



## Application for Works Approval and Licence

### Division 3, Part V *Environmental Protection Act 1986*

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<b>Licence Number</b>	L9114/2018/1
<b>Works Approval Number</b>	W6124/2018/1
<b>Applicant</b>	Shire of Northam
<b>File Number</b>	DER2017/002146
<b>Premises</b>	Inkpen Road Waste Management Facility COPLEY WA 6562  Legal description - Lot 28734 on Deposited Plan 215405 Certificate of Title Volume LR3023 Folio 181
<b>Date of Report</b>	25 October 2018
<b>Status of Report</b>	Final

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## 1. Definitions of terms and acronyms

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

**Table 1: Definitions**

Term	Definition
AACR	Annual Audit Compliance Report
ACN	Australian Company Number
AER	Annual Environment Report
Applicant	Shire of Northam
bgl	Below ground level
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	the department established under section 35 of the <i>Public Sector Management Act 1994</i> 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 <i>Public Sector Management Act 1994</i> and is responsible for the administration of the <i>Environmental Protection Act 1986</i> along with other legislation.
EP Act	<i>Environmental Protection Act 1986 (WA)</i>
EP Regulations	<i>Environmental Protection Regulations 1987 (WA)</i>
Existing Licence	The Licence issued under Part V, Division 3 of the EP Act and in force prior to the commencement of, and during this Review
Licence Holder	Shire of Northam
m AHD	Meters Australian Height Datum
NEPM	National Environmental Protection Measure
Noise Regulations	<i>Environmental Protection (Noise) Regulations 1997 (WA)</i>

Occupier	has the same meaning given to that term under the EP Act.
PM	Particulate Matter
PM <sub>10</sub>	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
Primary Activities	as defined in Schedule 2 of the Revised Licence
Risk Event	As described in <i>Guidance Statement: Risk Assessment</i>

## 2. Purpose and scope of assessment

An application for a licence and works approval (Application) was received from the Shire of Northam (Applicant) for the operation of the existing Inkpen Road Waste Management Facility, within Lot 28734 on Deposited Plan 215405 in Copley (the Premises), and the construction of additional landfill cells within the Premises.

This Decision Report presents an assessment of potential environmental and public health risks from emissions and discharges from the construction of the additional landfill cells and the operation of the Premises. As a result of this assessment, a Licence and a Works Approval has been granted (L9114/2018/1 and W6124/2018/1) (Attachment 2 and Attachment 3).

Due to the long term future landfilling planned within the Premises, the proposed landfill closure process has not been considered within this assessment.

### 2.1 Application details

The Application was received on 6 December 2017 and is a combined works approval and licence application for the proposal to continue to operate the existing Inkpen Road Waste Managed Facility and for the construction of new landfill cells within the Premises.

The Delegated Officer determined that additional information was required to validate the Application. A formal request to provide additional information was sent to the Applicant on 10 January 2018. On 30 January 2018 the Applicant provided the necessary additional information.

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 Form	6 December 2017
Supporting document: <i>Environmental Assessment and Management Plan, Inkpen Road Waste Management Facility</i> , Talis Consultants, November 2017.	
Additional information - letter and enclosed drawings: <i>Shire of Northam – Inkpen Road Waste Management Facility</i> , Ronan Cullen, Talis Consultants, 29 January 2018.	30 January 2018
Additional information – Facility Management Plan provided in hardcopy on site visit: <i>Shire of Northam, Inkpen Road Waste Management Facility, Facility Management Plan</i> , Final Rev 1, IWProjects prepared for Shire of Northam, 17 January 2017.	28 March 2018
Additional information – email: <i>Clarification required – Inkpen Road Waste Management Facility application – Response</i> , Colleen Pelletier, Talis Consultants, 17 April 2018.	17 April 2018
Additional information – email: <i>Clarification required – Inkpen Road Waste Management Facility application – Response</i> , Colleen Pelletier, Talis Consultants, 27 April 2018.	27 April 2018
Additional information – email: <i>Asbestos Management Plan queries - Inkpen Road Waste Management Facility - Shire of Northam</i> , Carmen Sadleir, Shire of Northam, 22 May 2018.	22 May 2018



Comments on draft works approval, licence and decision report – email: <i>FW: APPLICATION FOR A WORKS APPROVAL AND LICENCE - DRAFT INSTRUMENTS AND DECISION REPORT - W6124/2018/1; L9114/2018/1</i> , Carmen Sadlier, Shire of Northam, 16 October 2018.	16 October 2018
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Table 3 lists the prescribed premises categories that have been applied for.

**Table 3: Prescribed Premises Categories**

Classification of Premises	Description	Premises production or design capacity	Expected throughput
Category 57	Used tyre storage (general): premises (other than premises within category 56) on which used tyres are stored.	200 tyres per year	At least 100 tyres
Category 62	Solid waste depot: premises on which waste is stored, or sorted, pending final disposal or reuse.	3,000 tonnes per year	At least 500 tonnes per year
Category 64	Class II or III putrescible landfill site: premises on which waste (as determined by reference to the waste type set out in the document entitled “Landfill Waste Classification and Waste Definitions 1996” published by the Chief Executive Officer and as amended from time to time) is accepted.	5,000 tonnes per year	At least 20 tonnes per year

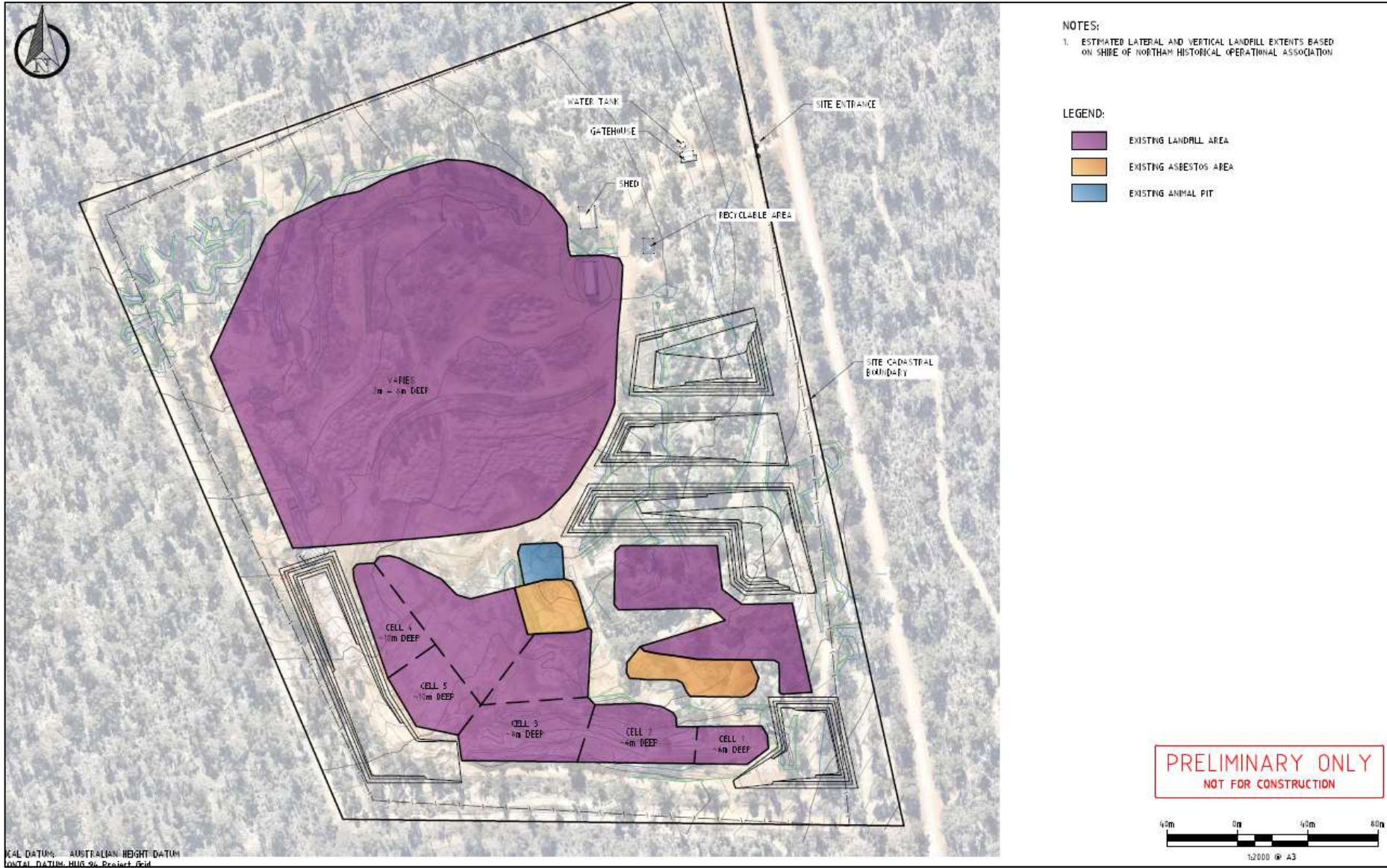
### 3. Background

The Premises is owned by the Shire of Northam under a Certificate of Crown Land Title.

#### Historical landfilling

The Premises has been used as a putrescible landfill since the late 1970’s, and was registered as a Category 89 putrescible landfill site in 2003 under registration number R1455.

There is limited historical site data and no detailed surveys of the previous landfill pits available. However, the Applicant has provided an indication of the previously filled areas of the Premises based on the Applicant’s historical operational knowledge. These areas are shown Figure 1. The depth of the landfilled waste within these areas is estimated to be between two to ten metres deep.



**Figure 1: Indication of previously landfilled areas within the Premises (Talis Consultants 2018a)**

Works Approval and Licence: W6124/2018/1 and L9114/2018/1

## 4. Overview of Premises

### 4.1 Operational aspects

The current operation of the Premises includes the following solid waste depot, tyre storage and landfill activities:

- Community Recycling Area (receiving e-waste, car batteries, aluminium and steel cans, glass, plastics, cardboard and paper, tyres, empty gas cylinders and waste/motor oil for processing off-site);
- stockpile of scrap metal for processing off-site;
- stockpile of green waste which is processed through mulching and provided to the community free of charge;
- stockpiles of cover material sourced from excavation within the Premises or from off-site sources;
- an active general waste tipping area for residential, commercial and mixed construction and demolition waste (limited to Inert Waste Type 1, Inert Waste Type 2, Putrescible waste and Contaminated Solid Waste which meets the acceptance criteria for Class II landfills);
- an active asbestos tipping area; and
- an active animal carcass tipping area.

The storage methods for wastes within the Community Recycling Area are as follows:

- Co-mingled recycling (aluminium and steel cans, glass, plastics, cardboard and paper) – hook lift bins within covered area
- Waste/motor oil – 5000 litre tank within bunded and covered area
- Car batteries – self bunded plastic pallets within covered area
- Tyres – stockpiled and uncovered

The only processing which occurs within the Premises is the mulching of the green waste stockpile biannually.

The Premises is managed on behalf of the Applicant by a hired contractor and is currently staffed by one person.

The Premises operating hours are between 2pm and 5pm Tuesday to Friday and between 9am to 5pm during the weekend and some public holidays. The gate to the Premises is locked outside of these hours.

#### Landfilling

Shire residents drop their own waste off at the tipping area after passing through the gate house. Currently the tipping is not always supervised.

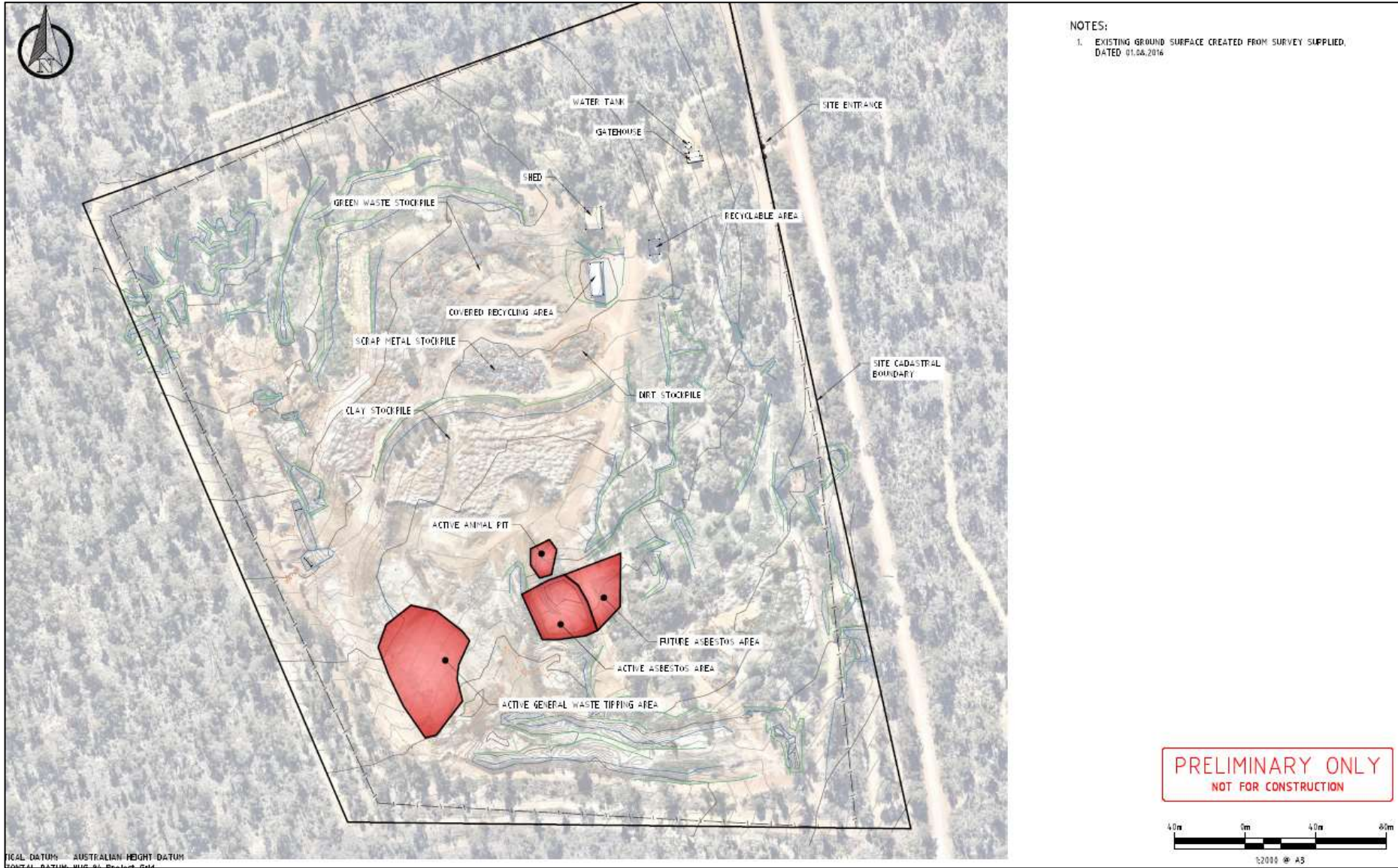
The currently active landfill areas, in which waste is currently disposed, are indicated within **Figure 2**.

The general waste tipping area and animal mortality tipping area are currently above ground level. The asbestos tipping area is within a pit below ground level.

The Applicant proposes to use material excavated from within the Premises as final cover for the closure profile, and as progressive cover on the active tipping areas where available.

The Applicant sources other cover materials from off-site, including subsoil or other inert waste materials (e.g. clay/cement based roof tiles, bricks, silica sand, slate, ceramic tiles, limestone, crushed concrete/cement). The Applicant also proposes to use other (non-inert) materials for cover, provided that they satisfy requirements to mitigate against any environmental health impacts (Talis Consultants 2018b).





**Figure 2: Current active landfill areas within the Premises (Talis Consultants 2018a)**

Works Approval and Licence: W6124/2018/1 and L9114/2018/1

## 4.2 Infrastructure

The Premises infrastructure, as it relates to Categories 57, 62 and 64 activities, is detailed in Table 4 and with reference to Figure 3.

**Table 4: Premises infrastructure relating to Categories 57, 62 and 64**

	Infrastructure	Site Plan Reference (Figure 3)
1	Front-end loader and excavator	N/A
2	Gatehouse	Gatehouse
3	Fences and gates aligned to Premises boundary	N/A
4	Signage	N/A
5	2 x sheds within Community Recycling Area (CRA)	Shed
6	Hook lift bins and shipping container	Within Community Recycling Area Shed
7	Self bunded plastic pallets	Within Community Recycling Area Shed
8	5000 litre waste/motor oil storage tank	Within Community Recycling Area Shed
9	Three separate active landfill cells/areas for: <ul style="list-style-type: none"> <li>• General waste</li> <li>• Asbestos waste</li> <li>• Animal mortalities</li> </ul>	Animal pit, Asbestos pit (General waste landfill area indicated in Figure 2)
10	Groundwater bores: GW01 – depth 41.7m, top of casing 299.99 m AHD GW02 – depth 35m, top of casing 310.91m AHD GW03 – depth 35m, top of casing 317.40 m AHD	GW01, GW02, GW03

## 5. Proposed works

The Applicant proposes to extend the current landfill area by excavating three new landfill pits. This proposal includes the clearing of native vegetation. The assessment of the proposed clearing (Clearing Permit Decision Report) is provided within Attachment 1 to this Decision Report.

The proposed fill volumes and depths of the three new pits are provided below. The total fill volume is 57,800m<sup>3</sup>.

- Pit 1: approximately 10m deep and 20,550m<sup>3</sup>
- Pit 2: approximately 7m deep and 10,250m<sup>3</sup>
- Pit 3: approximately 9m deep and 27,000m<sup>3</sup>

There is no indication from the Applicant that the new pits will receive any additional wastes which are not currently received for landfilling at the Premises.

Construction will be staged and completed over approximately 6 to 8 years. No leachate collection/management or lining system is proposed for the new cells.

The proposed area of Pits 1, 2 and 3 are shown in Figure 4. Pits 4 and 5 which are also

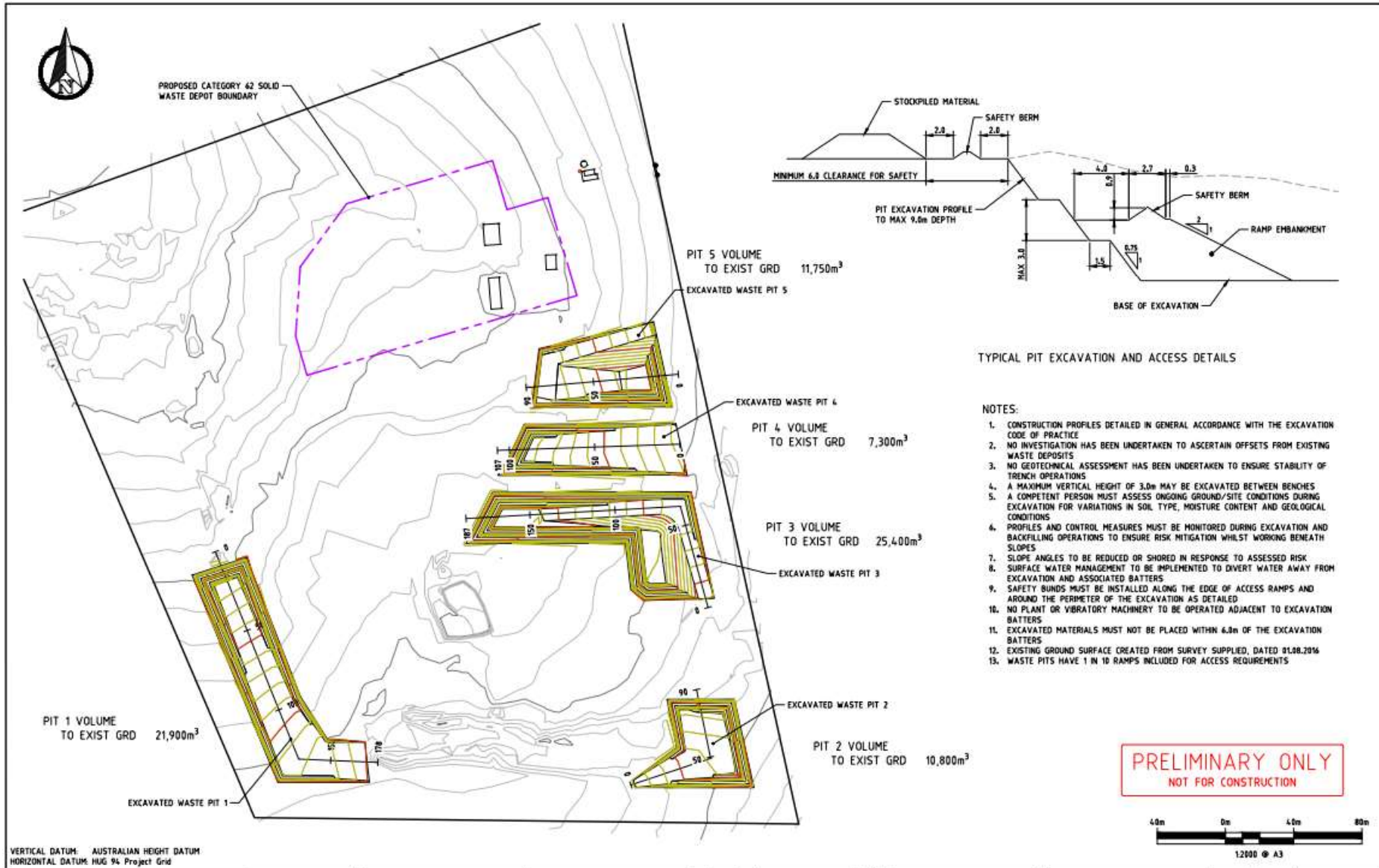


shown in the figure are future pits, for which the Applicant is not seeking approval to construct at this time.



Figure 3: Premises layout (Talis Consultants 2017)





**Figure 4: Pit excavation plan (Talis Consultants 2017)**

Works Approval and Licence: W6124/2018/1 and L9114/2018/1



## 6. Part V of the EP Act

### 6.1.1 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: Publication of Annual Audit Compliance Reports (May 2016)*
- *Guidance Statement: Decision Making (February 2017)*
- *Guidance Statement: Risk Assessments (February 2017)*
- *Guidance Statement: Environmental Siting (November 2016)*

### 6.1.2 Works approval and licence history

Table 5 summarises the works approval and licence history for the premises.

**Table 5: Works approval and licence history**

Instrument	Issued	Nature and extent of works approval, licence or amendment
R1455/2003/1	17/02/2003	Registration – Category 89 Putrescible Landfill Site.

### 6.1.3 Compliance inspections and compliance history

During the 2016/17 financial year, the Inkpen Road Waste Management Facility was subject to quarterly inspections as a part of the Waste Levy Inspection Program. During this period six Environmental Field Reports (EFRs) were issued to the Shire of Northam with the following alleged contraventions against the *Environmental Protection (Rural Landfill) Regulations 2002* (Rural Landfill Regs.):

- The Shire was found to have received asbestos material without the approval of the CEO in contravention of Regulation 15 of the Rural Landfill Regs. Environmental Field Report (EFR) 3271 was issued requesting compliance with the Rural Landfill Regs. The Shire ceased acceptance of asbestos material until CEO approval was granted by DWER.
- The Shire was found to have a cell tipping area greater than 30 metres in length in contravention of Regulation 5 of the Rural Landfill Regs. EFR 3272 was issued requesting compliance with the Rural Landfill Regs. The licensee put measures in place to ensure the tipping area does not exceed 30 metres to ensure compliance was maintained.
- The Shire was found to have not covered waste (exposed waste) on a weekly basis in accordance with Regulation 6 of the Rural Landfill Regs. EFR 3273 was issued requesting compliance with the Rural Landfill Regs. Formal correspondence was issued to the Shire requesting compliance with EFR 3273 due to insufficient action to achieve compliance. The Shire after receiving correspondence took steps to ensure

exposed waste was covered to meet compliance with EFR 3273.

- The Shire was found to have not managed stormwater to prevent contact with waste material in contravention of Regulation 10 of the Rural Landfill Regs. EFR 3274 was issued requesting compliance with the Rural Landfill Regs. The Shire extended stormwater bund infrastructure and explained that a sump within the premises collects all stormwater on the premises achieving compliance with EFR 3274.
- The Shire was found to have burnt greenwaste otherwise in accordance with Regulation 13 of the Rural Landfill Regs due to evidence of burnt of non-greenwaste material and being positioned in landfill areas. EFR 3275 was issued requesting compliance with the Rural Landfill Regs. The Shire repositioned the greenwaste management area and put controls in place to ensure compliance with EFR3275.
- The Shire was found to have undertaken works on the premises causing the premises to become capable of becoming a prescribed premises; namely works related to a Category 62 *Solid waste depot* (Schedule 1, Environmental Protection Regulations 1987), carried-out without a works approval in contravention of Section 52 of the EP Act. The Shire was issued EFR 3277 requesting compliance with the EP Act. The Shire has submitted an application to DWER for a Works Approval/Licence to meet the requirements of the EP Act in operating the premises solid waste depot facilities.

During the subsequent 2017/18 financial year levy inspections it was noted that the record keeping practice at the Premises was not aligned with DWER's Environmental Standard titled *Approved manner for estimating the volume or weight of waste received at and disposed of to landfills* (December 2016). The Shire of Northam CEO and EHO were advised via email of the record keeping requirements.

The most recent Waste Levy Compliance Inspection of the Inkpen Road Waste Management Facility premises was undertaken in September 2017 and the premises was found to be compliant with the requirements of the *Environmental Protection (Rural) Regulations 2002*.

## 7. Contaminated sites

The Shire of Northam reported the Premises to DWER as a known or suspected contaminated site in 2007, in accordance with Section 11 of the *Contaminated Sites Act 2003*. The Premises is currently awaiting classification.

## 8. Planning approval

The Premises is zoned as 'Public Purpose – Rubbish Disposal' within the Shire of Northam Local Planning Scheme No. 6.

## 9. Consultation

The Application was advertised on the DWER website and in the West Australian on 26 February 2018. No submissions were received during the consultation period of 21 days.

The Application was referred to the Department of Biodiversity, Conversation and Attractions (DBCA) for comment. A response was received on 16 March 2018 advising that DBCA did not have any comment to make on the referral.

## 10. Location and siting

### 10.1 Siting context

The Premises is located within the Kwolyinine Nature Reserve in Copley, which is approximately 50km north-east of Perth. The area surrounding the Nature Reserve is predominantly agricultural or pastoral land use (Talis Consultants 2017). The residential town of Wundowie is located north-west of the Nature Reserve.

### 10.2 Residential and sensitive Premises

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

**Table 6: Receptors and distance from activity boundary**

Sensitive Land Uses	Distance from Prescribed Activity
Single residential premises	Approximately 870m west of the Premises boundary
Single residential premises	Approximately 670m south-east of the Premises boundary
Wundowie residential area	Approximately 1300m north-west of the Premises boundary

### 10.3 Specified ecosystems

Specified ecosystems are areas of high conservation value and special significance that may be impacted as a result of activities at the Premises or from Emissions and Discharges from the Premises. The distances to specified ecosystems are shown in Table 7. Table 7 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 7: Environmental values**

Specified ecosystems	Distance from the Premises
Kwolyinine Nature Reserve - Parks and Wildlife Managed Land	Immediately surrounding Premises boundary
Important wetlands – Western Australia	None within 12km of the Premises
Threatened Ecological Communities and Priority Ecological Communities	None within 12km of the Premises
Biological component	Distance from the Premises
Threatened/Priority Flora – priority 3 flora	Approximately 1300m west north-west from the Premises boundary
Threatened/Priority Fauna – declared threatened bird sighting	Approximately 1800m north-west of the Premises boundary

### 10.4 Groundwater and water sources

The distances to groundwater and water sources are shown in Table 8.

**Table 8: Groundwater and water sources**

Groundwater and water sources	Distance from Premises	Environmental value
Public drinking water source areas	Approximately 6700m south-east of the Premises	Priority 1 drinking water protection area
Minor watercourse	Approximately 1100m north-west of the Premises (downgradient)	Provides habitat for fauna and flora
Major watercourses/waterbodies	None within 12km of the Premises	N/A
Private groundwater bores	Three private bores located approximately 1600m south-west of the Premises.  Two private bores located approximately 1700m north-east of the Premises. (WIR 2018)	Unknown, however the bores could potentially be used for abstraction for irrigation or livestock water.
Groundwater	Bores drilled within the Premises, in August 2017, to a depth of up to 41.7m did not encounter groundwater (Talis Consultants 2017)	N/A

## 10.5 Soil type

Talis consultancy undertook a hydrogeological and geotechnical investigation at the Premises during August 2017. The findings of this investigation are provided within the Application.

During the drilling of the three groundwater bores shown in Figure 3, the soil profile was logged to a depth of at least 35m and disturbed bulk soils samples were collected.

The general soil profile is summarised as coarse grained silty/sandy gravels to a depth of 4m bgl, underlain by gravelly silty sand and clayey silt with sand inclusions, and granite bedrock at a depth of between 18m bgl and 30m bgl.

The following laboratory analyses were undertaken on selected disturbed samples to determine the particle size distribution and permeability:

- AS 1289.3.6.1, Soil classification test – Determination of the particle size distribution of a soil – Standard method of analysis by sieving;
- AS 1289.3.6.3, Soil classification test – Determination of the particle size distribution of a soil – Standard method of fine analysis using hydrometer; and
- AS 1289.6.7.2, Soil strength and consolidation testing – Determination of the permeability of a soil – Falling head for a remoulded specimen.

The results of the laboratory analyses are summarised within Table 9.

**Table 9: Soil testing results**

Location	Sample depth	Description	Permeability (m/s)	% Gravel	% Coarse grained sand	% Medium grained sand	% Fine grained sand	% Silt	% Clay
GW01	8m	Silty SAND with clay	$4.452 \times 10^{-7}$	1.8	14.9	34.8	21	19	8.5
	10m		$4.78 \times 10^{-8}$	-	-	-	-	-	

Location	Sample depth	Description	Permeability (m/s)	% Gravel	% Coarse grained sand	% Medium grained sand	% Fine grained sand	% Silt	% Clay
GW02	10m	Sandy SILT with clay	$3.009 \times 10^{-7}$	-	-	-	-	-	-
	12m		$2.59 \times 10^{-8}$	0.2	3.51	22.3	12.8	52.2	9
GW03	10m	SILT with sand	$1.05 \times 10^{-8}$	0.0	1.5	6.5	10.6	73.9	7.5
	12m		$3.18 \times 10^{-8}$	-	-	-	-	-	-

## 10.6 Meteorology

### 10.6.1 Rainfall and temperature

The closest Bureau of Meteorology (BoM) station is located approximately 6km north-east of the Premises at Bakers Hill.

The mean rainfall and maximum temperature for the Bakers Hill BoM weather station is presented in Figure 5 below (BOM 2018). Based on the historical averages for the region, the Premises are likely to exhibit warm to hot temperatures between December to March with a mean annual rainfall of 585.2mm (1964-2018) with rainfall predominantly over June, July and August.

The Department of Primary Industries and Regional Development (DPIRD 2018) provides monthly pan evaporation rates for Muresk (the closest available station), which is located approximately 27km east of the Premises. The data indicates that the pan evaporation rates in the region are generally higher than the rate of rainfall throughout the majority of the year, with the exception of the winter months of June to August.

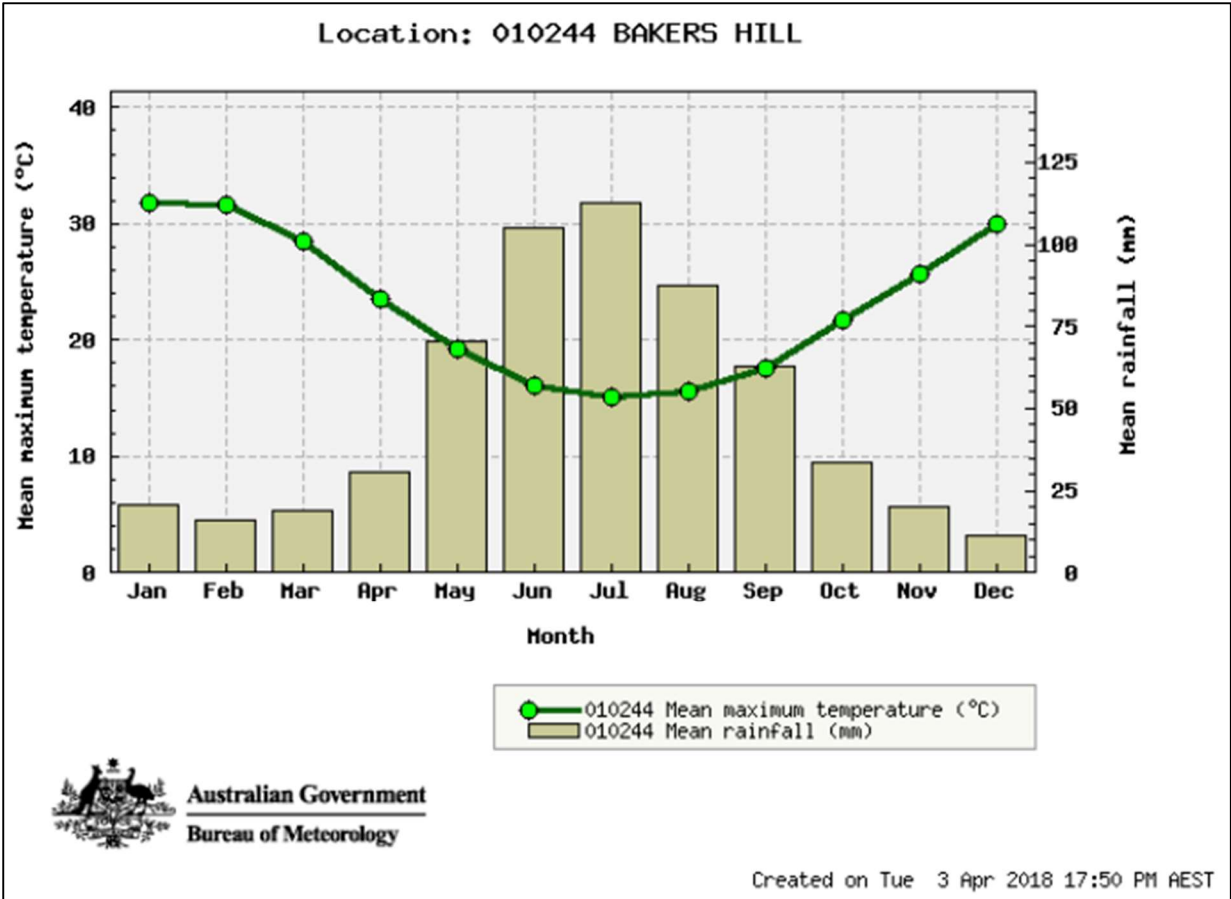


Figure 5: Mean temperature and rainfall at the Bakers Hill weather station

## 11. Risk assessment

### 11.1 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 10 and Table 11.

The identification of the sources, pathways and receptors to determine Risk Events are set out in Table 10 and Table 11 below.

**Table 10: 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 of landfill pits 1, 2 and 3	Vehicle movements	Noise	Residences located 670m and 870m from Premises boundary (see Table 6)	Air	Amenity impacts	No	Due to the relatively limited works required within the Premises and the minimum 670m separation distance to the nearest receptor, the Delegated Officer considers that the risk of amenity impacts from noise emissions does not require a detailed risk assessment.  Any potential noise emissions can be regulated through the <i>Environmental Protection (Noise) Regulations 1997</i> .
	Excavation and movement of soils	Dust	Residences located 670m and 870m from Premises boundary (see Table 6)	Air/wind dispersion Inhalation	Health and amenity impacts	Yes	See section 11.4
	Accidental exposure of previously landfilled waste	Odour	Residences located 670m and 870m from Premises boundary (see Table 6)	Air/wind dispersion	Amenity impacts	Yes	See section 11.5

Risk Events					Continue to detailed risk assessment	Reasoning
Sources/Activities	Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts		
	during excavation	Landfill leachate	Adjacent nature reserve (see Table 7)  Note: groundwater is not considered a receptor as no groundwater was intercepted within bores up to ~42m deep within the Premises during August 2017. (see Table 8)	Seepage through soil and movement downgradient	Soil contamination  Impact to flora and fauna health	Yes  See section 11.7

**Table 11: 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		
<b>Solid waste depot operations – Receival and storage of wastes and shredding of greenwaste</b>	Vehicle movements	Noise	Residences located 670m and 870m from Premises boundary (see Table 6)	Air	Amenity impacts	No  Due to the relatively limited vehicle and machinery movements within the Premises and the minimum 670m separation distance to the nearest receptor, the Delegated Officer considers that the risk of amenity impacts from noise emissions does not require a detailed risk assessment.  Any potential noise emissions can be regulated through the <i>Environmental Protection (Noise) Regulations 1997</i> .
	Vehicle movements on unsealed surfaces	Dust	Residences located 670m and 870m from Premises boundary (see Table 6)	Air/wind dispersion	Health and amenity impacts	Yes  See section 11.4
	Shredding of greenwaste			Inhalation		



Risk Events					Continue to detailed risk assessment	Reasoning
Sources/Activities	Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts		
Recyclables and greenwaste	Odour	Residences located 670m and 870m from Premises boundary (see Table 6)	Air/wind dispersion	Amenity impacts	Yes	See section 11.5
	Contaminated stormwater	Adjacent nature reserve (see Table 7) Note: groundwater is not considered a receptor as no groundwater was intercepted within bores up to ~42m deep within the Premises during August 2017 (see Table 8)	Seepage through soil and lateral movement via interflow following rainfall	Soil contamination Impact to flora and fauna health	Yes	See section 11.6
		Minor watercourse Approximately 1100m north west of the Premises (downgradient) (see Table 8)	Overland flow	Indirect contamination of surface waters at the point of interflow expression	No	The Delegated Officer considers that contaminated stormwater which may leave the Premises via interflow is unlikely to travel the 1100m distance to the nearest watercourse.
Fire - upset conditions	Smoke	Adjacent nature reserve (see Table 7)	Air/wind dispersion	Harm to local fauna	Yes	See section 11.8
		Residences located 670m and 870m from Premises boundary (see Table 6)	Air/wind dispersion	Health and amenity impacts		
	Contaminated fire suppression water	Adjacent nature reserve (see Table 7) Note: groundwater is not considered a receptor as no groundwater was intercepted within bores up to ~42m deep within the Premises during August 2017 (see Table 8)	Seepage through soil and lateral movement via interflow following rainfall Overland flow	Soil contamination Impact to flora and fauna health	Yes	See section 11.9

Risk Events					Continue to detailed risk assessment	Reasoning	
Sources/Activities	Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts			
			Minor watercourse Approximately 1100m north west of the Premises (downgradient) (see Table 8)		Indirect contamination of surface waters at the point of interflow expression	No	The Delegated Officer considers that fire suppression water which may leave the Premises via interflow is unlikely to travel the 1100m distance to the nearest watercourse.
Landfilling operations – Receival of waste at tipping areas and covering of waste	Vehicle movements	Noise	Residences located 670m and 870m from Premises boundary (see Table 6)	Air	Amenity impacts	No	Due to the relatively limited noise generating activities within the Premises and the minimum 670m separation distance to the nearest receptor, the Delegated Officer considers that the risk of amenity impacts from noise emissions does not require a detailed risk assessment.  Any potential noise emissions can be regulated through the <i>Environmental Protection (Noise) Regulations 1997</i> .
	Shredding of greenwaste						
	General waste and animal mortalities	Odour	Residences located 670m and 870m from Premises boundary (see Table 6)	Air/wind dispersion	Amenity impacts	Yes	See section 11.5
	Vehicle movement on unsealed surfaces	Dust	Residences located 670m and 870m from Premises boundary (see Table 6)	Air/wind dispersion Inhalation	Health and amenity impacts	Yes	See section 11.4
	Unloading of dust generating waste at tipping area						
	Covering of waste						

Risk Events					Continue to detailed risk assessment	Reasoning
Sources/Activities	Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts		
General waste and animal mortalities	Landfill leachate	Adjacent nature reserve (see Table 7)  Note: groundwater is not considered a receptor as no groundwater was intercepted within bores up to ~42m deep within the Premises during August 2017 (see Table 8)	Seepage through soil and movement downgradient	Soil contamination  Impact to flora and fauna health	Yes	See section 11.7
		Minor watercourse Approximately 1100m north west of the Premises (downgradient) (see Table 8)		Indirect contamination of surface waters at the point of interflow expression	No	The Delegated Officer considers that leachate which may leave the Premises via interflow is unlikely to travel the 1100m distance to the nearest watercourse.
	Contaminated stormwater	Adjacent nature reserve (see Table 7)  Note: groundwater is not considered a receptor as no groundwater was intercepted within bores up to ~42m deep within the Premises during August 2017 (see Table 8)	Seepage through soil and lateral movement via interflow following rainfall	Soil contamination  Impact to flora and fauna health	Yes	See section 11.6
		Minor watercourse Approximately 1100m north west of the Premises (downgradient) (see Table 8)		Overland flow	Indirect contamination of surface waters at the point of interflow expression	No
General waste and animal mortalities	Landfill gas	Residences located 670m and 870m from Premises boundary (see Table 6)	Lateral migration through soil or passive venting	Health impacts and explosion risk from high methane concentration	No	Due to the relatively small quantities of waste being accepted, the Delegated Officer considers that the risk of impacts from landfill gas emissions does not require a detailed risk assessment.

Risk Events					Continue to detailed risk assessment	Reasoning
Sources/Activities	Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts		
	General waste	Windblown waste	Residences located 670m and 870m from Premises boundary (see Table 6) Surrounding nature reserve (see Table 7)	Wind dispersion	Amenity and nuisance impacts Harm to local fauna	Yes See section 11.10
	General waste and animal mortalities	Pests and vermin	Residences located 670m and 870m from Premises boundary (see Table 6) Surrounding nature reserve (see Table 7)	Air and land via insects, birds and rodents	Amenity impacts and pest associated diseases	Yes See section 11.11
	Asbestos waste transported within the Premises and unloading at the asbestos tipping area	Asbestos fibres	The public accessing Premises for waste drop-off The public accessing the nature reserve surrounding the Premises (see Table 7)	Air/wind dispersion and inhalation	Health impacts	Yes See section 11.12
	Other waste types accepted for burial which are contaminated with asbestos		Residences located 670m and 870m from Premises boundary (see Table 6)			
	Fire - upset conditions	Smoke	Adjacent nature reserve (see Table 7)	Air/wind dispersion	Harm to local fauna	Yes See section 11.8
Residences located 670m and 870m from Premises boundary (see Table 6)			Air/wind dispersion	Health and amenity impacts		

Risk Events					Continue to detailed risk assessment	Reasoning
Sources/Activities	Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts		
	Contaminated fire suppression water	<p>Adjacent nature reserve (see Table 7)</p> <p>Note: groundwater is not considered a receptor as no groundwater was intercepted within bores up to ~42m deep within the Premises during August 2017 (see Table 8)</p>	<p>Seepage through soil and lateral movement via interflow following rainfall</p> <p>Overland flow</p>	<p>Soil contamination</p> <p>Impact to flora and fauna health</p>	Yes	See section 11.9

## 11.2 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 12 below.

**Table 12: 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 13 below.

**Table 13: 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	<ul style="list-style-type: none"> <li>onsite impacts: catastrophic</li> <li>offsite impacts local scale: high level or above</li> <li>offsite impacts wider scale: mid-level or above</li> <li>Mid to long-term or permanent impact to an area of high conservation value or special significance<sup>^</sup></li> <li>Specific Consequence Criteria (for environment) are significantly exceeded</li> </ul>	<ul style="list-style-type: none"> <li>Loss of life</li> <li>Adverse health effects: high level or ongoing medical treatment</li> <li>Specific Consequence Criteria (for public health) are significantly exceeded</li> <li>Local scale impacts: permanent loss of amenity</li> </ul>
Likely	The risk event will probably occur in most circumstances	Major	<ul style="list-style-type: none"> <li>onsite impacts: high level</li> <li>offsite impacts local scale: mid-level</li> <li>offsite impacts wider scale: low level</li> <li>Short-term impact to an area of high conservation value or special significance<sup>^</sup></li> <li>Specific Consequence Criteria (for environment) are exceeded</li> </ul>	<ul style="list-style-type: none"> <li>Adverse health effects: mid-level or frequent medical treatment</li> <li>Specific Consequence Criteria (for public health) are exceeded</li> <li>Local scale impacts: high level impact to amenity</li> </ul>
Possible	The risk event could occur at some time	Moderate	<ul style="list-style-type: none"> <li>onsite impacts: mid-level</li> <li>offsite impacts local scale: low level</li> <li>offsite impacts wider scale: minimal</li> <li>Specific Consequence Criteria (for environment) are at risk of not being met</li> </ul>	<ul style="list-style-type: none"> <li>Adverse health effects: low level or occasional medical treatment</li> <li>Specific Consequence Criteria (for public health) are at risk of not being met</li> <li>Local scale impacts: mid-level impact to amenity</li> </ul>
Unlikely	The risk event will probably not occur in most circumstances	Minor	<ul style="list-style-type: none"> <li>onsite impacts: low level</li> <li>offsite impacts local scale: minimal</li> <li>offsite impacts wider scale: not detectable</li> <li>Specific Consequence Criteria (for environment) likely to be met</li> </ul>	<ul style="list-style-type: none"> <li>Specific Consequence Criteria (for public health) are likely to be met</li> <li>Local scale impacts: low level impact to amenity</li> </ul>
Rare	The risk event may only occur in exceptional circumstances	Slight	<ul style="list-style-type: none"> <li>onsite impact: minimal</li> <li>Specific Consequence Criteria (for environment) met</li> </ul>	<ul style="list-style-type: none"> <li>Local scale: minimal to amenity</li> <li>Specific Consequence Criteria (for public health) met</li> </ul>

<sup>^</sup> Determination of areas of high conservation value or special significance should be informed by the *Guidance Statement: Environmental Siting*.

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

"onsite" means within the Prescribed Premises boundary.

## 11.3 Acceptability and treatment of Risk Event

DWER will determine the acceptability and treatment of Risk Events in accordance with the Risk treatment Table 14 below:

**Table 14: Risk treatment table**

Rating of Risk Event	Acceptability	Treatment
<b>Extreme</b>	Unacceptable.	Risk Event will not be tolerated. DWER may refuse application.
<b>High</b>	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.
<b>Medium</b>	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.
<b>Low</b>	Acceptable, generally not controlled.	Risk Event is acceptable and will generally not be subject to regulatory controls.

## 11.4 Risk Assessment – Dust

### 11.4.1 Description of dust emission and impact

The construction of new landfill pits and operation of the landfill and solid waste depot within the Premises may generate dust emissions which may result in health and amenity impacts to receptors near the Premises.

The potential sources of dust within the Premises are:

- excavation and movement of soils during construction of Pits 1 to 3;
- transport of waste loads within the Premises prior to unloading;
- unloading of waste at the landfill tipping area;
- covering of waste being disposed to landfill;
- vehicle movements on unsealed ground; and
- shredding of green waste.

### 11.4.2 Identification and general characterisation of emission

The frequency and time of exposure of receptors to dust may vary depending on the activities carried out at the Premises and weather conditions. The unloading of waste, covering of waste and vehicle movements may occur daily, however the shredding of green waste is carried out biannually.

The Applicant has proposed that waste materials sourced from off-site, which are not Type 1 Inert Waste, Clean Fill or Uncontaminated Fill, are able to be used as cover.

The risk associated with the release of asbestos fibres is assessed separately in Section 11.12.

### 11.4.3 Description of potential adverse impact from the emission

Dust emissions have the potential to impact public health when inhaled; affecting both the respiratory and cardiovascular systems. Amenity may also be impacted by the deposition of material on a variety of surfaces such as vehicles, dwellings and clothing.

The use of non-inert waste material would present an additional risk to receptors due to dust emission from the use of potentially contaminated cover material.

The receptors which may be most affected by dust emissions from the Premises would be the occupants of two residences located approximately 670m and 870m from the Premises and occupants within a residential area approximately 1300m from the Premises.

### 11.4.4 Criteria for assessment

The relevant criteria for assessment of dust emissions as PM<sub>10</sub> is 50µg/m<sup>3</sup> over 24 hours as specified in the National Environment Protection (Ambient Air Quality) Measure (NEPM). The NEPM is the relevant criteria for assessment in relation to human health and wellbeing.

Impacts can be assessed against the general provisions of the EP Act, specifically whether fugitive dust unreasonably interferes with the health, welfare, convenience, or comfort of any person.

### 11.4.5 Applicant/Licence Holder controls

This assessment has reviewed the controls proposed by the Applicant, set out in Table 15 below.

**Table 15: Applicant's proposed controls for dust emissions**

Source	Controls	Operation details
Vehicle movements	Restrict speed of vehicles moving within the Premises to less than 15km/hour.	Speed restriction sign-posted within and at the entry to the Premises.
	Minimise traffic movements	-
All	Dust suppression with water sprays if required	Requires services of Shire of Northam water trucks
All	Cease operation if required	Operations will cease during high winds

### 11.4.6 Key findings

**The Delegated Officer has reviewed the information regarding dust emission and impact and has found:**

- 1. There are no controls proposed for dust generation during green waste shredding except for the cease of operations during high winds. However, green waste shredding is expected to be an infrequent activity (approximately biannually).*

### 11.4.7 Consequence

Considering the semi-rural location of the receptors, the Delegated Officer has determined that if the emission of dust occurs from the Premises, the impact of exposure of receptors to dust may be minimal impacts to amenity. No impacts to health are expected. Therefore, the



Delegated Officer considers the consequence of dust emissions and impact to be **Slight**.

#### 11.4.8 Likelihood of Risk Event

##### Construction

Due to the distance to receptors, the Delegated Officer has determined that the likelihood of dust emissions from construction resulting in minimal impacts to amenity will probably not occur in most circumstances. Therefore, the Delegated Officer considers the likelihood of dust emissions and impact to be **Unlikely**.

##### Operation

Due to the limited dust generating activities undertaken within the Premises and the distance to receptors, the Delegated Officer has determined that the likelihood of dust emissions resulting in minimal impacts to amenity will probably not occur in most circumstances. Therefore, the Delegated Officer considers the likelihood of dust emissions and impact to be **Unlikely**.

#### 11.4.9 Overall rating of dust emission and impact

##### Construction

The Delegated Officer has compared the consequence and likelihood ratings described above with the risk rating matrix (Table 12) and determined that the overall rating for the risk of dust emission and impact during construction is **Low**.

##### Operation

The Delegated Officer has compared the consequence and likelihood ratings described above with the risk rating matrix (Table 12) and determined that the overall rating for the risk of dust emission and impact during operation is **Low**.

### 11.5 Risk Assessment – Odour

#### 11.5.1 Description of odour emission and impact

Putrescible waste disposed of at the Premises has the potential to produce odour emissions through the deposition of odorous loads, inadequate covering and decomposition of buried waste over time causing amenity impacts outside the Premises.

The excavation of Pits 1 to 3 could potentially expose previously buried waste, as there is some uncertainty regarding the extent of the previous landfilling within the Premises.

Green waste which is stored and mulched within the Premises may also produce an odour, however this is expected to be to a lesser extent than the putrescible materials accepted for disposal.

#### 11.5.2 Identification and general characterisation of emission

Factors that influence the emission rate of odour from landfill surface include the type and thickness of cover material and degree of compaction.

Factors that affect air dispersion include odour emission rates, wind speed and direction, topography and meteorological conditions.

#### 11.5.3 Description of potential adverse impact from the emission

Individual responses to odour may vary depending on age, health status, sensitivity and odour exposure patterns. Perceived odour intensity may increase or decrease on exposure.

Community response to an odour can include annoyance, potentially leading to stress and

loss of amenity. Exposure to repeated odour events can create a nuisance effect.

#### 11.5.4 Criteria for assessment

There are no set threshold or concentration criteria for odour assessment. Under section 49(5) of the EP Act, it is an offence to emit or cause to be emitted, an unreasonable emission from any premises.

An unreasonable emission is defined in the EP Act (section 49(1)) as an emission or transmission of noise, odour or electromagnetic radiation which unreasonably interferes with the health, welfare, convenience, comfort or amenity of any person.

#### 11.5.5 Applicant/Licence Holder controls

The Applicant has proposed the following controls for odour emissions:

- Cores will be taken prior to the excavation of the new pits to check for previously buried waste within the planned areas of excavation.
- Some waste compaction is achieved by the front end loader driving over deposited waste as the tip face progresses.
- General waste tipping face no greater than 30m wide and 2m in height.
- General tipping area and animal carcass waste will be covered partially at least every second day, and covered entirely every week to the following cover depths:
  - General waste tipping area: a minimum 100mm of cover material.
  - Animal carcass tipping area: a minimum of 300mm of cover material.
- At least 1m of cover material will be applied when the final profile is achieved.
- Vehicles delivering putrescible waste to the Premises are required to be enclosed or covered.

#### 11.5.6 Key findings

**The Delegated Officer has reviewed the information regarding odour emissions and has found:**

1. *Frequent and sufficient covering of waste is important in reducing the likelihood of odour impacts occurring.*

#### 11.5.7 Consequence

If odour emissions occur, then the Delegated Officer has determined that odour emissions may cause a low level impact on amenity at a local scale. Therefore, the Delegated Officer considers the consequence of odour emissions to be **Minor**.

#### 11.5.8 Likelihood of Risk Event

##### Construction

Considering that the exposure of previously buried wastes during construction is not intended to occur, and considering the distance to sensitive receptors, the Delegated Officer has determined that odour emissions during construction causing a low level impact to amenity may only occur in extreme circumstances. Therefore, the Delegated Officer considers the likelihood to be **Rare**.

## Operation

Due to the distance to sensitive receptors, the relatively small scale of the landfill operations, and the cover proposed, the Delegated Officer has determined that odour emissions causing a low level impact to amenity will probably not occur in most circumstances. Therefore, the Delegated Officer considers the likelihood to be **Unlikely**.

### 11.5.9 Overall rating of odour emissions

#### Construction

The Delegated Officer has compared the consequence and likelihood ratings described above with the risk rating matrix (Table 12) and determined that the overall rating for the risk of odour emissions during construction impacting sensitive receptors is **Low**.

#### Operation

The Delegated Officer has compared the consequence and likelihood ratings described above with the risk rating matrix (Table 12) and determined that the overall rating for the risk of odour emissions during operation impacting sensitive receptors is **Medium**.

## 11.6 Risk Assessment – Contaminated stormwater

### 11.6.1 Description of contaminated stormwater emission and impact

Stormwater within the Premises may become contaminated due to contact with waste, and may leave the Premises via interflow within the top section of the soil profile or via overland flow. Contaminated stormwater emissions may result in off-site soil contamination and impacts to flora and fauna health.

Landfill leachate is separately assessed within Section 11.7.

### 11.6.2 Identification and general characterisation of emission

Contaminated stormwater emissions will be influenced by the frequency and duration of rainfall events. The Premises is located within a relatively low rainfall area (expected to receive approximately 600mm of rain per annum).

The waste types which come into contact with stormwater also influence the nature of the emission. These waste types include recyclables (car batteries and waste oil posing the greatest risk), scrap metal, green waste, and waste being disposed to landfill (putrescible waste and contaminated solid waste which meets the acceptance criteria for Class II landfills).

### 11.6.3 Description of potential adverse impact from the emission

Overland flow or interflow (lateral flow within the soil profile) of contaminated stormwater may result in discharges outside of the Premises boundary. This can directly contaminate the soils of the adjacent nature reserve, and may cause a detrimental impact on the health of flora and fauna through contact with the stormwater or impacted soils.

### 11.6.4 Criteria for assessment

The DWER guideline *Assessment and Management of Contaminated Sites* (DER 2014) provides relevant assessment levels for water, soil and sediment.

### 11.6.5 Applicant/Licence Holder controls

This assessment has reviewed the controls proposed by the Applicant, set out in Table 16 below.

**Table 16: Applicant's proposed controls for contaminated stormwater**

Source	Control
Car batteries	Stored on self-bunded plastic pallets within undercover area.
Waste/motor oil storage tank	Stored within a 5000 litre tank, within concrete bunded undercover area.
Co-mingled recycling (aluminium and steel cans, glass, plastics, cardboard and paper)	Stored within hook lift bins within undercover area.
E-waste	Stored within an enclosed container or within a container within undercover area.
Scrap metal	-
Green waste	-
Putrescible and contaminated solid waste disposed at tipping areas	Uncapped areas of the landfill are shaped so that any contaminated surface water is contained within the landfill area.
	Progressive construction of low stormwater diversion bunds and drains to direct uncontaminated stormwater around the landfill.
General stormwater flow within the Premises	Unlined stormwater retention pond in downgradient corner of the Premises (north-western corner) to act as a sediment trap prior to discharge to the adjacent nature reserve.  Defined drains leading to the retention pond are proposed for the future landfill closure stage, however are not proposed for the current operation of the Premises.

### 11.6.6 Consequence

Considering the location of a nature reserve immediately adjacent to the Premises, if contaminated stormwater emissions occur, the Delegated Officer has determined that the emissions may cause low level off site impacts at a local scale. Therefore, the Delegated Officer considers the consequence of contaminated stormwater emissions to be **Moderate**.

### 11.6.7 Likelihood of Risk Event

Considering the controls proposed by the Applicant, the Delegated Officer has determined that the likelihood of low level off site impacts due to contaminated stormwater emissions will probably not occur in most circumstances. Therefore the Delegated Officer considers the likelihood to be **Unlikely**.

### 11.6.8 Overall rating of contaminated stormwater emission and impact

The Delegated Officer has compared the consequence and likelihood ratings described above with the risk rating matrix (Table 12) and determined that the overall rating for the risk of contaminated stormwater emission and impact is **Medium**.

## 11.7 Risk Assessment – Landfill leachate

### 11.7.1 Description of leachate/contaminated stormwater emission and impact

Leachate generated within the landfilled wastes (excluding the asbestos landfill area) may move downgradient via seepage through soils. Leachate emissions may result in off-site soil contamination and impacts to flora and fauna health.

### 11.7.2 Identification and general characterisation of emission

The quantity and content of leachate emissions will be influenced by the quantity and type of non-inert waste materials disposed within the Premises and the period of exposure of the waste mass to rainfall.

The waste types which will contribute to leachate generation through the decomposition process are putrescible wastes. The contaminated solid wastes which are accepted do not generate leachate themselves but contribute to the contaminants within the leachate upon contact.

Previously buried wastes could potentially be exposed during the excavation of Pits 1 to 3.

### 11.7.3 Description of potential adverse impact from the emission

Downgradient movement of leachate within the soil profile may result in discharges outside of the Premises boundary. The hydrogeological and geotechnical investigation undertaken at the Premises reports soil permeability from three locations (six samples) within the Premises, ranging from 8m to 12m depth. The permeability ranged from  $4.5 \times 10^{-7} \text{m/s}$  and  $1 \times 10^{-8} \text{m/s}$ , suggesting that the soils within the Premises generally have a low permeability.

A detrimental impact on the health of flora may occur via contact with leachate within the soils outside of the Premises boundary. Fauna may be indirectly impacted if there are changes to flora within their habitat.

### 11.7.4 Criteria for assessment

The DWER guideline *Assessment and Management of Contaminated Sites* (DER 2014) provides relevant assessment levels for water, soil and sediment.

### 11.7.5 Contaminated Sites advice

Technical advice was received in August 2018 from the DWER Contaminated Sites Branch regarding the proposal for additional landfill cells within the Premises. Considering the depth to the groundwater table and low rainfall combined with high evaporation rates in the local area, it was advised that the proposed expansion of the landfill is not likely to have a significant impact on the environmental risk profile of the site. It is noted that this advice was not based on a quantitative model.

### 11.7.6 Applicant/Licence Holder controls

This assessment has reviewed the controls proposed by the Applicant, set out in Table 17 below.

**Table 17: Applicant's proposed controls for landfill leachate**

Source	Control
Putrescible and contaminated solid waste disposed within the landfill	Low permeability in-situ soils
	General tipping area and animal carcass waste will be covered partially at least every second day, and covered entirely every week to the following cover depths: <ul style="list-style-type: none"><li>• General waste tipping area: a minimum 100mm of cover material.</li><li>• Animal carcass tipping area: a minimum of 300mm of cover material.</li></ul>
	At least 1m of cover material will be applied when the final landfill profile is achieved.

### 11.7.7 Key findings

**The Delegated Officer has reviewed the information regarding landfill leachate risk and has found:**

1. *While the in-situ soils appear to have a low permeability, there may also be natural pathways within the soils which have a higher permeability.*

### 11.7.8 Consequence

Considering the location of a nature reserve immediately adjacent to the Premises, if landfill leachate emissions occur, the Delegated Officer has determined that the emissions may cause low level off site impacts at a local scale. Therefore, the Delegated Officer considers the consequence of landfill leachate emissions to be **Moderate**.

### 11.7.9 Likelihood of Risk Event

#### Construction

Considering that the exposure of previously buried wastes during construction is not intended to occur, and considering the hydrogeological setting of the landfill, the Delegated Officer has determined that the likelihood of low level off site impacts due to landfill leachate emissions from construction activities may only occur in exceptional circumstances. Therefore the Delegated Officer considers the likelihood to be **Rare**.

#### Operation

Considering the reliance on in-situ soils for leachate containment and the hydrogeological setting of the landfill, the Delegated Officer has determined that low level off site impacts due to landfill leachate emissions could occur at some time. Therefore the Delegated Officer considers the likelihood to be **Possible**.

### 11.7.10 Overall rating of leachate emission and impact

#### Construction

The Delegated Officer has compared the consequence and likelihood ratings described above with the risk rating matrix (Table 12) and determined that the overall rating for the risk of landfill leachate emission and impact due to construction is **Medium**.

#### Operation

The Delegated Officer has compared the consequence and likelihood ratings described above with the risk rating matrix (Table 12) and determined that the overall rating for the risk of landfill leachate emission and impact due to operation is **Medium**.

## 11.8 Risk Assessment – Smoke

### 11.8.1 Description of smoke emission and impact

In the event of a fire at the Premises, smoke would be emitted from the Premises. Local fauna may be impacted within the adjacent nature reserve, and nearby residents may experience health and amenity impacts.

### 11.8.2 Identification and general characterisation of emission

Fire and smoke emissions are not anticipated during normal operations. Waste material stored within the Community Recycling Area, the green waste storage and the general landfilled waste may provide fuel sources if ignited. Spontaneous combustion of landfilled wastes and green waste may also occur due to temperature rise within the waste mass.

Tyres are not easily ignitable, however when on fire they are difficult to extinguish. The combustion of tyres typically results in a very hot fire and very large volumes of black smoke being generated.

### 11.8.3 Description of potential adverse impact from the emission

Smoke emissions from a fire within the Premises may cause health and amenity impacts when inhaled. There are two residences located 670m south east and 870m west of the Premises, and the residential area of Wundowie located 1300m north west of the Premises.

Smoke emissions may also impact local fauna within the Kwolyinine Nature Reserve immediately surrounding the Premises.

### 11.8.4 Criteria for assessment

There are no specific criteria for assessment which apply to fire and smoke. The general provisions of the EP Act make it an offence to cause or allow unreasonable emissions that unreasonably interfere with the health, welfare, convenience, comfort or amenity of any person.

Guidance regarding the storage of tyres is provided within the Department of Fire and Emergency Services Guidance Note: GN02 which recommends maximum tyre stack dimensions (3.7m in height, 60m<sup>3</sup> in area or 12.5 tonnes in weight) and separation distances between stacks (at least 2.5m).



### 11.8.5 Applicant/Licence Holder controls

The Applicant has proposed the following controls which contribute to the prevention or control of a fire:

- Fully fenced boundary and lockable gate to prevent unauthorised access.
- Some degree of waste compaction achieved through the front end loaded driving over deposited waste as the tip face progresses.
- Fire extinguishers are located within the Premises and clearly marked.
- A water tank with pump and hose is located next to the gatehouse.
- A 3m wide fire break is maintained along the fence line within the Premises.
- Segregation of flammable materials such as green waste and tyres by a minimum of 6m of clear space from each other and stored in small stockpiles not exceeding 10m long by 10m wide or 100m<sup>2</sup> and 3m in height, and a minimum of 10m between individual stockpiles.
- Separation of flammable materials from the active landfill tipping area by a minimum of 10m and a minimum of 35m from the Premises boundary.
- Removing recyclable materials from the site as soon as possible and not having large stockpiles of flammable recyclable materials on the Premises.
- General tipping area waste will be covered entirely every week with 100mm of cover material.
- Active inspection of incoming waste to attempt to remove potential ignition sources from the waste prior to disposal at the tipping area.
- Maintaining an available stockpile of soil available to smother a fire within the waste mass.

### 11.8.6 Key findings

**The Delegated Officer has reviewed the information regarding smoke emission and impact and has found:**

1. *Smoke resulting from a tyre fire may present additional risk of impacts to receptors, however given the limited number of tyres stored within the Premises (a maximum of 200 at any one time) this is not considered to significantly increase the overall smoke emission and impact risk from the Premises.*

### 11.8.7 Consequence

If smoke emissions occur, the Delegated Officer has determined that the smoke may cause low-level offsite impact to local fauna, mid-level impact to amenity and occasional medical treatment for nearby residents. Therefore, the Delegated Officer considers the consequence of smoke emissions to be **Moderate**.

### 11.8.8 Likelihood of Risk Event

Considering the location of nearby residences, and the storage of green waste for long periods, the Delegated Officer has determined that a mid-level impact to amenity and occasional medical treatment due to smoke emissions may occur at some time. Therefore, the Delegated Officer considers the likelihood of to be **Possible**.



### 11.8.9 Overall rating of smoke emission and impact

The Delegated Officer has compared the consequence and likelihood ratings described above with the risk rating matrix (Table 12) and determined that the overall rating for the risk of smoke emissions is **Medium**.

## 11.9 Risk Assessment – Contaminated fire suppression water

### 11.9.1 Description of contaminated fire suppression water emission and impact

Water from fire suppression activities within Premises in the case of a fire may become contaminated due to contact with waste, and may leave the Premises via interflow within the top section of the soil profile or via overland flow. Contaminated fire suppression water emissions may result in off-site soil contamination and impact to flora and fauna health. In the event of a fire at the Premises, smoke would be emitted from the Premises.

### 11.9.2 Identification and general characterisation of emission

Fire suppression water emissions are not anticipated during normal operations. In the event of a fire at the Premises, large amounts of water and other firefighting products may be used to extinguish the fire.

Waste material stored within the Community Recycling Area (including tyres), the green waste storage and the general landfilled waste may provide fuel sources. Fire suppression water emissions may contain various debris and contaminants, depending on the material that has been burnt.

### 11.9.3 Description of potential adverse impact from the emission

Overland flow or interflow (lateral flow within the soil profile) of contaminated fire suppression water may result in discharges outside of the Premises boundary. This can directly contaminate the soils of the adjacent nature reserve, and may cause a detrimental impact on the health of flora and fauna through contact with the contaminated water or impacted soils.

### 11.9.4 Criteria for assessment

The DWER guideline *Assessment and Management of Contaminated Sites* (DER 2014) provides relevant assessment levels for water, soil and sediment.

### 11.9.5 Applicant/Licence Holder controls

This assessment has reviewed the controls proposed by the Applicant, set out in Table 18 below. These controls have been proposed by the application in relation to the risk of contaminated stormwater, however they would also apply to contaminated fire suppression water.

**Table 18: Applicant's/Licence Holder's proposed controls for contaminated fire suppression water**

Source	Control
Putrescible and contaminated solid waste disposed at tipping areas	Uncapped areas of the landfill are shaped so that any contaminated surface water is contained within the landfill area.
General stormwater flow within the Premises	<p>Unlined stormwater retention pond in downgradient corner of the Premises (north western corner) to act as a sediment trap prior to discharge to the adjacent nature reserve.</p> <p>Defined drains leading to the retention pond are proposed for the future landfill closure stage, however are not proposed for the current operation of the Premises.</p>

### 11.9.6 Consequence

Considering the location of a nature reserve immediately adjacent to the Premises, if contaminated fire suppression water emissions occur, the Delegated Officer has determined that the emissions may cause a low level off site impacts at a local scale. Therefore, the Delegated Officer considers the consequence of contaminated stormwater emissions to be **Moderate**.

### 11.9.7 Likelihood of Risk Event

Considering that a fire would need to occur to generate this emission, the Delegated Officer has determined that the likelihood of low level off site impacts due to contaminated fire suppression water emissions may only occur in exceptional circumstances. Therefore the Delegated Officer considers the likelihood to be **Rare**.

### 11.9.8 Overall rating of contaminated fire suppression water emission and impact

The Delegated Officer has compared the consequence and likelihood ratings described above with the risk rating matrix (Table 12) and determined that the overall rating for the risk of smoke emissions is **Medium**.

## 11.10 Risk Assessment – Windblown waste

### 11.10.1 Description of windblown waste emission and impact

Windblown waste from the landfilling activities may be spread over a wide area by wind movement impacting public amenity and potentially altering local ecosystems.

### 11.10.2 Identification and general characterisation of emission

Windblown waste from landfilling municipal waste, especially light items such as paper, plastic film and plastic bags can be spread over a wide area by wind movement. The rate of windblown waste emissions from landfilling activities will be dependent on the waste type, ambient weather and efficiency of controls measures within the Premises.

### 11.10.3 Description of potential adverse impact from the emission

Windblown waste can result in potential nuisance impacts including degradation to the aesthetic value of local properties as well as potential injury or death of fauna within local ecosystems.

### 11.10.4 Criteria for assessment

There is no specific criteria for assessment relating to windblown waste.

### 11.10.5 Applicant/Licence Holder controls

The Applicant has proposed the following controls for windblown waste emissions:

- Vehicles carrying waste into the Premises will be covered.
- Premises boundary fencing will be maintained.
- Windblown waste within the Premises will be collected on a regular basis.
- Windblown waste outside the Premises will be collected (frequency unspecified).
- Maintain a limited tipface area for general waste deposition.
- Waste deposited in the general waste tipping area will be covered partially at least every second day, and covered entirely every week with a minimum depth of 100mm of cover material.

### 11.10.6 Consequence

If windblown waste emissions occur, then the Delegated Officer has determined that windblown waste emissions may cause a minimal impact on the fauna at a local scale, and may cause a low-level impact to amenity at a local scale. Therefore, the Delegated Officer considers the consequence of windblown waste emissions to be **Minor**.

### 11.10.7 Likelihood of Risk Event

Due to the distance to residences, the Delegated Officer has determined that amenity impacts due to windblown waste will probably not occur in most circumstances.

Due to the location of a nature reserve immediately bordering the Premises, and the application of only partial cover every second day, the Delegated Officer has determined that minimal impacts to local fauna due to windblown waste could occur at some time. Therefore, the Delegated Officer considers the likelihood to be **Possible**.

### 11.10.8 Overall rating of windblown waste emission and impact

The Delegated Officer has compared the consequence and likelihood ratings described above with the risk rating matrix (Table 12) and determined that the overall rating for the risk of windblown waste emissions is **Medium**.

## 11.11 Risk Assessment – Pests and vermin

### 11.11.1 Description of pests and vermin emission and impact

The general waste and animal carcass landfilling at the site may provide a breeding habitat for rats, flies, cockroaches, mosquitos and scavenger species. If uncontrolled, these vermin can be a nuisance and affect public health and surrounding ecosystems.

### 11.11.2 Identification and general characterisation of emission

Pests for which waste can provide a habitat may travel between the premises and the surrounding environment.

### 11.11.3 Description of potential adverse impact from the emission

Pests populations act as disease vectors or can cause changes in local ecosystems. Sensitive receptors may be exposed to airborne (mosquitos and flies) or land borne (rodents and insects) disease vectors.

### 11.11.4 Criteria for assessment

There are no specific criteria for the assessment of pests and vermin impacts. General provisions of the EP Act apply.

### 11.11.5 Applicant/Licence Holder controls

The Applicant has proposed the following controls for vermin/pathogen impacts:

- Deposited general waste will be covered partially every day or second day, and covered entirely every week to a depth of 100mm.
- Animal carcass will be covered partially every day or second day, and covered entirely every week to a depth of 300mm.
- Implement programs to manage vermin when if and when necessary.

### 11.11.6 Consequence

The Delegated Officer has determined that the impact of pests and vermin may present a minimal off-site impact at a local scale and a low level impact to amenity. Therefore, the Delegated Officer considers the consequence of pests and vermin to be **Minor**.

### 11.11.7 Likelihood of Risk Event

The Delegated Officer has determined that a minimal off-site impact and a low level amenity impact due to pests and vermin could occur at some time. Therefore, the Delegated Officer considers the likelihood to be **Possible**.

### 11.11.8 Overall rating of pests and vermin emission and impact

The Delegated Officer has compared the consequence and likelihood ratings described above with the risk rating matrix (Table 12) and determined that the overall rating for the risk of pests and vermin is **Medium**.

## 11.12 Risk Assessment – Asbestos fibres

### 11.12.1 Description of asbestos fibres emission and impact

The handling of asbestos waste or construction and demolition waste received at the Premises has the potential to release asbestos fibres. There is the potential for asbestos fibres to be contained within the construction and demolition waste received due to the widespread use of asbestos in Australian buildings and structures from the 1950s through to 1990.

Asbestos is a hazardous material and the release of asbestos fibres may cause health impacts for people nearby the Premises.

### 11.12.2 Identification and general characterisation of emission

The frequency and time of exposure of receptors to asbestos fibres would vary depending on the degree of containment (bagging or wrapping) of asbestos being unloaded at the Premises, the degree of contamination of the other wastes unloaded at the Premises, and weather conditions.

Asbestos fibres have the potential to impact public health when inhaled; severe health impacts include asbestosis and mesothelioma.

The receptors most affected by asbestos fibre emissions from the Premises would be:

- members of the public who are accessing the Premises for waste drop off;
- members of the public who may access the nature reserve which surrounds the Premises;
- the occupants of two residences located approximately 670m and 870m from the Premises; and
- the occupants within a residential area approximately 1300m from the Premises.

### 11.12.3 Criteria for assessment

The *Environmental Protection (Controlled Waste) Regulations 2004* include requirements for the transportation of asbestos material. These requirements include the separation of asbestos from other materials for disposal and for wrapping or containing the material containing asbestos in a manner that prevents asbestos fibres entering the atmosphere during transport.

The *Health (Asbestos) Regulations 1992* include similar requirements to ensure that asbestos is separated from other material for disposal where reasonably practicable and is wrapped in plastic or otherwise contained so as to prevent asbestos fibres entering the atmosphere.

The general provisions of the EP Act make it an offence to cause or allow unreasonable emissions that unreasonably interfere with the health, welfare, convenience or amenity of any person.

### 11.12.4 Applicant/Licence Holder controls

This assessment has reviewed the controls proposed by the Applicant, set out in Table 19 below.

**Table 19: Applicant’s proposed controls for asbestos fibre emissions**

Source	Controls	Operation details
Waste receipt for landfilling	Asbestos awareness training	Asbestos awareness training for all new site personnel and refresher training every two years. A record of attendance to be maintained.
	Pre-acceptance procedures	Information provided to the public and the site entrance sign advise that asbestos must be: <ul style="list-style-type: none"> <li>• wrapped;</li> <li>• kept separate from other waste; and</li> <li>• declared upon entry to the Premises.</li> </ul>
	General waste loads - Load inspection prior to	The surface of all loads inspected for undeclared asbestos waste prior to unloading at the general

Source	Controls	Operation details
	and during unloading	<p>waste tipping area.</p> <p>All loads are inspected for undeclared asbestos waste during unloading at the general waste tipping area by the Facility Operator.</p> <p>If any undeclared asbestos is identified at either stage and the customer is still on the Premises:</p> <ul style="list-style-type: none"> <li>• the load is rejected from the Premises; or</li> <li>• if the asbestos is able to be easily wrapped or bagged, the customer is provided the opportunity to separate the asbestos waste and appropriately wrap or bag the waste with wrapping material or bags provided by the Shire of Northam at the location of the down ramp to the asbestos pit.</li> </ul> <p>If the customer is no longer on the Premises at the time the undeclared asbestos is discovered the load is isolated and additional inspections undertaken to assess the degree of asbestos contamination.</p> <p>Where an asbestos contaminated load only contains a few random large pieces of asbestos containing material, the asbestos is removed and the remainder of the load is landfilled in the general landfill.</p> <p>Where the asbestos waste is not easily removed or the load contains asbestos fines or fibres or fibrous asbestos, the complete load is treated as asbestos contaminated.</p>
	Asbestos waste to be wrapped or bagged	<p>Declared asbestos loads inspected to confirm appropriate wrapping or bagging.</p> <p>Asbestos waste which is not appropriately wrapped or bagged is either:</p> <ul style="list-style-type: none"> <li>• rejected from the Premises; or</li> <li>• if the asbestos is able to be easily wrapped or bagged, the customer is provided the opportunity to wrap or bag the waste with wrapping material or bags provided by the Shire of Northam at the location of the down ramp to the asbestos pit.</li> </ul> <p>All undeclared asbestos waste which will not be rejected from the Premises is to be wrapped or bagged by the customer or facility operator and taken directly to the asbestos pit.</p> <p>Double wrap and tape asbestos in black plastic sheeting (minimum 200µm thickness).</p> <p>In the case of asbestos contaminated soil or asbestos fines, material is to be damp and packaged in suitable sealed containers (bulka bags, sealed bags).</p>

Source	Controls	Operation details
		Waste to be labelled with a warning of asbestos as per the EP Controlled Waste Regulations, except where undeclared asbestos is identified within the Premises and is going to be immediately buried within the asbestos pit.
	Dedicated asbestos landfill pit	Maintain record of asbestos pit location – marked on map of the Premises with coordinates indicating extent of the pit
		All disposal at the pit is to be supervised or undertaken by the facility operator.
	Appropriate placement of asbestos at the asbestos pit	Avoiding tipping from a height.
	Cover applied within asbestos pit	Disposed asbestos covered with at least 1m of dense, inert, incombustible material as soon as practical after disposal but prior to the end of each working day.
	Recording loads of declared asbestos	All loads of declared asbestos arriving at the Premises are entered into the Asbestos Register. The following information: <ul style="list-style-type: none"> <li>• date;</li> <li>• customers name;</li> <li>• delivery vehicle registration number;</li> <li>• estimate the quantity of asbestos waste delivered; and</li> <li>• drop off location.</li> </ul>
	Recording loads containing undeclared asbestos	For any loads containing undeclared asbestos received, the following information is recorded: <ul style="list-style-type: none"> <li>• date;</li> <li>• customers name;</li> <li>• customers contact details;</li> <li>• location where the waste was generated;</li> <li>• vehicle registration number;</li> <li>• estimate of the quantity of asbestos waste; and</li> <li>• incident outcome (material rejected or removed from Premises, or wrapped or bagged by customer); and</li> <li>• drop off location if accepted.</li> </ul>
	Recording disposal within asbestos pit	Within two hours of completion of disposal, the below details are entered into the asbestos register:

Source	Controls	Operation details
		<ul style="list-style-type: none"> <li>• the date of burial;</li> <li>• the facility operators name, as the person that supervised or carried out the burial;</li> <li>• confirmation of 1m cover material applied; and</li> <li>• confirmation of burial within the asbestos pit, including grid coordinates of the location with reference to the plan of the landfill site.</li> </ul>

### 11.12.5 Consequence

If the emission of asbestos fibres occurs, then the Delegated Officer has determined that the impact of the exposure of receptors to asbestos fibres may be ongoing medical treatment or loss of life. Therefore, the Delegated Officer considers the consequence of asbestos fibres emission and impact to be **Severe**.

### 11.12.6 Likelihood of Risk Event

Considering that asbestos waste may potentially be wrapped/bagged within the Premises by customers (as per the Asbestos Management Plan), however this should be a rare occurrence, the Delegated Officer has determined that asbestos fibres being emitted and causing health impacts will probably not occur in most circumstances. Therefore, the Delegated Officer considers the likelihood of asbestos fibres emission and impact to be **Unlikely**.

### 11.12.7 Overall rating of asbestos fibres emission and impact

The Delegated Officer has compared the consequence and likelihood ratings described above with the risk rating matrix (Table 12) and determined that the overall rating for the risk of asbestos fibres emission and impact is **High**.



## 11.13 Summary of treatment of Risk Events

A summary of the risk assessment of the risk events set out above, with the appropriate treatment and control, are set out in Table 20 below.

**Table 20: Risk assessment summary**

	Description of Risk Event			Applicant controls	Risk rating	Regulatory controls (Conditions of Works Approval or Licence)
	Emission	Source	Pathway/ Receptor (Impact)			
1.	Dust	Pit excavation Vehicle movements Waste unloading Covering waste Shredding greenwaste	Health and amenity impact at nearby residences	Restricted vehicle speed and minimise vehicle movements  Water sprays if required  Cease operation if required	(Construction and operation) Slight consequence Unlikely <b>Low Risk</b>	Works Approval and Licence condition requiring:  No visible dust generated by the Premises activities crosses the Premises boundary.
2.	Odour	Pit excavation exposing previously buried waste  Storage of recyclables and greenwaste  Landfilling general waste and animal mortalities	Air/ windborne  Amenity impact at nearby residences	Delivery vehicles covered  Covering of tipped waste	<u>Construction</u> Minor consequence Rare <b>Low Risk</b>  <u>Operation</u> Minor consequence Unlikely <b>Medium Risk</b>	Works Approval condition requiring:  Covering of any waste which is exposed during excavation.  Licence conditions requiring:  Cover material applied to animal carcasses daily (300mm cover depth) and other wastes (100mm cover depth) within three days of being deposited.

	Description of Risk Event			Applicant controls	Risk rating	Regulatory controls (Conditions of Works Approval or Licence)
	Emission	Source	Pathway/ Receptor (Impact)			
3.	Landfill leachate	<p>Pit excavation exposing previously buried waste</p> <p>Disposal of non-inert waste within landfill</p>	<p>Seepage through soil and movement down-gradient</p> <p>Impact to soils, flora and fauna within nature reserve</p>	<p>Low permeability in-situ soils</p> <p>Covering of tipped waste</p> <p>Final cover</p>	<p><u>Construction</u></p> <p>Moderate consequence</p> <p>Rare</p> <p><b>Medium Risk</b></p> <hr/> <p><u>Operation</u></p> <p>Moderate consequence</p> <p>Possible</p> <p><b>Medium Risk</b></p>	<p>Works Approval condition requiring:</p> <p>Covering of any waste which is exposed during excavation.</p> <p>Licence conditions requiring:</p> <p>Cover material applied to animal carcasses daily (300mm cover depth) and other wastes (100mm cover depth) within three days of being deposited.</p> <p>Final landfill cover of at least 1m required.</p>
4.	Contaminated stormwater	<p>Storage of recyclables, greenwaste and scrap metal</p> <p>Disposal of non-inert waste at tipping area</p>	<p>Seepage through soil and lateral movement or overland flow</p> <p>Impact to soils, flora and fauna within nature reserve</p>	<p>Containment and undercover storage of most recyclables</p> <p>Diversion of uncontaminated stormwater around landfill</p> <p>Retention basin</p>	<p>Moderate consequence</p> <p>Unlikely</p> <p><b>Medium Risk</b></p>	<p>Licence conditions requiring:</p> <p>Stormwater to be diverted from waste storage areas.</p> <p>Stormwater which has come into contact with waste storage areas shall be retained on the Premises.</p>

	Description of Risk Event			Applicant controls	Risk rating	Regulatory controls (Conditions of Works Approval or Licence)
	Emission	Source	Pathway/ Receptor (Impact)			
5.	Smoke	Fire – upset conditions	Air/ windborne Surrounding nature reserve and nearby residents	Restricted access Fire extinguishers and water tank Storage of flammable wastes in small stockpiles and separated Landfill cover Stockpiled soil available for use	Moderate consequence Possible <b>Medium Risk</b>	Licence conditions requiring: Restrict the storage of tyres to 200 at any one time. Maximum tyre stack dimensions specified. Maintenance of security fencing and regular inspections of fencing. Repair where damaged. Gates to be locked when Premises is unattended. Separation distances between stockpiles of green waste, tyres and the tipping face. Maximum stockpile size for green waste. DWER notified in event of a fire.
6.	Contaminated fire suppression water	Fire suppression activities – upset conditions	Seepage through soil and lateral movement or overland flow  Impact to soils, flora and fauna within nature reserve	Retention basin	Moderate consequence Rare <b>Medium Risk</b>	Licence conditions requiring: Fire suppression water must be retained on the Premises.
7.	Windblown waste	Landfilling general waste	Air/ windborne Harm to local fauna	Delivery vehicles covered Collection of windblown waste Restricted tipface area Covering of tipped	Minor consequence Possible <b>Medium Risk</b>	Licence conditions requiring: Restriction of tipping face size. Cover material applied to animal carcasses daily (300mm cover depth) and other wastes (100mm cover depth) within three days of being deposited. Windblown waste is prevented from escaping the

	Description of Risk Event			Applicant controls	Risk rating	Regulatory controls (Conditions of Works Approval or Licence)
	Emission	Source	Pathway/ Receptor (Impact)			
				waste		Premises and is collected at least weekly.
8.	Vermin and pathogens	Landfilling general waste and animal carcass	Air and land via insects, birds and rodents  Amenity impacts and pest associated diseases	Covering of tipped waste  Potential programs to manage vermin	Minor consequence Possible <b>Medium Risk</b>	Licence conditions requiring:  The implementation of measures to prevent infestations of pests, flies and vermin.  Cover material applied to animal carcasses daily (300mm cover depth) and other wastes (100mm cover depth) within three days of being deposited.
9.	Asbestos fibres	Landfilling asbestos waste  Landfilling other waste types potentially containing asbestos	Air/ windborne - inhalation  Health impact	Asbestos awareness training  Pre-acceptance procedures  Load inspection  Wrapping/bagging requirements  Dedicated asbestos landfill pit  Cover applied within asbestos pit  Record keeping	Severe consequence Unlikely <b>High Risk</b>	Licence conditions requiring:  Disposal of asbestos within a designated area.  Cover of 1m or more applied to tipped asbestos by the end of the working day.  Maintenance of a register of burials.  Previously buried asbestos waste shall not be disturbed.

## 12. Clearing assessment

The Clearing Permit Decision Report, which provides the assessment and decision making regarding the proposed clearing and the conditions for clearing, is included as Attachment 1 of this Decision Report. The conditions within the Clearing Permit Decision Report are included within the Works Approval.

## 13. Applicant's comments

The Applicant was provided with the draft Decision Report and draft Licence and Works Approval on 26 September 2018. The Applicant provided comments which are summarised, along with DWER's response, in Appendix 2.

## 14. 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 and Issued Licence will be granted subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

**A/MANGER WASTE INDUSTRIES  
REGULATORY SERVICES (ENVIRONMENT)**  
Delegated Officer  
under section 20 of the *Environmental Protection Act 1986*

## Appendix 1: Key documents

	Document title	In text ref	Availability
1.	Website: Bureau of Meteorology, Climate Data.	BOM 2018	Accessed 2018 at <a href="http://www.bom.gov.au/climate/data/">http://www.bom.gov.au/climate/data/</a>
2.	Department of Water and Environmental Regulation, December 2016. <i>Environmental Standard - Approved manner for estimating the volume or weight of waste received at and disposed of to landfills.</i>	-	accessed at <a href="http://www.dwer.wa.gov.au">www.dwer.wa.gov.au</a>
3.	Department of Environment Regulation, Western Australia, 2014. <i>Assessment and management of contaminated sites, Contaminated sites guidelines.</i>	DER 2014	accessed at <a href="http://www.dwer.wa.gov.au">www.dwer.wa.gov.au</a>
4.	DWER Internal Memorandum Miller, A. Senior Manager Contaminated Sites, <i>Memorandum Re: Inkpen Road Waste Management Facility – Shire of Northam – W6124/2018/1 New Works Approval Application</i> , 30 August 2018.	-	DWER records (A1715954)
5.	Website: Department of Primary Industries and Regional Development	DPIRD 2018	Accessed 2018 at <a href="https://www.agric.wa.gov.au/weather-stations-and-radar">https://www.agric.wa.gov.au/weather-stations-and-radar</a>
6.	IW Projects, prepared for Shire of Northam, 17 Jan 2017. <i>Shire of Northam, Inkpen Road Waste Management Facility, Facility Management Plan.</i>	-	DWER records (A1705574)
7.	Talis Consultants, <i>Environmental Assessment and Management Plan, Inkpen Road Waste Management Facility</i> , November 2017.	Talis Consultants 2017	DWER records (A1574671)
8.	Ronan Cullen, Talis Consultants, <i>Shire of Northam – Inkpen Road Waste Management Facility</i> , 29 January 2018.	Talis Consultants 2018a	DWER records (A1603733)
9.	Colleen Pelletier, Talis Consultants, <i>Clarification required – Inkpen Road Waste Management Facility application – Response</i> , 27 April 2018 [Email].	Talis Consultants 2018b	DWER records (A1662779)
10.	Website: Water Information Reporting database. Department of Water and Environmental Regulation.	WIR 2018	Accessed data 2018 at <a href="http://wir.water.wa.gov.au/Pages/Water-Information-Reporting.aspx">http://wir.water.wa.gov.au/Pages/Water-Information-Reporting.aspx</a>
11.	DER, July 2015. <i>Guidance Statement: Regulatory principles.</i> Department of Environment Regulation, Perth.	-	accessed at <a href="http://www.dwer.wa.gov.au">www.dwer.wa.gov.au</a>
12.	DER, October 2015. <i>Guidance Statement: Setting conditions.</i> Department of Environment Regulation,	-	

	Perth.		
13.	DER, August 2016. <i>Guidance Statement: Licence duration</i> . Department of Environment Regulation, Perth.	-	
14.	DER, February 2017. <i>Guidance Statement: Risk Assessments</i> . Department of Environment Regulation, Perth.	-	
15.	DER, February 2017. <i>Guidance Statement: Decision Making</i> . Department of Environment Regulation, Perth.	-	
16.	DFES, Guidance Note: <i>GN02 Bulk Storage Of Rubber Tyres Including Shredded And Crumbed Tyres</i>	-	Accessed at <a href="https://www.dfes.wa.gov.au/regulationandcompliance/buildingplanassessment/Pages/publications.aspx">https://www.dfes.wa.gov.au/regulationandcompliance/buildingplanassessment/Pages/publications.aspx</a>

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

Condition	Summary of Licence Holder comment	DWER response
2 – Waste acceptance	Request that E-waste collection is added to the Licence for recycling. At another facility e-waste is stored in a sea container and transported to Total Green Recycling for processing. The Applicant envisages this would be something we would like to undertake at the site in the next few years.	<p>Conditions 2, 4 and 18 have been amended to include the acceptance, storage and recording of e-waste.</p> <p>A definition for E-waste has also been included in the Definitions section of the Licence (Table 1).</p> <p>E-waste stored in an enclosed container (e.g. shipping container) or in another container stored undercover will be prevented from contaminating stormwater and doesn't present any other emission risks.</p>
4 – Processing and storage requirements	Request that Table 4 is corrected as it states that less than 100 tyres may be stored at any one time, however the Licence includes Category 57: Used Tyre Storage.	<p>DWER acknowledges that this was an error and has amended Table 4 to change the restriction of 100 tyres to 200 tyres as per the production/design capacity specified within the Application.</p> <p>Restricting the storage capacity to 200 tyres is intended to ensure that tyres cannot be continuously accumulated at the Premises.</p> <p>Due to the above change, the Delegated Officer has determined that an additional condition is required which specifies a maximum tyre stack size, in accordance with the guidance provided in the Department of Fire and Emergency Services Guidance Note: GN02 (see Key Documents in Appendix 1). This condition has been added to the Licence.</p>
16 (in draft Licence) –	Request change to cover requirement for	Condition 17 has been amended to remove the requirement for the covering of Contaminated Solid



Condition	Summary of Licence Holder comment	DWER response
Landfill cover	<p>Contaminated Solid Waste, Inert Waste Type 2 and Putrescible waste. Propose these wastes are covered with 100mm of cover material two times per week, on the basis that the cover of 150mm of cover material applied by the end of the working day seems fairly excessive for a site that accepts approximately 3000 tonnes (up to 5000 tonnes) of waste per year.</p> <p>Also note the site is only open 6 days per week meaning the waste is covered entirely every 3 days.</p>	<p>Waste, Inert Waste Type 2 and Putrescible waste with 150mm of cover material by the end of the working day. This has been replaced with the requirement to cover these wastes with 100mm of cover material twice per working week (6 day working week).</p> <p>The Delegated Officer considers that this is a sufficient cover frequency considering the small volumes of waste accepted for landfilling at the Premises and in the context of the less frequent covering specified within the Rural Landfill Regs.</p>
17 and 18 (in draft Licence) – Record-keeping	Request that the units of measurement for the waste acceptance and waste removal record keeping be changed from tonnes to m <sup>3</sup> as there is no weighbridge on site.	<p>Table 6 and Table 7 have been amended to change the units to m<sup>3</sup>.</p> <p>Table 8 has been amended to require the annual volumes of waste received and removed from the Premises to be provided in m<sup>3</sup> and tonnes, and for the conversion factor used to be provided. DWER requires the waste acceptance volumes to be provided so that compliance with the waste acceptance limit can be verified.</p>
21 (in draft Licence) - Reporting	Request that fire incidents are required to be reported to DWER within twenty four hours rather than two hours.	<p>Condition 21 has been amended to make it clear that DWER must be notified within 2 hours of the Licence Holder becoming aware of the fire, rather than the fire 'being discovered'.</p> <p>The Delegated Officer considers that 2 hours is a reasonable timeframe considering that the storage of tyres presents an addition smoke emissions risk in the event of a fire and up to 200 tyres can be stored on the Premises at any one time.</p>
Decision Report – section 11.8.6 Key	Correction of error in key finding which states that less than 100 tyres will be stored on the Premises	DWER acknowledges that this is an error and has amended the key finding to refer to a maximum of 200 tyres being stored at one time.

Condition	Summary of Licence Holder comment	DWER response
Findings	at any one time.	

# Attachment 1: Clearing Permit Decision Report

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## 1. Application details

### 1.1. Permit application details

Permit application No.: 7921/1  
Permit type: Works Approval / Licence Assessment

### 1.2. Applicant details

Applicant's name: Shire of Northam  
Application received date: 07 December 2017

### 1.3. Property details

Property: Lot 28734 on Plan 215405, Copley  
Local Government Authority: Northam, Shire of  
Localities: Copley

### 1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	Purpose category:
2.66		Mechanical Removal	Waste disposal/management

## 2. Site Information

**Clearing Description** The application is to clear 2.66 hectares of native vegetation within the above mentioned localities for the purpose of expanding a waste disposal site (Figure 1).

**Vegetation Description** The vegetation under application is mapped within the Yalanbee complex described as; Mixture of open forest of *Eucalyptus marginata* subsp. *thalassica-Corymbia calophylla* and woodland of *Eucalyptus wandoo* on lateritic uplands in semiarid to perarid zones (Mattiske and Havel, 1998).

**Vegetation Condition** Vegetation condition within this assessment has been assessed using the vegetation condition scale developed by Keighery (1994). All references to vegetation condition throughout this assessment therefore, reference this scale.

The vegetation condition has been assessed using digital aerial imagery and an image supplied by the applicant. The vegetation is in a Good condition: Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate.

**Local area** The local area is defined as 10 kilometres from edge of the application area (Figure 2).



Fig 1: Application area.

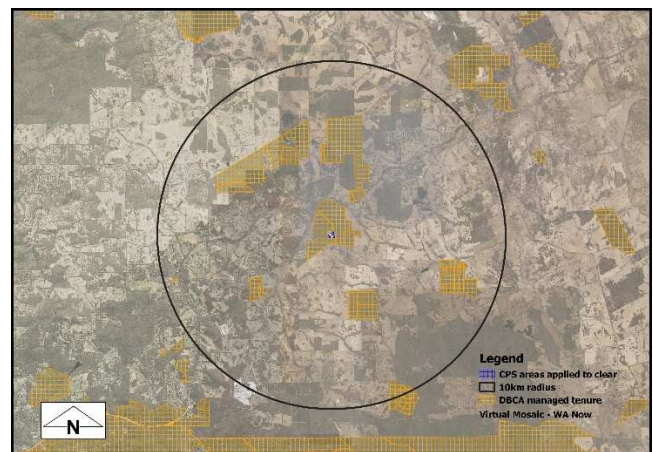


Figure 2: Local area.

## 3. Minimisation and mitigation measures

The applicant has not provided minimisation and mitigation measures.

#### 4. Assessment of application against clearing principles

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

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

Aerial imagery indicates the local area is approximately 37 per cent vegetated. The application area is surrounded by Kwolyinine Nature Reserve, an approximately 550 hectare reserve. Kwolyinine Nature Reserve adjoins smaller reserves in the local area. As assessed within Principle (e), the vegetation under application is not a significant remnant within a highly cleared landscape.

As assessed within Principles (c) and (d), no threatened ecological communities (TEC) or rare flora have been mapped within the local area. Given this, they are not likely to be present within the application area. No Priority Ecological Communities (PEC) have been recorded within the local area.

Twelve flora species listed as Priority 3 or 4 by the Department of Biodiversity, Conservation and Attractions (DBCA) have been recorded within the local area. Priority 3 and 4 species are defined as species that are not currently under threat and are represented in conservation estate. If present within the application area, populations are likely to extend into the adjoining large areas of native vegetation. Given this, and the low conservation status of the species, they are not likely to be impacted by the proposed clearing.

One Priority 2 flora species has been recorded within the local area. As the habitat preferences for this species are not present within the application area, it is not likely to be present or impacted by the proposed clearing.

As assessed within Principle (b), the proposed clearing is not likely to contain significant habitat for endemic fauna. Although nesting habitat for threatened black cockatoos may be present within the application area, given the extent of adjoining and suitable habitat within the local area; the habitat present within the application area is not likely to be significant to this species. A fauna management condition requiring potential habitat trees within the application area to be surveyed prior to clearing will ensure that the potential risk to black cockatoos individuals present at the time of clearing are not impacted.

Given the above, the proposed clearing is not likely to be at variance to this Principle.

##### (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.

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

Seven fauna species listed as rare or likely to become extinct under the *Wildlife Conservation Act 1950* (WC Act) have been recorded within the local area:

- Baudin's cockatoo (*Calyptorhynchus baudinii*);
- forest red-tailed black cockatoo (*Calyptorhynchus banksii* subsp. *naso*);
- Carnaby's cockatoo (*Calyptorhynchus latirostris*);
- chuditch (*Dasyurus geoffroi*);
- woylie (*Bettongia penicillata* subsp. *ogilbyi*);
- shield-backed trapdoor spider (*Idiosoma nigrum*); and
- bilby (*Macrotis lagotis*) (DBCA, 2007-).

Four priority fauna species have been recorded within the local area (DBCA, 2007-):

- quenda (*Isoodon obesulus*) (Priority 4);
- Western false pipistrelle (*Falsistrellus mackenziei*) (Priority 4);
- water-rat (*Hydromys chrysogaster*) (Priority 4); and
- Western Brush Wallaby (*Macropus irma*) (Priority 4).

Aerial imagery indicates the local area is approximately 37 per cent vegetated. The application area is surrounded by Kwolyinine Nature Reserve, an approximately 550 hectare reserve. Kwolyinine Nature Reserve adjoins smaller reserves in the local area. As assessed within Principle (e), the vegetation under application is not a significant remnant within a highly cleared landscape.

According to the Commonwealth Department of the Environment and Energy (DotEE) *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) referral guidelines for Western Australia's three threatened black cockatoo species, the proposed clearing falls within the breeding range for Carnaby's cockatoo (DotEE, 2012). It is also in the distribution range for forest red-tailed black cockatoo and Baudin's cockatoo (DotEE, 2012). All three species of black cockatoo have been recorded in the local area (DBCA, 2007-). Carnaby's cockatoo is listed as endangered under both the WC Act and the EPBC Act. Baudin's cockatoo is listed as endangered under the WC Act and vulnerable under the EPBC Act and forest red-tailed black cockatoo is listed as vulnerable under both the WC Act and EPBC Act.

Carnaby's cockatoo nests in large hollows of eucalyptus trees and forages on the seeds and flowers of the Proteaceae family including *Banksia*, *Hakea*, and *Grevillea* as well as species from *Allocasuarina* and *Eucalyptus* (Valentine and Stock, 2008). Black cockatoos generally forage within six kilometres of a night roost site and, while nesting, within a 12 kilometre radius of their nest site (DotEE, 2013).

Carnaby's cockatoo is said to nest in any species of eucalypt with a suitable hollow (Department of Parks and Wildlife, 2013), while forest red-tailed black cockatoo is known to nest in the large hollows of marri, jarrah and karri (Johnstone and Kirkby, 1999) and Baudin's cockatoo nests in mature trees such as marri, karri, jarrah and wandoo in the lower southwest of Western Australia (DEC, 2008). Given this, the application area may contain suitable breeding habitat for Carnaby's and forest red-tailed black cockatoos. Given the extent of similarly suitable habitat within the local area and adjoining the application area, breeding habitat would only be significant if being utilised at the time of clearing.

Given the extent of vegetation within the local area and adjoining the application area, the vegetation under application is not likely to form significant foraging habitat for these species.

The chuditch is listed as vulnerable under the EPBC Act and WC Act. Chuditch travel large distances and have a large home range. Given this, the retention of vegetation corridors is noted as an important requirement of the species (Department of Parks and Wildlife, 2012). The habitat preferences of this species are present within the application area as well as surrounding vegetation (Menkhorst and Knight, 2004). As the proposed clearing will not impact on a linkage, is of a small size when compared to the adjoining remnant and is adjoining previous disturbance, the vegetation under application is not likely to form significant habitat for this species.

The shield-backed trapdoor spider is listed as 'vulnerable' under the WC Act. This species is distributed throughout the mid-west of Western Australia in Acacia and Eucalypt woodlands on heavy soils. Given this, the application area may provide suitable habitat for this species (Western Wildlife, 2012). As the proposed clearing will not impact on a linkage, is of a small size when compared to the adjoining remnant and is adjoining previous disturbance, the vegetation under application is not likely to form significant habitat for this species.

Since the Woylie and Bilby have been recorded within the local area they have undergone significant range contraction and no longer occur within the local area. Given this, they are not likely to be impacted by the proposed clearing.

While the application area may provide suitable habitat for quenda, western false pipistrelle and western brush wallaby, given their wide distribution through south western Australia and the extent of adjoining habitat, the proposed clearing is unlikely to have a significant impact on the conservation status of these species. As habitat for the water-rat (permanent water) is not present within the application area, it is not likely to be impacted by the proposed clearing.

Noting the presence of adjoining native vegetation, no ecological linkages will be impacted by the proposed clearing. The proposed clearing is not likely to impact on fauna moving through the landscape.

Given the above, the proposed clearing is not likely to be at variance to this Principle. A fauna management condition requiring potential habitat trees within the application area to be surveyed prior to clearing will ensure that the potential risk to black cockatoos individuals present at the time of clearing are not impacted.

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

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

According to available databases, no rare flora species have been recorded within the local area. The closest known record is located approximately 11 kilometres from the application area. This species is known to grow on and around granite outcrops, often in rock crevices (Western Australian Herbarium, 1998- ).

Suitable habitat for this species is not likely to be located within the application area.

Given the above, the proposed clearing is not likely to be at variance to this Principle.

**(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.**

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

No TEC's have been recorded within the local area. Given this, the vegetation under application is not likely to comprise the whole or a part of, or be necessary for the maintenance of a TEC. The proposed clearing is not likely to be at variance to this Principle.

**(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.**

**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).

The local area retains approximately 37 per cent native vegetation. The application area is located within the Jarrah Forest Interim Biogeographic Regionalisation of Australia (IBRA) bioregion which retains approximately 54 per cent of its pre-European vegetation extents (Government of Western Australia, 2017).

The application area is mapped as Beard vegetation association 1006 which retains approximately 49 per cent pre-European vegetation extents within the Jarrah Forest IBRA bioregion. The application area is mapped as South West vegetation Yalanbee

complex which retains 66 per cent native vegetation (Government of Western Australia, 2016; Government of Western Australia, 2018). Given this, the proposed clearing does not occur within a highly cleared landscape.

The application area is surrounded by Kwolyinine Nature Reserve, an approximately 550 hectare reserve. Kwolyinine Nature Reserve that adjoins additional reserves in the local area. Given the size of the application area in comparison to the adjoining reserve, the vegetation within the application area is not significant to the reserve. As no ecological linkages will be impacted by the proposed clearing, it is not likely to impact on fauna moving through the landscape.

Given the above, the proposed clearing is not likely to be at variance to this Principle.

	Pre-European (ha)	Current Extent (ha)	Remaining (%)	Extent in DBCA Managed Lands (%)
<b>IBRA Bioregion</b>				
Jarrah Forest	4,506,660	2,416,018	54	69
<b>Beard Vegetation Association in Bioregion*</b>				
1006	44,908	21,795	49	46
<b>South West Forest Vegetation Complex**</b>				
Yalanbee	126,610	83,707	66	39
<b>Local area</b>				
10 kilometre radius	12,205	32,770	37	-

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

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

No watercourses or wetlands occur within the application area. The closest is mapped 1.2 kilometres from the application area. Given this, the proposed clearing is not likely to be at variance to this Principle.

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

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

As no watercourses are mapped within the application area, the area will remain surrounded by native vegetation and the cleared area will be maintained through the end land use; the proposed clearing is not likely to cause land degradation and is not likely to be at variance to this Principle.

**(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.**

**Proposed clearing may be at variance to this Principle**

The application area is surrounded by Kwolyinine Nature Reserve, an approximately 550 hectare reserve. Kwolyinine Nature Reserve that adjoins reserves in the local area. Given the size of the application area in comparison to the adjoining reserve, the vegetation within the application area is not significant to the reserve. As no ecological linkages will be impacted by the proposed clearing, it is not likely to impact on fauna movement through the landscape.

The proposed clearing may introduce weeds and dieback into the Kwolyinine Nature Reserve adjacent to the application area. Weed and dieback management conditions will mitigate the potential impact to the Kwolyinine Nature Reserve.

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

**(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.**

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

As no watercourses are mapped within the application area, the area will remain surrounded by native vegetation and the cleared area will be maintained through the end land use; the proposed clearing is not likely to cause deterioration in the quality of surface or underground water and is not likely to be at variance to this Principle.

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

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

As no watercourses are mapped within the application area, the area will remain surrounded by native vegetation and the cleared area will be maintained through the end land use; the proposed clearing is not likely to cause, or exacerbate, the incidence or intensity of flooding and is not likely to be at variance to this Principle.

## 5. Recommendation

### Recommendation

An assessment of the environmental impacts of the proposed clearing has been undertaken in accordance with Department of Water and Environmental Regulation's Regulatory Principles, taking into consideration the clearing principles contained in Schedule 5 of the *Environmental Protection Act 1986* (EP Act). It has been concluded that the proposed clearing may be at variance with Principle (h) and is not likely to be at variance to the remaining clearing principles. Section 62(1) of the EP Act provides for conditions to be placed on a works approval to prevent, control, abate or mitigate pollution or environmental harm. Recommended conditions are as follows:

#### 1. Clearing authorised

The works approval holder shall not clear more than 2.66 hectares of native vegetation within the area cross-hatched yellow on attached Plan 7921/1.

#### 2. Avoid, minimise and reduce the impacts and extent of 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.

#### 3. Weed and Dieback

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.

#### 4. Fauna management

- (a) Prior to undertaking any clearing authorised under this Permit, the Permit Holder shall engage a *fauna specialist* who shall identify *black cockatoo nesting tree(s)* suitable to be utilised by fauna species listed below:
  - (i) *Calyptorhynchus lateriosis* (*Carnaby's cockatoo*);
  - (ii) *Calyptorhynchus baudini* (*Baudin's cockatoo*); and
  - (iii) *Calyptorhynchus banksii naso* (*Forest Red-tailed Black Cockatoo*).
- (b) Prior to clearing, any habitat/ *black cockatoo nesting tree(s)* identified by condition 4(a) shall be inspected by a *fauna specialist* for the presence of fauna listed in condition 4(a).
- (c) Where a *black cockatoo nesting tree(s)* being utilised by Carnaby's cockatoo, Baudin's cockatoo or forest red-tailed black cockatoo is identified, the Permit Holder shall monitor the *black cockatoo nesting tree(s)* to determine when the chick(s) has fledged, as determined by the *fauna specialist*; and
- (d) The Permit Holder shall not clear a *black cockatoo nesting tree* identified as being utilised by Carnaby's cockatoo, Baudin's cockatoo or forest red-tailed black cockatoo until the chick(s) has fledged, as determined by the *fauna specialist*.

#### 5. Records to 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 location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings or decimal degrees;
  - (ii) the date that the area was cleared;
  - (iii) the size of the area cleared (in hectares);
  - (iv) actions taken to avoid, minimise and reduce the impacts and extent of clearing in accordance with condition 2; and
  - (v) actions taken to minimise the risk of the introduction and spread of *weeds* and *dieback* in accordance with condition 3.
- (b) In relation to fauna management pursuant to condition 4:
  - (i) the location of the *black cockatoo nesting tree(s)* identified as being utilised by Carnaby's cockatoo, Baudin's cockatoo or forest red-tailed black cockatoo recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings or decimal degrees;
  - (ii) the evidence by which it was determined the *black cockatoo nesting tree(s)* was being utilised including the date of that determination; and
  - (iii) the evidence by which it was determined the chick(s) had fledged including the date of that determination.

### DEFINITIONS

The following meanings are given to terms used:

*black cockatoo nesting tree/s* means trees that have a diameter, measured at 1.5 metres from the base of the tree, of 50 centimetres or greater (or 30 centimetres or greater for *Eucalyptus salmonophloia* or *Eucalyptus wandoo*) that contain hollows suitable for nesting by Carnaby's cockatoo or forest red-tailed or Baudin's black cockatoo;

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



*fauna specialist*: means a person:

- (a) Who holds a tertiary qualification specializing in environmental science or equivalent, has a minimum of two years work experience in fauna identification and surveys of fauna native to the region being inspected or surveyed and holds a valid fauna licence issued under the *Wildlife Conservation Act 1950*; or
- (b) Who does not have appropriate professional qualifications, but has a minimum of seven years work experience in fauna identification and surveys of fauna native to the region being inspected or surveyed and holds a valid fauna licence issued under the *Wildlife Conservation Act 1950*.

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

*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;

*weed/s* mean 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 Biodiversity, Conservation and Attractions Regional Weed Rankings Summary, regardless of ranking; or
- (c) not indigenous to the area concerned.

Mathew Gannaway  
MANAGER  
NATIVE VEGETATION REGULATION

19 September 2018

## 6. References

- Commonwealth of Australia (2001) National Objectives and Targets for Biodiversity Conservation 2001-2005, Canberra.
- Department of the Environment and Energy (DotEE) (2013) Environment Protection and Biodiversity Conservation Act 1999 referral guidelines for three threatened black cockatoo species: Carnaby's cockatoo (endangered) *Calyptorhynchus latirostris*, Baudin's cockatoo (vulnerable) *Calyptorhynchus baudinii*, Forest red-tailed black cockatoo (vulnerable) *Calyptorhynchus banksii naso*. DotEE, Canberra.
- \*Government of Western Australia (2016) 2016 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of October 2016. WA Department of Parks and Wildlife, Perth.
- \*\*Government of Western Australia (2018) 2017 South West Vegetation Complex Statistics. Current as of December 2016. WA Department of Parks and Wildlife, Perth.
- Johnstone, R. E., Kirkby, T. (1999) Food of the Forest Red-tailed Black Cockatoo *Calyptorhynchus banksii naso* in south-west Western Australia. *Western Australian Naturalist* 22, 167-177.
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- Mattiske, E.M. and Havel, J.J. (1998) Vegetation Complexes of the South-west Forest Region of Western Australia. Maps and report prepared as part of the Regional Forest Agreement, Western Australia for the Department of Conservation and Land Management and Environment Australia.
- Shah, B. (2006) Conservation of Carnaby's Black-Cockatoo on the Swan Coastal Plain, Western Australia. December 2006. Carnaby's Black-Cockatoo Recovery Project. Birds Australia, Western Australia.
- Valentine, L.E. and Stock, W. (2008) Food Resources of Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*) in the Gngalara Sustainability Strategy Study Area. Edith Cowan University and Department of Environment and Conservation. December 2008.
- Western Australian Herbarium (1998- ) FloraBase - The Western Australian Flora. Department of Parks and Wildlife. <http://florabase.dpaw.wa.gov.au/> (Accessed August 2018).

### GIS Database List

- Aboriginal Sites of Significance
- DBCA Estate
- Groundwater Salinity
- Hydrography, linear
- SAC Bio datasets (September 2018)
- Pre-European vegetation
- Salinity Risk
- Soils, statewide

## Attachment 2: Issued Works Approval W6124/2018/1

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## Attachment 3: Issued Licence L9114/2018/1

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