Decision Report

Application for Works Approval

Division 3, Part V *Environmental Protection Act 1986*

Licence Number	W6223/2019/1
Applicant	Bunbury Harvey Regional Council
File Number	DER2018/001584
Premises	Stanley Road Class II Putrescible Landfill Site 51 Stanley Road WELLESLEY WA 6233 Lot 45 on Deposited Plan 17161 as depicted in Schedule 1 of the Works Approval
Date of Report	24 April 2020
Status of Report	Final

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1. Definitions of terms and acronyms

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

Table 1: Definitions

Term	Definition
AHD	Australian Height Datum
Applicant	Bunbury Harvey Regional Council
AS 4454	*AS 4454-2012 (Incorporating Amendment Nos 1 and 2) Australian Standard: Composts, soil conditioners and mulches*
Category/ Categories/ Cat.	Categories of Prescribed Premises as set out in Schedule 1 of the EP Regulations
CS Act	*Contaminated Sites Act 2003* (WA)
Decision Report	refers to this document.
Delegated Officer	an officer under section 20 of the EP Act.
Department	means the department established under section 35 of the *Public Sector Management Act 1994* and designated as responsible for the administration of Part V, Division 3 of the EP Act.
DWER	Department of Water and Environmental Regulation As of 1 July 2017, the Department of Environment Regulation (DER), the Office of the Environmental Protection Authority (OEPA) and the Department of Water (DoW) amalgamated to form the Department of Water and Environmental Regulation (DWER). DWER was established under section 35 of the *Public Sector Management Act 1994* and is responsible for the administration of the *Environmental Protection Act 1986* along with other legislation.
Emission	has the same meaning given to that term under the EP Act.
EPA	Environmental Protection Authority
EP Act	*Environmental Protection Act 1986* (WA)
EP Regulations	*Environmental Protection Regulations 1987* (WA)
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cth)
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

Term	Definition
FOGO	Food organics and garden organics from source-separated municipal waste collections.
Green Waste	means solid waste that originated from flora and which does not contain or has not been treated or coated with preserving agents, biocides, fire retardants, paint, adhesives or binders.
Licence Holder	Bunbury Harvey Regional Council
m^3	cubic metres
Minister	the Minister responsible for the EP Act and associated regulations
mtpa	million tonnes per annum
NEPM	National Environmental Protection Measure
Noise Regulations	*Environmental Protection (Noise) Regulations 1997* (WA)
Occupier	has the same meaning given to that term under the EP Act.
PM	Particulate Matter
PM_{10}	used to describe particulate matter that is smaller than 10 microns (µm) in diameter
Prescribed Premises	has the same meaning given to that term under the EP Act.
Premises	refers to the premises to which this Decision Report applies, as specified at the front of this Decision Report
Primary Activities	as defined in Schedule 2 of the Revised Licence
Review	this Licence review
Revised Licence	the amended Licence issued under Part V, Division 3 of the EP Act following the finalisation of this Review.
Risk Event	As described in *Guidance Statement: Risk Assessment*
tpa	tonnes per annum
UDR	*Environmental Protection (Unauthorised Discharges) Regulations 2004* (WA)
$\mu g/m^3$	micrograms per cubic metre
µg/L	micrograms per litre

2. Purpose and scope of assessment

An application for Works Approval (Application) was received from Bunbury Harvey Regional Council (Applicant) to construct an enclosed tunnel composting facility and Green Waste mulching and storage area at Stanley Road Class II Putrescible Landfill Site (Premises). Table 2 summarises the prescribed activities related to this application.

Table 2: Proposed prescribed activities

Category	Description	Production or design capacity
61A	Solid waste facility: premises (other than premises within category 67A) on which solid waste produced on other premises is stored, reprocessed, treated, or discharged onto land.	20,000 tonnes per year
67A	Compost manufacturing and soil blending: premises on which organic material (excluding silage) or waste is stored pending processing, missing, drying or composting to produce commercial quantities of compost or blended soils.	50,000 tonnes per year

The application states that the proposed composting facility will initially be built for a throughput of up to 35,000 tonnes per annum (tpa) but will be designed to allow for future expansion to a capacity of 50,000 tpa, subject to demand. As such, this Decision Report considers the potential emissions and risk from a composting facility of 50,000 tpa throughput. The proposed estimated mulching capacity is up to 20,000 tpa.

This Decision Report is an assessment of the foreseeable Risk Events that have the potential to impact public health, public amenity and the environment, arising from the construction of the described composting facility.

It is noted that the Application states the submitted information, "*The following process description is largely based on a description and concept design provided by AP, a technology supplier. Final operational and design details may not be identical to that described. The extent of variation will depend upon the detailed design provided by the supplier selected from a tendering process, which has not yet been conducted. However the proposed facility will be designed to achieve an equivalent level of environmental protection to the facility described in this document*." (GHD, 2018). This has been taken into account in this assessment using the Department's risk assessment framework.

The implementation of the proposed works is subject to clearing of native vegetation. The works approval does not authorise clearing of any native vegetation. Clearing has been assessed separately and is discussed further in section 5.3.4.

The Applicant currently has other applications active with the Department including a licence amendment proposal to add an additional lined landfill cell. All other applications are being assessed separately and are not considered as part of this amendment.

2.1 Application details

Table 3 lists the documents submitted during the assessment process.

Table 3: Documents and information submitted during the assessment process

Document/information description	Date received
Application form and supporting documentation	6 November 2018
Response to request for further information prior to validating application	14 December 2018
Revised preliminary design drawing set (Appendix C of original supporting documentation) with changes requested by Shire of Harvey	8 March 2019

3. Background

The Stanley Road Class II Putrescible Landfill Site (Premises) in Wellesley in an existing landfill premises and solid waste depot, licensed (L8949/2016/1) as described in Table 4.

Table 4: Prescribed Premises Categories in the Existing Licence

Category number	Category description	Approved production or design capacity
62	Solid waste depot: premises on which waste is stored, or sorted, pending final disposal or re-use.	10,000 tonnes per annual period
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 for burial.	100,000 tonnes per annual period

The Premises map is shown in Appendix 1.

The Premises is currently licensed to accept green waste within Category 64 for landfilling. Currently, the Applicant carries out green waste processing at another site, the Banksia Road Organic Processing Facility in Dardanup (L8746/2013/1). The Application states that the proposed activities will replace the current green waste processing at Banksia Road.

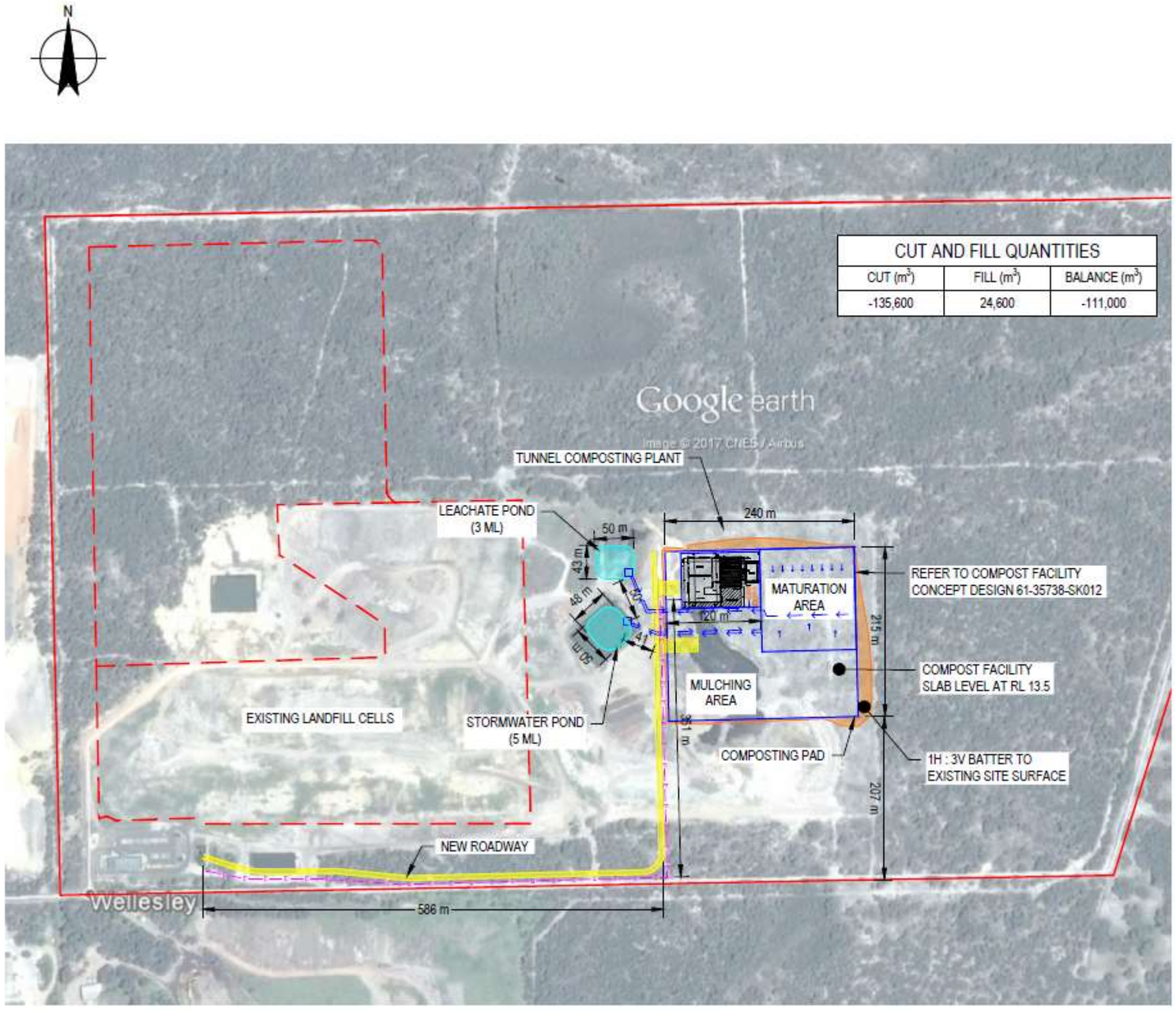
On 6 November 2019 the Applicant submitted an application for a works approval under Part V of the EP Act to set up a compost and green waste mulching facility. The Applicant proposes to construct an enclosed tunnel composting facility at the Premises, and carry out green waste mulching and storage activities. These activities are further described in Section 4.

4. Overview of Premises

4.1 Operational aspects

The proposed composting facility will initially process up to 35,000 tpa of food organics and garden organics (FOGO) and other putrescible organic material (termed F4 organics). The application states that the facility will be designed to allow for future expansion to a capacity of 50,000 tpa, subject to demand. The proposed estimated Green Waste mulching capacity is up to 20,000 tpa.

The following sections summarise the process information and infrastructure described in the Application. The proposed layout is shown in Figure 1 and Figure 2.



LEGEND

- SITE BOUNDARY
- COMPOST FACILITY INFRASTRUCTURE
- ROAD
- POND
- LANDFILL CELLS
- POWER SUPPLY ROUTE
- BATTER TO EXISTING SITE SURFACE
- LEACHATE AND STORMWATER PIPES
- LEACHATE AND STORMWATER RETURN PIPES

NOTES

1. GHD SCOPE OF WORKS IS LIMITED TO THE COMPOST FACILITY BOUNDARY
2. CUT AND FILL PROFILE IS BASED ON DEPTH BETWEEN THE EXISTING SURFACE AND THE COMPOST FACILITY PLAN (61-35738-SK012)
3. CUT AND FILL QUANTITIES ARE BASED ON VOLUME CALCULATIONS BETWEEN THE EXISTING SURFACE AND THE COMPOST FACILITY PLAN (61-35738-SK012)

0 50 100 150m
SCALE 1:5000 AT ORIGINAL SIZE

PRELIMINARY

rev	description	app'd	date
D	REVISED	DG	18.03.19
C	INITIAL ISSUE	DG	02.11.18

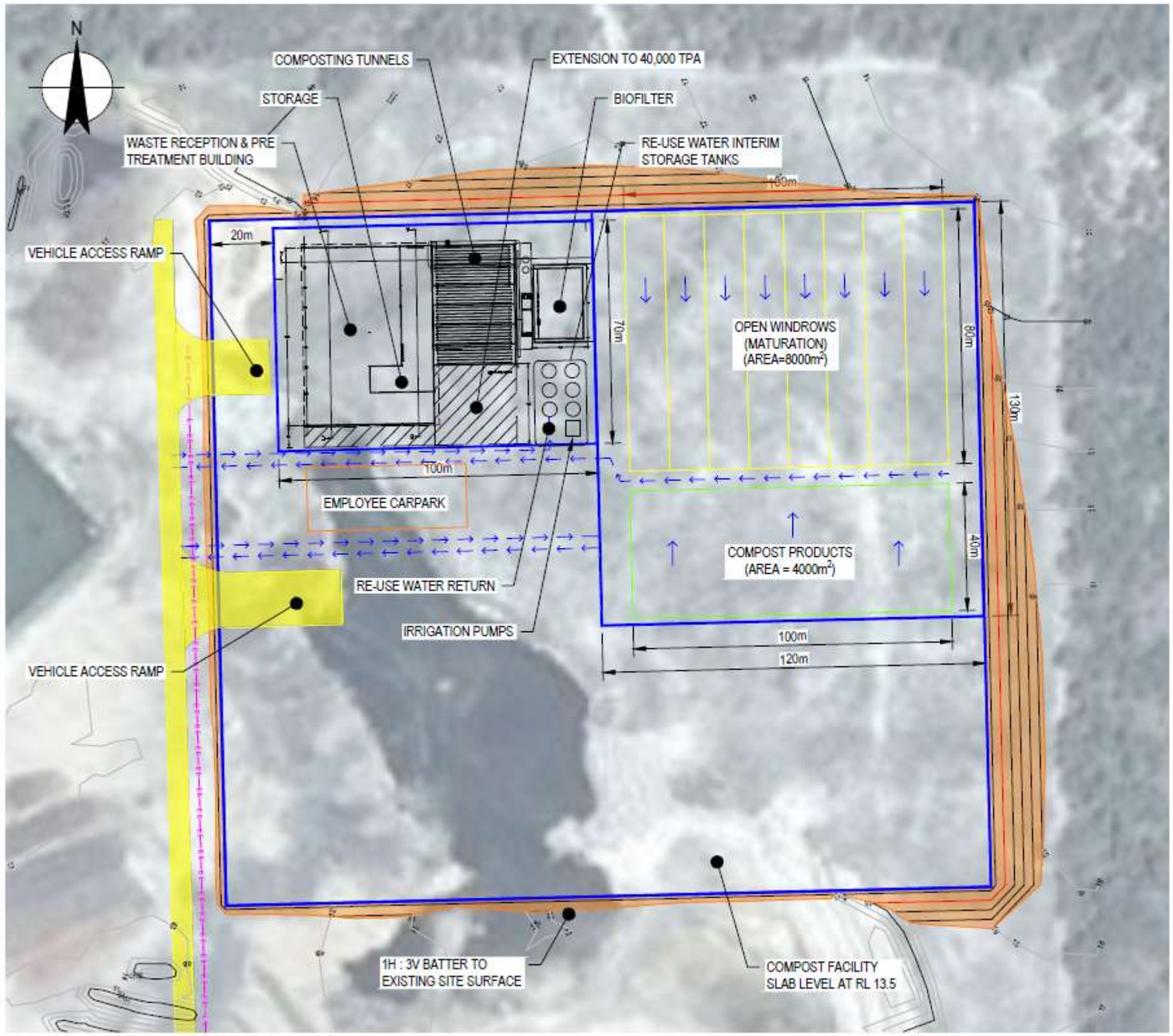
BUNBURY-HARVEY REGIONAL COUNCIL
STANLEY ROAD COMPOSTING FACILITY
CONCEPT MASTERPLAN
QS PLAN

GHD
Level 15, 133 Castlereagh Street, Sydney NSW 2000 Australia
T 61 2 9239 7100 F 61 2 9239 7199
E sydmail@ghd.com W www.ghd.com

scale 1:5000 for A3 | job no. 61-35738
date MAR 2019 | rev no. D

approved (PD) SK015

Figure 1: Proposed compost and mulching facility layout



LEGEND

- EXISTING SITE CONTOURS (1m INCREMENT)
- DESIGN CONTOURS (1m INCREMENT)
- SITE BOUNDARY
- COMPOST FACILITY AREA
- NEW ACCESS ROAD
- WATER FLOW DIRECTION
- LEACHATE AND STORMWATER PIPES
- POWER SUPPLY ROUTE

NOTES

1. ALL INFRASTRUCTURE HAS BEEN SCALED FROM BUNBURY-HARVEY REGIONAL COUNCIL DRAWING TITLED 'TUNNEL COMPOSTING PLANT 35,000 tpa - TYPICAL'
2. GHD SCOPE OF WORKS IS LIMITED TO THE COMPOST FACILITY BOUNDARY

0 12.5 25 37.5m
SCALE 1:1250 AT ORIGINAL SIZE

PRELIMINARY

rev	description	app'd	date
D	REVISED	DG	18.03.19
C	REVISED	DG	01.11.18

BUNBURY-HARVEY REGIONAL COUNCIL
STANLEY ROAD COMPOSTING FACILITY
CONCEPT DESIGN

GHD
Level 15, 133 Castlereagh Street, Sydney NSW 2000 Australia
T 61 2 9239 7100 F 61 2 9239 7199
E sydmail@ghd.com W www.ghd.com

scale 1:1250 for A3 | job no. 61-35738
date MAR 2019 | rev no. D

approved (PD) SK012

Figure 2: Inset of proposed composting and mulching facility layout

4.1.1 Feedstocks

The principal feedstocks for compost will be municipal food organic and garden organic waste (FOGO) from weekly municipal waste collections within the Bunbury region. The Applicant states that feedstocks may be collected from areas surrounding Bunbury in future.

The specific origin (type, age at delivery to site) of the 'F4' other putrescible waste is not identified in the Application. The green waste mulched and stored on site is intended to be used as a feedstock in the composting process.

Table 5: Intended feedstocks as given in the Application

Input	Quantities (tonnes per year)	Description of source
FOGO/F4	30,000	FOGO - Source separated organic waste from the weekly domestic kerbside collection systems (namely garden and kitchen organics) F4 – any F4 category feedstock
Green Waste	5,000	Green waste delivered by the public either domestic and commercial
Other feedstock may include small quantities of manure, saw dust and other organic products which may be required for the composting process to enhance product value and/or meet market requirements.	Not specified	Not specified

The term F4 feedstocks is defined in the now-withdrawn DER (2016) *Environmental Standard: Composting (March 2016 – draft released for consultation)*. This document defines F4 as consisting of putrescible waste as given in Table 6. It is noted that as this document is no longer an active guideline regarded by the Department, the designation of odour risk in relation to F4 waste will be assessed as part of the application.

Table 6: Definition of F4 feedstocks (from DER 2016, Table 11)

Category	Waste types	Examples
F4	Meat, fish and fatty foods	Animal mortalities, parts of carcasses, bone, fish and fatty processing or food and abattoir waste
	Municipal putrescible waste from domestic, commercial or industrial premises	Food, kitchen and other putrescible wastes, disposed of into municipal waste collection systems.

4.1.2 Proposed composting process

A two-stage composting process is proposed, with an enclosed tunnel system for the initial composting stage from receival to pasteurisation, followed by outdoor maturation to produce a product that is in compliance with the *Australian Standard: Composts, soil conditioners and mulches* (AS 4454-2012).
The main steps are:

- Waste receipt and de-contamination;
- Shredding and moistening;
- Tunnel composting;
- Open windrow maturation; and
- Product refinement.

The following description of the works and planned infrastructure is summarised from the detailed information given in the Application.

Waste reception and de-contamination

- The FOGO and other putrescible materials will be brought to site by trucks to a waste reception area. This is a partially enclosed undercover area with a roof and 4 m high perimeter walls and a footprint of approximately 100 m by 70 m.
- The building contains two separated areas: The corridor in front of the tunnels, which serves as front end loader manoeuvring area for the loading and unloading of tunnels, and raw material interim stockpile; and Waste receival and pre-treatment area, where all kerbside material is unloaded, screened for contamination, and shredded.
- Each load is segregated on the floor by a front end-loader followed by manual screening and the removal of physical contaminants into separate bins for either landfill disposal or recycling as appropriate.
- After physical contaminants have been removed, the FOGO material is pushed onto the stockpile for shredding.
- The waste reception area will provide for two days storage capacity (approximately 270 tonnes) of non - shredded waste and one day storage capacity (approximately 135 tonnes) for the shredded tunnel raw material, i.e. in total three days storage capacity.

Shredding and moistening

- Organic material will be shredded in batches for the subsequent composting process.
- The shredder will be operated by the front end-loader driver by means of a remote control device. A spray bar at the shredder discharge conveyor provides for water addition to the material prior to the composting process. Ideally, the composting material should have a moisture content of around 50-55%.
- The shredded material will be stockpiled in the shredded material storage bay, from where the material is either loaded into one of the tunnels (FOGO, F4) or moved to the windrowing area for outdoor processing (green waste).

Tunnel composting

- The tunnel composting plant comprises tunnel modules, arranged side by side, a deodorisation stage incorporating a biofilter and process water collection, storage and recycling facilities.
- Each tunnel is self-operating and comprises an air duct system, blowers, process water collection & recycling systems and various process control features (temperature, pressure, etc.). The tunnel floor (i.e. aeration floor) allows the inflow of process water and outflow of air into the composting material.

- The material will be pasteurised by keeping it above 55ºC for a minimum time period, to destroy pathogens and denature weed seeds.
- During the composting process there is no need to access the tunnels, thus creating an air tight environment with some process air being collected and either recycled back into the process and the remaining air discharged via a biofilter.
- On-line control, adjustment, recording and analysis of the process parameters for each
- individual tunnel on the control computer enables automated operation (no constant supervision required) and pasteurisation of each batch.
- The internal air and process water recycling systems reduce the total volume of odorous air discharged into the biofilter and reduces water input requirements.
- Process Control & SCADA - the process controls in the tunnels are integrated, operated and controlled via a central process control system that consists of a programmable logic controller (PLC), supervisory control and data acquisition (SCADA) system and the process control computer. An operator can monitor and adjust process parameters as required such as processing time, temperature progression to ensure material batch reaches AS 4454-2012 certification.

Deodorisation Stage

- Exhaust air from the tunnels is discharged into the deodorisation stage for treatment and final discharge. The deodorisation stage comprises a fan, the humidifier (or scrubber) and a biofilter.
- The biofilter facility is roofed
- A suitable media is used within the biofilter for the biological removal of odorous compounds. Nominally filter bed of composted material with roof structure overhead, over biofilter basement (below ground sealed concrete chamber)

Process Water Collection & Recirculation

- Process water from the tunnels and condensate from associated ductworks is collected through a network of sealed pipes and gravity drains into a sealed process water reclamation tank. The process water is then recycled back into the tunnel composting process to establish and/or maintain the desired material moisture content.
- A pump system fitted adjacent to the enclosed process water tank supplies the process water through a network of pipes and auto controlled valves which are mounted outside the tunnel structure to an array of spray nozzles along the ceiling inside each tunnel.
- The actual water demand depends on material moisture and climatic conditions. During the dry, hot period of the year, additional water is required to provide sufficient water for the composting process. Make-up water valves have been fitted to the process water and humidifier tanks, which automatically open when make-up water from the (roof rainwater) reclamation tanks is required.

Open windrow maturation

- After the tunnel composting process is complete, the raw compost will have been pasteurised as per the requirements of AS 4454-2012.
- A large open windrowing area will be located adjacent to the tunnel composting plant for the maturation of FOGO and F4 material or pasteurisation (green waste only), the size of which is based on an average maturation period and storage for 100% output.
- The pasteurised material will be either placed on a Mobile Aerated Floor (MAF) area first or placed directly into windrows for turning to maintain aerobic conditions until a mature product is produced.
- Water for increasing the moisture content of compost windrows (if required) will be provided from the stormwater pond through a pump and sprinkler system, alternatively the windrows may be moistened during turning (subject to turning equipment).

- The windrow quality control includes temperature monitoring and process documentation procedures (i.e date of laying, volume/ composition of each windrow). The windrow area will have a simple consecutive numbering system that is permanently fixed in front of the perimeter but doesn't interfere with the normal operational activities of the facility.
- The windrow area has sufficient storage capacity to accommodate supply / demand fluctuations over the year.

Product refinement and Compost Grading

- Outside the pasteurisation stage, the process is controlled in order to enhance biological activity and maximise decomposition rate.
- The grading plant, consisting of a mobile trommel screen, will be utilised to produce compost in discrete particle size ranges for final product requirements.

On site sales

- The front end-loader operator will service customers including any commercial bulk orders. All customers will leave the site via the weighbridge facility.
- The compost product is intended to be sold locally, including directly to the public from the Premises.

Key Finding:

The Delegated Officer notes that the process descriptions are based on a concept design and process information provided by a commercial supplier. The final operational and design details will be determined during a future detailed design phase. As such, the risk assessment for operations is indicative only, and the risk can only be fully identified and assessed, and subsequent regulatory controls developed, when detailed design information is provided during the Licence application stage.

4.2 Infrastructure

The compost facility infrastructure, as it relates to Category 67A and 61A activities, is detailed in Table 7 and with reference to the Site Plan (attached in the Works Approval). The following descriptions of the works and planned infrastructure are summarised from the Application:

- Civil works associated with the facility include construction of a nearly level pad on which the composting facility would be constructed, and composting and green waste mulching activities can be conducted.
- The pad would be constructed using soil from the existing area, by cutting and filling. There is expected to be approximately 135,600 m3 of excavation (cutting), and 24,600 m3 of filling.
- Excess spoil (about 111,000 m3) will be used for landfilling operations that occur elsewhere on the Premises.
- An employee and visitor car parking area with up to 10 car spots will be established on the pad, adjacent to the composting building.
- The area of the pad where outdoor composting area will be undertaken (some 12,000 m2 of the total 41,000 m2 pad area) will have a HDPE liner (or equivalent barrier liner with a permeability of 1x10-11 m/s or lower) placed beneath the gravel layer. This is to prevent compost affected stormwater from infiltrating into groundwater beneath the pad. Subject to detailed design, other materials may also be placed between the hard stand layer, and the barrier layer, as shown in Figure 3.
- A concrete slab will be established on the constructed pad and the composting plant will be built on top of the slab.

- The areas of the pad that are not covered with the plant, or sealed roadways will be covered with a layer of hard stand, comprising lime gravel. The thickness of the lime gravel layer is expected to be 150 mm.
- No hardstand material will be placed in the section of the pad where the plant concrete slab will be constructed.
- Earthen drainage berms will be located around the composting area to prevent escape of compost affected water/leachate. The surface of the composting area will also be graded to prevent compost drainage water from escaping over the edges of the pad.
- Leachate and stormwater storage ponds will be established to service the composting facility. A desktop water balance was undertaken to estimate the required capacity for the ponds. Based on this, the capacity of the ponds is expected to be approximately 3 ML each. Council will install drainage pipes to enable runoff from the various pad areas (composting area, finished products storage area, green waste mulching area) to be collected and directed to either the leachate or the stormwater pond.
- The composting plant will include a biofilter which will contain a 1 m thick filter bed, comprising composted material (roots, bark, humus, compost). Air will flow through a humidifier prior to entering the biofilter. After leaving the biofilter, the air should have approximately 97% of its original odour removed.
- The civil works include constructing a roadway from the existing weighbridge to the new facility. They include connecting the new facility to existing power, via new overhead wires along this new roadway. A new substation may be needed to service the facility, due to its power requirements. The location and size of this substation will be determined during detailed design. The roadway profile will be determined during detailed design.
- Electrical or diesel powered pumps will be used to recirculate water back to the composting operations when needed. This is subject to Council preference and the choice of the successful compost plant tenderer.

Table 7: Compost and mulching facility Category 67A and Category 61A infrastructure

	Infrastructure	**Site Plan Reference**
	Prescribed Activity Category 67A for composting and 61A solid waste facility for mulching	
1	Composting pad Nearly level base site level constructed using soil from the existing area, by cutting and filling	Composting Pad
2	Concrete slab for tunnel composting plant area	Tunnel Composting Plant
3	Hardstand for compost maturation With a HDPE liner (or equivalent barrier liner with a permeability of $1x10^{-11}$ m/s or lower) placed beneath the gravel layer to prevent stormwater from infiltrating into groundwater beneath the pad.	Open Windrows Maturation Compost Products Area
4	Hardstand for other feedstock storage With a HDPE liner (or equivalent barrier liner with a permeability of $1x10^{-11}$ m/s or lower) placed beneath the gravel layer to prevent stormwater from infiltrating into groundwater beneath the pad.	Mulching Area

	Infrastructure	Site Plan Reference
5	Process water collection and recirculation system – fully sealed piping network which connects to a sealed underground process water tank	Re-use Water Return, Re-use Water interim Storage Tanks, Irrigation Pumps
6	Main building for receivals, sorting and storage – roof and 4 m high perimeter walls	Waste Reception and Pre-treatment Building Storage
7	Composting tunnels – full sealed concrete tunnel with lockable and rubber sealed doors	Composing Tunnels
8	Leachate pond – accepting water from compost area Approximately 3 ML capacity Approximately 43 m by 50 m Designed such that at least 300 to 500 mm freeboard will be maintained based on a detailed water balance	Leachate Pond
9	Stormwater pond – accepting water from hardstand outside compost area Appears to be adapted from an existing pond Approximately 3 ML capacity Approximately 48 m by 50 m Designed such that at least 300 mm to 500 mm freeboard will be maintained based on a detailed water balance.	Stormwater Pond
10	Green waste mulching plant	Mulching Area
11	Biofilter – filter bed of composted material with roof structure overhead, over biofilter basement (below ground sealed concrete chamber) such that at least 97% of incoming odour is removed.	Biofilter
	Directly related activities	
12	Access road, services	New Roadway

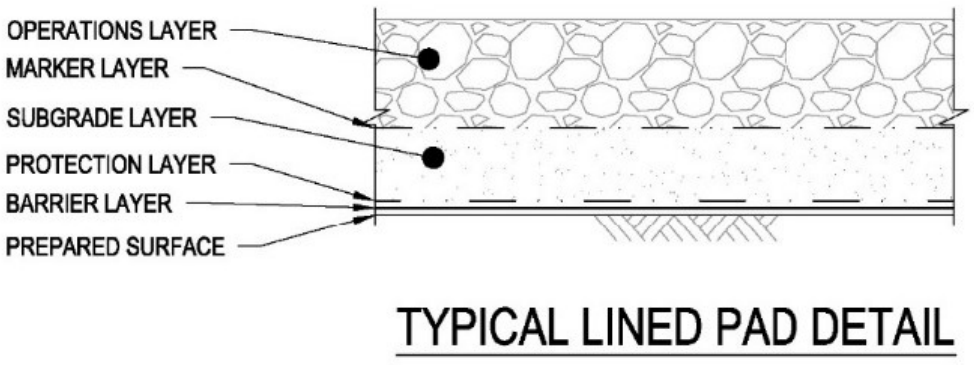


Figure 3: Conceptual proposed design of hardstand outdoor areas

5. Legislative context

5.1 Planning approvals

The Shire of Harvey initially received the Applicant's Development Approval application and conducted their assessment of the application in consultation with the Department of Planning, Land and Heritage and included input from the Department of Fire and Emergency Services. The Development Approval Application was subsequently referred to the Western Australian Planning Commission (WAPC) for determination under the *Planning and Development Act 2005*. The Applicant received Development Approval from WAPC with approval to commence development issued on 13 March 2020, subject to conditions.

The Development Approval has been approved under the Greater Bunbury Region Scheme only, and the Applicant has been advised that the development will need to comply with all other legislation, local laws and/or licence requirements that may relate to the development. The WAPC also advised the Applicant within their Development Approval conditions that a separate building permit by the Shire of Harvey is required prior to the commencement of development.

The Delegated Officer notes that it is the responsibility of the Applicant to ensure that any action or activity referred to in the Works Approval is permitted by, and is carried out in compliance with, other statutory requirements.

5.2 Contaminated sites

The Premises (Lot 45 on Plan 17161) is classified under the *Contaminated Sites Act 2003* (the CS Act) as *'possibly contaminated – investigation required'.*

The Premises was first classified under section 13 of the CS Act based on information submitted to the former Department of Environment and Conservation in May 2007. Additional information submitted to the former Department of Environment Regulation in May 2017 prompted a review and reclassification of the Premises.

The 2017 review of the Premises classification identified that contamination originating from the landfill had migrated offsite towards a neighboring sand mine located directly west (Lot 42 on Plan 67196). The Premises was identified as the 'Source Site' and Lot 42 as 'the Affected Site'. The groundwater contamination identified through groundwater monitoring at the Premises is indicative of leachate impacts from the unlined landfilling operations.

Further investigations are required to characterise and delineate groundwater contamination and landfill gas migration potential. BHRC is progressing staged investigations in accordance with the Department's contaminated sites guidelines. A Contaminated Site Auditor has been appointed and a Mandatory Auditors Report is expected to be submitted in early 2020 which the Department will review and update the classification if necessary.

The Development Approval issued to the Applicant by WAPC also includes conditions that require the Applicant to undertake investigation for the extent of soil and soil-gas contamination to determine if remediation is required, prior to commencing the approved works. Any required remediation, including validation of remediation, of any contamination identified be completed prior to the commencement of site works to the satisfaction of the Shire of Harvey on advice from DWER. Investigations and remediation are to be carried out in compliance with the CS Act and current DWER Contaminated sites guidelines.

The Development Approval also requires that the Applicant, in accordance with regulation 31(1)(c) of the *Contaminated Sites Regulations 2006,* prepare a Mandatory Auditors Report prepared by an accredited contaminated sites auditor, and submit this report to DWER as evidence of compliance with the Development Approvals conditions.

5.3 Part V of the EP Act

5.3.1 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: Licence Duration (August 2016)
- Guideline: Decision Making (June 2019)
- Guidance Statement: Risk Assessments (February 2017)
- Guidance Statement: Environmental Siting (November 2016)
- Guideline: Industry Regulation Guide to Licensing (June 2019)

5.3.2 Works approval and licence history

Table 8 summarises the works approval and licence history for the premises.

Table 8: Works approval and licence history

Instrument	Issued	Nature and extent of works approval, licence or amendment
L8949/2016/1	22 January 2016	Licence granted
Amendment Notice	12 April 2018	Amendment to accept and store paint at the Premises.
Amendment Notice	1 May 2018	Addition of a new unlined cell (Cell 1) and an additional 30,000 tonnes of waste disposal allowed for Category 64.
Amendment to Licence	19 December 2019	Amendment application for the construction and operation of a new lined landfill cell (Cell 2/3).
Amendment to Licence	22 April 2020	Amendment to increase capacity of Category 62 and add Category 13 activities.

5.3.3 Compliance inspections and compliance history

A review of DWER's Incident and Complaints Management System indicates that there have not been any odour complaints in relation to the currently operating landfill in the past 10 years (L8949/2016/1).

Landfills including this Premises are inspected regularly. Some outcomes from the immediately preceding inspections are summarised in Table 9.

Table 9: Compliance inspections and compliance history

Instrument	Event	Findings
L8949/2016/1	Inspection 9 April 2018 – DWER Compliance Branch	Changes made to groundwater well monitoring and reporting to reflect current licence requirements
L8949/2016/1	Inspection 2 October 2019 – DWER Compliance Branch	Environmental Field Report issued due to native vegetation clearing near monitoring wells in Premises but not at compost footprint.

5.3.4 Native Vegetation Clearing

The Applicant was previously issued Native Vegetation Clearing Permit CPS5394/4 for the area encompassing the compost facility footprint. This clearing permit was granted in November 2017 for the purposes of daily cover material for a rubbish disposal site and rehabilitation. The clearing permit contained conditions requiring revegetation and rehabilitation of the clearing area following this use. The construction of the proposed compost facility within this area will permanently prevent revegetation and rehabilitation of native vegetation, and would hence affect the Applicants ability to fulfil the clearing permit conditions as required under Section 51 of the EP Act. The requirement for revegetation and rehabilitation of the clearing area would also prevent the implementation of a Works Approval. Subsequently, the Applicant applied for an amendment to the existing clearing permit which would act to remove reference to rehabilitation of the area, and reflect revised offset conditions.

The amended clearing permit CPS5394/5 was issued on 20 April 2020 after the Applicant provided evidence to DWER that relevant Development Approval for the Premises was in place.

The Applicant has been granted clearing permit CPS 7259/2 for other areas of the Premises, which also relates to the procurement of daily cover for landfill activities. The Applicant currently has another clearing proposal with DWER (Native Vegetation) for assessment, relating to the construction of Cells 2 and 3 at the Premises, authorised under an amendment to the sites existing licence issued in December 2019. This assessment is yet to be finalised and has no bearing on this works approval application (CPS 8486/1).

Figure 4 shows the location of the current Premises clearing permits/applications and clearing offsets.

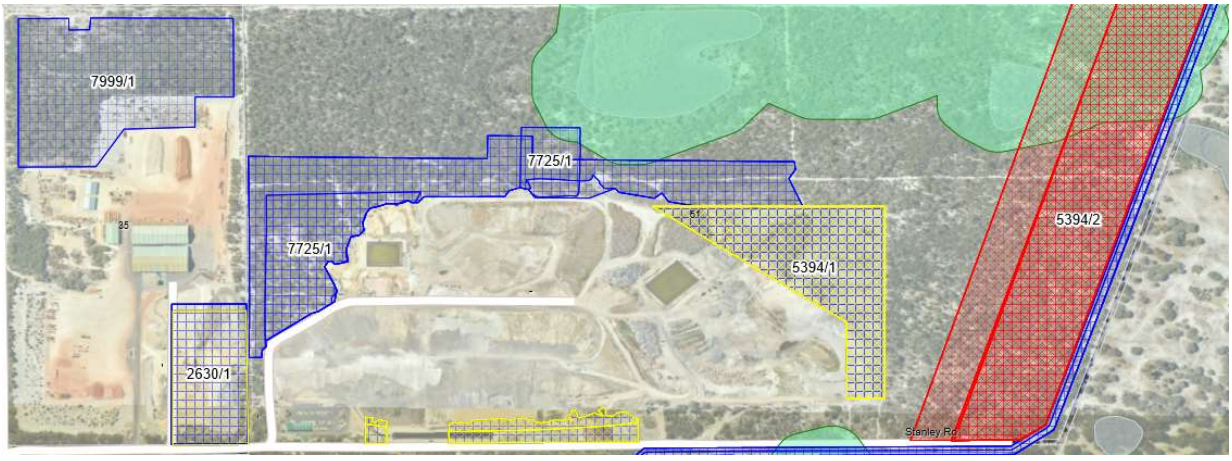


Figure 4: Native vegetation clearing permits/applications (yellow and blue areas) and clearing offsets (red areas).

6. Consultation

DWER consulted the Shire of Harvey and advertised the Application on the DWER website as summarised below. Consultation with the Applicant is summarised in Section 11.

Table 10: Applicant consultation

Method	Comments received	DWER response
Application advertised on DWER website	None received	NA

Method	Comments received	DWER response
Local Government Authority advised of proposal (19 February 2019)	The Shire of Harvey have referred the Applicant's Development Approval application to WAPC for determination. WAPC have granted Development Approval for the compost facility proposal on 13 March 2020, subject to conditions.	The Delegated Officer notes that it is the responsibility of the Applicant to ensure that any action or activity referred to in the Works Approval is permitted by, and is carried out in compliance with, other statutory requirements.

7. Location and siting

7.1 Siting context

The Stanley Road Landfill is located on the Swan Coastal Plan, 14 km north-east of Bunbury in the suburb of Wellesley. The site is located within the Kemerton Industrial Park bushland buffer zone, and there are a number of industrial premises in the immediate vicinity. In recent years the premises has experienced urban encroachment, with the residential developments in the suburb of Leschenault now within 1 km of the premises. The vegetation in the area surrounding the premises is predominately banksia woodland and wetlands.

7.2 Residential and sensitive Premises

The distances to residential and sensitive receptors are detailed in Table 11 and shown in Figure 5.

Table 11: Receptors and distance from activity boundary

Sensitive Land Uses	Distance from activity of prescribed premises
Residential Premises	Approximately 535 m west south west from the western side of the premises boundary Approximately 900 m east from the eastern side of the premises boundary.
Industrial premises	Directly adjacent to the west and south.

7.3 Specified ecosystems

Specified ecosystems are areas of high conservation value and special significance that may be impacted as a result of activities at or Emissions and Discharges from the Premises. The description of specified ecosystems and distances from the Premises are discussed in Table 12 and shown in Figure 5 and further discussion in the following sections.

Table 12: Environmental values

Specified ecosystems and ecological receptors	Distance from the Premises
Groundwater	Superficial aquifer 3-15 metres below ground level (bgl) Leederville aquifer 35 - 40 m bgl
RIWI Act Groundwater Area	The Premises is within the Bunbury Groundwater Area (Proclaimed status)

Specified ecosystems and ecological receptors	Distance from the Premises
Beneficial users of groundwater – predominately non-potable domestic and industrial uses	19 privately owned bores are located within 1 km of the site boundary (DWER GIS – WIN Groundwater Sites) The closest bore is located 690 m south west of the eastern site boundary. One bore located at Sand Mine immediately west of the western site boundary, 210 m from the western site boundary. One bore located at an Inert landfill 115 m south of the southern site boundary (DWER Water Register)
Public Drinking Water Source Areas	A Priority 3 Public Drinking Water Source Area is located approximately 14 km south west.
RIWI Act Irrigation Districts -	Collie River Irrigation District – 900 m east (proclaimed status)
RIWI Act Surface Water Area -	Brunswick River and Tributaries – 220 m south (proclaimed status)
Rivers and Tributaries	Wellesley River 130 m south east of the southern site boundary Brunswick River 430 m south of the southern site boundary. Collie River 5.5 km south west of the southern site boundary
Leschenault Inlet	Leschenault Inlet 3 km west of the western boundary Leschenault Inlet Management Area 151 m south and 1.9 km west.
Wetlands	Conservation category geomorphic wetlands within premises boundary (northern portion), 20 m south, 522 m south, 620 m east, 3 km west. Management category geomorphic wetlands east of the premises extending approximately 27 m inside the premises boundary, directly adjacent to the north east premises boundary, 165 m south east, 2.9 km west.
Parks and Wildlife Managed Land – recreation, conservation of flora and fauna and or historical features.	Land reserved under section 5(1)(h) of the Conservation and Land Management Act 1984 directly north.
Priority 3 Threatened Ecological Community buffers (Banksia Woodland)	Within and surrounding the premises.

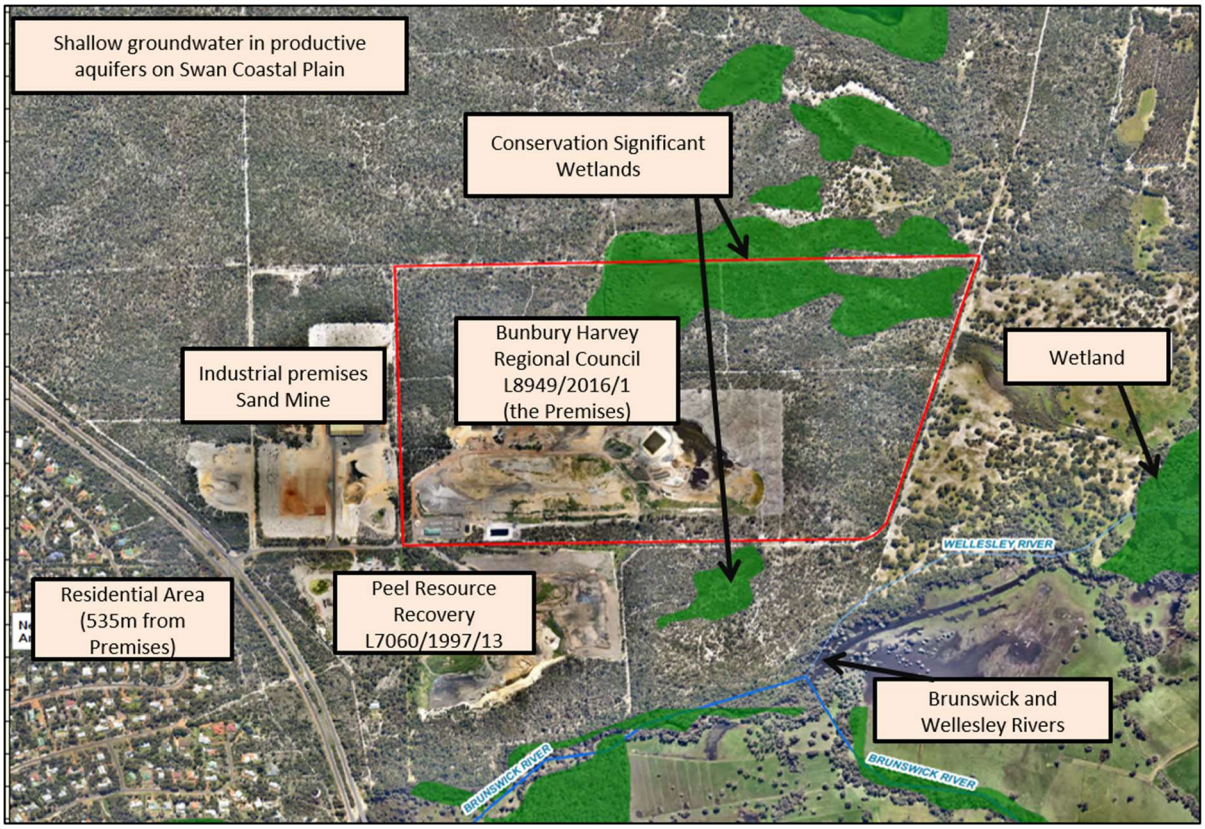


Figure 5: Proximity of Premises to sensitive environmental receptors

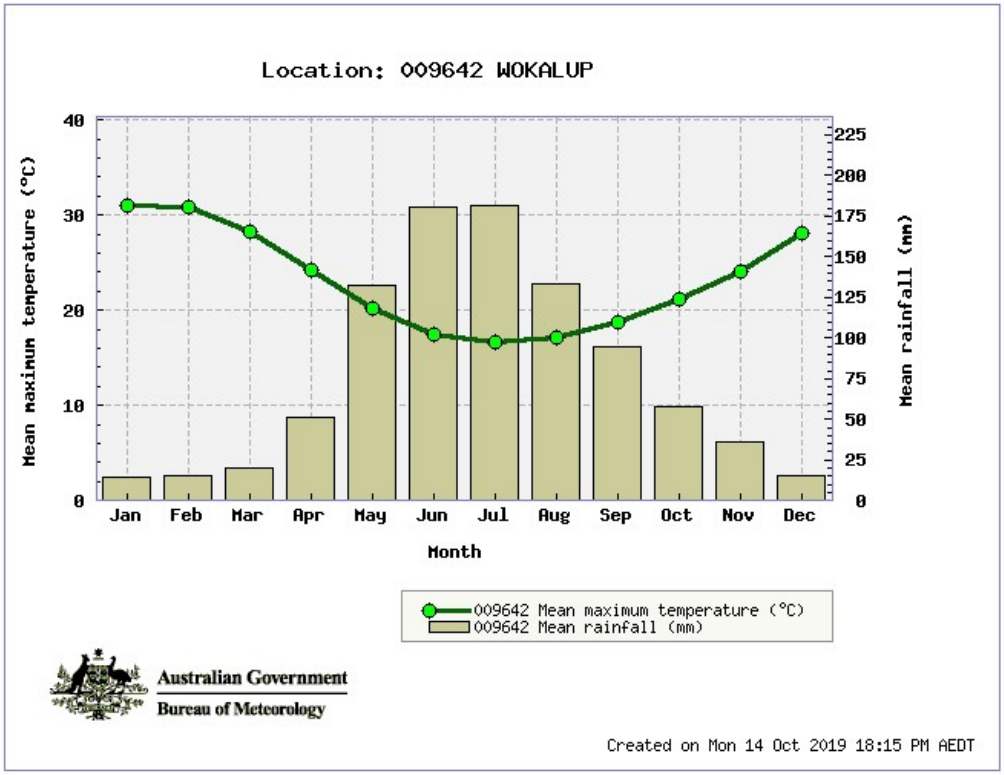
7.4 Climate

7.4.1 Rainfall and temperature

The nearest Bureau of Meteorology (BoM) station with rainfall and temperature data is Wokalup WA (station number 009642) located approximately 13.5 km from the Premises.

As shown in Figure 6, the BoM data for the Wokalup WA station shows that the area in the vicinity of the Premises has an annual average of 933.7 mm (based on data between 1951 and 2019), with the majority of rainfall received between May to September.

Temperatures average around 16 °C to 17 °C in winter months, and up to 30 °C in summer months, for an average annual temperature of 23.1 °C degrees.



Statistics	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Years
Mean maximum temperature (°C) for years 1951 to 2000	31.0	30.8	28.3	24.2	20.2	17.5	16.7	17.1	18.7	21.1	24.0	28.1	23.1	38
Statistics	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Annual**	**Years**
Mean rainfall (mm) for years 1951 to 2019	14.5	15.3	20.5	51.0	132.8	180.4	181.6	133.7	95.1	57.7	35.7	15.3	933.7	65

Figure 6: Wokalup WA mean rainfall and mean maximum temperature

7.4.2 Wind direction and strength

The nearest BoM station with wind data is Bunbury (station number 009965) located approximately 20 km from the Premises.

Based on the climate data for the Bunbury station the prevailing wind directions are morning easterlies and afternoon westerlies. This is depicted in the wind roses shown in Figure 7.

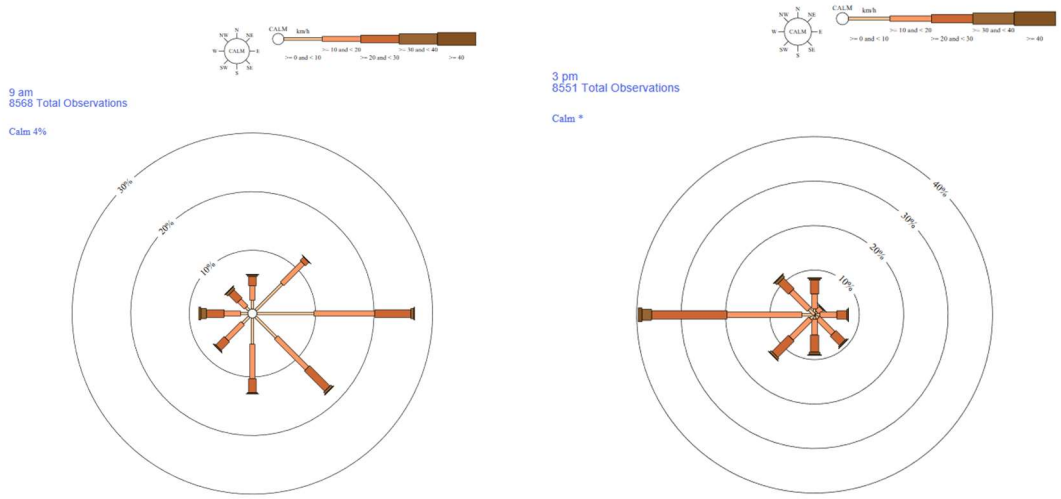


Figure 7: Bunbury 9 am and 3 pm wind direction and strength

It is important to note that these wind roses show historical wind speed and wind direction data for the Bunbury weather station and should not be used to predict future data.

7.5 Topography and soils

DWER's GIS mapping indicates that the Premises is underlain by Bassendean Sand and Tamala Limestone. Bassendean Sands are generally described as quartz sand and Tamala Limestone as limestone, calcarenite and sand, with minor clay. The Guildford formation comprising clay, loam, gravel, sand is present in the northern portion and alluvium in the south-eastern portion of the Premises.

The drilling of monitoring bores at 18 different locations across the site generally confirms the regional geological maps. The site is underlain by an unconfined sandy soil and unconsolidated rock, approximately 20 to 10m thick, with discontinuous clay layers and lenses.

The Premises is relatively flat, with contours between 15 and 25 Australian Height Datum (AHD).

7.5.1 Acid sulfate soils

The works are planned in an area mapped as moderate to low risk for acid sulfate soils (ASS) (DWER Acid Sulfate Soil Risk Map - Swan Coastal Plan), and the southern end of the proposed cut area (GHD 2018, SK013 Concept Masterplan Cut and Fill Profile, Rev D November 2018) is approximately 100 m from an area considered high to moderate risk. There are wetlands within the northern part of the Premises and approximately 20 m from the southern Premises boundary. The submitted cut and fill quantity plan (GHD 2018) shows that excavations are proposed up to 5 m below the current ground level.

From *Identification and investigation of acid sulfate soils and acid landscapes* (DER 2015), to prevent environmental harm under the EP Act, under certain circumstances investigations need to be conducted prior to ground disturbing and/or groundwater disturbing activities to determine whether or not ASS are present and fully characterise their nature and extent. DER (2015) identified that disturbances to more than 3 m below ground surface and disturbances within 500 m of a wetland trigger an ASS investigation, as depicted in Figure 8.

Key Finding:

The Delegated Officer notes the following regarding acid sulfate soils; the proposed excavations for construction trigger the need to investigate acid sulfate soils to suitably identify the risk of ASS and prevent environmental harm under the EP Act. This is based on the DER (2013, amended 2015) guidelines, with proposed excavation in a mapped moderate to low risk area for ASS where it is:

- within 500 m of wetlands; and
- with earthworks extending to beyond 3 m below natural ground surface.

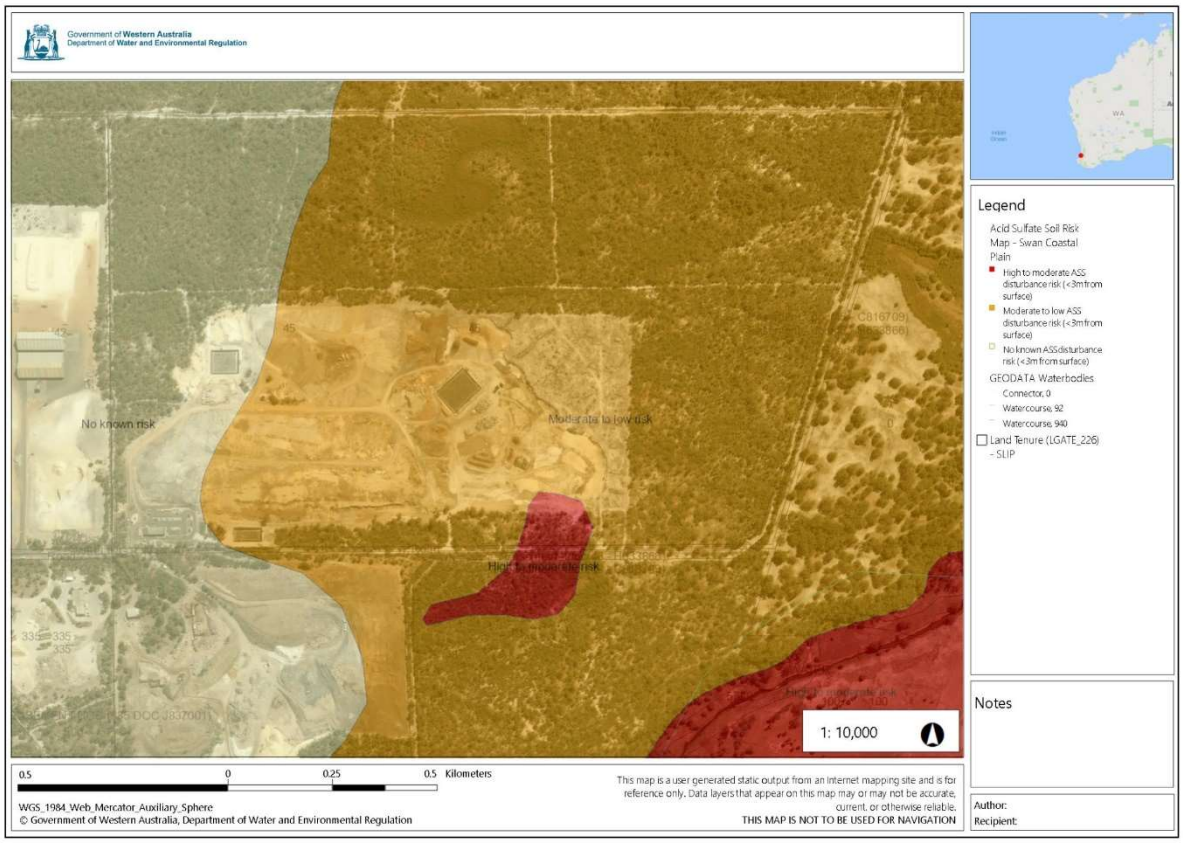


Figure 8: Acid sulfate soil risk at the Premises, with orange showing moderate to low risk and red showing high to moderate risk.

Class of land as shown on acid sulfate soils risk map	Nature of disturbance that triggers ASS investigation
Class 1 – high to moderate risk of ASS occurring within 3m of natural soil surface	▪ earthworks that will disturb more than 100m^3 of soil ▪ dewatering or soil draining activity
Class 2 – moderate to low risk of ASS occurring within 3m of natural soil surface but high to moderate risk of ASS beyond 3m of natural soil surface	▪ works involving lowering of watertable (temporary or permanent) ▪ earthworks extending to beyond 3 metres below natural ground surface ▪ works within 500m of wetlands

Figure 9: Classification scheme for acid sulfate soil risk maps, from DER (2015) *Identification and investigation of acid sulfate soils and acidic landscapes* (Table 2, page 14)

7.6 Hydrology

Given the sandy soils in the area, and the absence of perennial surface water channels on the premises it is considered unlikely that any surface water would migrate a significant distance from the premises, and instead would readily infiltrate to ground.

The Premises is located 130 m from Wellesley River. The Wellesley River joins the Brunswick River 430 m south of the site, flowing into the Leschenault Estuary via the Collie River.

Wetlands are located within and in close proximity to the Premises. They are positioned along the northern, eastern and southern boundaries. A conservation management category wetland located in the northern portion of the site covers approximately 14 % of the Premises and extends outside of the Premises boundary (Figure 5). Additional conservation wetland areas extend north from the site for about 1.5 km.

The site is located in close proximity to a surface water area and irrigation district that are proclaimed under the *Rights in Water and Irrigation Act 1914* (RIWI Act). The Collie River Irrigation District is located 900 m east of the site and the Brunswick River and Tributaries surface water area is 220 m south.

7.7 Hydrogeology

A number of site-specific hydrogeological investigations have been undertaken by BHRC over the past 10 years. A recent report submitted in support of the application is the Bunbury Harvey Regional Council, Stanley Road Landfill Detailed Hydrogeological Investigation, GHD July 2018 (GHD, 2018). Previous assessments of the Premises by DWER have reviewed investigations undertaken at the site in March 2016 and reported in Talis Phase 2 Hydrogeological Investigation, July 2016 (Talis, 2016). This section presents a summary of the hydrogeology as determined by these investigations.

Site investigations have identified a superficial aquifer that is made up of upper and lower sandy layers separated by a clay layer that ranges in thickness from 0.2 to 2.5 m (Talis, 2016). The more recent investigations by GHD 2018 indicate that there may be an additional

intermediate clay layer, however groundwater bore drilling data has provided limited detail on this existence or extent of this layer. The superficial aquifer is underlain by the Leederville Aquifer which is located approximately 35-40 m below surface.

Groundwater levels in the superficial aquifer, measured in March 2016, were between approximately 3 m to 10 m below ground level (BGL) in bores screened within the upper superficial aquifer (GQ1S – GQ18S) and between approximately 8 m to 15 m BGL in bores screened within the lower superficial aquifer (GQ1D – GQ18D). Groundwater levels measured in 2018 were similar to those measured in 2016.

Previous site investigations have suggested that the upper and lower levels of the superficial aquifer are hydraulically linked. Based on the lateral continuity of the interbed clays (as identified in all drilling locations), and the difference in hydraulic head difference observed in groundwater monitoring bores, the most recent investigation (GHD, 2018) has inferred that the upper and lower aquifers are hydraulically separate. Erratic hydraulic head data, and the detection of leachate impacts in the lower aquifer have been attributed to poor groundwater bore integrity, and areas of thinning, or discontinuous clay in the western are of the Premises. It is noted that groundwater wells with poor integrity were decommissions and replaced as part of the recent hydrogeological investigations.

Groundwater flow direction within the superficial aquifer is complex. Talis 2016 suggested that groundwater flow in the upper aquifer, is complicated by mounding from the loading of the landfill, resulting in flow occurring to the north, west, southwest and south. GHD 2018 suggests that groundwater flow direction in the upper aquifer flows towards the northwest.

Both Talis 2016 and GHD 2018 indicate that the groundwater flow direction in the deeper aquifer is generally from northwest to southeast towards the Brunswick and Wellesley Rivers. Talis 2016 indicated that flow direction in the southwest area of the Premises is influenced by offsite abstraction wells located west and southwest of the Premises. Field tests indicate that the superficial aquifer permeability ranges between 0.34 m/day and 1.73 m/day.

The Delegated Officer has reviewed the information regarding hydrogeology and notes the following for the purposes of the risk assessment:

- The sandy, permeable nature of the superficial aquifer indicates that groundwater flow in the upper and lower levels of the aquifer are potential pathways for consideration in the assessment of risk. Based on the aquifer properties, there is unlikely to be significant potential for attenuation of contaminants within the superficial aquifer.
- While groundwater wells with poor integrity have been replaced, it is noted that there is the potential for downward leakage from the upper to the lower superficial aquifer clay is very limited in thickness or absent. Therefore, the superficial aquifer will be considered as a single entity in the assessment of risk to identified receptors.
- The Leederville Aquifer is located approximately 35 m below ground level and is typically overlain by a regionally extensive confining shale aquitard. This expected to restrict any downward migration of contaminants into the Leederville Aquifer and for the purposes of this assessment the aquifer will not be considered in the assessment of pathways or receptors for the risk assessment.
- Based on inferred groundwater flow directions in the superficial aquifer, it is considered likely that groundwater from beneath the Premises has the potential to be in connection with; wetland areas to the northeast and southeast; the Brunswick/Wellesley River system to the south; and groundwater abstraction wells to the west and southwest.

8. Risk assessment

8.1 Determination of emission, pathway and receptor

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

To establish a Risk Event there must be an emission, a receptor which may be exposed to that emission through an identified actual or likely pathway, and a potential adverse effect to the receptor from exposure to that emission. Where there is no actual or likely pathway and/or no receptor, the emission will be screened out and will not be considered as a Risk Event. In addition, where an emission has an actual or likely pathway and a receptor which may be adversely impacted, but that emission is regulated through other mechanisms such as Part IV of the EP Act, that emission will not be risk assessed further and will be screened out through Table 14.

The identification of the sources, pathways and receptors to determine Risk Events are set out in Tables 13 and 14 below.

Table 13: Identification of emissions, pathway and receptors during construction

Risk Events						Continue to detailed risk assessment	Reasoning
Sources/Activities		Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts		
Construction, mobilisation and positioning of infrastructure	Construction of new buildings, plant and infrastructure Excavation of soil below natural ground level Vehicle movements	Noise	Residences Approximately 535 m west south west from the western side of the premises boundary and approximately 900 m east from the eastern side of the premises boundary.	Air / wind dispersion	Amenity impacts	No	Due to the short term nature of construction activities, any emissions of noise may be subject to the provisions of the *Environmental Protection (Noise) Regulations 1997*. No further risk assessment is required.
Construction, mobilisation and positioning of infrastructure	Construction of new buildings, plant and infrastructure Excavation of soil below natural ground level Vehicle movements on unsealed areas	Dust	Residences Approximately 535 m west south west from the western side of the premises boundary and approximately 900 m east from the eastern side of the premises boundary. Wetlands within Premises and 20 m south of the Premises boundary.	Air / wind dispersion	Amenity impacts Disruption to normal ecosystem function	No	The Delegated Officer considers the prevailing wind conditions may provide a pathway for minor dust emissions to impact the nearest sensitive receptors. The Applicant has proposed construction and operation dust management measures that are likely to adequately manage dust emissions: • Dust will be visually monitored and dust controls measures will be implemented to minimise the likelihood of visible dust leaving the premises; • Ground surfaces and materials producing dust will be kept damp by using the onsite water truck; • Maintenance of construction stockpile moisture levels to reduce dust suppression; • Minimise stockpile exposure to wind and minimise stockpile slope. Unsealed gravelled roads and traffic corridors will be monitored and if necessary moistened with a water cart. Due to the short term nature of construction activities, any emissions of dust may be subject to the provisions of section 49 of the EP Act, and no additional regulatory controls are required. No further risk assessment is required.

Risk Events						Continue to detailed risk assessment	Reasoning
Sources/Activities		Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts		
Excavation of soil to create pad level or install subsurface infrastructure	Excavation of soil below natural ground level	Production of sulfuric acid from the oxidation of acid sulfate soils and potential acid sulfate soils Release of elements in soluble form, such as metals and nutrients from the soil profile	Multiple wetlands and waterways Surrounding groundwater bore users (19 within 1 km) Threatened ecological communities buffer and DPAW managed lands Aquifers in the Bunbury Groundwater Area	Soil, groundwater	Decline in the health and amenity of surrounding sensitive receptors, such as: • fish kills and loss of biodiversity in wetlands and waterways; • contamination of groundwater resources by acid, arsenic, heavy metals and other contaminants; • loss of agricultural productivity; and • corrosion of concrete and steel infrastructure by acidic soil and water.	Yes	The proposed works trigger an ASS investigation as per the DER (2015) guidelines. There are several receptors in close range that could be affected by the oxidation of acid sulfate soils. See Section 8.4
Machinery and plant use in construction	Hydrocarbons or chemical from construction machinery, equipment or vehicles	Hydrocarbon or chemical spills	Multiple wetlands and waterways Surrounding groundwater bore users (19 within 1 km) Threatened ecological communities buffer and DPAW managed lands Aquifers in the Bunbury Groundwater Area	Surface water runoff Migration through soil profile Groundwater	Amenity impacts Health impacts Disruption to ecosystem function	No	Minor fuel spillage is adequately regulated by the Environmental Protection (Unauthorised Discharges) Regulations 2004. Applicant has committed to fuel management procedures as well as utilising the current Premises licensed facilities for fuel management: • Appropriate legislation and Australian Standards (AS1940:2017) will be complied with by all personnel and contractors. In order to ensure minimum impact of hydrocarbon or chemical storage associated with the project works, the following management practices will be applied: • Fuels are to be stored in a secured complex in compliance with AS1940:2017 regulations (existing facilities at the landfill to be utilised); • Oily rags and contaminated materials are stored in hydrocarbon skips; • A spill management plan will be implemented, detailing clean-up procedures; and • Good housekeeping and regular inspections and maintenance. The Delegated Officer considers there is no foreseeable risk from spills of hydrocarbons given the Applicant's proposal. No further risk assessment is required.

Table 14: 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		
Composting	Feedstock trucks	Odour	Residences Approximately 535 m west south west from the western side of the premises boundary and approximately 900 m east from the eastern side of the premises boundary.	Air / wind dispersion	Amenity impacts Health impacts	Yes	Feedstocks are recognised as having a high likelihood of producing odour, with odour potentially produced from multiple sources and steps in the composting process. The Delegated Officer considers that the proposed waste receival and unloading area does not meet the description of an enclosed composting system as currently designed. It would be considered an outdoor, covered space. The applicable odour separation distance with the currently designed waste receival building is 1,300 m as compared to 550 m when considered a fully enclosed design. The nearest residence is approximately 535 m from the Premises boundary and approximately 1,100 m from the compost infrastructure. The current risk of odour effects during operations is considered high Risk rating is based on the information in the Application. The risk and operating regulatory controls will be considered during the Licence Application.
	Unloading, decontamination and storage in waste reception and pretreatment area						
	Composting tunnel plant						
	Biofilter						
	Leachate pond						
Composting	Production of leachate from composting feedstocks (FOGO/F4/Green Waste) prior to pasteurisation	Leachate	On site compost maturation and product areas Off site: Multiple wetlands and waterways Surrounding groundwater bore users (19 within 1 km) Threatened ecological communities buffer and DPAW managed lands Aquifers in the Bunbury Groundwater Area	Surface water runoff / overland flow Migration through soil profile to groundwater Air / wind dispersion	Introduction of pathogens and propagules to surrounding environment Nutrient inputs to surrounding environment Amenity impacts from odour Health impacts from odour	No	There are several receptors in close range that could be affected by leachate from unpasteurised compost / feedstocks. Potential to compromise the final compost product. The leachate collection system is designed to contain all runoff from composting operations (taken to mean hardstand areas and concrete pad areas) into the 3 ML capacity leachate pond. The collection system will be designed and constructed to ensure that leachate does not enter the mature product area. The Delegated Officer considers that the controls proposed by the Applicant are sufficient to prevent an emission occurring under most circumstance. Risk rating is based on the information in the Application. The risk and operating regulatory controls will be considered during the Licence Application.

Risk Events						Continue to detailed risk assessment	Reasoning
Sources/Activities		Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts		
Composting	Overtopping of leachate ponds						The leachate pond is designed to be lined with a HDPE membrane and designed to maintain free board of 0.3 m to 0.5 m, with overflow provisions including tankering excess water approximately once per year, with an expected overflow once every 10 years. Further mitigation measures for run-off collection and containment proposed are: - The dam levels will be kept as low as possible to maximise the capacity in the event of heavy rainfall; - For storm events of greater magnitude than the 1 in 10 year ARI storm event, water from the leachate dam will be recycled back to the windrows for evaporation to ensure that it is not released into adjacent surface water or groundwater systems; and - An audio and visual high-level alarm is to be installed at the dam to alert the operational staff of critical dam capacity including a remote controlled electric pump installed in the catchment dam(s). The Delegated Officer notes that the conceptual design includes "Containment of a 20-year 24-hour event with 100% runoff as per relevant guidelines as a reasonable first estimate of dam sizing". The Delegated Officer considers that the controls proposed by the Applicant are sufficient to prevent an emission occurring under most circumstance. The Delegated Officer considers that the controls proposed by the Applicant are sufficient to prevent an emission occurring under most circumstance. Risk rating is based on the information in the Application. The risk and operating regulatory controls will be considered during the Licence Application.
Product maturation area stormwater collection **Water collection**	Runoff from green waste storage hardstand areas	Surface water runoff from green waste mulching area	Multiple wetlands and waterways Surrounding groundwater bore users (19 within 1 km) Threatened ecological communities buffer and DPAW managed lands Aquifers in the Bunbury Groundwater Area	Surface water runoff Migration through soil profile to groundwater	Nutrient inputs to surrounding environment Erosion or sedimentation of surrounding ecological receptors including wetlands	No	There are several receptors in close range that could be affected by surface water runoff. The green waste mulching area hardstand is designed to capture and direct all runoff to the 3 ML stormwater pond. The Delegated Officer considers that the controls proposed by the Applicant are sufficient to prevent an emission occurring under most circumstance. Risk rating is based on the information in the Application. The risk and operating regulatory controls will be considered during the Licence Application.

Risk Events						Continue to detailed risk assessment	Reasoning
Sources/Activities		Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts		
	Overtopping of stormwater pond						The green waste mulching area hardstand is designed to capture and direct all runoff to the 3 ML stormwater pond. The stormwater pond is designed to be lined with a HDPE membrane and designed to maintain free board of 0.3 m to 0.5 m. Further mitigation measures for run-off collection and containment proposed are: - The dam levels will be kept as low as possible to maximise the capacity in the event of heavy rainfall; - For storm events of greater magnitude than the 1 in 10 year ARI storm event, water from the leachate dam will be recycled back to the windrows for evaporation to ensure that it is not released into adjacent surface water or groundwater systems; and - An audio and visual high-level alarm is to be installed at the dam to alert the operational staff of critical dam capacity including a remote controlled electric pump installed in the catchment dam(s). The Delegated Officer notes that the conceptual design includes "Containment of a 20-year 24-hour event with 100% runoff as per relevant guidelines as a reasonable first estimate of dam sizing". The Delegated Officer notes that the Application states, "water from the green waste mulching area of the pad was assumed to be diverted to a separate stormwater pond, which would be able to periodically overflow without any significant consequences". It is noted that the pond is located internally within the site, and that any overflows would be required to be kept within the composting area to prevent erosion or sedimentation to surrounding ecological receptors including the wetland within the Premises. The Delegated Officer considers that the controls proposed by the Applicant are sufficient to prevent an emission occurring under most circumstance. Risk rating is based on the information in the Application. The risk and operating regulatory controls will be considered during the Licence Application.
Mulching and Composting	Composting tunnel plant Mulching plant and machinery	Noise	Residences Approximately 535 m west south west from the western side of the premises boundary and approximately 900 m east from the eastern side of the premises boundary.	Air / wind dispersion	Amenity impacts Health impacts	No	Considered general Emissions and subject to the general requirements of the EP Act and Noise Regulations
Composting	Materials brought to site	Solid waste / litter	Residences Approximately 535 m west south west from the western side of the premises boundary Threatened ecological communities buffer and DPAW managed lands	Air / wind dispersion	Amenity impacts Health impacts	No	The prevailing wind direction is at times towards the residential community and other times towards waterways and the threatened ecological community buffer. Litter and windblown waste is addressed in the current Licence and these regulatory controls are likely to adequately cover the additional risk of litter from the compost and mulching activities at the Premises.
Composting **Mulching**	Putrescible and organic materials being brought to site and stored on site	Vectors / pests	Residences Approximately 535 m west south west from the western side of the premises boundary Threatened ecological communities buffer and DPAW managed lands	Air / wind dispersion Movement over land	Amenity impacts Health impacts Putrescible feedstocks in open storage may attract vectors and vermin whose range may affect nearby receptors.	No	Vermin control is addressed in the current Licence and these regulatory controls are likely to adequately cover the additional risk of vermin from the compost and mulching activities at the Premises.

Risk Events						Continue to detailed risk assessment	Reasoning
Sources/Activities		Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts		
Composting Mulching	Flammable materials being stored and processed on site.	Fire related emissions including embers and smoke	Residences Approximately 535 m west south west from the western side of the premises boundary and approximately 900 m east from the eastern side of the premises boundary. Multiple wetlands and waterways Threatened ecological communities buffer DPAW managed lands	Air / wind dispersion	Embers travelling through air causing fire and ecological harm Amenity impacts from smoke	Yes	The prevailing wind direction is at times towards the residential community and other times towards waterways and the threatened ecological community buffer. The product maturation area processing 20,000 tpa of compost product represents a large stockpile of flammable material on site at any one time. The Delegated Officer considers that the final size and configuration of the product maturation area will need to allow for emergency services vehicle access for fire-fighting between windrows. The BHRC has an emergency management plan. The Delegated Officer considers that this will need to be updated to reflect the risk of storing compost. Risk rating is based on the information in the Application. The risk and operating regulatory controls will be considered during the Licence Application.

8.2 Consequence and likelihood of risk events

A risk rating will be determined for risk events in accordance with the risk rating matrix set out in Table 15 below. DWER will undertake an assessment of the consequence and likelihood of the Risk Event in accordance with Table 16 below.

Table 15: 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

Table 16: Risk criteria table

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

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

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

"onsite" means within the Prescribed Premises boundary.

8.3 Acceptability and treatment of Risk Event

DWER will determine the acceptability and treatment of Risk Events in accordance with the Risk treatment Table 17 below:

Table 107: Risk treatment table

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

8.4 Risk Assessment – acid sulfate soils disturbance in construction

8.4.1 Description of acid sulfate soils impacts

Excavation to below natural ground level causing the oxidation of potential acid sulfate soils and acid sulfate soils. The sulfuric acid can release of elements such as metals and nutrients from the soil profile. Where the soil intersects groundwater, the acidic conditions can mobilise and affect the quality and function of surrounding wetlands and waterways, surrounding groundwater bore users (19 within 1 km), adjacent threatened ecological communities' buffer and DPAW managed lands or aquifers in the Bunbury Groundwater Area

8.4.2 Identification and general characterisation of emission

Excavation to below natural ground level causing the oxidation of potential acid sulfate soils and acid sulfate soils.

8.4.3 Description of potential adverse impact from the emission

Decline in the health and amenity of surrounding sensitive receptors, such as:

- fish kills and loss of biodiversity in wetlands and waterways;
- contamination of groundwater resources by acid, arsenic, heavy metals and other contaminants;
- loss of agricultural productivity; and
- corrosion of concrete and steel infrastructure by acidic soil and water.

8.4.4 Criteria for assessment

The Department considers DER, (2015), *Identification and investigation of acid sulfate soil and acidic landscapes* in considering acid sulfate soils under the EP Act and Contaminated Sites Act 2003.

8.4.5 Applicant/Licence Holder controls

This assessment has not addressed acid sulfate soils in the Application.

8.4.6 Key findings

The Delegated Officer has reviewed the information regarding acid sulfate soils and has found:

1. An acid sulfate soil investigation is required prior to these works being carried out. DER (2015) states that an acid sulfate soil investigation should be carried out where there is excavation within 500 m of a wetland and where there is planned excavation to greater than 3 m below the natural ground level in an area mapped as low to medium risk of acid sulfate soils.

8.4.7 Consequence

If acid sulfate soils are present at the Premise and the proposed works cause the oxidation of acid sulfate soils, then the Delegated Officer has determined that the impact to surrounding receptors of acid sulfate soils will be major. Therefore, the Delegated Officer considers the consequence of acid sulfate soils impacts to be major.

8.4.8 Likelihood of Risk Event

The Delegated Officer has determined that the likelihood of impacts from acid sulfate soils present onsite causing impacts to surrounding areas with no investigations or action is possible. Therefore, the Delegated Officer considers the likelihood of acid sulfate soils to be possible.

8.4.9 Overall rating of acid sulfate soils

The Delegated Officer has compared rating matrix (Table 15) and determined that the overall rating for the risk of acid sulfate soils is high. the consequence and likelihood ratings described above with the risk

8.5 Risk Assessment – odour during operations

8.5.1 Description of odour impacts during operation

Odour from feedstocks and the compost can affect the amenity and health of people in surrounding residential areas. The nearest residence is approximately 535 m from the Premises boundary and approximately 1100 m from the compost infrastructure.

There are several potential significant sources of odour during the complete composting process described including

- Feedstock trucks including movements and any washing or decontamination procedures;
- Unloading, decontamination and storage in waste reception and pre-treatment area;
- Composting tunnel plant;
- Biofilter; and

- Leachate pond.

The proposed feedstocks are recognised as having a high potential to produce odour.

8.5.2 Identification and general characterisation of emission

Odour generated in the compost process is generally associated with receipt, storage, handling and decomposition of putrescible feedstocks and leachate and runoff generated from feedstock and compost, in the initial pasteurisation stages.

The routine operations are expected to emit large volumes of odorous air, for example several loads per day of feedstocks being spread over the receivals area pad to be decontaminated, then the clean fraction will be shredded before being moistened by re-used water from pasteurisation leachates.

The Application refers to separation distances provided in the Draft DWER '*Environmental Standard: Composting*' (March 2016) which has been withdrawn. However, the same distances are provided as screening distances in the *DWER Guideline: Odour Emissions (Odour guideline)* (https://www.der.wa.gov.au/our-work/licences-and-works-approvals/541-guideline-odour-emissions). For composting, several configurations are specified in the odour guideline with different screening distances reflecting the risk of odour emissions attached to them.

The Applicant has considered that the proposed receival and windrow preparation structure would be classified as an 'In-vessel or enclosed composting with odour controls' option. However, the proposed roof and screening wall configuration implies that material receival, screening, decontamination, shredding or any other operations to prepare windrows for the pasteurisation phase should be enclosed with odour controls and not only the pasteurisation phase. Therefore, the screening distance of 550 m would not apply in this instance but 1,300 m (for 'Outdoor covered windrows with continuous aeration').

If the building will be enclosed, then it would be expected that the bulk air of the building will be extracted and treated and that the building will be maintained under negative pressure.

8.5.3 Description of potential adverse impact from the emission

Odour can cause amenity and health impacts to surrounding receptors. The nearby residential areas are considered sensitive receptors for odour. The Delegated Officer notes that the closest residence is approximately 535 m from the Premises boundary and approximately 1100 m from the proposed compost infrastructure. Both identified residences within proximity of the premises are down prevailing wind direction.

8.5.4 Criteria for assessment

The *DWER Guideline: Odour Emissions* (https://www.der.wa.gov.au/our-work/licences-and-works-approvals/541-guideline-odour-emissions).

8.5.5 Applicant controls

The Applicant considers odour control in detail including the following principles for odour control:

- Areas of odour generation will be minimised and process stages, which are a source for offensive odour release, will be encapsulated (e.g. tunnels, aeration system, humidifier, sludge collection pits).
- Odorous air will be recycled into the tunnel process as far as possible in order to minimize the total air volume (m3/hr) released from the biofilter facility.

- Only proven and reliable air handling equipment (i.e. fans, scrubber, ducts) will be installed, with contingency provisions to minimise down times (repair, maintenance).
- Fully sealed tunnel concrete structure with lockable and rubber sealed doors.
- A two stage deodorisation unit (i.e. humidifier, biofilter) with performance monitoring and control procedures to achieve high and consistent performance (given as target performance of 500 odour units (ou) and 97% odour abatement).

8.5.6 Key findings

The Delegated Officer has reviewed the information regarding odour during operations and has found:

- The proposed feedstocks are recognised as having a high potential to produce odour.
- While the composting tunnels are fully enclosed, there are several potential significant sources of odour during the composting process including feedstock receipt and storage prior to processing and leachate generation and storage.
- The waste reception building is not considered to be a closed building for the purposes of odour control as currently designed. For the purposes of the risk assessment it is considered as an outdoor, covered space.
- The applicable odour separation distance with the currently designed waste receival building is considered to be 1,300 m based on the current structure design. The nearest residence is approximately 535 m from the Premises boundary and approximately 1,100 m from the compost infrastructure.

8.5.7 Consequence

If odour affects surrounding sensitive receptors, then the Delegated Officer has determined that the impact will be moderate, with mid-level impacts to amenity of surrounding residential areas. Therefore, the Delegated Officer considers the consequence of odour impacts to be major.

8.5.8 Likelihood of Risk Event

Based on the receival infrastructure design and the current feedstock process description the Delegated Officer has determined that the likelihood of impacts from odour causing amenity and possible health impacts is likely.

8.5.9 Overall indicative rating of odour

The Delegated Officer has compared rating matrix (Table 15) and determined that the overall rating for the risk of odour impacts during operations given the information in the application is high.

The Delegated Officer considers that the risk of odour effects is related to the design of the feedstock receival infrastructure and the Applicant process methodology. It is considered that by enclosing the waste receivals building with the bulk air of the building being extracted and treated and the building maintained under negative pressure, the consequence and likelihood of odour emission impacts would be reduced to an acceptable level. Regulatory controls have been proposed to manage the infrastructure design to achieve this outcome.

In addition, the compost process should be reviewed and re-submitted as part of the Licence application to include further information to assess operational odour risk including:

- further detail of the proposed biofilter design, for example if the treated air is only emitted to the atmosphere or if and how part of it would be recirculated underneath the windrow in the tunnels
- an assessment of how the biofilter will achieve the target performance of 500 odour units (ou) and 97% odour abatement
- the monitoring regime, and minimum management of this biofilter and what corrective actions and contingency actions are envisaged should the performance decrease. This should include how the targeted performance of the biofilter (97% abatement of odour and an outlet odour concentration around 500 ou) will be monitored and what other surrogate parameters may be used to assess performance on a daily basis.
- odour management strategies for other operational activities that may produce odour, such as truck wash down / decontamination

8.6 Risk Assessment – fire risk in operations

8.6.1 Description of fire risk

The storage of up to 20,000 tpa of compost in the maturation area represents a flammable source of organic matter. This may be subject to accidental fire (such as machinery malfunction causing an ignition source) or malicious sources.

Fire can produce smoke that may affect the amenity of nearby residents, approximately 535 m west and 900 m east of the Premises boundary and at times in the prevailing wind path. Embers can also spread fire to other sites, and this may affect the quality and function of surrounding receptors such as wetlands and waterways within and near the site, adjacent threatened ecological communities buffer and DPAW managed lands.

8.6.2 Identification and general characterisation of emission

Fire in the compost maturation area can produce smoke and fire embers.

8.6.3 Description of potential adverse impact from the emission

Decline in the amenity of surrounding sensitive receptors in residential areas

Decline in the quality and function of ecological receptors from vegetation and habitat destruction and direct harm to fauna.

8.6.4 Criteria for assessment

There are no specific criteria for smoke emissions. 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.

8.6.5 Applicant/Licence Holder controls

This Applicant has referred to the BHRC Emergency Management Plan for the Premises, that includes addressing:

- Fire or explosion in the building;
- Fire in landfill;
- Fire in haulage vehicle; and
- Grass / scrub fire.

8.6.6 Key findings

The Delegated Officer has reviewed the information regarding fire risk and has found:

2. The storage of compost represents a new fire risk that needs to be addressed in the Premises emergency management procedures
3. The Applicant has emergency management plan for the currently Licenced activities.

8.6.7 Consequence

If fire causes smoke or embers at the Premises, then the Delegated Officer has determined that the impact to surrounding receptors of fire will be major. Therefore, the Delegated Officer considers the consequence of fire to be major.

8.6.8 Likelihood of Risk Event

The Delegated Officer has determined that with the appropriate on site emergency management procedures, the likelihood of impacts from fire causing impacts to surrounding areas is rare. Therefore, the Delegated Officer considers the likelihood of fire impacts to surrounding receptors be rare.

8.6.9 Overall rating of fire impacts

The Delegated Officer has compared rating matrix (Table 15) and determined that the overall rating for the risk of fire medium.

8.7 Summary of acceptability and treatment of Risk Events

A summary of the risk assessment and the acceptability or unacceptability of the risk events set out above, with the appropriate treatment and control, are set out in Table 18 below. Controls are described further in section 11.

Table 11: Risk assessment summary

	Description of Risk Event			Applicant controls	Risk rating	Acceptability with controls (conditions on instrument)
	Emission	**Source**	**Pathway/ Receptor (Impact)**			
1.	Construction acid sulfate soils	Excavation below natural ground level	Soil and groundwater transmission to surrounding wetlands, bore users, aquifer	None proposed	Major consequence Possible likelihood **High risk**	Acceptable subject to regulatory conditions / outcomes based controls
2.	Operation - odour	Odour feedstocks and composting operations	Pathway through air to surrounding residence	See Section 8.5.5	Moderate consequence Likely likelihood **High risk**	Acceptable subject to regulatory conditions / outcomes based controls
3.	Operation – smoke and embers from fire	Ignition of compost materials	Pathway through air to surrounding ecological receptors and residences	See Section 8.6.5	Major consequence Rare likelihood **Medium risk**	Acceptable subject to regulatory conditions / outcomes based controls

9. Regulatory controls

A summary of regulatory controls determined to be appropriate for the Risk Event is set out in this section. DWER will determine controls having regard to the adequacy of controls proposed by the Applicant. The conditions of the Works Approval will be set to give effect to the determined regulatory controls.

It is considered that for risk events not assessed in detail, that the risk outcome is dependent on the Applicant controls being effective, specifically that infrastructure is constructed in accordance with the proposed design. As part of the Licence application, the Department will assess adequacy of the construction of infrastructure and re-assess operational controls, if required, for risk events including:

- Leachate;
- Surface water;
- Noise; and
- Vector risks (windblown waste and vermin and pests)

9.1 Works Approval controls

9.1.1 General construction conditions

The regulatory controls will specify conditions related to the construction and installation of infrastructure to ensure it will meet fit for purpose requirements in operation.

9.1.2 Construction acid sulfate soils

The regulatory controls will specify that the Applicant carry out acid sulfate soils investigations to identify and appropriately manage the risk of acid sulfate soils prior to construction, as per DWER guidelines.

9.1.3 Odour during operation

The regulatory controls for the Works Approval will reflect the Applicant's proposed management measures. In addition, the waste receival building shall be constructed as a fully enclosed building, to meet the odour principles specified by the Applicant and to meet recommended separation distances from sensitive receptors.

The regulatory controls for operations will be assessed and included in the Licensing stage.

9.1.4 Fire smoke and embers during operation

The regulatory controls will reflect a targeted update to the Applicant's current emergency management procedures with respect to the fire risk from compost and mulching activities.

10. Determination of conditions

10.1 Determination of Works Approval conditions

The conditions in the issued Works Approval in Attachment 1 have been determined in accordance with the *Guidance Statement: Setting Conditions*.

Table 19 provides a summary of the conditions to be applied to this works approval.

Table 19: Summary of conditions to be applied

Condition Ref	Grounds
Installation and construction requirements 1, 2, 3 and 4	These conditions are valid, risk-based and enable flexibility in operations.
Acid sulfate soil investigation and reporting 5 and 6	These conditions are valid, risk-based and consistent with the EP Act.
Emissions 7	These conditions are valid, risk-based and consistent with the EP Act.
Record keeping 8 and 9	These conditions are valid and are necessary administration and reporting requirements to ensure compliance.

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

10.2 Determination of Licence conditions

DWER notes the concept design submitted by the Applicant and will review the screening risk assessment undertaken at this stage, at the time of Licensing.

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

11. Applicant's comments

The Applicant was provided with the draft Decision Report and draft issued Works Approval on 18 March 2020. The Applicant provided comments which are summarised, along with DWER's response, in Appendix 2.

12. Conclusion

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

This assessment was also informed by a site inspection by DWER officers on 11 July 2019.

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

Tracey Hassell

Digitally signed by Tracey Hassell
Date: 2020.04.24 12:20:50 +08'00'

TRACEY HASSELL
A/MANAGER WASTE INDUSTRIES
REGULATORY SERVICES
Delegated Officer under section 20 of the *Environmental Protection Act 1986*

Appendix 1: Key documents

	Document title	In text ref	Availability
1.	L8949/2016/1	Existing Licence	accessed at www.der.wa.gov.au
2.	CPS 5394/4	Clearing Permit	accessed at www.der.wa.gov.au
3.	Works Approval Application – Bunbury Harvey Regional Council Stanley Road Landfill Composting Facility	Application	DWER records (A1736658)
4.	Design and Approval of New Composting Facility - Stanley Road Waste Facility Department of Water and Environmental Regulation - Request for further information on WAA	Application GHD 2018	DWER records (A1751023)
5.	Bunbury Harvey Regional Council Stanley Road Waste Facility – new Appendix C, Additional supporting information	Application	DWER records (A1779685)
6.	Application to amend clearing permit CPS 5394/4	Clearing Permit amendment	DWER records (A1803702)
7.	DER, July 2015. *Guidance Statement: Regulatory principles.* Department of Environment Regulation, Perth.	DER 2015a	accessed at www.dwer.wa.gov.au
8.	DER, October 2015. *Guidance Statement: Setting conditions.* Department of Environment Regulation, Perth.	DER 2015b	
9.	DER, August 2016. *Guidance Statement: Licence duration.* Department of Environment Regulation, Perth.	DER 2016a	

	Document title	In text ref	Availability
10.	DER, November 2016. *Guidance Statement: Risk Assessments*. Department of Environment Regulation, Perth.	DER 2016b	
11.	DER, November 2016. *Guidance Statement: Environmental Siting.* Department of Environment Regulation, Perth.	DER2016c	
12.	DER, November 2016. *Guidance Statement: Decision Making*. Department of Environment Regulation, Perth.	DER 2019a	
13.	DWER, June 2019. *Guideline: Industry Regulation Guide to Licensing.* Department of Water and Environmental Regulation, Perth.	DWER 2019b	
14.	DER, June 2015. *Identification and investigation of acid sulfate soil and acidic landscapes*, Department of Environment Regulation, Perth.	DER 2015	

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

Condition	Summary of Licence Holder comment	DWER response
1 (Table 2) Infrastructure and equipment requirements table	The Applicant agrees to conditions relating to: • Pad construction; • Pad level; • Slab engineering and construction; • Composting tunnel construction; • Hardstand construction for other composting pad areas not covered by composting tunnel plant; and • Drainage infrastructure construction.	Agreement noted.
1 (Table 2) Concrete slab for tunnel composting plant area	Hydraulic conductivity of pad parameters – concrete slab provides an impermeable barrier and hydraulic conductivity of 1 X 10^{-9} m/s is not relevant.	Inclusion of the requirement of a maximum allowable hydraulic conductivity of 1 X10 $^{-9}$ m/s is standard wording used throughout DWER's issued instruments – wording has been retained in condition. In the case of a concrete slab, demonstration that it has been laid with no cracks or defects is sufficient evidence to demonstrate the conditions has been met.
1 (Table 2) Waste reception and pre-treatment building	Fully enclosed building condition – not agreed – this is a partially enclosed undercover area with a roof and is not connected to a biofilter. Maintained under negative pressure – not agreed – this is a partially enclosed building, and cannot be maintained under negative pressure	DWER's experience indicates that odour generated from FOGO handling has the potential to cause significant amenity impacts to sensitive receptors more than 1 km away. A major odour generating activity identified at FOGO handling premises is the deposit of FOGO wastes at

Condition	Summary of Licence Holder comment	DWER response
	Bulk of the building air extracted and treated by a biofilter to target 97% odour reduction – not agreed – this applies to the air from the tunnels only, not the building The Applicant does not believe that there is sufficient justification for total enclosure of the waste reception and pre-treatment building. The low odour nature of the product (i.e. FOGO and greenwaste) and the temporary timeframes involved with storage of this material prior to being placed within sealed in-vessel composting tunnels, does not, in the Applicant's opinion and experience, warrant a fully closed building for the waste reception and pre-treatment building with the controls as proposed. Instead, the Applicant suggests that a condition is imposed with regards to the maximum volume of material and timeframe that fresh source material can be stored within the waste reception and pre-treatment building prior to being placed into the controlled environment of the tunnel compost system. In normal circumstances, it is expected that all material would be removed overnight, and floors cleaned in readiness for the next day of operations. Further to this, and upon commissioning the plant, odour should be monitored using field surveys and at periodic annual timeframes with clear trigger levels and contingencies prescribed with regards to the outcomes of those surveys. The outcome of any odour field survey should be additionally supported/validated through the receipt of any odour complaints by the general public. The Applicant recommends the timing and methodology of any odour survey program should be developed in consultation and agreement with DWER.	reception areas prior to transportation for processing. DWER considers that the most effective and proven odour control for FOGO handling premises is to ensure buildings/warehouses are fully enclosed with adequate ventilation filtration systems and process controls implemented that ensures access points for deliveries and outgoings are kept closed in between vehicle movements and unloading/loading activities. The Applicants views are noted, however the comments provided do not justify a change to DWER's risk assessment and decision in regard to the need for the waste reception and pre-treatment building to be: • Fully enclosed; • Maintained under negative pressure; and • For the bulk air of the building extracted and treated for odour to a target performance of approximately 97% of its original odour removed. These conditions have not been changed.

Condition	Summary of Licence Holder comment	DWER response
1 (Table 2) Leachate Pond	The Applicant notes the requirement to contain storm events "of greater magnitude than the 1 in 10 year ARI storm event". Please confirm this should be "up to the 1 in 10 year…". We anticipate this is the intention based on GHD's Water Modelling Summary Memorandum and also because specifying a maximum event is more applicable in this context than a minimum. Likewise, we anticipate that the requirement to "include any structures needed to prevent overflows" applies up to the 10 year design event.	Comments noted. Condition wording changed to 'designed to contain a 1 in 10 year ARI storm event'.
1 (Table 2) Stormwater Pond	As outlined in GHD's Water Modelling Summary Memorandum it is proposed that runoff from different portions of the site be separated such that the stormwater system is intended to manage the lower risk runoff areas, with discharge from the stormwater pond occurring more frequently, subject to appropriate housekeeping and maintaining stormwater areas free of higher risk materials such as early stage composting materials. The Applicant proposes that the requirements with relation to the 10 year ARI event, lining with an HDPE membrane and preventing overflows are not proportional to the risk posed by the stormwater runoff. Rather, a condition requiring ongoing housekeeping measures to maintain this catchment separation would be more appropriate, as well as relying on water quality monitoring in the pond to confirm appropriate separation of catchments.	It is DWER's understanding that the stormwater pond will contain stormwater runoff from the mulching area of the Premises. Stormwater that comes into contact with stockpiled greenwaste or mulch may become contaminated with any leachate generated, which has potential adverse environmental impacts. The consistent approach of DWER is that all Premises that stockpile greenwaste and/or mulch have a stormwater/leachate collection pond that is HDPE lined. The Applicants views are noted, however this condition has not been changed. Condition wording is changed to 'designed to contain a 1 in 10 year ARI storm event' in light of above comments on the Leachate Pond.
1 (Table 2) Biofilter	The Applicant is not aware of any structures that enable ongoing odour levels to be monitored, other than sampling	Conditions within the Works Approval allow some flexibility regarding how infrastructure/equipment construction requirements can be met. The

Condition	Summary of Licence Holder comment	DWER response
	cones, which are used for collecting odour samples and are brought in especially for that purpose. Please refer to the post-commissioning odour field survey recommendations as per the conditions regarding the *Waste reception and pre-treatment building*	requirement to include measures to ensure that monitoring of the infrastructure function is achievable for ongoing site operations. Note that the design of the chosen monitoring process should demonstrate biofilter functionality, and as such instrumentation does not need to monitor odour, but may monitor air flow, moisture, humidity or other parameters in accordance with the manufacturer's recommendations. Condition wording has been modified from 'structures' to 'instrument or design feature' to reflect the intent of the infrastructure requirement in light of BHRC's proposal.
4 and 5 Acid Sulfate Soils investigations	An Acid Sulfate Soil (ASS) investigation will be undertaken in accordance with DWER guidance (June 2015). Contingent on the outcome of the investigation, if required, an ASS Management Plan (ASSMP) will also be prepared to manage ASS disturbance risk during construction	Agreement noted.

Attachment 1: Works Approval W6223/2019/1