly visible fencing to: • delineate the Revegetation Area in which existing vegetation is to be retained • ensure no unapproved clearing is undertaken within the Revegetation Area.	Prior to clearing	Revegetation contractor
	Ensure construction workers and mining contractors are aware of designated entry and exit points to the Project Area, which pass through exclusion zones in the revegetation strip.	During operation	Project manager
	Restrict access to all tracks within the Revegetation Area (that are not designated entry and exit points to the Project Area).	During and post-construction	Project manager
Fire management	Install firebreak along boundary of Revegetation Area.	Prior to planting	Site manager
	Unless necessary for site works, limit vehicles to designated tracks, all vehicles remaining within the site works area and away from vegetation.	Ongoing	Site manager
	Smoking, and cigarette disposal, is not permitted within or near the Revegetation Area.	Ongoing	Site manager
Erosion Management	Incorporate mulched vegetation into the topsoil.	After topsoil transfer, prior to planting	Revegetation contractor
	Position larger branches and logs around the perimeter of the Revegetation Area.	After topsoil transfer and planting	Revegetation contractor
	Opportunistic visual inspections to identify areas of erosion within the Revegetation Area.	Ongoing	Revegetation contractor
Fencing	Install a stock exclusion fence around the perimeter of the offset Revegetation Area.	At the completion of sand extraction	Site manager
	Opportunistically inspect fencing for breaks, repair as required.	Ongoing	Site Manager

2.6 Completion criteria

Completion criteria have been determined to provide targets to be met before revegetation can be considered successful and complete. Completion criteria presented below are specific to the Rehabilitation Area and its ability to contribute towards offsetting the 12.6 ha of black cockatoo habitat to be cleared:

1. Local provenance species to achieve a total species richness of at least 12 native species.
2. At least 50% of planted species will have a mature height of >5m.
3. At least 60% of tree and shrub species planted to be primary foraging species for black cockatoo.
4. Overstorey established at a density of 1000 plants/ha (75 % of the 1350 plants/ha planted).
5. Overstorey tree species are known to have the potential to develop suitable nesting hollows for black cockatoos.
6. No introduction of new weed species, and existing weed infestations are contained (as compared to baseline weed mapping collected at the offsite area prior to revegetation, and the topsoil collection site prior to commencement of clearing).

2.7 Monitoring actions

Monitoring of establishment success will be undertaken formally at 15-18 months (after the second spring following establishment), and any areas with significant failures will be retreated either with topsoil from Stage 2 when available, or via additional planting. Formal monitoring will be undertaken by way of establishing three transects along the length of Revegetation Area to enable plant species richness and density to be monitored and recorded.

Table 4: Monitoring actions for the offset Revegetation Area

Parameter	Frequency	Purpose
Understorey revegetation success (native understorey)	Formally at 15-18 months following establishment	To determine whether: a) additional topsoil treatment is required, and/or b) additional planting is required.
Overstorey revegetation success	Formally at end of first summer following establishment	To determine whether additional planting is required.
	Formally at 2 years following establishment	To determine success against targets.
Weeds	Inspection of Revegetation Area biannually - Autumn and Spring	To determine whether: a) weed cover exceeds 20% b) any new weed infestations are present; c) any existing infestations have increased, and d) to determine appropriate weed control measures (if required).
Fencing condition	Informally, during other monitoring events	To ensure the fencing is in good condition and to prevent unauthorised access to the Revegetation Area.
Feral fauna	Informally, during other monitoring events	To assess whether rabbits have established within Revegetation Area and if present to define control requirement.
Waste	Informally, during other monitoring events	To ensure no waste is dumped in Revegetation Area.

2.8 Remedial actions

Table 5 identifies the remedial actions to be initiated in the event that the objectives for the protection and management of the Revegetation Area are not being met.

Table 5: Remedial actions for Revegetation Areas

Trigger	Action	Responsibility
Increase in species, extent of existing infestation, or density/cover of weeds above 20% within or along boundaries or Revegetation Area, or persistence of weed infestation subsequent to treatment	• Map the extent of the weed species within the site. • Identify activities that may have potentially increased the abundance, distribution or density/cover of weed species. • Review and revise (if required) weed control program (may involve seeking advice from relevant authorities/expertise) according to findings from point 2. • Implement revised hygiene control and education measures.	Revegetation contractor
Native flora species richness and/or density (<75% of targets) is not achieved	• Identify cause. • Implement approach to remedy cause, which could include: ∗ retreating with stockpiled topsoil to compensate for the insufficient native plant density ∗ accessing additional provenance seed and undertaking direct seeding ∗ procuring or propagating additional seedlings of key species to undertake infill planting. • Monitor success of remedy.	Land manager
Unrestricted or unauthorised access	• Determine how access was gained and, if possible, the likely time of access. • Implement remedy, which could include: ∗ repair fence/s ∗ erect signs to highlight private property ∗ install barriers around pedestrian paths. • Monitor success of control.	Land manager

Trigger	Action	Responsibility
Increase in distribution, abundance or density of feral animals observed	• Investigate cause. • Review, revise (if required) and implement control program • Monitor success of remedy.	Land manager
Fire incident	• Respond to fire in accordance with fire response procedures. • Investigate cause of fire. • Implement any remedial actions, if practicable, to prevent future fire incidents, seeking advice of Department of Fire and Emergency Services if necessary. • Monitor success of remedy.	Land manager
Waste dumping	• Remove waste items. • Investigate cause. • Implement any remedial actions, if practicable, to prevent future waste dumping. • Monitor success of remedy.	Land manager

2.9 Implementation

2.9.1 Timeline

Timing of some activities such as collection of seed from the Project Area is dependent on the timing that clearing occurs, and seed set of target species.

The indicative time line presented in Table 6 indicates optimal timing for the action. Where all months are highlighted, the action may be undertaken at any time, as required.

For timing specific to site preparation actions see Table 2.

As the owner of the site and therefore the Revegetation Area Urban Resources will manage and maintain the Revegetation Area. At the completion of sand mining operations the site will be retained for rural purposes and ultimately subdivided into 'Rural Pursuit' Lots. Under the Shire of Serpentine Jarrahdale Town Planning Scheme, Rural Pursuit Lots have a minimum size of 40 ha, with the retention of vegetation being a propriety outcome of rural subdivision. A notice will be placed on the title(s) associated with the Revegetation Area informing future owners that the revegetation cannot be removed.

The timing of the subdivision and placement of notice on title requiring the ongoing protection of the Revegetation Area will b determined by the sand mining operations and market conditions.

Table 6: Indicative timing for selected management actions

Action													Year	Completion
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Seed collection from Project Area	■	■	■	■	■				■	■	■	■	Sep Year 1 – May Year 2	As required until revegetation targets met or 31 December 2020
Site preparation		■	■	■									Year 1 only	Year 1
Revegetation (seeding, planting)					■	■	■						Year 1	Year 1
Revegetation monitoring		■	■	■					■	■	■		All years	As required until revegetation targets met or 31 December 2020
Top-up seeding, planting or topsoil spread (if required)						■	■						As required	As required until revegetation targets met or 31 December 2020
Weed monitoring		■	■	■					■	■	■		All years	As required until revegetation targets met or 31 December 2020
Weed control	■	■	■	■	■	■	■	■	■	■	■	■	All years	As required until revegetation targets met or 31 December 2020

2.9.2 Responsibilities

All contractors and staff will be required to operate in accordance with this EOP. Key personnel and responsibilities are described below.

Project Manager

The primary responsibilities of the Project Manager include;

- act as primary liaison between DotE, SoSJ, Parks and Wildlife, and contractors
- engage suitably qualified contractors to implement the EOP as required
- ensure all contracts contain relevant environmental management provisions
- review reports provided by the contractors as required
- ensure all site personnel are aware of the requirements of the EOP and related management plans
- report to DotE in accordance with conditions listed within EPBC 2015/7429.

Site Manager

The primary responsibilities of the Site Manager include;

- assist the project manager to ensure construction activities do not adversely affect black cockatoo habitat within the Revegetation Area
- ensure all site personnel are aware of the requirements of the EOP and related plans
- provide support to the Project Manager and SoSJ as required during the construction phase
- provide reports on clearing activities to the Project Manager including:
  - map indicating the areas of clearing that has occurred
  - key dates of construction.

Revegetation Contractor

The primary responsibilities of the Revegetation Contractor include:

- provide progress activity reports to the Project Manager which include details of activities undertaken, including, for example:
  - weed control details (herbicide name, volumes, method, date and location, weather conditions, other relevant observations)
  - direct seeding details (species, volumes used, date and location of seeding, conditions and other relevant observations [e.g. presence of weeds, rabbits, litter, erosion])
  - planting (species, numbers planted, date and location of planting, conditions and other relevant observations [e.g. presence of rabbits, litter, erosion])
- ensure all revegetation personnel are aware of the requirements of the EOP and related management plans
- undertake weed vegetation monitoring as required by this EOP, at the stated intervals
- provide a report to the Project Manager at the completion of each round of vegetation monitoring summarising the results, including an assessment against the key performance indicators
- ensure revegetation activities meet performance targets
- provide support to the Project Manager as required during the construction phase.

3. Waroona Offset Site

3.1 Site overview

3.1.1 Location

An additional offset site has been identified approximately 50 km south of the Project area, northeast of Waroona townsite, within Lot 480 - Survey 105339 (the offset site; Figure 3). The offset site is contained within a parcel of land which is 64 ha in size, the majority of which has been identified as native Jarrah-Marri forest representing habitat of excellent value for black cockatoos.

Based on the Offset Assessment Guide calculation (Appendix 1) 41 ha of the land parcel is to be conserved to achieve 84% of the offset requirements, on the basis that 4.9 ha of revegetation on Lot 810 Yangedi Road achieves 16% of the offset requirement. The 41 ha area is henceforth referred to as the Waroona Offset Site.

3.1.2 Conservation arrangements

The offset site northeast of Waroona is zoned rural under the Shire of Waroona Town Planning Scheme No. 7. In considering potential offsets for the proposed development, the Department of Parks and Wildlife were consulted for sites providing habitat for all three species of Black Cockatoo. At the time of consultation, no sites were available.

Urban Resources identified a block of land that was available for purchase and was considered suitable to act as an offset. Urban Resources also identified potential landowners who were enthusiastic about owning and covenanting the land for the purpose of protecting its high conservation value in perpetuity.

To facilitate the purchase, Urban Resources has contributed funds to the estimated value of the devaluation of the land after a covenant has been placed over it, enabling the new landowners to purchase the property for an affordable value. In exchange for the contribution and by way of formal agreement, Urban Resources has been granted the rights to use the covenant as a means of securing the offset.

Urban Resources and the landowners are committed to protecting the site in perpetuity. The 41 ha of the site identified as an offset as per Figure 3 will be protected through entering into a covenant with the Commissioner of Soil and Land Conservation under s30 of the ***Soil and Land Conservation Act 1945***. This will ensure the protection and management of the site for conservation purposes.

These are voluntary written agreements with the Commissioner to manage the vegetation in such a way as to retain and promote its growth. They are positive covenants but are also able to include restrictive requirements. The covenant will be registered as a memorial on the certificate of title.

3.2 Suitability as an offset site

An assessment of the Waroona Offset Site was undertaken by two Strategen ecologists over two events in July and November 2015. The May 2015 assessment comprised a brief site walkover to identify the predominant vegetation contained within the offset site and give an indication as to the suitability of the site for use as on offset. The purpose of the November 2015 assessment was to provide detailed information regarding black cockatoo habitat quality within the offset site to inform offset calculations.

Given the size of the offset site; a representative sample area was surveyed by means of transects. Seven transects totalling 2.58 km in length and 20 m in width were surveyed to achieve a total area of 5.16 ha (the survey area). Transect locations were selected to provide a representative sample of the site; with transect locations and direction being dictated by site topography and vegetation structure. The survey transects are shown in Figure 3.The results of the site assessment are considered to be an accurate assessment of the site's black cockatoo values.

The Waroona Offset Site was identified as containing excellent habitat for black cockatoo species, and is expected to support the habitat quality value of 8 assigned through the offsets calculation, under the ***Offsets Assessment Guide*** (DSEWPaC 2012a). It was determined through the offsets calculation that conservation of 41 ha within the site will achieve 84 % of the overall offset required for the Project.

3.2.1 Foraging potential

Foraging habitat for black cockatoos is generally defined as the availability of plant food sources within an area (Finn 2012). Food availability for black-cockatoos is a function of the diversity, abundance, distribution, energetic and nutritional qualities, and seasonality (phenology) of the food sources within a particular area.

The offset site was surveyed to record any flora species with the potential to provide a food source for black cockatoos. This assessment was used to determine the foraging value of identified vegetation units, based on the presence and quantity of potential food species and any evidence of foraging by black cockatoos.

Vegetation units identified within the site include:

1. Jarrah (***Eucalyptus marginata***) - Marri (***Corymbia calophylla***) forest (approx. 60.25 ha; Plate 1).
2. Shrubland vegetation occurring on granite outcrops (approx. 0.46 ha; Plate 2).
3. Cleared areas or modified vegetation, associated with access tracks and the current building envelope (approx. 3.29 ha).

The Jarrah-Marri vegetation complex included foraging species such as ***Banksia grandis*** in upland areas and ***Banksia littoralis*** along watercourses. The most abundant foraging species within the offset site was C. calophylla which occurred throughout majority of the site including areas along watercourses in deep soils and upland areas between granite outcrops where soils were shallow.

Signs of foraging by FRTBC and BBC were noted within the offset site and a flock of approximately 25 FRTBC were recorded within the offset site during the November 2015 assessment. Anecdotal evidence by the current landowner also suggests that CBC use the offset site as a food resource at various times of year.

Based on the results of the foraging assessment, the offset site is considered to contain excellent quality foraging habitat for all three species of Threatened black cockatoos. It is worth noting that the high proportion and density of Marri trees within the offset site provides an excellent food resource for all three species of black cockatoos.

Figure 3: 41 ha offset site at Waroona

Scale 1:10,000 at A4

0 100 200 300 m

N

Coordinate System: GDA 1994 MGA Zone 50
Note that positional errors may occur in some areas
Date: 9/05/2016
Author: SFinning
Source: Cadastre: Landgate 2015; Aerial: ESRI estimated 2010.

Legend

- Survey transects
- 41 ha offset
- Lot 480 Survey 105339
- Cadastre

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Path: Q:\Consult\2015\URE\URE15098\ArcMap_documents\R001\URE15098_01_R001_RevA_F003.mxd

Plate 1: Jarrah-Marri forest vegetation complex

Plate 2: Shrublands on granite outcrops vegetation complex

3.2.2 Breeding habitat

Breeding habitat' for black cockatoos is defined in DSEWPaC (2012b) as trees of species known to support breeding within the range of the species which either have a suitable nest hollow or are of a suitable DBH to develop a nest hollow (> 300 mm for salmon gum and wandoo, and >500 mm for other species). These trees are known as significant trees. Trees of this size may also be large enough to provide roosting habitat (i.e. trees which provide a roost or rest area for the birds). Significant trees which contain hollows, that have an entrance diameter of more than 100 mm, are suitable for use by black cockatoos (Whitford and Williams 2002). In general, hollows of sufficient size to support black-cockatoos do not form until trees are at least 230 years old, and the majority of nests are found in 300-500 year old trees (Johnstone 2006).

A total of 161 significant trees (DBH > 500mm) were identified within the survey area. As vegetation within the offset site has been adequately represented within the survey area of 5.16 ha; it can be inferred that more than 1200 significant trees are likely to occur within the 41 ha offset area.

Of the 161 significant trees identified within the survey area; 49 of these trees contained hollows with an entrance diameter of greater than 100 mm, suitable for use as nest hollows by black cockatoos. Extrapolating this across the 41 ha offset area it can be inferred that the offset site is likely to support in excess of 350 trees containing hollows an entrance diameter greater than 100 mm.

Anecdotal evidence from the current landowner indicates that at both FRTBC and BBC utilise the offset site for breeding.

3.2.3 Water availability

The offset site contains two small lakes, with a larger lake immediately adjacent to the western boundary of the site. These lakes have been excavated and are connected via a watercourse which flows perennially through the offset site. This provides a permanent water source for black cockatoos within the offset site and the observed flock of FRTBC recorded during the November 2015 assessment were seen within 100 m of these areas.

3.2.4 Overall suitability

Given the composition of vegetation, location of the offset site within the projected range of all three species of black cockatoos, the presence of black cockatoo foraging habitat and breeding/roosting trees and the presence of a permanent water source; it can be inferred that the offset site provides excellent quality habitat for all three species of black cockatoos. Accordingly, the site was assigned a habitat quality value of 8 for black cockatoos, guided by the ***Environmental Offsets Assessment Guide*** (DSEWPaC 2012a).

Based on the black cockatoo habitat values of the impact site on Lot 810 Yangedi Road, the conservation in perpetuity of the selected offset site at Waroona will provide a substantial benefit to black cockatoo species.

3.3 Offset Objectives

The primary goal is to conserve the identified offset site (41 ha) within Lot 480 Waroona and protect the existing native vegetation, providing a lasting habitat with excellent foraging and breeding potential, for all three species of black cockatoo.

3.4 Targets

With the existing Jarrah-Marri forest already identified as providing excellent foraging and breeding/roosting potential for black cockatoos, the primary target is to ensure this vegetation unit retains its very high habitat value of 8 (assigned through the offsets calculation) in perpetuity.

3.5 Management measures

Through the establishment of a covenant over the site, the landowner will commit to retaining and maintaining the vegetation values. The covenant agreement will include the management actions as described below.

Through the process of establishing the offset area, three key threatening processes were identified as potential risks to the health of the offset area. These include:

- weed incursion
- altered fire regimes
- dieback spread.

Given the isolated location of the Waroona Offset Site, the steep undulating topography, the very limited access to the site, and the excellent condition of the existing vegetation, the management measures proposed will provide for the maintenance of the site's vegetation and habitat quality.

3.5.1 Weed control

The weed management strategy will be centred upon the monitoring of weed species present in the offset site through an annual weed assessment. This will include a walkover of the offset site to identify weed species present and the mapping the location and extent of species distribution. Permanent monitoring quadrats may also be established and monitored to provide a consistent reference. If the number of weed species, or the extent of weed coverage increases beyond a pre determined trigger value, management measures will be implemented. Management measure will include the identification of the weed source and removal of the source where possible. Treatment options will be defined in the covenant agreement.

3.5.2 Altered fire regime

The offset site is located on a private property. Access to the site will be highly regulated by the owner. The primary access tracks are limited to around the building envelope (homestead and associated sheds) within Lot 480. These buildings are located outside the boundary of the 41 ha offset area. The controlled access to the site will ensure that the offset site is not subject to any alteration of the current fire regime.

The primary track through the property runs east/west from the cleared area around the homestead, to and beyond the property's eastern boundary. This track will be maintained to a standard consistent with the requirements of the ***Bush Fires Act 1954*** and the annual notices issues by the Shire of Waroona to allow the track to be traversed by fire fighting vehicles in the case of an emergency.

3.5.3 Dieback prevention

Access to the site will be highly regulated by the owner. The primary access tracks are limited to around the building envelope (homestead and associated sheds) within Lot 480. These buildings are located outside the boundary of the 41 ha offset area. This will restrict unauthorised people, cars, trucks and machinery entering the site and thus limiting the potential for the spread of dieback into the offset site. Anyone entering the offset site will be required to adhere to dieback wash down protocols outlined in the covenant agreement.

3.6 Implementation

The process for establishing a covenant under the ***Soil and Land Conservation Act 1945*** is relatively straight forward and the ability to establish the covenant has been confirmed with the Department of Agriculture and Food.

Subject to DotE approval of the proposed offset, the site will be presented to the Commissioner of Soil and Land Conservation, via the Department of Agriculture and Food. Upon in principle agreement from the Commissioner to a Conservation Covenant, the landowner will engage a licensed surveyor to draw up an Interests Only Deposited Plan (IODP) that identifies the area to be protected by a covenant.

The Commissioner will provide a statement of undertaking in support of the required legal documentation, confirming that the owners understand they are signing an irrevocable covenant.

After all the documents have been signed, they will be lodged with Landgate for registration of the memorial on the Certificate of Land Title.

4. Offset assessment guide

The ***Offsets Assessment Guide*** (DSEWPaC 2012a) and the associated offset calculator (Appendix 1) was used to assess the suitability of the selected offset sites to compensate for the loss of 12.6 ha of identified black cockatoo habitat within Lot 810 Yangedi Road.

Table 7 explains how the two proposed offset sites meet the requirements of an offset site as per the EPBC Act ***Environmental Offsets Policy*** (DSEWPaC 2012a).

Table 7: Comparison of black cockatoo offset requirements with proposed offsets

Offset requirements	Proposed offsets
Suitable offsets must deliver an overall conservation outcome that improves or maintains the viability of the aspect of the environmental that is protected by national environmental laws and affected by the proposed action	The proposed offset for black cockatoo species will result in an improved overall conservation outcome, ensuring protection and enhancement of key habitat for the species.
Suitable offsets must be built around direct offsets but may include other compensatory measures	100% of the proposed offset is a direct offset. The selected offset sites will provide habitat of equal value to that on Lot 810 proposed to be cleared, directly compensating for the loss of black cockatoo habitat, ensuring long term viability of suitable habitat within the region i.e. this is a direct offset.
Suitable offsets must be in proportion to the level of statutory protection that applies to the protected matter	The offsets proposed are consistent with DotE policy and the offset calculator. Statutory protection will be provided for the majority of the offset, being the placement of a Conservation Covenant over the Waroona Offset Site.
Suitable offsets must be of a size and scale proportionate to the residual impacts on the protected matter	The extent of habitat to be protected at the Waroona Offset Site and the revegetation of habitat within Lot 810 Yangedi Road will be proportionate to the residual impacts from clearing within the Proposal Area. The proposed action will result in the clearing of 12.6 ha of potential foraging and breeding habitat for black cockatoo species. The Waroona Offset Site will be approximately 41 ha in size. Together with the Revegetation Area on Lot 810 Yangedi Road (4.9 ha in size), the selected offset sites are of a size and scale proportionate to the residual impacts on the protected matter. The combined offset package provides for at least 100% of the impact offset as identified through the offset calculator.
Suitable offsets must effectively account for and manage the risk of the offset not succeeding	The risk of the offset option not fulfilling the aims for which it is designed is considered to be very low and a confidence level of 90% has been used in the offset calculator. The offset property will be managed and protected in perpetuity consistent with the requirements of the Conservation Covenant and revegetation works on Lot 810 Yangedi Rd will ensure that the offset measures undertaken are enduring in terms of their improvement of the local habitat values.
Suitable offsets must be additional to what is already required, determined by law or planning regulations or agreed to under other schemes or programs (this does not preclude the recognition of state or territory offsets that may be suitable as offsets under the EPBC Act for the same action)	The proposed offsets package represents new and additional conservation outcomes for the two proposed offset sites. Both proposed offset sites are zoned rural, with uses available for both sites consistent with the requirements of the relevant town planning schemes.
Suitable offsets must be efficient, effective, timely, transparent, scientifically robust and reasonable	The proposed offsets meet the requirements of EPBC Act Environmental Offsets Policy (DSEWPaC 2012a). The purchase and protection of the Waroona Offset Site provides immediate and permanent protection for the significant values contained within the property. The proposed revegetation on Lot 810 Yangedi Rd provides local mitigation to the proposed impact. The proximity of the revegetation works to the project site permits the efficient use of seed laden topsoil and mulch, enhancing the potential for success of the revegetation works.

Offset requirements	Proposed offsets
Suitable offsets must have transparent governance arrangements, including being able to be readily measured, monitored, audited and enforced	Performance for the improvement of the revegetation offset habitat is readily measurable through the development of a baseline position and ongoing monitoring and reporting in terms of improvements being undertaken. The Waroona Offset Site will be managed consistent with the requirements of the Covenant.

The direct offset measures detailed in Table 7 have been proposed to contribute to the ongoing viability of black cockatoo populations in the area. These offsets include the acquisition and protection for conservation purposes of approximately 41 ha of land at Waroona known to contain vegetation with excellent habitat value and the revegetation of 4.9 ha on Lot 810 Yangedi Road using black cockatoo foraging, breeding and roosting species. These offsets will adequately compensate for residual impacts from the action (clearing 12.6 ha within Lot 810).

The proposed offset package is consistent with the key offset requirements as specified in the Department's EPBC Act ***Environmental Offsets Policy*** (DSEWPaC 2012a) and offsets calculator tool.

Justification of the values utilised in the offset calculator (Appendix 1), are included in Table 8 and Table 9 below for the Revegetation Area and Waroona Offset Site respectively. Using these input values, the offset calculator determined that revegetation of the 4.9 ha Revegetation Area within Lot 810 will account for 16 % of the impact required to be directly offset under the EPBC Act Environmental Offsets Policy. While 41 ha of excellent black cockatoo habitat at a suitable offset site at Waroona, will account for the remaining 84 % offset requirement. Both offset sites will be conserved or managed in perpetuity.

Table 8: Offset calculator values for the Revegetation Area

Offset parameter	Values used in calculator	Justification of value
Start quality (proposed action)	6	12.6 ha of quality foraging and breeding/roosting habitat for black cockatoos will be cleared for the proposed action.
Time over which loss is averted	20	The offset site will be protected in perpetuity.
Time until ecological benefit	10	It has been estimated that it will take 10 years following revegetation of the offset area on Lot 810, for the habitat to be beneficial as both foraging and roosting habitat for black cockatoo species.
Start quality	1	The offset Revegetation Area is largely cleared and only contains three small areas of remnant native vegetation giving the offset site an approximate starting habitat quality of 1. Revegetation of the site will provide a better linkage for fauna movement between Bush Forever Site No. 378 and isolated remnants of vegetation on neighbouring properties to the west and north of the Proposal Area.
Risk of loss (%) without offset	20%	If this site was not revegetated for the purpose of the offset there would be no suitable habitat for black cockatoos within Lot 810, and therefore no suitable linkage between Bush Forever Site No. 378 and isolated remnants of vegetation on neighbouring properties. There would also be a risk the site could be mined in the future or developed for agricultural or other purposes in the future.
Future quality without offset	0	Quality of the offset site will easily decline from 1 to 0 without any protection measures. The site will not provide any habitat for black cockatoos if it is not revegetated as an offset site.
Risk of loss (%) with offset	20%	Formal protection of the offset site will ensure that the risk of loss is minimised as much as possible.
Future quality with offset	4	Given the small area of remnant native vegetation and the need to revegetate the site with suitable foraging and breeding/roosting species for black cockatoos. Even with revegetation the future quality of the offset site is only estimated to increase to 4, as the site will not provide breeding habitat for black cockatoos In general, hollows of sufficient size to support black-cockatoos given hollows do not form until trees are at least 230 years old, and the majority of nests are found in 300-500 year old trees (Johnstone 2006).

Offset parameter	Values used in calculator	Justification of value
Confidence in result (habitat quality)	90%	Protection mechanisms, once established, will provide a higher level of certainty that the offset will be conserved and enhanced through active management.
Confidence in result (averted loss)	90%	Proposed management options provide a high level of certainty that the offset will be conserved, averting the level of loss of black cockatoo habitat that would occur should no formal protection measures be implemented.

Table 9: Offset calculator values for the Waroona Offset Site

Offset parameter	Values used in calculator	Justification of value
Start quality (proposed action)	6	12.6 ha of quality foraging and breeding/roosting habitat for black cockatoos will be cleared for the proposed action.
Time over which loss is averted	20	The offset site will be protected in perpetuity as a conservation reserve, vested in the Conservation Commission under s30 of the ***Soil and Land Conservation Act 1945.***
Time until ecological benefit	1	Ecological benefit would be realised immediately as a direct offset would be provided.
Start quality	8	The Waroona Offset Site comprises 60.25 ha of Jarrah-Marri forest in excellent condition (approximate habitat quality scope of 9), offering suitable roosting and breeding habitat for black cockatoo, as well as foraging habitat for some species. The forest understorey comprises ***Banksia grandis*** in the upland areas and ***Banksia ilicifolia*** in lowland areas, also known foraging species for black cockatoo.
Risk of loss (%) without offset	20%	If this site was not land banked for the purpose of offset rural or extractive land uses could prevail and there would be no formal protection mechanisms or active conservation management.
Future quality without offset	7	Quality of the offset site is likely to steadily decline without any protection measures. Clearing may result in a reduction of available foraging and breeding/roosting species for black cockatoos in the area.
Risk of loss (%) with offset	5%	Formal protection of the offset site will ensure that the risk of loss is minimised as much as possible.
Future quality with offset	8	Given the existing vegetation is of excellent quality at the Waroona Offset Site, the future quality is unlikely to increase.
Confidence in result (habitat quality)	90%	Protection mechanisms, once established, will provide a higher level of certainty that the offset will be conserved and enhanced through active management.
Confidence in result (averted loss)	90%	The conservation in perpetuity of the proposed offset site under s30 of the ***Soil and Land Conservation Act 1945,*** will provide a high level of certainty that the offset will be conserved, averting the level of loss that would likely occur should no formal protection measures be implemented.

5. Reporting requirements

Urban Resources will provide the DotE with offset attributes and shapefiles of the 41 ha offset site at Waroona and the 4.9 ha revegetation offset site on Lot 810 Yangedi Road, within 12 months of the commencement of the action.

Urban Resources will maintain records of all of all activities associated with the implementation of this offsets plan, suitable for review by an independent auditor should an audit be undertaken of compliance with the conditions of the approval.

6. References

Finn H 2012, ***Assessment of habitat values for black-cockatoos within selected sites at Newmont Boddington Gold Mine***, report prepared for Newmont Boddington Gold Pty Ltd.

Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) 2012a, ***Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy***, Australian Government, Canberra.

Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) 2012b, ***Environment Protection and Biodiversity Conservation Act 1999 referral guidelines for three black cockatoo species: Carnaby's cockatoo (endangered) Calyptorhynchus latirostris, Baudin's cockatoo (vulnerable) Calyptorhynchus baudinii, Forest red-tailed black cockatoo (vulnerable) Calyptorhynchus banksii naso***, Australian Government, Canberra.

Johnstone R 2006, ***Going, going, gone! Veteran and stag trees: a valuable resource***, Western Australian Museum, Perth.

Whitford KR & Williams MR 2002, 'Hollows in jarrah (Eucalyptus marginata) and marri (Corymbia calophylla) trees II. Selecting trees to retain for hollow dependent fauna', ***Forest Ecology and Management***, vol. 160: pp. 215 232.

Appendix 1
Offset assessment guide

Offsets Assessment Guide

For use in determining offsets under the *Environment Protection and Biodiversity Conservation Act 1999*
2 October 2012

This guide relies on Macros being enabled in your browser.

Matter of National Environmental Significance	
Name	Caranby's Black cockatoo
EPBC Act status	Endangered
Annual probability of extinction Based on IUCN category definitions	**1.2%**

Key to Cell Colours
User input required
Drop-down list
Calculated output
Not applicable to attribute

Impact calculator

Impact calculator

Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact		Units	Information source
Ecological communities						
Area of community	No		**Area**			
			Quality			
			Total quantum of impact	0.00		
Threatened species habitat						
Area of habitat	No	regrowth Banksia woodland	**Area**	12.7		
			Quality	**6**		
			Total quantum of impact	7.62		
Protected matter attributes	**Attribute relevant to case?**	**Description**	**Quantum of impact**		**Units**	**Information source**
Number of features e.g. Nest hollows, habitat trees	No					
Condition of habitat Change in habitat condition, but no change in extent	No					
Threatened species						
Birth rate e.g. Change in nest success	No					
Mortality rate e.g Change in number of road kills per year	No					
Number of individuals e.g. Individual plants/animals	No					

Offset calculator

Offset calculator

Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon (years)		Start area and quality		Future area and quality without offset		Future area and quality with offset		Raw gain	Confidence in result (%)	Adjusted gain	Net present value (adjusted hectares)		% of impact offset	Minimum (90%) direct offset requirement met?	Cost ($ total)	Information source
Ecological Communities																					
Area of community	No				**Risk-related time horizon (max. 20 years)**		**Start area (hectares)**		**Risk of loss (%) without offset**		**Risk of loss (%) with offset**										
									Future area without offset (adjusted hectares)	0.0	**Future area with offset (adjusted hectares)**	0.0									
					Time until ecological benefit		**Start quality (scale of 0-10)**		**Future quality without offset (scale of 0-10)**		**Future quality with offset (scale of 0-10)**										
Threatened species habitat																					
Area of habitat	yes	7.62	Adjusted hectares	revegetation on site	**Time over which loss is averted (max. 20 years)**	20	**Start area (hectares)**	41	**Risk of loss (%) without offset**	20%	**Risk of loss (%) with offset**	5%	6.15	90%	5.53	4.36	6.41	84.06%	No	$400,000.00	
									Future area without offset (adjusted hectares)	32.8	**Future area with offset (adjusted hectares)**	39.0									
					Time until ecological benefit	1	**Start quality (scale of 0-10)**	**8**	**Future quality without offset (scale of 0-10)**	**7**	**Future quality with offset (scale of 0-10)**	**8**	1.00	90%	0.90	0.89					
Protected matter attributes	**Attribute relevant to case?**	**Total quantum of impact**	**Units**	**Proposed offset**	**Time horizon (years)**		**Start value**		**Future value without offset**		**Future value with offset**		**Raw gain**	**Confidence in result (%)**	**Adjusted gain**	**Net present value**		**% of impact offset**	**Minimum (90%) direct offset requirement met?**	**Cost ($ total)**	**Information source**
Number of features e.g. Nest hollows, habitat trees	No																				
Condition of habitat Change in habitat condition, but no change in extent	No																				
Threatened species																					
Birth rate e.g. Change in nest success	No																				
Mortality rate e.g Change in number of road kills per year	No																				
Number of individuals e.g. Individual plants/animals	No																				

Summary

Summary

Protected matter attributes	Quantum of impact	Net present value of offset	% of impact offset	Direct offset adequate?	Cost ($)		
					Direct offset ($)	Other compensatory measures ($)	Total ($)
Birth rate	0				$0.00		$0.00
Mortality rate	0				$0.00		$0.00
Number of individuals	0				$0.00		$0.00
Number of features	0				$0.00		$0.00
Condition of habitat	0				$0.00		$0.00
Area of habitat	7.62	6.41	84.06%	**No**	$400,000.00	$273,494.70	$673,494.70
Area of community	0				$0.00		$0.00
					$400,000.00	**$273,494.70**	**$673,494.70**

Offsets Assessment Guide

For use in determining offsets under the *Environment Protection and Biodiversity Conservation Act 1999*
2 October 2012

This guide relies on Macros being enabled in your browser.

Matter of National Environmental Significance	
Name	Caranby's Black cockatoo
EPBC Act status	endangered
Annual probability of extinction Based on IUCN category definitions	**1.2%**

Key to Cell Colours
User input required
Drop-down list
Calculated output
Not applicable to attribute

Impact calculator

Protected matter attributes	Attribute relevant to case?	Description	Quantum of impact		Units	Information source
Ecological communities						
Area of community	No		**Area**			
			Quality			
			Total quantum of impact	0.00		
Threatened species habitat						
Area of habitat	No	regrowth Banksia woodland	**Area**	12.7		
			Quality	**6**		
			Total quantum of impact	7.62		
Protected matter attributes	**Attribute relevant to case?**	**Description**	**Quantum of impact**		**Units**	**Information source**
Number of features e.g. Nest hollows, habitat trees	No					
Condition of habitat Change in habitat condition, but no change in extent	No					
Threatened species						
Birth rate e.g. Change in nest success	No					
Mortality rate e.g Change in number of road kills per year	No					
Number of individuals e.g. Individual plants/animals	No					

Offset calculator

Protected matter attributes	Attribute relevant to case?	Total quantum of impact	Units	Proposed offset	Time horizon (years)		Start area and quality		Future area and quality without offset		Future area and quality with offset		Raw gain	Confidence in result (%)	Adjusted gain	Net present value (adjusted hectares)	% of impact offset	Minimum (90%) direct offset requirement met?	Cost ($ total)	Information source
Ecological Communities																				
Area of community	No				**Risk-related time horizon (max. 20 years)**		**Start area (hectares)**		**Risk of loss (%) without offset**		**Risk of loss (%) with offset**									
									Future area without offset (adjusted hectares)	0.0	**Future area with offset (adjusted hectares)**	0.0								
					Time until ecological benefit		**Start quality (scale of 0-10)**		**Future quality without offset (scale of 0-10)**		**Future quality with offset (scale of 0-10)**									
Threatened species habitat																				
Area of habitat	yes	7.62	Adjusted hectares	revegetation on site	**Time over which loss is averted (max. 20 years)**	20	**Start area (hectares)**	4.9	**Risk of loss (%) without offset**	20%	**Risk of loss (%) with offset**	20%	0.00	90%	0.00	0.00	1.25	16.44%	No	
									Future area without offset (adjusted hectares)	3.9	**Future area with offset (adjusted hectares)**	3.9								
					Time until ecological benefit	10	**Start quality (scale of 0-10)**	**1**	**Future quality without offset (scale of 0-10)**	**0**	**Future quality with offset (scale of 0-10)**	**4**	4.00	90%	3.60	3.20				
Protected matter attributes	**Attribute relevant to case?**	**Total quantum of impact**	**Units**	**Proposed offset**	**Time horizon (years)**		**Start value**		**Future value without offset**		**Future value with offset**		**Raw gain**	**Confidence in result (%)**	**Adjusted gain**	**Net present value**	**% of impact offset**	**Minimum (90%) direct offset requirement met?**	**Cost ($ total)**	**Information source**
Number of features e.g. Nest hollows, habitat trees	No																			
Condition of habitat Change in habitat condition, but no change in extent	No																			
Threatened species																				
Birth rate e.g. Change in nest success	No																			
Mortality rate e.g Change in number of road kills per year	No																			
Number of individuals e.g. Individual plants/animals	No																			

Summary

Protected matter attributes	Quantum of impact	Net present value of offset	% of impact offset	Direct offset adequate?	Cost ($)		
					Direct offset ($)	Other compensatory measures ($)	Total ($)
Birth rate	0				$0.00		$0.00
Mortality rate	0				$0.00		$0.00
Number of individuals	0				$0.00		$0.00
Number of features	0				$0.00		$0.00
Condition of habitat	0				$0.00		$0.00
Area of habitat	7.62	1.25	16.44%	**No**	$0.00	#DIV/0!	#DIV/0!
Area of community	0				$0.00		$0.00
					$0.00	**#DIV/0!**	**#DIV/0!**

Appendix 2
Planning approval

a 6 Paterson Street, Mundijong WA 6123 t 08 9526 1111 f 08 9525 5441 e info@sjshire.wa.gov.au www.sjshire.wa.gov.au

Shire of Serpentine Jarrahdale

Sustainable. Connected. Thriving!

All enquiries to Planning Services on 9526 1131
Our ref: P01495/01: RT:bo
Electronic Ref: OC15/9695

21 May 2015

SAGH Pty Ltd
PO Box 739
COMO WA 6952

Dear Sir/Madam

Re: Industry (Extractive) Application – Lot 810 (No.253) Yangedi Road, Hopeland

I refer to your application for development approval in respect of the above property. The Shire is pleased to advise that the application has been carefully considered and the Shire has been able to support the proposal, with an approval decision notice attached for your information and future reference.

Should you wish to proceed with the development, it is important that you review the various conditions that have been imposed. The conditions have been imposed due to the various regulatory requirements that exist in Western Australia and ultimately to ensure that the expectations of the community will be achieved into the future. While every effort has been made to ensure that the requirements are clear, please do not hesitate contact the relevant officers of the Shire should you require any additional information or wish to clarify the requirements of the conditions.

Should you be aggrieved by any of the conditions, you may have the right under the Planning and Development Act 2005 to have the decision reviewed by the State Administrative Tribunal. Applications for review must be submitted to the Tribunal within 28 days of the date on the decision notice. Further information can be obtained by calling the Tribunal on (08) 9219 3111 or by visiting their website at www.sat.justice.wa.gov.au

The Shire is endeavouring to provide a high level of customer service and is always keen to receive feedback on how we can improve our services. Should you have any feedback that you would like to provide to the Shire, please do not hesitate to send us an email to planning@sjshire.wa.gov.au.

Thank you again for lodging a development application with the Shire and we look forward to working with you again in the future.

Yours faithfully

Leonard Long
Statutory Planning Coordinator

6 Paterson Street
Mundijong 6123
Western Australia

Shire of Serpentine Jarrahdale

Telephone: 9526 1111
Facsimile: 9525 5441
Web: www.sjshire.wa.gov.au
Email: info@sjshire.wa.gov.au

FORM 2
PLANNING APPROVAL
TOWN PLANNING SCHEME NO. 2

PROPERTY FILE:	P01495/01	**DOCUMENT NO:**	OC15/9695
APPLICANT:	SAGH Pty Ltd		
OWNER:	Rich Vista Pty Ltd 66 Bourke Drive ATTADALE WA 6156 De Evergrace Pty Ltd 11 Meadowbank Terrace SOUTH LAKE WA 6164		
PROPERTY:	Lot 810 (No.253) Yangedi Road, Hopeland		
DEVELOPMENT:	Industry – Extractive		
USE CLASS:	Industry – Extractive		
APPROVAL DATE:	21 May 2015		
AUTHORITY:	OCM043/04/15		

Application for approval to commence development as per application form **dated 3 December 2014** and accompanying plans is **APPROVED** under the above authority subject to the following conditions:

CONDITIONS

1. This approval is valid for a period of five years expiring on 12 April 2020.

2. Except to the extent inconsistent with any other conditions set out hereunder, all development on the site shall comply with the Extractive Industry Licence Application as approved by the Shire and any subsequent amendments as may be agreed in writing between the Shire and the applicant from time to time.

3. The applicant shall undertake the extractive industry operations in accordance with the Shire of Serpentine Jarrahdale's Extractive Industries Local Law.

4. The landowner shall submit an Annual Compliance Assessment Report to the Shire by 31 December each year. The Annual Compliance Assessment Report shall include an internal compliance audit of the Community Consultation Framework and all the development and licence approval conditions and management plans, complaints and complaint responses.

5. Operating hours are restricted to 7:00am to 5:00pm Monday to Friday.

6. Any buildings/structures associated with the excavation activities such as site office, equipment store and vehicle parking area are to be located so that they are screened from view from any adjacent roads or properties to the satisfaction of the Shire.

7. Outside lighting should be angled to minimise light impacts on neighbouring properties.

8. Within 3 months of the date of this approval, and before pre-excavation works commence, the landowner is to submit to the Shire a plan for Community Consultation Framework. The plan shall feature, but not be limited to, formation of a committee comprising the relevant landowner, community representatives from the Shire and government agency representatives, terms of reference for the committee and the frequency of committee meetings. Once approved the plan is to be implemented in its entirety.

9. At the completion of each stage of mining operations, the landowner shall ensure that all sand faces, non-operational stock piles and bund walls are safe and stable and must provide a report from a certified Geotechnical Engineer to verify their short, medium and long term stability to the satisfaction of the Shire.

10. Prior to the commencement of pre-excavation works, a Traffic Management Plan shall be submitted to and approved by the Shire and thereafter implemented.

11. Prior to the commencement of pre-excavation works, a Wetland Management Plan shall be submitted to and approved by the Shire and thereafter implemented.

12. Prior to commencement of operations, a Water and Drainage Management Plan that addresses surface and groundwater quality and quantity (including a suitable network of groundwater monitoring bores) is to be submitted to and approved by the Shire and thereafter implemented. The maximum depth of excavation shall facilitate a 2 metre separation to groundwater.

13. Prior to commencement of operations, a Landscape Rehabilitation Plan is to be submitted to and approved by the Shire and thereafter implemented. Within two years from the cessation of the extraction form the final stage of sand extraction, the land must be rehabilitated and revegetated to the satisfaction of the Shire.

14. Prior to commencement of operations, an Acoustic Assessment is to be submitted to and approved by the Shire and thereafter implemented so as to ensure noise levels comply with the allowable noise levels.

15. Prior to the commencement of pre-excavation works, a Dust Management Plan shall be submitted and approved by the Shire and thereafter implemented so as to minimise dust emissions and ensure that visible dust is not emitted beyond the boundaries of the development site.

16. The applicant shall operate in accordance with the Unauthorised Discharge Regulations to minimise the risks of fuel spills or leaks of chemicals including fuel, oil or other hydrocarbons, and shall ensure that no chemicals or potential liquid contaminants are disposed of on site.

17. Prior to commencement of operations, a Fire and Emergency Management Plan is to be submitted to and approved by the Shire and thereafter implemented.

18. Prior to the commencement of works a Staging Plan is to be submitted to and approved by the Shire and thereafter implemented.

APPEAL RIGHTS

The applicant may have the right under the Planning and Development Act 2005 to have the decision reviewed by the State Administrative Tribunal (SAT). Applications for review must be submitted to the SAT within 28 days of the date on the decision notice. Further information can be obtained by calling SAT on (08) 9219 3111 or by visiting their website at www.sat.justice.wa.gov.au

Leonard Long
Statutory Planning Coordinator

Appendix 3
List of flora species recorded within the Project Area

Table 1-1: Species recorded in each vegetation type to be rehabilitated in Revegetation Area

Vegetation type (quadrat number)	Native species recorded	Dominant species (by % cover)
EmBi (Y1)	*Eucalyptus marginata*	Y
	Banksia ilicifolia	Y
	Melaleuca thymoides	
	Banksia menziesii	
	Lomandra preissii	
	Hibbertia hypericoides	
	Burchardia congesta	
	Drosera porrecta	
	Patersonia occidentalis	
	Acacia willdenowiana	
	Gompholobium tomentosum	Y
	Allocasuarina fraseriana	
	Mesomelaena pseudostygia	
	Dampiera linearis	
MpAf (Y4)	*Melaleuca preissiana*	Y
	Astartea fascicularis	Y
	Lepidosperma longitudinale	
	Kunzea glabrescens	
	Cassytha racemosa	
ErAf (Y6)	*Eucalyptus rudis*	Y
	Astartea fascicularis	Y
	Cassytha racemosa	
BmBaEm (Y2, Y3)	*Acacia sessilis*	
	Acacia willdenowiana	
	Allocasuarina humilis	Y
	Anigozanthos manglesii	
	Anigozanthos humilis	
	Astroloma macrocalyx	
	Banksia menziesii	Y
	Bossiaea eriocarpa	
	Burchardia congesta	
	Caladenia flava	
	Calytrix leschenaultii	
	Chamaescilla corymbosa	
	Conostylis setigera	
	Daviesia triflora	
	Desmocladus flexuosus	
	Drosera porrecta	
	Drosera menziesii	
	Eremaea ebracteata	
	Eucalyptus marginata	Y
	Gompholobium tomentosum	
	Hibbertia hypericoides	Y
	Hovea trisperma	
	Kunzea glabrescens	
	Laxmannia squarrosa	
	Leucopogon polymorphus	
	Lomandra hermaphrodita	
	Mesomelaena pseudostygia	

Vegetation type (quadrat number)	Native species recorded	Dominant species (by % cover)
	Neurachne alopecuroidea *Patersonia occidentalis* *Patersonia juncea* *Petrophile linearis* *Poranthera microphylla* *Quinetia urvillei* *Schoenus curvifolius* *Siloxerus humifusus* *Stylidium repens* *Stylidium piliferum* *Thysanotus patersonii* *Trachymene pilosa* *Xanthorrhoea preissii* *Xanthosia huegelii*	

Appendix 4
Local Planning Policy No. 4

Shire of Serpentine Jarrahdale Sustainable. Connected. Thriving!	***LOCAL PLANNING POLICY NO. 4*** Revegetation Version 4 Updated: May 2014 File: SJ1086 Trim Ref: E14/2076 Adopted OCM033/08/14 – 25 August 2014

1.0 POLICY OBJECTIVES

The objectives of this policy are:

Revegetation of land within the Shire;

Encouragement of the use of local native flora for revegetation;

Raising awareness of the importance of revegetation as a relevant planning consideration; and

Provision of guidance for landowners, developers and Council on the requirements of TPS2 Clause 7.13 Tree Preservation and Planting.

2.0 BACKGROUND

The Shire of Serpentine Jarrahdale's Strategic Community Plan 2013 to 2022 provides a vision for the Natural Environment and a strategy of excellence in environmental management. This includes the objective of protection, restoration and management of our landscapes and biodiversity, and the implementation of the Shire's Local Biodiversity Strategy.

Urban growth in the region, the drying climate and the increasing importance of planning for bushfire protection are having a significant negative impact on the natural vegetation assets and landscapes of the Shire.

The Shire must consider the measures to use in management of our vegetation assets to deliver better landscape and biodiversity outcomes in new and existing communities. Better landscape management involves understanding principles of ecological sustainability and recognition of the environmental services provided by vegetation. These services include shade, shelter, habitat, screening, visual amenity, nutrient stripping and soil stabilisation.

Vegetation resources and their services can be regrown, but may require decades to reach peak performance.

Where these services are compromised, by planned and approved action, by disaster or by illegal activity they should be replaced by approved revegetation.

3.0 APPLICATION

This policy applies to all strategic and statutory planning proposals on all zonings, land uses and development types within the Shire.

4.0 IMPLEMENTATION

4.1 Principles of Revegetation

Revegetation under this policy shall follow the following principles:

Revegetation is required to replace the vegetation that is lacking or being lost throughout the Shire. Actions involving removal of vegetation require consultation with the Shire and, where deemed necessary, a detailed plan for replacement.

When revegetation is proposed, preference will be given to local native species. The Shire has prepared guidelines, information notes and species lists to aid with this policy's implementation.

Revegetation should be carried out according to current best practice techniques and with consideration given to its location and purpose.

If a management plan is required it will need to incorporate a fire and water management strategy.

Bank guarantees for proposed revegetation may be required where works have not been completed prior to clearance of subdivisions. Bank guarantees will be determined from outstanding implementation costs and a schedule of maintenance submitted by the proponent.

4.2 Documentation

Proponents should submit relevant documentation, as required by the Shire.

4.3 Revegetation Requirements

Revegetation must be in accordance with the Shire's guidelines.

Policy Adoption and Amendment History

Reviewed/Modified	Minutes Reference	Date	Meeting Type
Adopted	CR10/82	May 2010	OCM
Modified/Advertising	CR14/70	23 June 2014	OCM
Reviewed			

Shire of Serpentine Jarrahdale
Sustainable. Connected. Thriving!

Attachment 1

REVEGETATION DOCUMENTATION REQUIREMENTS

This document relates to Local Planning Policy No.4 and provides guidelines as to the documentation required by the proponent to support the application of this policy.

Zone	Change of Use / Development Type	Management Plan Timing
Rural	Subdivisions	Submit Plan for approval with civil engineering drawings, implement approved works prior to clearance
	Change of Use / Development	Submit Plan for approval prior to site works, implement, maintain and monitor according to planning approval conditions
	Extractive Industries	Submit Plan for approval prior to site works, implement, maintain and monitor according to planning approval and licence conditions
Urban	Subdivisions	Submit Strategy at LSP stage Submit Plan for approval consistent with civil engineering drawings and water and fire management plans, implement approved works prior to clearance
	Commercial	Submit Plan for approval prior to issuing building licence, implement approved works prior to occupation of site, maintain according to planning approval conditions
	Industrial	Submit Plan for approval consistent with civil engineering drawings and water and fire management plans prior to site works, implement approved works prior to occupation of site, maintain all plantings and monitor performance according to planning approval conditions
Other	Council Activities	At Council's discretion
	Tree Removal Requests	Inform Council of intent and purpose Plan may be required prior to planning approval
	Other	At Council's discretion

Shire of Serpentine Jarrahdale
Sustainable. Connected. Thriving!

Attachment 2

REVEGETATION GUIDELINES

These guidelines relate to Local Planning Policy No 4.
This document provides guidance required by the proponent to support the application of this policy.

Stage	Required Procedures
Site Preparation	1. Site preparation techniques will include: Knock-down herbicide application; Weed control, targeting identified weed species present; Deep ripping (0.5m); Mounding (20cm high and 60cm wide) and stabilisation in areas subject to inundation; Soil conditioning; and Other tasks where necessary. 2. The range and application of site preparation techniques used will depend on a number of considerations, including past, current and future land use, and site specific environmental information. 3. All machinery is to be confirmed free of soil and plant material prior to use, to minimise the risk of weed and disease introduction. 4. Where water treatment or design features are to be modified or constructed, the methods used in their construction should be described in any required urban or rural water management plan and civil engineering drawings.
Vegetation Establishment	1. The proponent will provide a list to the Shire for approval of plant numbers, species and location, and their provision as tube stock or advanced plants. 2. Species selection will be based on soil type and current presence on site and in nearby areas of natural vegetation. 3. Seeds and tube stock should be ordered at least a year before required to allow sufficient time for propagation. 4. The timing, seed preparation, hardening processes (e.g. sun exposure), fertilizer application, and addition of mulch, soil conditioning or other surface material should be described in the management plan. 5. Different establishment techniques may be used in different purpose planting areas (these may need to be described separately) and the applicant must address how they will achieve the following in the management plan: Visual screening; Shelter/wind break;

Stage	Required Procedures
	Creek-lining; Biodiversity; Compensating basin; and Nutrient stripping sedges and rushes (variable density to achieve soil stabilisation and water purification). 6. Planting should be carried out between May and September, except: Wetland plants in emergent zones should be planted as water levels recede at the end of winter; and Sedges and rushes in permanently inundated areas should be planted in spring and summer. 7. Creation of habitat should be included in the management plan. Use of the original flora on the site will maximise benefit for local fauna. Consideration can be given to attraction of particular butterflies, birds, mammals or other fauna by use of associated plants. This may include the retention of hollows on the ground or in trees and/or replacement with artificial hollows. 8. Revegetation adjacent to firebreaks should be planted in accordance with an approved fire management plan.
Vegetation Maintenance and Protection	1. Vegetation maintenance and protection is to be described in the management plan, and carried out by the proponent through a variety of means including (but not limited to): Vegetation monitoring; Ongoing weed management; Removal of tree guards; Protective fencing; Infill supplemental planting to meet completion criteria; Thinning; and Ongoing pruning, irrigation, fertiliser application (if appropriate) and mulching. 2. A vegetation maintenance period of two or more years (negotiable with Council) will apply to Public Open Spaces within residential subdivisions and in rural subdivisions with monitoring requirements. 3. Annual monitoring and reporting of revegetation results, including weed management, may be required.
Practical Completion, Handover Inspections	1. Completion criteria must be clearly described in the management plan. 2. For residential subdivisions, the handover inspection occurs at the end of the maintenance period (2 or more years), which commences at the time

Stage	Required Procedures
and Completion Criteria	of a satisfactory practical completion inspection. 3. For rural subdivisions, the maintenance period (2 or more years) commences at the time of completion of planting. 4. Where the plant survival rate is below 75% of the completion criteria requirements in any one year, supplemental planting or seeding is required. 5. A final report of revegetation survival and other completion criteria may be required.

APPENDIX G – LETTER OF AUTHORITY

LETTER OF AUTHORITY

APPLICATION SUBMISSIONS
Department of Water and Environmental Regulation
Locked Bag 10
Joondalup DC WA 6919

Dear Sir/Madam,

RE: Authority to lodge a licence and works approval application for a Category 12: Screening licence at 253 Yangedi Road, Hopeland.

The undersigned as owner of the land described as 253 Yangedi Road, Hopeland, hereby authorises Site Environmental and Remediation Services (SERS) to lodge the aforementioned application.

Yours Sincerely,

_____

Land Owner

_____

Date

APPENDIX H – LETTER AUTHORISING WORKS (FROM SAGH PTY LTD)

APPENDIX I – NATUREMAP SEARCH

NatureMap Species Report Yangedi

Created By Guest user on 22/07/2019

Current Names Only	Yes
Core Datasets Only	Yes
Method	'By Circle'
Centre	115° 52' 31" E,32° 23' 09" S
Buffer	1km

	Name ID	Species Name	Naturalised	Conservation Code	[1]Endemic To Query Area
1.	24734	*Calyptorhynchus latirostris (Carnaby's Cockatoo, White-tailed Short-billed Black Cockatoo)*		T	
2.		*Phytophthora cinnamomi*			

Conservation Codes
T - Rare or likely to become extinct
X - Presumed extinct
IA - Protected under international agreement
S - Other specially protected fauna
1 - Priority 1
2 - Priority 2
3 - Priority 3
4 - Priority 4
5 - Priority 5

[1] For NatureMap's purposes, species flagged as endemic are those whose records are wholely contained within the search area. Note that only those records complying with the search criterion are included in the calculation. For example, if you limit records to those from a specific datasource, only records from that datasource are used to determine if a species is restricted to the query area.

NatureMap
Mapping Western Australia's biodiversity

NatureMap Species Report Yangedi

Created By Guest user on 22/07/2019

Current Names Only	Yes
Core Datasets Only	Yes
Method	'By Circle'
Centre	115° 52' 31" E,32° 23' 09" S
Buffer	1km

Area (ha)		314.12
Taxa:	Naturalised	0
	Native	2
Endemics:		0
Families:		2
Genera:		2
Conservation Status:	-	1
	T	1
MS Status:	-	2
Rank:	-	2

Top Ten Families

	Species	Records
1. Psittacidae	1	2
2. Peronosporaceae	1	2

Top Ten Genera

	Species	Records
1. Phytophthora	1	2
2. Calyptorhynchus	1	2

[1]Endemic To Query Area

Name ID	Species	Conservation Status

Conservation Codes
T - Rare or likely to become extinct
X - Presumed extinct
IA - Protected under international agreement
S - Other specially protected fauna
1 - Priority 1
2 - Priority 2
3 - Priority 3
4 - Priority 4
5 - Priority 5

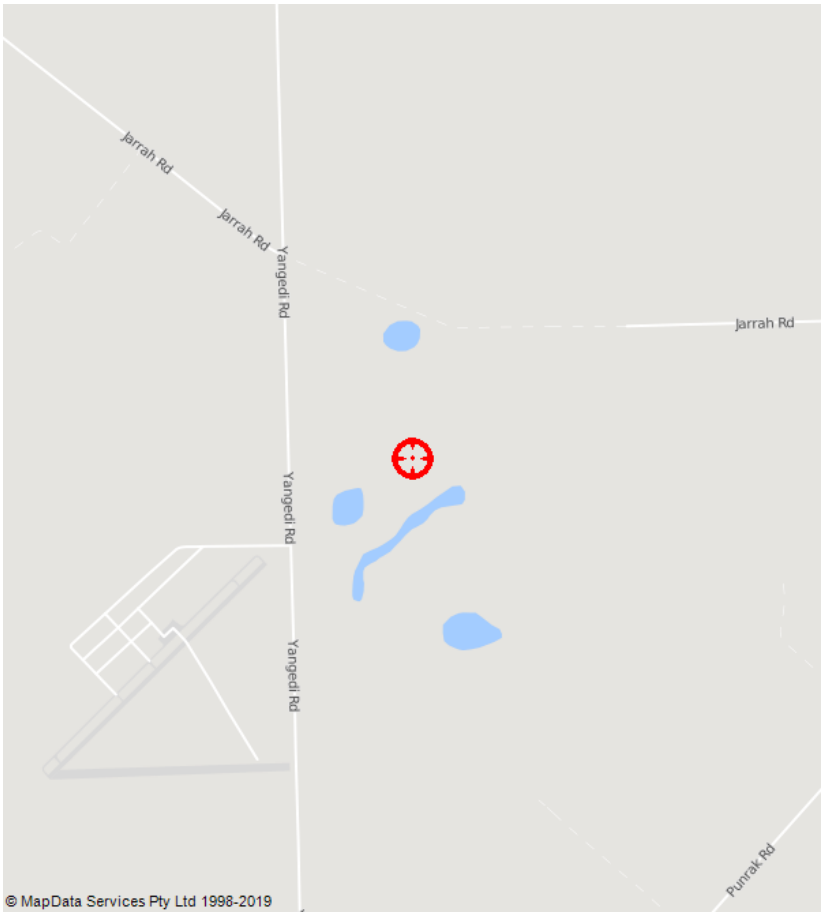
[1] For NatureMap's purposes, species flagged as endemic are those whose records are wholely contained within the search area. Note that only those records complying with the search criterion are included in the calculation. For example, if you limit records to those from a specific datasource, only records from that datasource are used to determine if a species is restricted to the query area.

APPENDIX J – PERTH GROUNDWATER ATLAS REPORT

Government of Western Australia
Department of Water

Perth Groundwater Map

253 YANGEDI ROAD HOPELAND 6125

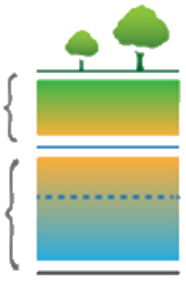


Depth to Groundwater

-.-

Depth of Water

-.-



Depths

Depth from ground level to:

Water table:	-.-
Base of Aquifer:	-.-

Levels relative to AHD (~sea level):

Natural Surface:	-.-
Water table:	-.-
Base of Aquifer:	-.-

Water Quality

Groundwater Salinity:	1000-1500
Surface Geology Type:	Bassendean Sand: quartz sand (dunes)| Qpb
Iron Staining Risk:	Low risk
Garden Bore Suitability:	Unsuitable
Acid Sulfate Class:	Moderate to low risk
Public Drinking Water Source Areas (PDWSA):	N/A

User Comments:

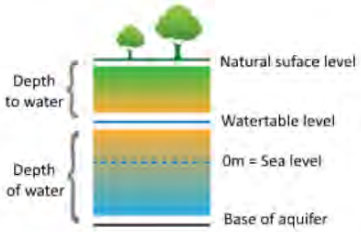
The following comments were entered by the user

Generated from Groundwater Map

Depth to Groundwater

Estimates may fluctuate between 0.5 and 3m due to seasonal variation. Under normal circumstances, a garden bore will be drilled to a depth 10m below the water table. Add 10m to the depth-to-groundwater to estimate the drilling depth. Groundwater level contours are estimated based on recorded groundwater levels measured in May of 2003 (end of summer). Changes in groundwater and natural surface levels can occur over time, and it should be clearly understood that the Department of Water is not in a position to guarantee the accuracy of the data.

The data is not suitable for calculating the depth of water bodies such as rivers or lakes.



For further information, contact the Department of Water Information Line on (08) 6364 6505 or email: wir@water.wa.gov.au

Groundwater Salinity

The salinity of the groundwater below the Perth metropolitan area varies considerably. In general, areas underlain by sand or limestone will have access to groundwater with a quality that is suitable for watering household gardens.

Fresh	0-500 mg/L
Marginal	501-1000 mg/L
Brackish	1001-3000 mg/L
Saline	over 3000 mg/L

Surface Geology Type

Derived from 250k Geology dataset re-classified based on groundwater significance, it is comprised of Tertiary to Quaternary sediments of the Safety Bay Sand, Becher Sand, Tamala Limestone, Bassendean Sand, Gnangara Sand, Guildford Clay, Yoganup Formation and Ascot Formation. It consists of up to 90m sequences of sand, limestone, silt and clay. Similar to the Superficial formations of the Northern Perth Basin, the sand and limestone occurs at the coast, the Bassendean Sand and Gnangara Sands in the central Swan Coastal Plain, and clayey deposits of the Guildford Formation further east at the foot of the Darling and Gingin Scarps. The Gnangara Mound north of the Swan River and the Jandakot Mound south of the Canning River are the main flow systems. There are smaller flow systems such as the Safety Bay, Stake Hill, Swan Helena, Cloverdale, Armadale, Byford and Serpentine mounds in the centre and south.

Iron Staining Risk

Many areas across the Perth metropolitan area are affected by surface staining from groundwater. The map does not include all locations that may have iron staining potential, and as soil strata are highly variable, bores should be checked to confirm the status of local iron staining risk.

The Iron Staining Risk theme is divided into two categories:

- High risk: Areas having an elevated iron / manganese staining risk.
- Low risk: Areas low in iron concentration, away from past or present wetlands with neutral to alkaline pH.

Garden Bore Suitability

The Garden Bore Suitability risk has been assessed as one of two classes:

- Suitable: Use of groundwater for domestic irrigation supported in preference to scheme water.
- Unsuitable: Additional domestic garden bores not supported as water quantity or quality may not be appropriate

To view the Departments policy on Garden Bores, see https://www.water.wa.gov.au/__data/assets/pdf_file/0014/1706/99735.pdf

Acid Sulfate Class

The disturbance risk has been assessed as one of three classes:

- Class 1: High risk of Acid Sulfate Soils occurring within 3m of natural soil surface.
- Class 2: Moderate risk of Acid Sulfate Soils occurring within 3m of natural soil surface
- Class 3: Low risk of Acid Sulfate Soils occurring within 3m of natural surface.

Public Drinking Water

Perth relies heavily upon groundwater resources to provide drinking water to consumers. Accordingly, specific areas are identified for protection in legislation to ensure that Perth can continue to receive safe, good quality drinking water to protect public health for now and into the future at a reasonable cost to consumers.

- Priority 1 **(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*.
- Priority 2 **(P2)** areas are defined and managed to maintain or improve the quality of the drinking water source with the objective of *risk minimisation*.
- Priority 3 **(P3)** areas are defined and managed to maintain the quality of the drinking water source for as long as possible with the objective of *risk management*.
- Not assigned. Priority areas have not yet been assigned to this source.
- N/A. Not in a public drinking water source area.

APPENDIX K – ASIC (URBAN RESOURCES)

ASIC
Australian Securities & Investments Commission

Current Company Extract

Name: URBAN RESOURCES PTY LTD
ACN: 121 043 034

Date/Time: 29 May 2019 AEST 12:53:01 PM

This extract contains information derived from the Australian Securities and Investments Commission's (ASIC) database under section 1274A of the Corporations Act 2001.

Please advise ASIC of any error or omission which you may identify.

EXTRACT

Organisation Details		Document Number
Current Organisation Details		
Name:	URBAN RESOURCES PTY LTD	1E2379153
ACN:	121 043 034	
ABN:	47121043034	
Registered in:	Western Australia	
Registration date:	02/08/2006	
Next review date:	02/08/2019	
Name start date:	02/08/2006	
Status:	Registered	
Company type:	Australian Proprietary Company	
Class:	Limited By Shares	
Subclass:	Proprietary Company	

Address Details		Document Number
Current		
Registered address:	33 Cocos Drive, BIBRA LAKE WA 6163	7E9251083
Start date:	19/07/2017	
Principal Place Of Business address:	33 Cocos Drive, BIBRA LAKE WA 6163	7E9251083
Start date:	15/06/2017	

Contact Address	
Section 146A of the Corporations Act 2001 states 'A contact address is the address to which communications and notices are sent from ASIC to the company'.	
Current	
Address:	PO BOX 1094, CANNING BRIDGE APPLECROSS WA 6153
Start date:	12/07/2017

Officeholders and Other Roles		Document Number
Director		
Name:	STEPHEN JOHN ELLIOTT	1E2379153
Address:	20 Duckett Drive, MANNING WA 6152	
Born:	09/07/1955, ADELAIDE, SA	
Appointment date:	02/08/2006	
Secretary		
Name:	STEPHEN JOHN ELLIOTT	1E2379153
Address:	20 Duckett Drive, MANNING WA 6152	
Born:	09/07/1955, ADELAIDE, SA	
Appointment date:	02/08/2006	
Appointed Auditor		
Name:	PETER DOUGLAS CROWE	030578636
Address:	17 Williamson Way TRIGG WA 6029	
Start date:	06/03/2015	
Ultimate Holding Company		

Name:	HANSCON HOLDINGS PTY LTD	1E2379153
ACN:	009 091 258	
ABN:	13009091258	

Share Information

Share Structure

Class	Description	Number issued	Total amount paid	Total amount unpaid	Document number
ORD	ORDINARY SHARES	4	4.00	0.00	1E2379153

Members

Note: For each class of shares issued by a proprietary company, ASIC records the details of the top twenty members of the class (based on shareholdings). The details of any other members holding the same number of shares as the twentieth ranked member will also be recorded by ASIC on the database. Where available, historical records show that a member has ceased to be ranked amongst the top twenty members. This may, but does not necessarily mean, that they have ceased to be a member of the company.

Name: STEPHEN JOHN ELLIOTT
Address: 20 Duckett Drive, MANNING WA 6152

Class	Number held	Beneficially held	Paid	Document number
ORD	1	yes	FULLY	1E2379153

Name: HANSCON HOLDINGS PTY LTD
ACN: 009 091 258
Address: 36 Murray Road, WELSHPOOL WA 6106

Class	Number held	Beneficially held	Paid	Document number
ORD	3	yes	FULLY	1E2379153

Financial Reports

Balance date	Report due date	AGM due date	Extended AGM due	AGM held date	Outstanding	Document number
30/06/2014	31/10/2014				no	029263802
30/06/2015	31/10/2015				no	029441089
30/06/2016	31/10/2016				no	029813744
30/06/2017	31/10/2017				no	030251009
30/06/2018	31/10/2018				no	030534962

Documents

Note: Where no Date Processed is shown, the document in question has not been processed. In these instances care should be taken in using information that may be updated by the document when it is processed. Where the Date Processed is shown but there is a zero under No Pages, the document has been processed but a copy is not yet available.

Date received	Form type	Date processed	Number of pages	Effective date	Document number
02/12/2016	388H (FR 2016) Financial Report Financial Report - Large Proprietary Company That Is Not A Disclosing Entity	07/12/2016	27	30/06/2016	029813744
12/07/2017	484 Change To Company Details 484B Change Of Registered Address 484C Change Of Principal Place Of Business (Address)	12/07/2017	2	12/07/2017	7E9251083
19/01/2018	388H (FR 2017) Financial Report Financial Report - Large Proprietary Company That Is Not A Disclosing Entity	23/01/2018	27	30/06/2017	030251009
05/04/2019	388H (FR 2018) Financial Report Financial Report - Large Proprietary Company That Is Not A Disclosing Entity	08/04/2019	27	30/06/2018	030534962

*****End of Extract of 3 Pages*****

APPENDIX L – ASIC (SAGH PTY LTD)

ASIC
Australian Securities & Investments Commission

Current Company Extract

Name: SAGH PTY LTD
ACN: 166 570 636

Date/Time: 09 October 2019 AEST 07:31:03 PM

This extract contains information derived from the Australian Securities and Investments Commission's (ASIC) database under section 1274A of the Corporations Act 2001.

Please advise ASIC of any error or omission which you may identify.

EXTRACT

Organisation Details		Document Number
Current Organisation Details		
Name:	SAGH PTY LTD	1E9938998
ACN:	166 570 636	
ABN:	92166570636	
Registered in:	Western Australia	
Registration date:	01/11/2013	
Next review date:	01/11/2019	
Name start date:	01/11/2013	
Status:	Registered	
Company type:	Australian Proprietary Company	
Class:	Limited By Shares	
Subclass:	Proprietary Company	

Address Details		Document Number
Current		
Registered address:	CANNING ACCOUNTING, 'Pinnacle House' Level 1, 16 Ogilvie Road, MOUNT PLEASANT WA 6153	7EAM42379
Start date:	26/06/2019	
Principal Place Of Business address:	33 Cocos Drive, BIBRA LAKE WA 6163	7E9396148
Start date:	02/08/2017	

Contact Address	
Section 146A of the Corporations Act 2001 states 'A contact address is the address to which communications and notices are sent from ASIC to the company'.	
Current	
Address:	PO BOX 1094, CANNING BRIDGE APPLECROSS WA 6153
Start date:	25/09/2014

Officeholders and Other Roles		Document Number
Director		
Name:	STEPHEN JOHN ELLIOTT	029136002
Address:	20 Duckett Drive, MANNING WA 6152	
Born:	09/07/1955, ADELAIDE, SA	
Appointment date:	01/11/2013	
Secretary		
Name:	STEPHEN JOHN ELLIOTT	029136002
Address:	20 Duckett Drive, MANNING WA 6152	
Born:	09/07/1955, ADELAIDE, SA	
Appointment date:	01/11/2013	

Share Information
Share Structure

Class	Description	Number issued	Total amount paid	Total amount unpaid	Document number
ORD	ORDINARY SHARES	100	100.00	0.00	1E9938998

Members

Note: For each class of shares issued by a proprietary company, ASIC records the details of the top twenty members of the class (based on shareholdings). The details of any other members holding the same number of shares as the twentieth ranked member will also be recorded by ASIC on the database. Where available, historical records show that a member has ceased to be ranked amongst the top twenty members. This may, but does not necessarily mean, that they have ceased to be a member of the company.

Name: STEPHEN JOHN ELLIOTT
Address: 20 Duckett Drive, MANNING WA 6152

Class	Number held	Beneficially held	Paid	Document number
ORD	100	yes	FULLY	2E3690212

Documents

Note: Where no Date Processed is shown, the document in question has not been processed. In these instances care should be taken in using information that may be updated by the document when it is processed. Where the Date Processed is shown but there is a zero under No Pages, the document has been processed but a copy is not yet available.

Date received	Form type	Date processed	Number of pages	Effective date	Document number
29/08/2017	484C Change To Company Details Change Of Principal Place Of Business (Address)	29/08/2017	2	29/08/2017	7E9396148
19/06/2019	484B Change To Company Details Change Of Registered Address	19/06/2019	2	19/06/2019	7EAM42379

*****End of Extract of 2 Pages*****

Decision Report

Application for Works Approval

Division 3, Part V *Environmental Protection Act 1986*

Works Approval Number	W6347/2020/1
Applicant	Urban Resources Pty Ltd
ACN	121 043 034
File Number	DER2019/000617
Premises	Yangedi Road Quarry 253 Yangedi Road, Hopeland Legal description - Lot 810 on Deposited Plan 202726
Date of Report	19/02/2020
Status of Report	Final

Table of Contents

Figure 1: Site Layout with Dust Monitors

1. Definitions of terms and acronyms

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

Table 1: Definitions

Term	Definition
ACN	Australian Company Number
AER	Annual Environment Report
AHD	Australian Height Datum
Applicant	Urban Resources Pty Ltd
Category/ Categories/ Cat.	Categories of Prescribed Premises as set out in Schedule 1 of the EP Regulations
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.
EPA	Environmental Protection Authority
EP Act	*Environmental Protection Act 1986* (WA)
EP Regulations	*Environmental Protection Regulations 1987* (WA)
m^3	cubic metres
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.
PM	Particulate Matter

PM_{10}	used to describe particulate matter that is smaller than 10 microns (µm) in diameter
Prescribed Premises	has the same meaning given to that term under the EP Act.
Premises	refers to the premises to which this Decision Report applies, as specified at the front of this Decision Report
UDR	*Environmental Protection (Unauthorised Discharges) Regulations 2004* (WA)

2. Purpose and scope of assessment

The Applicant (Urban Resources Pty Ltd (Urban)) has applied for a works approval to establish a 200,000 tonnes/annum sand screening operation on Lot 810 on Deposited Plan 202726, Hopeland (the Premises). The operation will include both wet and dry screening of excavated materials. Once construction under the works approval have been completed, Urban will be required to operate the site under an *Environmental Protection Act 1986* (EP Act) Part V Licence, Category 5 and 12.

Sand will be processed as required by market demand. The Applicant estimates between 50,000 and 100,000 tonnes per annual period will require wet screening to remove impurities in the product. Wet screening will involve the raw product being processed through the on-site Terex FM120 wet screening plant.

Water to supply the wet screening operations will be sourced from two purpose-build groundwater dams. Water will be drawn from one dam to supply the plant and the wash-water will be directed to the second dam to allow for settling of undersize particles. The wash-water will be reused in the wet screening process at a later date. No additives are introduced to the wet screening process and there is not expected to be any water discharges from the wet screening activities. The estimated water usage of the wet screening activities is shown in Diagram 1 below.

Sand Quantity (Tonnes)	Annual Sand Washing Evaporation Loss (kL/yr)	Annual Dam Evaporation Loss (kL/yr)	Annual Water Use (kL)
50,000	9,375	1,552	10,927
60,000	11,250	1,552	12,802
70,000	13,125	1,552	14,677
80,000	15,000	1,552	16,552
90,000	16,875	1,552	18,427
100,000	18,750	1,552	20,302

Diagram 1: Wet screen water usage

2.1 Application details

Table 2 lists the documents submitted during the assessment process.

Table 2: Documents and information submitted during the assessment process

Document/information description	Date received
Application – New Works Approval – Urban Resources Pty Ltd, Yangedi Road (DWERDT211631)	14/10/2019
Site Environmental and Remediation Services - Application for Works Approval and Licence (DWERDT211631)	
Site Environmental and Remediation Services – Application for Works Approval – Request for Further Information Response (DWERDT245516)	13/12/2019

3. Overview of Premises

3.1 Infrastructure

The Yangedi Road facility infrastructure, as it relates to Category 5 and 12 activities, is detailed in Table 3 and with reference to the Site Plan (attached in the Issued Works Approval).

Table 3 lists infrastructure associated with each prescribed premises category.

Table 3: Yangedi Road facility infrastructure

	Infrastructure	**Site Plan Reference**
	Prescribed Activity Category 5	
Wet screening materials for market demand		
1	Terex FM120 wet screening plant	Mobile units – various locations
2	Volvo 150F front end loader	
3	One 35 x 20 x 2.5 metre dam One 35 x 30 x 2.5 metre dam	Figure 1: Site Plan
	Prescribed Activity Category 12	
Dry screening of materials for market demand		
1	Finlay 683 screening plant	Mobile units – various locations
2	Volvo 150F front end loader	
	Directly related activities	
Dust suppression		
1	Water Truck	Mobile unit – various locations

Figure 1: Site Plan including dust monitor locations

4. Legislative context

Table 4 summarises approvals relevant to the assessment.

Table 4: Relevant approvals and tenure

Legislation	Number	Subsidiary	Approval
Planning and Development Act 2005	PA18/475	Urban Resources Pty Ltd	Shire of Serpentine Jarrahdale
Environmental Protection and Biodiversity Conservation Act 1999	EPBC Approval 2015/7429	Urban Resources Pty Ltd	Department of the Environment and Energy
Rights in Water and Irrigation Act 1914	GWL 201334(1)	Urban Resources Pty Ltd	DWER

4.1 Other relevant approvals

4.1.1 Planning approvals

Urban Resources Pty Ltd applied for planning approval with the Shire of Serpentine Jarrahdale to undertake an extractive industry operations at Lot 810 Yangedi Road, Hopeland. Approval was granted on 21 May 2015 under Application number PA18/475.

An amendment was sought in 2018 to extend the expiry date of PA18/475. The expiry date for PA18/475 is not 12 April 2025. Planning approval was granted containing the following conditions that are relevant to this application:

- Acoustic Assessment;
- Dust Management Plan; and
- Water and Drainage Management Plan.

4.1.2 Federal Legislation

Due to the presence of a defined black cockatoo habitat, Urban Resources Pty Ltd are required by the Department of the Environment and Energy (DEE) under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) to develop and implement an offset plan for the clearing of habitat trees.

The offset plan is titled ‘Lot 810 Yandengi Road, Hopeland, Environmental Offset Plan’ (Revision 5) dated 8 September 2016. Approval for the offset plan has been granted by DEE until 30 September 2021 (EPBC 2015/7429).

4.2 Part V of the EP Act

4.2.1 Applicable regulations, standards and guidelines

The overarching legislative framework of this assessment is the EP Act and EP Regulations.

The guidance statements which inform this assessment are:

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

4.2.2 Clearing

The clearing of 13 hectares of bush is required to undertake operations at the Premises and a clearing permit is required under section 51E of the *Environmental Protection Act 1986*.

Clearing permit CPS6417/1 was issued to undertake the clearing by the then Department of Regulation (DER) on 17 December 2016 and expires on 12 April 2025. At the time of writing this report, all clearing under CPS6417/1 has been completed.

5. Location and siting

5.1 Siting context

The Premises is located in the locality of Hopeland, approximately 5.7 km south-east of the Town of Rockingham, as shown in Figure 1 above.

5.2 Residential and sensitive receptors

The distances to residential and sensitive receptors are detailed in Table 5.

Table 5: Receptors and distance from activity boundary

Sensitive Land Uses	Distance from Prescribed Activity
Residential Premises	Approximately 800 metres NW of the screening area
Serpentine Airfield	Approximately 500 metres SW of the screening area

5.3 Specified ecosystems

Specified ecosystems are areas of high conservation value and special significance that may be impacted as a result of activities at or Emissions and Discharges from the Premises. The distances to specified ecosystems are shown in Table 6. Table 6 also identifies the distances to other relevant ecosystem values which do not fit the definition of a specified ecosystem.

The table has also been modified to align with the *Guidance Statement: Environmental Siting.*

Table 6: Environmental values

Specified ecosystems	**Distance from the Premises**
Geomorphic Wetlands	Three wetlands are present within the premises boundary. All three are classified as "Sumpland" under Geomorphic Wetlands – Swan Coastal Plain.
Bush Forever: Regional open space or proposed regional open space	Bushforever ID: 378 is located approximately 500 metres south west of the screen location.
Regional Parks	Rockingham Lakes Regional Park is located approximately 8km west of the premises.
Biological component	**Distance from the Premises**
Threatened/Priority Flora	There are no priority flora within 10 km of the premises.
Threatened/Priority Fauna	16 species of conservation significance have been recorded within the local area. Based on habitat preferences, the biota within the premises boundary is likely to provide suitable habitat for the following: • Forest Red-tailed Black Cockatoo; • Baudin's Cockatoo; • Carnaby's Cockatoo; • Western Quoll - *Dasyurus geoffroii*; and • Southern Brown Bandicoot - *Isoodon obesulus*.

5.4 Groundwater and water sources

The distances to groundwater and water sources are shown in Table 7.

Table 7: Groundwater and water sources

Groundwater and water sources	**Distance from Premises**	**Environmental value**
Public drinking water source areas	16 km East of Premises	PDWSA – Serpentine Pipehead Dam Catchment Area
Major watercourses/waterbodies	3.2Km North West of Screen	Serpentine River Catchment area – proclaimed surface water resource.
Groundwater	Localised groundwater at the site is recorded to be approximately 11 to 12 metres AHD with a seasonal variation of around 1.2 metres.	Water is not used for potable or industrial use. Groundwater system linked to wetlands located within and surrounding the subject area. Groundwater within the Serpentine Catchment – Proclaimed groundwater resource under the *RIWI Act 1914*.

6. Risk assessment

6.1 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 through Table 9.

The identification of the sources, pathways and receptors to determine Risk Events are set out in Tables 8 and 9 below.

Table 8. Identification of emissions, pathway and receptors during construction

Risk Events						Continue to detailed risk assessment	Reasoning
Sources/Activities		**Potential emissions**	**Potential receptors**	**Potential pathway**	**Potential adverse impacts**		
Construction, mobilisation and positioning of infrastructure	Vehicle movements on unsealed access roads	Noise	Nearest sensitive receptor is approximately 800 metres north-west of the proposed screening plant.	Air / wind dispersion	Amenity impacts.	No	Mobilization and establishment of the screening machinery will be complete in less than 1 day. The Delegated Officer considers the *Environmental Protection (Noise) Regulations 1997* and the *Environmental Protection (Unauthorised Discharges) Regulations 2004* are sufficient to regulate noise and dust emissions during construction.
		Dust				No	

Table 9: Identification of emissions, pathway and receptors during operation

Risk Events						Continue to detailed risk assessment	Reasoning
Sources/Activities		Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts		
Screening of material - Dry	Vehicle movements Screening activities Unloading, loading and storage of product	Dust	Nearest sensitive receptor is approximately 800 metres north-west of the proposed screening plant.	Air / wind dispersion	Amenity.	Yes	See section 7.4 Risk Assessment – Dust Emissions
		Noise			Reduced amenity from increased noise emissions	No	Noise modelling undertaken by Herring Storer Acoustics identifies the six nearest sensitive receptors surrounding the premises. A worst case scenario will see noise levels at all of the receptors comply with the assigned noise levels set out in the *Environmental Protection (Noise) Regulations 1997.*
Screening of material - wet	Vehicle movements Screening activities Unloading, loading and storage of product	Dust	Nearest sensitive receptor is approximately 800 metres north-west of the proposed screening plant.	Air / wind dispersion	Amenity.	Yes	See section 7.4 Risk Assessment – Dust Emissions
		Noise			Reduced amenity from increased noise emissions	No	Noise modelling undertaken by Herring Storer Acoustics identifies the six nearest sensitive receptors surrounding the premises. A worst case scenario will see noise levels at all of the receptors comply with the assigned noise levels set out in the *Environmental Protection (Noise) Regulations 1997.*

6.2 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 10 below.

Table 10: 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 11 below.

Table 11: 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 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.

6.3 Acceptability and treatment of Risk Event

DWER will determine the acceptability and treatment of Risk Events in accordance with the Risk treatment table 12 below:

Table 12: 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.

6.4 Risk Assessment – Dust Emission

6.4.1 Identification and general characterisation of emission

Dust can arise from different sources and activities undertaken within the premises, including vehicle movement on unsealed roads, screening, ore processing and stockpiling.

6.4.2 Description of potential adverse impact from the emission

Dust emissions can have health as well as amenity impacts on sensitive receptors in close proximity, in particular ones directly influenced by meteorological conditions. Planned expansion works are likely resulting in increased dust emissions and potential impacts on sensitive receptors.

6.4.3 Criteria for assessment

Relevant air quality criteria are set out in the National Environment Protection (Ambient Air Quality) Measure (NEPM). The standard described for PM_{10} is 50 µg/m^3 over a 24 hour averaging period.

6.4.4 Applicant controls

The applicant has developed a Dust Management Plan (DMP) as part of their application for Planning Approval with the Shire of Serpentine/Jarrahdale. The DMP has been designed to be consistent with the document *A guideline for managing the impacts of dust and associated contaminants from land development sites, contaminated sites remediation and other related activities* (DWER 2011).

The DMP contains the following commitments for the **control** of dust emissions:

- Notice to be erected at the site, providing contact details of the person to be contacted regarding the works;
- Appropriate wind fencing is to be stored on site in order to be available within one hour of being required;
- Areas of land cleared and the period of time they remain cleared are to be kept to a minimum. Stabilisation of open areas during earthworks will occur promptly, utilising chemical stabilisation (Dustex). Final stabilisation of the site will be done upon completion of the works;
- Batters and top soil bunds are to be stabilised with hydro mulch with grass seeds; however during the summer period seeding will not apply;
- Vehicle paths to be restricted to limestone road routes. Plant and vehicles are not to use random routes. Plant will use delineated routes as far as practicable when undertaking specific tasks in a given area;
- Trucks carrying loose material such as sand, limestone and topsoil must have their covers on and their travel authorised by the site supervisor. Site entries and surrounding streets will be street swept on a regular basis. Additionally, exit points will incorporate wheel washes;
- Vehicle speeds will be restricted to no more than 20km/hr on the site to minimise dust liftoff;
- Material drop heights between loaders and trucks and to stockpiles will be kept to a minimum practical height;
- Appropriate number of water carts allocated to project maintaining site in a damp condition. (Water carts are to have no less than 10,000 litres capacity per 7.5 hectares of disturbed site);
- Preventative measures may also be required outside normal working hours where excessive dust generation is detected by the on-site monitors or is observed to be impacting off-site. In the event of dust event outside of normal hours (reported a complaint or from the dust monitor) the site supervisor will respond by inspecting the site to establish what remedial measures are required. Contingency measures that may apply include:
    - Use of water to stabilise areas where visible dust liftoff is occurring;
    - Application of spray mulch as soon as it is feasible; and
    - Erection of wind fencing stored on-site as a contingency.
- The site supervisor will record the matter as an environmental incident as per Urban Resources Procedures. Works will cease until remedial measures are undertaken; and
- No burning off is to occur. Vegetation is to be re-used on site where possible.

The DMP contains the following commitments for the **monitoring** of dust emissions:

- Three dust monitors are to be located, as shown in the attached site plan (Figure 1 above), to monitor and assess the effectiveness of management practices in controlling emissions of dust and other air pollutants and therefore guide management decisions;
- Dust monitor locations have been selected based on typical meteorological conditions that prevail at the site and also considering the topography, predicted area of greatest

impact and the location of sensitive receptors;

- The dust monitoring instrument utilised is the DustTrak II. The instrument will be calibrated in accordance with the manufacturer's recommendation including a field check at least once per week;
- Background monitoring will be implemented for at least one week prior to site activity commencing to provide information on the typical base line levels of air pollutants in the ambient air in the absence of site activity;
- The DustTrack II instruments are equipped with an SMS alarm card that can trigger an alarm to the mobile phone of the site supervisor or a second person at preset alarm levels. See Figure 3 below for the proposed trigger levels;
- The only statutory assessment criteria for atmospheric particulate concentrations is the National Environmental Protection Measure (NEPM) criteria of 50µg/m^3 (24 hour average) not to be exceeded more than 5 times per year which is a target for urban air quality throughout Australia. Accordingly this value has been adopted as one alarm criteria;
- It is also useful to use a 1 hour average assessment criteria as this ensures that management actions can be implemented quickly to prevent short-term events resulting in an exceedance of the NEPM criteria. A 1 hour average value of 1000µg/m^3 has been adopted as a 1 hour average alert level as if that value is maintained for 1 hour then it is possible that the 50µg/m^3 (24 hour average criteria) will be exceeded;
- Management response to the adopted criteria. To minimise the possibility that the adopted assessment criteria will be exceeded, two sets of alarm levels and responses will be implemented as described in Figure 2 below. The Corrective Action Alert levels have been set at 80% of the adopted Alarm criteria with the aim that the action will be taken to prevent an exceedance of the Alarm level;
- Monitors will be deployed in the locations shown on the attached plan and will operate continuously 24 hours per day;
- Regular monitoring of Bureau of Meteorology weather forecasts to take into account predicted conditions that may present an increased risk to site operations and potential for dust generation off the site. Appropriate contingency measures to be put in place including the cessation of works that may contribute to increased dust emissions off site during adverse weather/wind conditions. Preventative measures may also be required to be put in place outside normal working hours;
- Dust will be visually monitored daily during operations to ensure control measures are effective; and
- Any complaints generated due to dust will be directed to the site supervisor and stabilisation will occur within 18 hours of receiving the initial complaint. The C.A.R. Procedure and complaints is in place to record complaints and ensure complaints are acted on promptly.

The Applicant has developed a complaints register to ensure all issues with operations are bought to the attention of the on-site manager. A template has also been developed to be sent to nearby residents prior to major excavation activities to notify residents and provide contact details in case of a dust event.

Alarm Type	Trigger Value (ug/m^3)	Management Response
1 hour average Corrective Action Alert	800	• Flashing light triggered on top of monitoring unit • Alarm notification sent to site supervisors phone • Site supervisor to immediately evaluate conditions and implement contingency measures
24 hour average Corrective Action Alert	40	• Flashing light triggered on top of monitoring unit • Alarm notification sent to site supervisors phone • Site supervisor to immediately evaluate conditions and implement contingency measures
1 hour average Alarm	1000	• In addition to SMS alarm to supervisor and flashing light, SMS is also sent to Stephen Elliot or the site environmental consultant • If condition persists for more than 3 hours, then work to cease on site
24 hour average Alarm	50	• In addition to SMS alarm to supervisor and flashing light, SMS is also sent to Stephen Elliot or the site environmental consultant • Dust controls for the site to be re-evaluated and upgraded as required to prevent a recurrence

Figure 2: Trigger levels for dust monitors

6.4.5 Consequence

If a dust emission occurs, then the Delegated Officer has determined that the impact will be of low level impact on a localised scale. Therefore, the Delegated Officer considers the consequence of a dust emission to be **Minor.**

6.4.6 Likelihood of Risk Event

The Delegated Officer has determined that the likelihood of a dust emission occurring will only occur in exceptional circumstances due to the commitments made by the Applicant in their Dust Management Plan. Therefore, the Delegated Officer considers the likelihood of Risk Event 1 to be **Rare**.

6.4.7 Overall rating of Dust Emission

The Delegated Officer has compared the consequence and likelihood ratings described above with the risk rating matrix (Table 10) and determined that the overall rating for the risk of a dust emission is **Low**.

6.5 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 13 below.

Table 13: Risk assessment summary

	Description of Risk Event			Applicant controls	Risk rating	Acceptability with controls (conditions on instrument)
	Emission	**Source**	**Pathway/ Receptor (Impact)**			
1.	Fugitive Dust	Stockpiles, vehicle movement, screening activities and product loading.	Air/wind to sensitive receptor causing health impacts from inhalation of dust.	Wind fencing, water carts, chemical stabilisation, hydro mulch, vehicle speed restrictions, dust monitoring and triggered alarms to site personnel.	Minor consequence Rare likelihood **Low Risk**	Acceptable

7. Applicant's comments

The Applicant was provided with the draft Decision Report and draft Works Approval on 18 February 2020. The Applicant provided no comments and waived the additional comments period on 18 February 2020.

8. 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 Works Approval will be granted subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

Tim Gentle
Manager, Resource Industry
Delegated Officer
under section 20 of the *Environmental Protection Act 1986*

Appendix 1: Key documents

	Document title	In text ref	Availability
1.	Works Approval W6347/2020/1 – Yangedi Road	W6347/2020/1	accessed at www.der.wa.gov.au
2.	Email: *Application for Works Approval and Licence – Category 12 screening Lot 810 253 Yandgedi Road Hopeland – Supporting Documents* (and attachments), Site Environmental and Remediation Services – 14 October 2019	Application documentation	DWER records (DWERDT211631)
3.	Email: Yangedi Road Application – Request for Further Information Response, Site Environmental and Remediation Services – 13 December 2019	Additional Documentation	DWER records (DWERDT245516)
4.	DER, July 2015. *Guidance Statement: Regulatory principles.* Department of Environment Regulation, Perth.	DER 2015a	accessed at www.dwer.wa.gov.au
5.	DER, October 2015. *Guidance Statement: Setting conditions.* Department of Environment Regulation, Perth.	DER 2015b	
6.	DER, August 2016. *Guidance Statement: Licence duration.* Department of Environment Regulation, Perth.	DER 2016a	
7.	DER, November 2016. *Guidance Statement: Risk Assessments*. Department of Environment Regulation, Perth.	DER 2016b	
8.	DER, November 2016. *Guidance Statement: Decision Making*. Department of Environment Regulation, Perth.	DER 2016c	

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

Condition	Summary of Applicant comment	DWER response

Attachment 1: Issued Works Approval W6347/2020/1

Government of Western Australia
Department of Water and Environmental Regulation

Works Approval

Works approval number	W6347/2020/1
Works approval holder	Urban Resources Pty Ltd
ACN	121 043 034
Registered business address	33 Cocos Drive Bibra Lake, WA, 6163
DWER file number	DER2019/000617
Duration	19/02/2020 to 18/02/2023
Date of issue	19/02/2020
Premises details	Yangedi Road Quarry 253 Yangedi Road, Hopeland Legal description - Lot 810 on Deposited Plan 202726

Prescribed premises category description **(Schedule 1, *Environmental Protection Regulations 1987*)**	**Assessed production capacity**
Category 12: Screening etc. of material	200,000 tonnes per annual period

This works approval is granted to the works approval holder, subject to the attached conditions, on 19 February 2020, by:

Tim Gentle
Manager, Resource Industries
REGULATORY SERVICES

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

Explanatory notes

These explanatory notes do not form part of this Works Approval.

Defined terms

Definition of terms used in this Works Approval can be found at the start of this Works Approval. Terms which are defined have the first letter of each word capitalised throughout this Works Approval.

Department of Water and Environmental Regulation

The Department of Water and Environmental Regulation (DWER) is 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 *Environmental Protection Act 1986* (WA) (EP Act). The Department also monitors and audits compliance with licences and works approvals, takes enforcement action and develops and implements licensing and industry regulation policy.

Works Approval

Section 52 of the EP Act provides that an occupier of any premises commits an offence if any work is undertaken on, or in relation to, the premises which causes the premises to become, or to become capable of being, Prescribed Premises, except in accordance with a works approval.

Section 56 of the EP Act provides that an occupier of Prescribed Premises commits an offence if Emissions are caused or increased or permitted to be caused or increased, or Waste, noise, odour or electromagnetic radiation is altered or permitted to be altered from Prescribed Premises, except in accordance with a works approval or licence.

Categories of Prescribed Premises are defined in Schedule 1 of the *Environment Protection Regulations 1987* (WA) (EP Regulations).

This Works Approval does not authorise any activity which may be a breach of the requirements of another statutory authority including, but not limited to, the following:

- conditions imposed by the Minister for Environment under Part IV of the EP Act;
- conditions imposed by DWER for the clearing of native vegetation under Part V, Division 2 of the EP Act;
- any requirements under the *Waste Avoidance and Resource Recovery Act 2007;*
- any requirements under the *Environmental Protection (Controlled Waste) Regulations 2004*; and
- any other requirements specified through State legislation.

It is the responsibility of the Works Approval Holder to ensure that any action or activity referred to in this Works Approval is permitted by, and is carried out in compliance with, statutory requirements.

The Works Approval Holder must comply with the Works Approval. Contravening a Works Approval Condition is an offence under s.55 of the EP Act.

Responsibilities of Works Approval Holder

Separate to the requirements of this Works Approval, general obligations of Works Approval Holders are set out in the EP Act and the regulations made under the EP Act. For example, the Works Approval Holder must comply with the following provisions of the EP Act:

- the duties of an occupier under s.61; and

- restrictions on making certain changes to Prescribed Premises unless the changes are in accordance with a Works Approval, Licence, closure notice or environmental protection notice (s.53).

Strict penalties apply for offences under the EP Act.

Reporting of incidents

The Works Approval Holder has a duty to report to the Department all Discharges of Waste that have caused or are likely to cause Pollution, Material Environmental Harm or Serious Environmental Harm, in accordance with s.72 of the EP Act.

Offences and defences

The EP Act and its regulations set out a number of offences including:

- Offence of emitting an Unreasonable Emission from any Premises under s.49.
- Offence of causing Pollution under s.49.
- Offence of dumping Waste under s.49A.
- Offence of discharging Waste in circumstances likely to cause Pollution under s.50.
- Offence of causing Serious Environmental Harm (s.50A) or Material Environmental Harm (s.50B).
- Offence of causing Emissions which do not comply with prescribed standards (s.51).
- Offences relating to Emissions or Discharges under regulations prescribed under the EP Act, including materials discharged under the *Environmental Protection (Unauthorised Discharges) Regulations 2004 (WA).*
- Offences relating to noise under the *Environmental Protection (Noise) Regulations 1997 (WA).*

Section 53 of the EP Act provides that a Works Approval Holder commits an offence if Emissions are caused, or altered, from a Prescribed Premises unless done in accordance with a Works Approval, Licence or the requirements of a closure notice or an environmental protection notice.

Defences to certain offences may be available to a Works Approval Holder and these are set out in the EP Act. Section 74A(b)(iii) provides that it is a defence to an offence for causing Pollution, in respect of an Emission, or for causing Serious Environmental Harm or Material Environmental Harm, or for discharging or abandoning Waste in water to which the public has access, if the Works Approval Holder can prove that an Emission or Discharge occurred in accordance with a Works Approval.

This Works Approval specifies the Emissions and Discharges, and the limits and Conditions which must be satisfied in respect of specified Emissions and Discharges, in order for the defence to offence provision to be available.

Authorised Emissions and Discharges

The specified and general Emissions and Discharges from the Works authorised through this Works Approval are authorised to be conducted in accordance with the Conditions of this Works Approval.

Amendment of Works Approval

The Works Approval Holder can apply to amend the Conditions of this Works Approval under s.59 of the EP Act. An application form for this purpose is available from DWER.

The CEO may also amend the Conditions of this Works Approval at any time on the initiative

of the CEO without an application being made.

Duration of Works Approval

The Works Approval will remain in force for the duration set out on the first page of this Works Approval or until it is surrendered, suspended or revoked in accordance with s.59A of the EP Act.

Suspension or revocation

The CEO may suspend or revoke this Works Approval in accordance with s.59A of the EP Act.

Definitions and interpretation

Definitions

In this Works Approval, the terms in Table 1 have the meanings defined.

Table 1: Definitions

Term	Definition
Books	has the same meaning given to that term under the EP Act.
CEO	means Chief Executive Officer. CEO for the purposes of notification means: Director General Department administering the *Environmental Protection Act 1986* Locked Bag 10 Joondalup DC WA 6919 info@dwer.wa.gov.au
Condition	means a condition to which this Works Approval is subject under s.62 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.
Department Request	means a request for Books or other sources of information to be produced, made by an Inspector or the CEO to the Works Approval Holder in writing and sent to the Works Approval's address for notifications, as described at the front of this Works Approval, in relation to: (a) compliance with the EP Act or this Works Approval; (b) the Books or other sources of information maintained in accordance with this Works Approval; or (c) the Books or other sources of information relating to Emissions from the Premises.
Discharge	has the same meaning given to that term under the EP Act.
DWER	Department of Water and Environmental Regulation
Emission	has the same meaning given to that term under the EP Act.
EP Act	means the *Environmental Protection Act 1986* (WA).
EP Regulations	means the *Environmental Protection Regulations 1987* (WA).
Implementation Agreement or Decision	has the same meaning given to that term under the EP Act.
Inspector	means an inspector appointed by the CEO in accordance with s.88 of the EP Act.

Pollution	has the same meaning given to that term under the EP Act.
Premises	refers to the premises to which this Works Approval applies, as specified at the front of this Works Approval and as shown on the map in Schedule 1 to this Works Approval.
Prescribed Premises	has the same meaning given to that term under the EP Act.
Unreasonable Emission	has the same meaning given to that term under the EP Act.
Waste	has the same meaning given to that term under the EP Act.
Works	refers to the Works described in Schedule 2, at the locations shown in Schedule 1 of this Works Approval to be carried out at the Premises, subject to the Conditions.
Works Approval	refers to this document, which evidences the grant of the works approval by the CEO under s.54 of the EP Act, subject to the Conditions.
Works Approval Holder	refers to the occupier of the Premises being the person to whom this Works Approval has been granted, as specified at the front of this Works Approval.

Interpretation

In this works approval:

(a) the words ‘including’, ‘includes’ and ‘include’ in conditions mean “including but not limited to”, and similar, as appropriate;

(b) where any word or phrase is given a defined meaning, any other part of speech or other grammatical form of that word or phrase has a corresponding meaning;

(c) where tables are used in a condition, each row in a table constitutes a separate condition;

(d) any reference to an Australian or other standard, guideline or code of practice in this works approval means the version of the standard, guideline or code of practice in force at the time of granting of this works approval and includes any amendments to the standard, guideline or code of practice which may occur from time to time during the course of the works approval;

(e) unless specified otherwise, any reference to a section of an Act refers to that section of the EP Act; and

(f) unless specified otherwise, all definitions are in accordance with the EP Act.

NOTE: This works approval requires specific conditions to be met but does not provide any implied authorisation for other emissions, discharges, or activities not specified in this works approval.

Works approval conditions

The works approval holder must ensure that the following conditions are complied with:

Construction phase

Infrastructure and equipment

1. The works approval holder must:

(a) install the infrastructure and/or equipment;

(b) in accordance with the corresponding design and construction / installation requirements; and

(c) at the corresponding infrastructure location,

as set out in Table 2.

Table 2: Design and installation requirements

	Infrastructure	Design and installation requirements	Infrastructure location
1.	Terex FM120 wet screening plant	Installed as per manufacturer's instructions	Schedule 1: Premises Map
2.	Finlay 683 screening plant		
3.	2x Sedimentation dams	N/A	

Compliance reporting

2. The works approval holder must within 30 calendar days of an item of infrastructure required by condition 1 being installed:

(a) undertake an audit of their compliance with the requirements of condition 1; and

(b) prepare and submit to the CEO an Environmental Compliance Report on that compliance, including photographic evidence.

Time limited operational phase

3. Following submission of the Environmental Compliance Report required by condition 2(b), the works approval holder may conduct processing and screening operations (category 12) for a period not exceeding 90 calendar days from the submission date of the compliance report required by condition 2(b), or until such time as a licence for ongoing processing and screening operations (category 12) is issued, whichever is sooner.

Records and reporting

4. The works approval holder must record the following information in relation to complaints received by the works approval holder (whether received directly from a complainant or forwarded to them by the Department or another party) about any alleged emissions from the premises:

(a) the name and contact details of the complainant, (if provided);

(b) the time and date of the complaint;

(c) the complete details of the complaint and any other concerns or other issues raised; and

(d) the complete details and dates of any action taken by the works approval holder to investigate or respond to any complaint.

5. The works approval holder must maintain accurate and auditable books including the following records, information, reports, and data required by this works approval:

(a) the works conducted in accordance with condition 1;

(b) any maintenance of infrastructure that is performed in the course of complying with condition 1; and

(c) complaints received under condition 4.

6. The books specified under condition 5 must:

(a) be legible;

(b) if amended, be amended in such a way that the original version(s) and any subsequent amendments remain legible and are capable of retrieval;

(c) be retained by the works approval holder for the duration of the works approval; and

(d) be available to be produced to an inspector or the CEO as required.

END OF CONDITIONS

Schedule 1: Maps

Premises map

The boundary of the prescribed premises is shown in red on the map below (Figure 1).

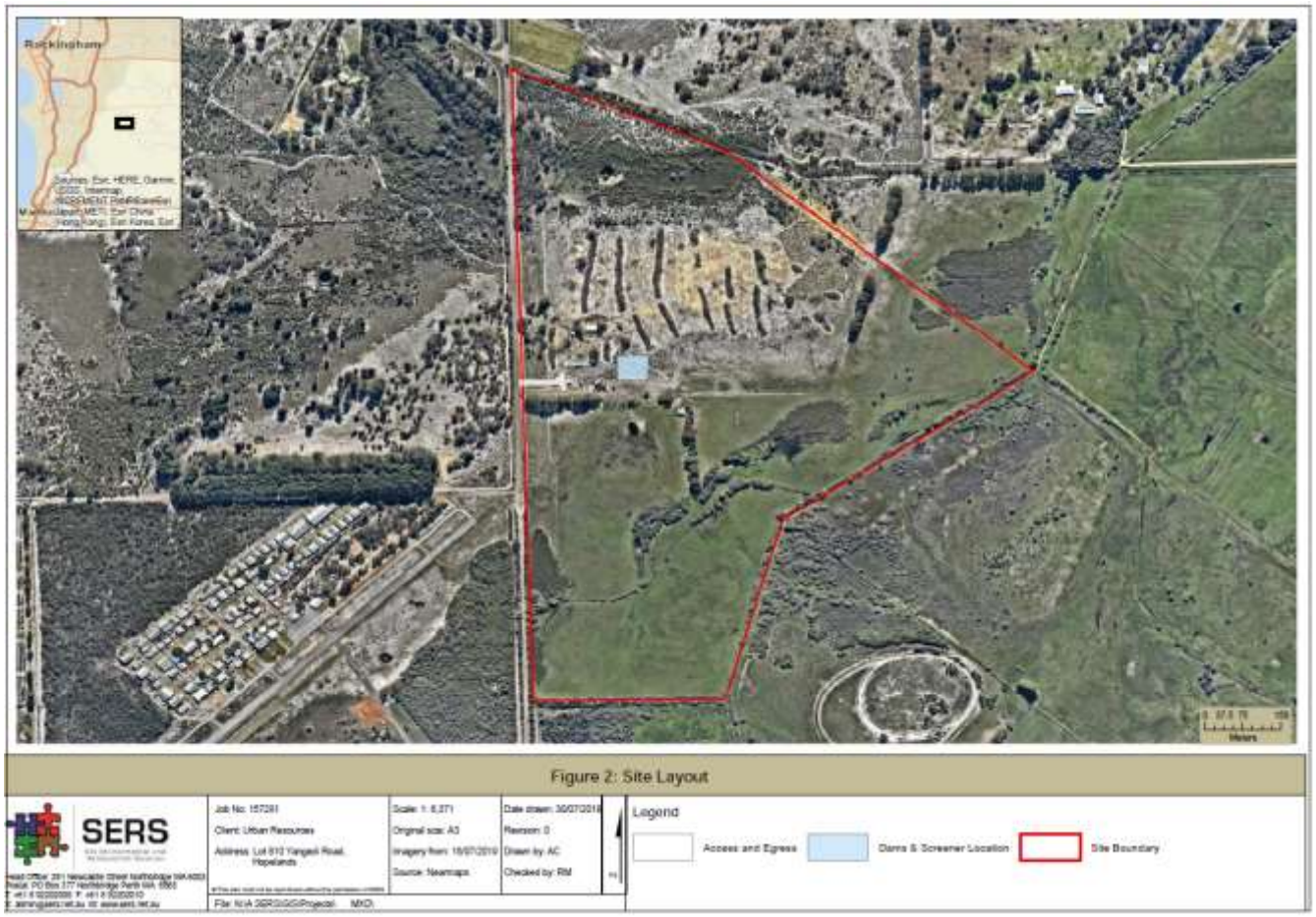
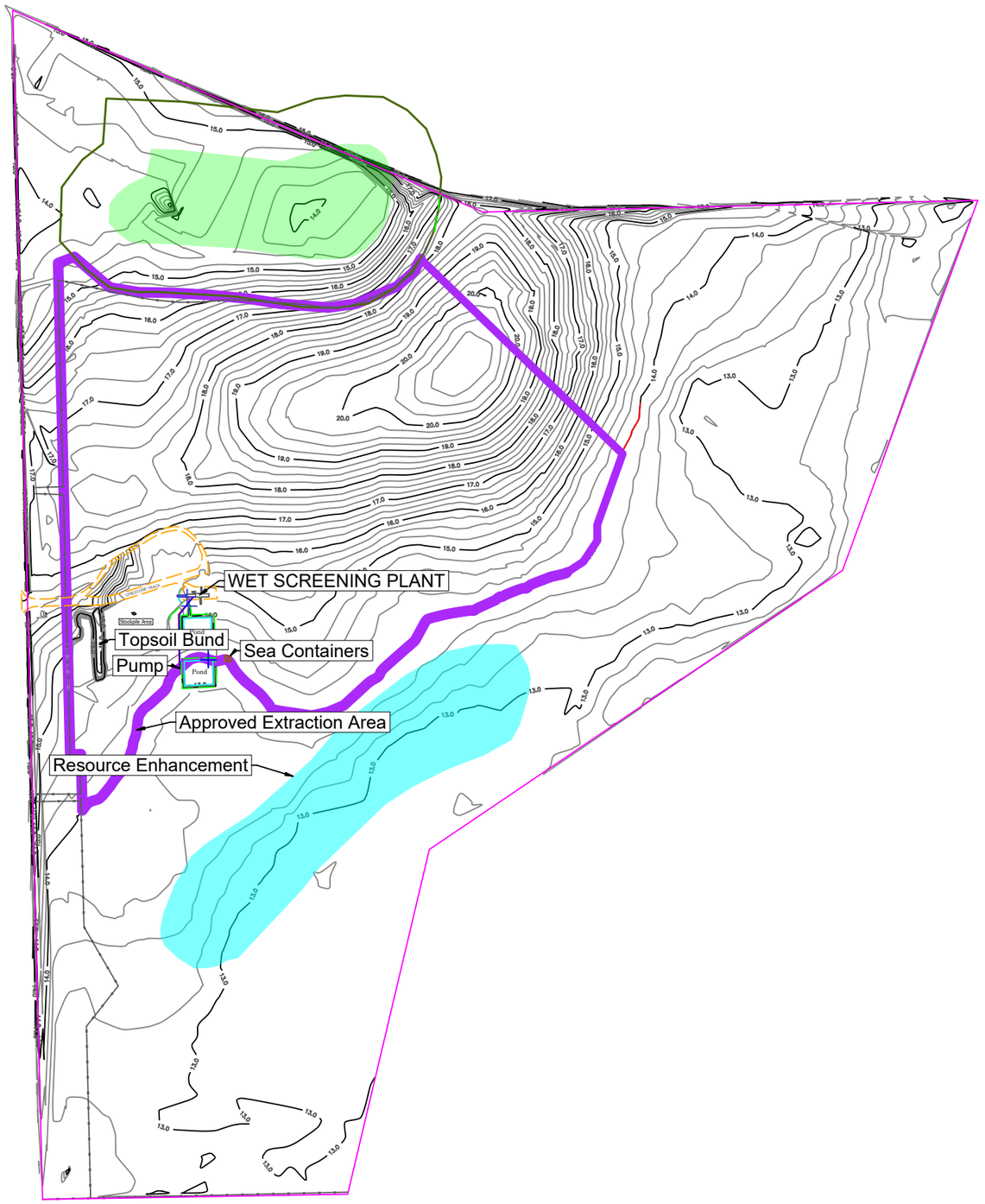


Figure 1: Map of the boundary of the prescribed premise



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WEB: www.urbanresources.com.au

SURVEYED: AH		DATE: 15/10/20
DRAWN: AH		

DESCRIPTION:

Yangedi Road

Wash Plant

Site Drawing