Government of Western Australia
Department of Environment Regulation

Works Approval

Environmental Protection Act 1986, Part V

Works Approval Holder: Abbotts Liquid Salvage Pty Ltd

Works Approval Number: W5905/2015/1

Registered office: 8 Princess Royal Drive
ALBANY WA 6330

ACN: 125 634 004

Premises address: Abbotts Liquid Salvage
35494 Albany Hwy
DROME WA 6330
Being Part of Lot 4638 on Plan 157018 within co-ordinates (MGA Zone 50) -34.9376S, 117.7778E; -34.9375S, 117.7827E; -34.935S, 117.7827E; -34.9351S, 117.7810E; -34.9346S, 117.7770E; -34.9339S, 117.7806E as depicted in Schedule 1.

Issue date: Thursday, 11 February 2016

Commencement date: Friday, 12 February 2016

Expiry date: Sunday, 10 February 2019

The following category/s from the *Environmental Protection Regulations 1987* cause this Premises to be a prescribed premises for the purposes of the *Environmental Protection Act 1986*:

Category number	Category description	Category production or design capacity	Approved premises production or design capacity
67A	Compost Manufacturing and Soil Blending: premises on which organic material (excluding silage) or waste is stored pending processing, mixing, drying or composting to produce commercial quantities of compost or blended solids	1 000 tonnes or more per year	6500 tonnes per annual period

Conditions
This Works Approval is subject to the conditions set out in the attached pages.

Date signed: 10 February 2016
.....
Caron Goodbourn
A/Manager Licensing (Waste Industries)
Officer delegated under section 20
of the *Environmental Protection Act 1986*

Works Approval Conditions

1 General

1.1 Interpretation

1.1.1 In the Works Approval, definitions from the *Environmental Protection Act 1986* apply unless the contrary intention appears.

1.1.2 In the Works Approval, unless the contrary intention appears:

'Act' means the *Environmental Protection Act 1986;*

'annual period' means the inclusive period from 1 January until 31 December in the same year;

'averaging period' means the time over which a limit or target is measured or a monitoring result is obtained;

'ASTM D5092-04(2010)e1' means the standard ASTM D5092-04(2010)e1 *Standard practice for design and installation of groundwater monitoring wells*;

'CEO' means Chief Executive Officer of the Department of Environment Regulation;

'CEO' for the purpose of correspondence means;

Chief Executive Officer
Department Administering the *Environmental Protection Act 1986*
Locked Bag 33
CLOISTERS SQUARE WA 6850
Email: info@der.wa.gov.au

'Condition' means a condition to which this Works Approval is subject under Section 62 of the Act, and as set out in this Works Approval;

'NATA' means the National Association of Testing Authorities, Australia;

'NATA accredited' means in relation to the analysis of a sample that the laboratory is NATA accredited for the specified analysis at the time of the analysis;

'Premises' means the area defined in the Premises Map in Schedule 1 and listed as the Premises address on page 1 of the Works Approval;

'Schedule 1' means Schedule 1 of this Works Approval unless otherwise stated;

'Works Approval' means this Works Approval numbered W5905/2015/1 and issued under the Act;

'Works Approval Holder' means the person or organisation named as the Works Approval Holder on page 1 of the Works Approval;

1.1.3 Any reference to an Australian or other standard in the Works Approval means the relevant parts of the standard in force from time to time during the term of this Works Approval.

1.1.4 Any reference to a guideline or code of practice in the Works Approval means the current version of the guideline or code of practice in force from time to time, and shall include

any amendments or replacements to that guidelines or code of practice made during the term of this Works Approval.

1.2 General conditions

1.2.1 Subject to the Conditions of this Works Approval, the Works Approval Holder must construct the works in accordance with the document listed in Table 1.2.1:

Table 1.2.1: Construction Requirements[1]

Document	Parts	Date of Document
Abbotts Liquid Salvage Proposed Biosolid Composting Facility Commissioning Plan 2015, Revision 2	Potential Impacts from Composting Facility	October 2015
	Water Balance	
	Facility Construction	

Note 1: Where the details and commitments of the documents listed in condition 1.2.1 are inconsistent with any other Condition of this Works Approval, the Conditions of this Works Approval shall prevail.

1.2.2 The Works Approval Holder must ensure that the Works specified in Column 1 of Table 1.2.2 meet or exceed the specifications in Column 2 of Table 1.2.2 for the infrastructure in each row of Table 1.2.2.

1.2.3 The Works Approval Holder must not depart from the specifications in Table 1.2.2 except:
(a) where such departure is minor in nature and does not materially change or affect the infrastructure; or
(b) where such departure improves the functionality of the infrastructure and does not increase risks to public health, public amenity or the environment;
and all other Conditions in this Works Approval are still satisfied.

Table 1.2.2: Works specifications

Column 1	Column 2
Infrastructure	**Specifications (design and construction)**
1) Hardstand	(a) The composting hardstand must; (i) be lined using a clay liner; and (ii) be engineered and constructed so as to be capable of accommodating the weight and movement of materials, vehicles and equipment used in the production of compost and required to operate on the hardstand, without distortion, cracking or otherwise compromising the integrity of the liner or altering the permeability and (iii) have a minimum 2% drainage gradient to ensure the free drainage of all leachate to leachate collection infrastructure; and (iv) have an impervious ($1x10^{-9}$m/s) kerbing/bunding of at least 150mm to prevent run-on and run-off of surface water, including a 1 in 20 year storm event (20 year average recurrence interval) of 72 hours duration; and (v) have a seal between the hardstand and any bunding/kerbing that is impervious ($1x10^{-9}$m/s). (b) The composting hardstand clay liner must: (i) comprise successive compaction of a minimum of two separate layers of 150mm of clay once compacted; (ii) have each clay layer scoured to ensure each clay layer is effectively bonded to the adjoining clay layer; (iii) be at least 300mm thick in total once compacted; (iv) have a hydraulic conductivity of less than $1x10^{-9}$m/s; (v) be covered with a protective layer that will protect the liner from damage as a result of day-to-day activities or machinery movements.

2) Leachate collection infrastructure	(c) Leachate collection infrastructure that will collect all leachate from the hardstand and direct the leachate into the leachate storage dam must: (i) be constructed of impervious material ($1x10^{-9}$m/s); and (ii) have impervious bunding of at least 150mm to prevent run-on of surface water.
3) Leachate storage dam	(d) The leachate storage dam must be lined using either clay, or HDPE and the liner must be constructed in accordance with the following specifications: (i) A clay liner must: a. comprise successive compaction of a minimum of two separate layers of 150mm of clay once compacted; b. have each clay layers scoured to ensure each clay layer is effectively bonded to the adjoining clay layer; c. be at least 300mm thick in total once compacted; d. have a hydraulic conductivity of less than $1x10^{-9}$m/s. (ii) A HDPE liner must have: a. a minimum thickness of 1.55 mm with heat welded joints; b. have a permeability of less than $1x10^{-9}$m/s; and c. be capable of maintaining that permeability for the working life of the pond. (e) Batter slopes for the liners on the sides of ponds must not exceed 1:3 vertical to horizontal elevation to ensure compaction and stability of the dam liner.
4) Leachate conveyance infrastructure	(f) The infrastructure for the conveyance of leachate from the leachate storage dam to the anaerobic liquid waste treatment ponds must be impermeable, adequately sized to ensure overflow of leachate cannot occur, and free of leaks or defects.
5) Groundwater monitoring bore	(g) One groundwater monitoring bore must be installed in accordance with ASTM D5092-04(2010)e1 and located north of the composting hardstand within the Premises. (h) The groundwater monitoring bore must be surveyed to allow the ground level and groundwater level (AHD and BGL) to be accurately determined during monitoring events.
6) Other treatments	(i) Plant machinery and vehicles involved in the construction of the works must operate only between 7am to 6am Monday to Friday.

1.2.4 The Works Approval Holder must not undertake commissioning or operation of the Works.

2 Information

2.1 Reporting

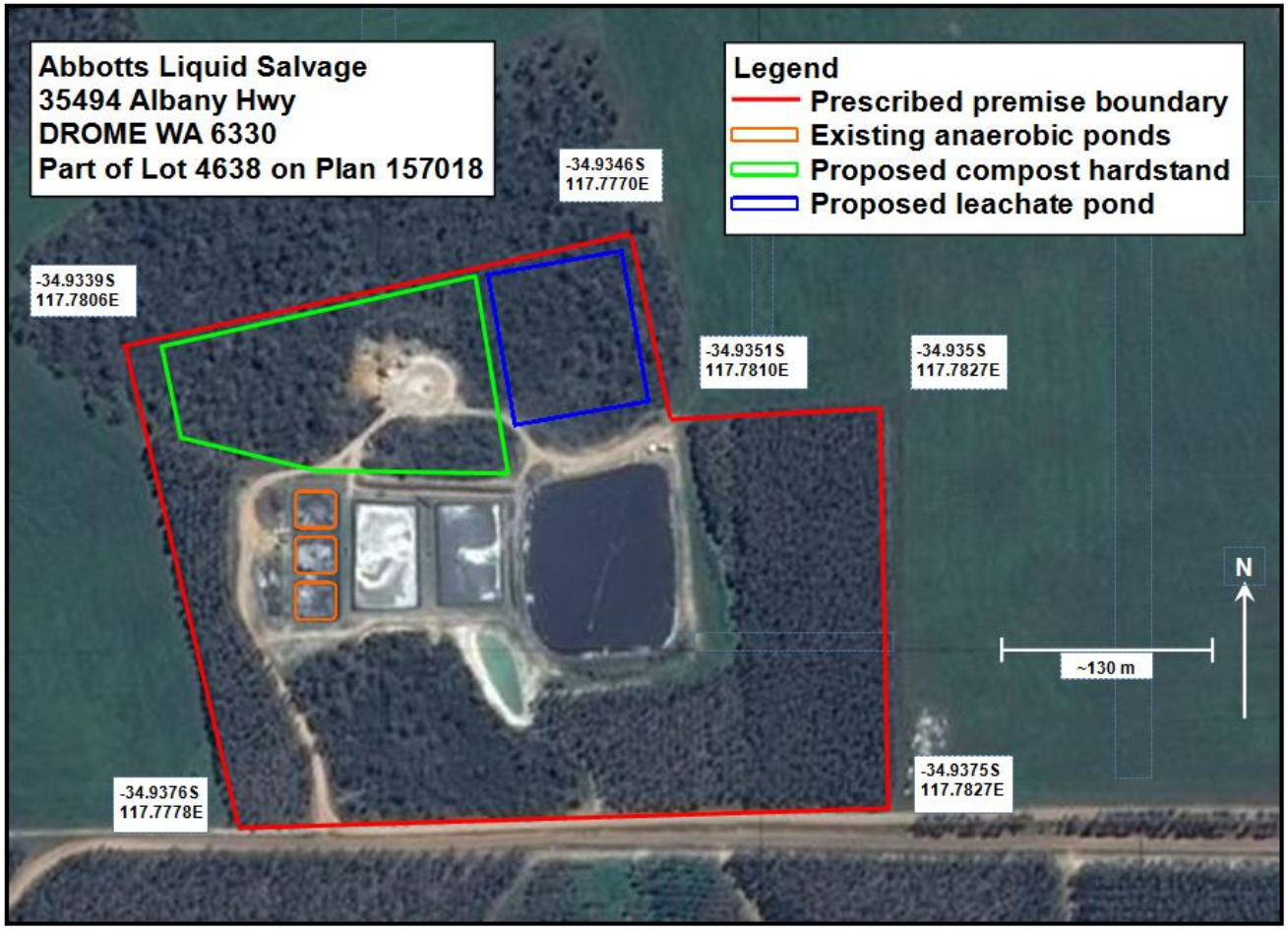
2.1.1 Subject to Condition 1.2.3, the Works Approval Holder must, at least 21 days prior to the commencement of the Works, provide to the CEO detailed engineering and construction drawings and plans that are certified by a suitably qualified professional engineer that each item of infrastructure specified in Column 1 of Table 1.2.2 meets or exceeds the specifications in Column 2 of Table 1.2.2 for the infrastructure in each row of Table 1.2.2.

2.1.2 The Works Approval Holder must submit a construction compliance document to the CEO, following the construction of the works.

2.1.3 The Works Approval Holder must ensure the construction compliance document:
(a) is certified by a suitably qualified professional engineer or builder that each item of infrastructure specified in Condition 1.2.2, Table 1.2.2 has been constructed in accordance with the Conditions of the Works Approval with no material defects;
(b) be signed by a person authorised to represent the Works Approval Holder and contain the printed name and position of that person within the company.

Schedule 1: Maps

Premises map
The Premises is shown in the map below.



Government of Western Australia
Department of Environment Regulation

Decision Document

Environmental Protection Act 1986, Part V

Proponent: Abbotts Liquid Salvage Pty Ltd

Works Approval: W5905/2015/1

Registered office:	8 Princess Royal Drive ALBANY WA 6330
ACN:	125 634 004
Premises address:	Abbotts Liquid Salvage 35494 Albany Hwy DROME WA 6330 Being Part of Lot 4638 on Plan 157018 within co-ordinates (MGA Zone 50) -34.9376S, 117.7778E; -34.9375S, 117.7827E; -34.935S, 117.7827E; -34.9351S, 117.7810E; -34.9346S, 117.7770E; -34.9339S, 117.7806E.
Issue date:	Thursday, 11 February 2016
Commencement date:	Friday, 12 February 2016
Expiry date:	Sunday, 10 February 2019

Decision

Based on the assessment detailed in this document the Department of Environment Regulation (DER), has decided to issue a works approval. DER considers that in reaching this decision, it has taken into account all relevant considerations.

Decision Document prepared by:	Tessa Smith Licensing Officer
Decision Document authorised by:	Caron Goodbourn Delegated Officer

Contents

1 Purpose of this Document

This decision document explains how DER has assessed and determined the application and provides a record of DER's decision-making process and how relevant factors have been taken into account. Stakeholders should note that this document is limited to DER's assessment and decision making under Part V of the *Environmental Protection Act 1986.* Other approvals may be required for the proposal, and it is the proponent's responsibility to ensure they have all relevant approvals for their Premises.

2 Administrative summary

Administrative details		
Application type	Works Approval ☒ New Licence ☐ Licence amendment ☐ Works Approval amendment ☐	
Activities that cause the Premises to become prescribed Premises	**Category number(s)** 67A	**Assessed design capacity** 6500 tonnes per annum
Application verified Application fee paid	Date: 23/09/2015 Date: 08/10/2015	
Works Approval has been complied with Compliance Certificate received	Yes☐ No☐ N/A☒ Yes☐ No☐ N/A☒	
Commercial-in-confidence claim	Yes☐ No☒	
Commercial-in-confidence claim outcome		
Is the proposal a Major Resource Project?	Yes☐ No☒	
Was the proposal referred to the Environmental Protection Authority (EPA) under Part IV of the *Environmental Protection Act 1986*?	Yes☐ No☒	Referral decision No: Managed under Part V ☐ Assessed under Part IV ☐
Is the proposal subject to Ministerial Conditions?	Yes☐ No☒	Ministerial statement No: EPA Report No:
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the *Environmental Protection Act 1986*)?	Yes☐ No☒ Department of Water consulted Yes ☒ No ☐	
Is the Premises within an Environmental Protection Policy (EPP) Area Yes☐ No☒		
Is the Premises subject to any EPP requirements? Yes☐ No☒		

3 Executive summary of proposal and assessment

Abbotts Liquid Salvage Pty Ltd (ALS) currently operate a liquid waste facility under Licence L7827/2001/5, on part of Lot 4638 on Plan 157018 on Albany Highway (Premises). The Premises is located approximately 14km North of the City of Albany. The Premises accepts biological waste, non-toxic salts and low strength wastewater for treatment within a pond system consisting of three anaerobic ponds and two facultative ponds. The treated wastewater is stored within a storage dam prior to irrigation of plantation timber within the Premises. Sludge from the treatment ponds is collected and dried within a contained sludge drying bed within the Premises. The proponent has proposed to undertake composting of the dried sludge to produce a soil amendment product. The proponent received development approval from the City of Albany on 10 November 2015. Works Approval W5905/2015/1 has been granted for the construction of the proposed infrastructure.

This Works Approval only authorises the construction of the composting facility. A licence amendment application is required following the completion of the works to allow the operation of the facility.

Location
The proposed composting facility will be located directly north of the existing ALS operations. The Premises boundary specified within the existing licence L7827/2001/5 will need to be extended to include the boundary of the Premises defined in this Works Approval following compliance with the works approval.

The surrounding landscape is predominantly used for agriculture. There are seasonal creeks located approximately 1.5km east, 1.5km south east and 2km south west of the Premises. There are several dams located on neighbouring agricultural properties, the closest of which is located approximately 700m south east of the Premises. Topographic contours indicate that the direction of surface water flow is generally towards the south-south east. Groundwater monitoring at bores located around the existing ALS Premises indicate that groundwater within the area is approximately 12m - 14m below ground level. The Department of Water has advised that the groundwater at the site is likely to follow surface topography, so is likely to flow in a southerly direction. The Premises itself is not within a Public Drinking Water Source Area (PDWSA), however part of the south west portion of Lot 4638 is located within a Priority 2 PDWSA. The Premises itself will be located less than 50m from the boundary of the PDWSA. The nearest neighbouring residences are approximately 1km to the east and approximately 1.2km to the south-west. Immediately south of the Premises is a blue gum plantation on which broad scale irrigation of treated wastewater from the Albany Wastewater Treatment Plant occurs.

The Environmental Protection Authority guidance document *Separation Distances Between Industrial and Sensitive Land Uses* (June 2005) recommends a buffer distance of 500m for composting facilities with outdoor uncovered regularly turned windrows using biosolids, and a distance of 1000m for outdoor uncovered regularly turned windrows using manures. DER's (2015) *Guidance Statement: Separation distances (Draft released for consultation)* identifies that separation distances for compost manufacturing and soil blending of 1,300 metres for a Premises with a capacity of 6,000 tonnes/ year.

The proposed location of the composting activity is currently an area of native vegetation which will be required to be cleared. The clearing will be exempt from requiring a clearing permit if carried out in accordance with Regulation 5, Item 1 of the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004*. The cleared vegetation will be mulched on site during the construction of the facility.

Process
The proposed composting process involves the mixing of dried sludge with green waste at a ratio of approximately 1:4 to form windrows approximately 3 metres wide and 2 metres high. Compost windrows will be irrigated with wastewater sourced from the leachate dam on site to maintain the

necessary moisture levels within the windrows. No liquid wastes (other than onsite generated leachate) may be applied as a feedstock to the composting process, Windrows will be mechanically turned approximately once every three days to maintain aerobic conditions within the windrows. After the internal temperature of the windows has reached 55 degrees Celsius for a minimum of 15 days, several windrows will be combined to produce a conditioning pile. The conditioning piles will then be tested to determine the pathogen and contaminant levels within the compost, prior to being stockpiled for sale. The final compost product is proposed to be sold for unrestricted use provided that the product meets the necessary pathogen and contaminant levels. ALS propose to follow the requirements of Australian Standard AS 4454 *Composts, soil conditioners and mulches* (AS4454) and meet the P1C1 within the document *Western Australia Guidelines for Biosolids Management* (Department of Environment and Conservation 2012). If the appropriate classification level is not achieved, the compost may be returned to a composting windrow for further treatment, or if the P2C2 grading is achieved the compost may be used for spreading on agricultural land. The proposal does not include the shredding of green waste within the Premises.

Infrastructure

The proposal includes the construction of a hardstand approximately 25 000m^2 in size and a leachate storage dam approximately 22 000m^2 in size. The hardstand will be constructed from compacted clay and compacted cover material, and graded such that runoff from the hardstand will collect in the adjacent leachate storage dam. The leachate storage dam will be approximately 22 000m^2 and 2m deep (providing a total capacity of approximately 40 000m^3, excluding freeboard) and be lined either with a compacted clay layer or synthetic liner. Water balance calculations have been completed for the hardstand and leachate dam under two different scenarios; mean monthly rainfall and 90th percentile monthly rainfall (see water balance in Appendix A). Under the mean monthly rainfall scenario, the proposed dam total storage capacity of approximately 40 000m^3 is more than sufficient for the storage of all rainfall inputs (including a 1 in 20 year 72 hour storm event) less evaporation and use in windrow irrigation. However, under the 90th percentile monthly rainfall scenario, the storage capacity of the dam would not be sufficient for the storage of all rainfall inputs considering that the storm event capacity needs to be maintained. It is proposed that up to 11 000 kilolitres of wastewater from the leachate dam may be transferred to the existing storage dam within the Premises (part of the current ALS liquid waste facility) if needed to reduce the wastewater level within the dam. The wastewater within the existing storage dam is subject to emission limits and is irrigated to a 4 hectare blue gum plantation area within the Premises.

All composting activities will be required to be undertaken on the hardstand area, including the storage of green waste, dried sludge and finished compost product.

Potential emissions and controls

The main potential emissions from the Premises during construction and operation are dust, odour and leachate/contaminated stormwater. The proponent has stated that construction activities will be monitored to ensure that no visible dust leaves the Premises, and that water used during construction to achieve compaction will also act as a dust suppressant. Odour generation during operations will be minimised by maintaining an aerobic state within the composting windrows. Leachate and contaminated stormwater will be contained on the composting hardstand and within the leachate storage dam, which will be required to be constructed to appropriately contain the leachate. A 500mm freeboard will be maintained on the dam at all times.

ALS is currently licensed to irrigate treated wastewater from the existing liquid waste facility storage dam to a blue gum plantation within the Premises. The proposal includes the transfer of up to 11 000 kilolitres of wastewater from the composting leachate dam to the existing storage dam of the ALS liquid waste facility. Based on the risk assessment undertaken for the emission to land during operation, the wastewater from the leachate dam will be required to be only transferred to the existing anaerobic treatment ponds within the Premises, rather than the storage dam. The wastewater will therefore be subject to treatment via the pond system prior to discharge via irrigation. There are conditions within Licence L7827/2001/5 which regulate how the treated wastewater from the storage dam is discharged to land, including limits on the quality of the wastewater.

Monitoring

During operation of the composting activity following licence amendment, monitoring of the dried sludge feedstock, compost windrows and compost product is proposed. Monitoring will include sampling to determine pathogen and contaminant levels and the monitoring of other parameters such as temperature and moisture content. Monitoring of additional parameters is proposed for three existing groundwater bores, currently monitored biannually under the requirements of Licence 7827/2001/5 for the existing liquid waste facility.

4 Decision table

All applications are assessed in line with the *Environmental Protection Act 1986*, the *Environmental Protection Regulations 1987* and DER's Operational Procedure on Assessing Emissions and Discharges from Prescribed Premises. Where other references have been used in making the decision they are detailed in the decision document.

DECISION TABLE			
Works Approval / Licence section	**Condition number** **W = Works Approval** **L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
Interpretation	W1.1.1 – 1.1.4	**Construction** Conditions 1.1.1 – 1.1.4 require that terminology used within the Works Approval is referenced to the appropriate definitions where applicable and that any reference to a standard or guideline is to the most current version of that standard or guideline.	General provisions of the *Environmental Protection Act 1986*
General conditions	W1.2.1 – 1.2.4 L- TBC	**Construction** The emission risk assessments informing the regulatory controls under general conditions in the Works Approval are contained in Appendix B. Condition 1.2.1 included within the Works Approval requires the construction of the works to be undertaken in accordance with the relevant parts of the application supporting documentation subject to the conditions of the works approval. Condition 1.2.2 included within the Works Approval states the design and construction specifications for the works (where details of the proposed design and construction are not included in the application supporting documentation). Condition 1.2.3 allows for minor deviation from the design and construction specifications where appropriate. Condition 1.2.4 included in the Works Approval requires that commissioning and operation of the Works is not undertaken (note commissioning is proposed in the Application referred to within Condition 1.2.1).	Application supporting documentation *Environmental Protection (Unauthorised Discharges) Regulations 2004* General provisions of the *Environmental Protection Act 1986* Australian Standard AS 4454 – 2012 Composts, soil conditioners and

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
		Operation The emission risk assessments informing the regulatory controls expected to be applied under a Licence for the operation of the facility are contained in Appendix B. The licence amendment for the operation of the facility will include conditions specifying the following; • The waste types and quantities that can be accepted at the Premises. The waste types and quantities will be limited to what has been assessed by DER. The dried sludge used within the process will be limited to sludge sourced from the treatment ponds of ALS existing liquid waste facility. • The storage of dried sludge, green waste, the process of composting and pasteurisation and the storage of final compost product must be on the composting hardstand. • The core temperature of the composting windrows must be maintained above 55 degrees Celsius for a period of at least 15 days for sufficient pasteurisation. • A freeboard of 500mm must be maintained on the leachate storage dam and that leachate may only be transferred to the anaerobic ponds within the Premises. • Infrastructure containment requirements for the hardstand, leachate collection and conveyance infrastructure and the leachate storage dam, which will reflect the design and construction specifications included within the Works Approval. • The chemical and pathogen requirements (as per AS4454) for final compost quality prior to sale or distribution to the public for unrestricted use. • The shredding of green waste shall not be undertaken, as this has not been proposed with the application supporting documentation and therefore potential emissions from this activity have not been assessed.	mulches

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
Emissions to land	L- TBC	**Construction** No emissions to land are expected during the construction of the composting facility. **Operation** The risk assessments informing the regulatory requirements under emissions to land are contained in Appendix B.	Application supporting documentation Environmental Assessment Report for Licence L7827/2001/5, 2013. 2014 Annual Environmental Report, Abbotts Liquid Salvage, February 2015.
Fugitive emissions	N/A	**Construction** <u>Emission Description</u> *Emission:* Dust may be generated by construction activities, machinery movement, earthworks and the mulching of the vegetation which is cleared for construction. *Impact:* Reduced local air quality from airborne particulates. The closest residence is located approximately 1km east of the proposed Premises. The surrounding land is used for agriculture, with a blue gum plantation located immediately south of the Premises. *Controls:* The proponent has stated that construction activities will be monitored to ensure that no visible dust leaves the site, and that water used during construction to achieve compaction will also act as a dust suppressant. <u>Risk Assessment</u> *Consequence*: Insignificant	Application supporting documentation

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
		Likelihood: Unlikely *Risk Rating:* Low Regulatory Controls It is considered that the provisions of Section 49 of the *Environmental Protection Act 1986* are sufficient to regulate dust emissions during construction. Residual Risk *Consequence*: Insignificant *Likelihood:* Unlikely *Risk Rating:* Low **Operation** Emission Description *Emission:* Dust may be generated by vehicle and machinery movement within the Premises. No green waste grinding is permitted to occur onsite so dust from the acceptance of green waste will not be a dust source. *Impact:* Reduced local air quality from airborne particulates. The closest residence is located approximately 1km east of the proposed Premises. The surrounding land is used for agriculture, with a blue gum plantation located immediately south of the Premises. *Controls:* No dust controls are proposed by the Licensee in regards to the operation of the composting activity. Risk Assessment *Consequence*: Insignificant *Likelihood:* Unlikely *Risk Rating:* Low	

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
		Regulatory Controls It is considered that the provisions of Section 49 of the *Environmental Protection Act 1986* are sufficient to regulate dust emissions during operation. Residual Risk *Consequence*: Insignificant *Likelihood:* Unlikely *Risk Rating:* Low	
Odour	L - TBC	**Construction** No odour emissions are expected during the construction of the composting facility. **Operation** Emission Description *Emission:* Odour emissions may be generated from the storage of dried sludge, leachate and the movement of sludge in the initial stages of commencement of composting. Some odour may be generated during turning of windrows in initial stages of composting. Odour may also be generated from the compost windrows during the composting process itself. The storage of green waste is not expected to generate significant odour. Anaerobic conditions are the greatest cause of odour emission and should not occur under normal operating conditions. *Impact:* Odour emissions may interfere with the health or comfort of sensitive receptors. The closest residence is located approximately 1km east of the proposed Premises. The surrounding land is used for agriculture, with a blue gum plantation located immediately south of the Premises. *Controls:* It is proposed that compost windrows will be mechanically turned approximately once every three days to facilitate aeration of the pile and maintain aerobic microbial activity. Maintaining an aerobic environment within the windrows will reduce odour generation.	Application supporting documentation

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
		Risk Assessment *Consequence*: Insignificant *Likelihood:* Unlikely *Risk Rating:* Low Regulatory Controls A condition will be included within the amended licence requiring that compost windrows are regularly turned to ensure that aerobic conditions are maintained. A condition will also be included within the amended licence restricting the composting feedstocks to green waste and dried sludge sourced from the existing ALS treatment ponds, therefore preventing potential odorous feedstocks (e.g. manures, grease trap waste) from being used in the composting process. Residual Risk *Consequence*: Insignificant *Likelihood:* Unlikely *Risk Rating:* Low	
Noise	N/A	**Construction** Emission Description *Emission:* Noise arising from construction activities, machinery movement, earthworks and the mulching of vegetation cleared for construction. *Impact:* Noise emissions may interfere with the comfort of nearby residences. The closest residence is located approximately 1km east of the proposed Premises. *Controls:* The proponent has committed to only operating the earthmoving equipment within the hours of 7am to 6pm, Monday to Friday.	Application supporting documentation

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
		Risk Assessment *Consequence*: Insignificant *Likelihood:* Unlikely *Risk Rating:* Low Regulatory Controls It is considered that the provisions of *Environmental Protection (Noise) Regulations 1997* will be sufficient to regulate noise emissions during construction. The commitment to only undertake works during weekdays and normal business hours has been specified under condition 1.2.3, Table 1.2.2. Row 6. Residual Risk *Consequence*: Insignificant *Likelihood:* Unlikely *Risk Rating:* Low **Operation** Emission Description *Emission:* Noise arising from vehicle movement and the operation of machinery used for windrow formation and turning. *Impact:* Nuisance caused to nearby residences. The closest residence is located approximately 1km east of the proposed Premises. *Controls:* No noise controls are proposed by the Licensee in regards to the operation of the composting activity. Risk Assessment *Consequence*: Insignificant *Likelihood:* Rare	

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
		Risk Rating: Low Regulatory Controls It is considered that the provisions of *Environmental Protection (Noise) Regulations 1997* will be sufficient to regulate noise emissions during operation. Residual Risk *Consequence*: Insignificant *Likelihood:* Rare *Risk Rating:* Low	
Monitoring of inputs and outputs	L - TBC	**Operation** The licence amendment will include a condition requiring the monitoring of the volume of waste inputs and the volume of final compost produced output. This requirement will allow DER to regulate the volume of waste in compliance with the licence condition specifying waste acceptance and the approved production capacity.	
Process monitoring	L - TBC	**Construction** No process monitoring will be required during construction. **Operation** During operation of the composting activity following licence amendment, monitoring of the dried sludge feedstock, compost windrows and compost product is proposed. The monitoring will include sampling to determine pathogen and contaminant levels and the monitoring of other parameters such as temperature and moisture content. The licence amendment will include a condition requiring the monitoring of compost quality. Key pathogen and contaminant requirements as identified in AS 4454 will be required to be monitored in the final compost product.	Application supporting documentation

DECISION TABLE			
Works Approval / Licence section	**Condition number W = Works Approval L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
Ambient quality monitoring	L - TBC	**Operation** The proponent has proposed groundwater monitoring for three existing bores (MW4, MW5 and MW7) for pH, Biological Oxygen Demand, Total Dissolved Solids and a range of nutrients, major ions and metals. The monitoring was proposed to be undertaken bimonthly within the application supporting documentation. DER does not consider it necessary to undertake groundwater monitoring at this frequency, given the controls that will be in place to prevent the contamination of land or groundwater. Six monthly groundwater quality monitoring of 7 existing bores is currently required under the Abbotts Liquid Salvage Licence L7827/2001/5. This requirement will remain in place on the licence for the operation of the new composting facility, however some additional parameters will be required to be monitored for bores MW4, MW5, MW7 and the additional monitoring bore required to be installed under the works approval (see Appendix B), in accordance with the parameters proposed to be monitored by the proponent.	Application supporting documentation
Information	W2.1.1 - 2.1.3	Condition 2.1.1 included in the Works Approval requires the submission of detailed construction plans and drawings prior to construction. The submission will verify that the infrastructure to be constructed meets the specifications of the Application and the Works Approval conditions by way of qualified professional certification. The condition includes the provision for minor deviation from design and construction specifications under Condition 1.2.3. Plans and drawings were lacking in the Application. Conditions 2.1.2 – 2.1.3 included within the works approval require that the construction specifications for infrastructure are confirmed as compliant in writing by the Works Approval Holder following the completion of construction. The conditions include the provision for minor deviation from design and construction specifications under Condition 1.2.2.	
Works Approval Duration	N/A	The works approval has been issued for a period of three years. The proponent has received development approval from the City of Albany, and the approval does not include an expiry date.	

5 Advertisement and consultation table

Date	Event	Comments received/Notes	How comments were taken into consideration
19/10/2015	Application advertised in West Australian (or other relevant newspaper)	No comments received.	N/A
13/10/2015	Application referred to interested parties listed; - City of Albany -Department of Health - Department of Water	City of Albany - no comments received. Department of Health (DoH) - The applicant will require DoH approval before commencement of composting operations using dried sludge as more information is required on the proposed composting methods and trial sampling program.	The applicant needs to apply for a licence amendment prior to commencing operations. This can be resolved at licensing stage.

Date	Event	Comments received/Notes	How comments were taken into consideration
		Department of Water Recommended that; • polluted stormwater is contained on site; • clean stormwater should not enter the composting facility and should be separated from any leachate drainage; • the hardstand should be bunded to ensure runoff leaving the hardstand area is contained before entering the leachate dam; • leachate overflow being directed from the leachate dam to the irrigation area should also be contained to ensure no runoff occurs in transit; • a Drainage Management Plan should be required as part of the proposal; • the network of groundwater monitoring bores located within the existing and proposed sites is adequate to monitor impacts on groundwater quality.	Conditions included within the works approval stating design and construction specifications require that leachate is contained on site via containment within the infrastructure to be constructed. The hardstand and leachate collection infrastructure are required to be bunded to prevent the run-on of surface water. The information provided within the application document was considered sufficient to complete the risk assessments regarding the potential for leachate/leachate contaminated stormwater emissions and other contaminated stormwater emissions. A Drainage Management Plan was not requested from the proponent. Recommendation regarding the groundwater monitoring bores was noted, however given the expected hydrogeological gradient is As groundwater at the site is likely to flow in a southerly direction, an additional bore will be required to be installed north of the premises to act as a control bore.
27 January 2016	Proponent sent a copy of draft instrument	Condition 2.1.1 - seems to duplicate the requirement of the compliance documentation required in 2.1.3. Proposed that it would be more appropriate to provide as built drawings for compliance. Shredding of green waste – the Decision Document refers to there being no	Confirmed that proponent will require plans/drawings to be completed prior to construction. Condition 2.1.1 remains unchanged. The risk posed by mulching the cleared vegetation during construction is considered low. Additional text has been added to the

Date	Event	Comments received/Notes	How comments were taken into consideration
		shredding of green waste to be undertaken. It was intended that during construction the vegetation that was to be cleared would be mulched to provide future feedstock for the composting. Additionally, the composting heaps may need to be ground prior to sale to allow spreading through machinery.	Decision Document to include the mulching during construction. Grinding of compost during operation was not included within the Works Approval application supporting documentation. This will need to be included within the licence amendment application and will be assessed at that point. No change to the Decision Document.

6 Risk Assessment

Note: This matrix is taken from the DER Corporate Policy Statement No. 07 - Operational Risk Management

Table 1: Emissions Risk Matrix

Likelihood	Consequence				
	Insignificant	Minor	Moderate	Major	Severe
Almost Certain	Moderate	High	High	Extreme	Extreme
Likely	Moderate	Moderate	High	High	Extreme
Possible	Low	Moderate	Moderate	High	Extreme
Unlikely	Low	Moderate	Moderate	Moderate	High
Rare	Low	Low	Moderate	Moderate	High

Appendix A

Water balance calculations provided within application supporting documentation

	Inputs				Outputs					Storage Dam Volumes			
										90th Percentile Rainfall		Mean Rainfall	
Month	90th Percentile rainfall (mm)	90th Percentile Volume (kl)	Mean Average Rainfall (mm)	Mean rainfall Volume (kl)	Mean Monthly Evaporation (mm)	Evaporation loss form Leachate Storage Dam (kl)	Windrow Irrigation use (kl)	Forestry Irrigation Use (kl)	Total outputs (kl)	Net Gain/loss from storage dam (kl)	Cumulative Monthly Dam Volume (kl)	Net Gain/loss from storage dam (kl)	Cumulative Monthly Volume (kl)
Jan	65.7	2,957	24	1,062	205	4,501	2,000	2,000	8,501	-5,545	**0**	**-7,439**	**0**
Feb	47.9	2,156	22	1,004	175	3,853	2,000	2,000	7,853	-5,698	**0**	**-6,850**	**0**
Mar	66	2,970	34	1,512	155	3,410	1,500	1,000	5,910	-2,940	**0**	**-4,398**	**0**
Apr	115.2	5,184	61	2,759	99	2,178	1,500	1,000	4,678	506	**506**	**-1,920**	**0**
May	135.7	6,107	90	4,041	68	1,500	0	0	1,500	4,606	**5,112**	**2,541**	**2,336**
Jun	168	7,560	108	4,860	57	1,254	0	0	1,254	6,306	**11,418**	**3,606**	**6,147**
Jul	167	7,515	119	5,369	59	1,296	0	0	1,296	6,219	**17,637**	**4,073**	**7,679**
Aug	145.3	6,539	107	4,806	71	1,569	0	0	1,569	4,970	**22,607**	**3,237**	**7,310**
Sep	134.2	6,039	89	3,983	84	1,848	0	0	1,848	4,191	**26,798**	**2,135**	**5,372**
Oct	104	4,680	71	3,186	112	2,455	0	1,000	3,455	1,225	**28,023**	**-269**	**0**
Nov	76.1	3,425	47	2,115	141	3,102	1,500	2,000	6,602	-3,178	**24,846**	**-4,487**	**0**
Dec	61.9	2,786	28	1,251	186	4,092	2,000	2,000	8,092	-5,307	**19,539**	**-6,841**	**0**
Jan	65.7	2,957	24	1,062	205	4,501	2,000	2,000	8,501	-5,545	**13,994**	**-7,439**	**0**
Feb	47.9	2,156	22	1,004	175	3,853	2,000	2,000	7,853	-5,698	**8,297**	**-6,850**	**0**
Mar	66	2,970	34	1,512	155	3,410	1,500	1,000	5,910	-2,940	**5,357**	**-4,398**	**0**
Apr	115.2	5,184	61	2,759	99	2,178	1,500	1,000	4,678	506	**5,863**	**-1,920**	**0**
May	135.7	6,107	90	4,041	68	1,500	0	0	1,500	4,606	**10,469**	**2,541**	**2,336**
Jun	168	7,560	108	4,860	57	1,254	0	0	1,254	6,306	**16,775**	**3,606**	**6,147**

	Inputs				Outputs					Storage Dam Volumes			
										90th Percentile Rainfall		Mean Rainfall	
Month	90th Percentile rainfall (mm)	90th Percentile Volume (kl)	Mean Average Rainfall (mm)	Mean rainfall Volume (kl)	Mean Monthly Evaporation (mm)	Evaporation loss form Leachate Storage Dam (kl)	Windrow Irrigation use (kl)	Forestry Irrigation Use (kl)	Total outputs (kl)	Net Gain/loss from storage dam (kl)	Cumulative Monthly Dam Volume (kl)	Net Gain/loss from storage dam (kl)	Cumulative Monthly Volume (kl)
Jul	167	7,515	119	5,369	59	1,296	0	0	1,296	6,219	**22,994**	**4,073**	**7,679**
Aug	145.3	6,539	107	4,806	71	1,569	0	0	1,569	4,970	**27,964**	**3,237**	**7,310**
Sep	134.2	6,039	89	3,983	84	1,848	0	0	1,848	4,191	**32,155**	**2,135**	**5,372**
Oct	104	4,680	71	3,186	112	2,455	0	1,000	3,455	1,225	**33,380**	**-269**	**1,865**
Nov	76.1	3,425	47	2,115	141	3,102	1,500	2,000	6,602	-3,178	**30,202**	**-4,487**	**0**
Dec	61.9	2,786	28	1,251	186	4,092	2,000	2,000	8,092	-5,307	**24,896**	**-6,841**	**0**
Annual	**959**	**57,915**	**799**	**35,946**	**1,412**	**31,059**	**10,500**	**11,000**	**52,559**				

Storm event

The total volume for a 1 in 20 year 72 hour storm event has been based on a rainfall rate of 2mm/hr, which equals 150mm over 72 hours. The total proposed area for leachate catchment is 45 000m^2. The total volume for a 1 in 20 year 72 hours storm event equals 6750kL (150x45000/1000).

Appendix B

Emission risk - contaminated stormwater emission during construction

Emission: Contaminated stormwater discharge to land. Stormwater may come into contact with contaminants (e.g. hydrocarbons or cement) or become loaded with sediment.
Impact: Contaminated stormwater may contribute to contaminant loads within soils, surface water or groundwater. Topographic contours indicate that the direction of surface water flow is generally towards the south-south east. The Department of Water has advised that the groundwater at the site is likely to follow surface topography, so is likely to flow in a southerly direction. Groundwater monitoring at bores located around the existing ALS Premises indicate that groundwater within the area is approximately 12m - 14m below ground level. The Premises itself is located less than 50m from the boundary of a Priority 2 PDWSA. There are seasonal creeks located approximately 1.5km east, 1.5km south east and 2km south west of the Premises. There are several dams located on neighbouring agricultural properties, the closest of which is located approximately 700m south east of the Premises.
Controls: The proponent has not commented on stormwater management during construction of the facility. No controls are proposed.

Risk assessment:
Consequence: Insignificant
Likelihood: Unlikely
Risk Rating: Low

Regulatory controls:
It is considered that the provisions of Section 49 of the *Environmental Protection Act 1986* and the provisions of the *Environmental Protection (Unauthorised Discharge) Regulations 2004* are sufficient to regulate the potential emissions of contaminated stormwater during construction of the facility.

Residual risk:
Consequence: Insignificant
Likelihood: Unlikely
Risk Rating: Low

Emission risk – leachate/leachate contaminated stormwater emission during operation

Emission Description
Emission: Leachate (and leachate contaminated stormwater) emission to land via runoff from the composting hardstand, overflow of the leachate dam, or infiltration through integrity failure of the composting hardstand, leachate dam or inadequate containment during the transfer of leachate between the hardstand, leachate dam and the existing anaerobic treatment ponds. The dried sludge proposed to be used within the composting process will be sourced from the treatment ponds of the existing ALS liquid waste facility operation under Licence L7827/2001/5. The liquid waste facility accepts biological waste, non-toxic salts and low strength wastewater. The sludge leachate or leachate from the compost windrows may contain pathogens, elevated nutrients and a range of other contaminants including heavy metals. Stored green waste and final compost product may also generate leachate containing elevated nutrient levels and other contaminants.
Impact: Contamination of land and groundwater. Surface water flow at the site is generally towards the south-south east and the Department of Water has advised that the groundwater flow is also expected to be in a southerly direction. Groundwater monitoring at bores located around the existing ALS Premises indicate that groundwater within the area is approximately 12m - 14m below ground level. The Premises itself is located less than 50m from the boundary of a Priority 2 PDWSA. There are seasonal creeks located approximately 1.5km east, 1.5km south east and 2km south west of the Premises. There are several dams located on neighbouring agricultural properties, the closest of which is located approximately 700m south east of the Premises.

Controls: It is proposed that all composting activities occur on a hardstand. This includes the storage of dried sludge and green waste feedstock, the composting of these wastes within windrows and the storage of the final compost stockpiles. The specifications of the proposed works are not provided in detail, however it is stated that the composting hardstand is proposed to be constructed from compacted clay and compacted cover material in accordance with the requirements within the DER (2015) *Environmental Standard: Composting (Draft released for consultation)* and graded such that runoff from the hardstand will collect in an adjacent leachate storage dam. The leachate storage dam is proposed to be constructed to meet DER requirements (no specifications provided) and be lined either with a compacted clay layer or synthetic liner. Infrastructure for the flow of leachate from the hardstand to the leachate dam has not been discussed within the application supporting documentation. A 500mm freeboard will be maintained within the dam.

Infrastructure for the transfer of leachate from the leachate dam to the existing liquid waste treatment ponds has not been discussed within the application supporting documentation.

Groundwater monitoring is proposed for three existing bores on the southern border of the proposed composting activity. See the ambient quality monitoring section of the decision table for further details of the monitoring proposed.

Risk Assessment
Consequence: Moderate
Likelihood: Rare
Risk Rating: Moderate

Regulatory Controls
Condition 1.2.1 included within the works approval requires the construction of works to be undertaken in accordance with the relevant parts of the application supporting documentation subject to the conditions of the Works Approval.

Condition 1.2.2 included within the Works Approval states design and construction specifications in regards to the composting hardstand and leachate dam, where the application supporting documentation does not include details on the proposed design and construction. The hardstand is required to be constructed at a 2% drainage gradient, with a clay liner (permeability of less than $1x10^{-9}$m/s) and impervious bunding (in accordance with the commitment made by the proponent). The dam may be either clay or HDPE lined; however in both cases the liner must have a permeability of less than $1x10^{-9}$m/s.

As the supporting documentation does not provide any details on how leachate will flow from the hardstand to the leachate dam, or how the leachate will be transferred from the leachate dam to the liquid waste treatment ponds, specifications have been included in condition 1.2.2 for leachate collection infrastructure and leachate conveyance infrastructure. The leachate collection infrastructure for the collection of leachate from the hardstand and the conveyance of leachate into the leachate dam must be constructed of impervious material ($1x10^{-9}$m/s) and have impervious bunding to prevent the run-on of surface water. The leachate conveyance infrastructure for the conveyance of leachate from the leachate storage dam to the liquid waste treatment ponds must be impermeable and free of leaks or defects.

The Licence amendment for the operation of the facility will include a condition specifying that the storage of dried sludge and green waste, the process of composting and pasteurisation, and the storage of final compost product must be on the composting hardstand. A condition will be included requiring that a freeboard of 500mm is maintained on the leachate dam.

The existing groundwater bores MW4, MW5 and MW7 are located along the southern boundary of the proposed new composting area. As the groundwater at the site is likely to flow in a southerly direction, a requirement has been included within condition 1.2.2 for the Works Approval Holder to install a groundwater monitoring bore north of the composting hardstand. This bore would act as a control bore located up-hydrogeological gradient of the facility. A control bore is considered necessary as the monitoring results may then be compared against the monitoring results from the bores located south of the composting facility, and will help to indicate whether the composting facility is having any effect on the groundwater at the site. See the ambient quality monitoring section of the decision table for further details of the monitoring that will be required during the operation of the facility.

Residual Risk
Consequence: Moderate
Likelihood: Rare
Risk Rating: Moderate

Emission risk - contaminated stormwater (other than leachate contaminated stormwater) emission during operation
Emission: Contaminated stormwater discharge to land. Outside of the proposed contained areas Stormwater may come into contact with contaminants (e.g. hydrocarbons) or become loaded with sediment.
Impact: Contaminated stormwater may contribute to contaminant loads within soils, surface water or groundwater. Topographic contours indicate that the direction of surface water flow is generally towards the south-south east. The Department of Water has advised that the groundwater at the site is likely to follow surface topography, so is likely to flow in a southerly direction. Groundwater monitoring at bores located around the existing ALS Premises indicate that groundwater within the area is approximately 12m - 14m below ground level. The Premises itself is located less than 50m from the boundary of a Priority 2 PDWSA. There are seasonal creeks located approximately 1.5km east, 1.5km south east and 2km south west of the Premises. There are several dams located on neighbouring agricultural properties, the closest of which is located approximately 700m south east of the Premises.
Controls: The proponent has not commented on controls for stormwater management other than in regards to the containment of leachate contaminated stormwater (which has been addressed separately).

Risk assessment:
Consequence: Insignificant
Likelihood: Unlikely
Risk Rating: Low

Regulatory controls:
It is considered that the provisions of Section 49 of the *Environmental Protection Act 1986* and the provisions of the *Environmental Protection (Unauthorised Discharge) Regulations 2004* are sufficient to regulate this potential emission during operation of the facility.

Residual risk:
Consequence: Insignificant
Likelihood: Unlikely
Risk Rating: Low

Emission risk - emission to land (irrigation) during operation
The proponent has calculated the leachate dam capacity required under two different scenarios; mean monthly rainfall and 90th percentile monthly rainfall. Under the mean monthly rainfall scenario, the proposed dam capacity of approximately 40 000m^3 is more than sufficient for the storage of all rainfall inputs (including a 1 in 20 year storm event) less evaporation and use in windrow irrigation.

However, under the 90th percentile monthly rainfall scenario, the storage capacity of the dam would not be sufficient for the storage of all rainfall inputs considering that the storm event capacity needs to be maintained.

It is proposed that up to 11 000 kilolitres of wastewater from the leachate dam may be transferred to the existing storage dam within the Premises (part of the current ALS liquid waste facility) if needed to reduce the wastewater level within the leachate dam (based on the water balance using 90th percentile monthly rainfall). The wastewater that has undergone treatment via the pond system is stored within the existing storage dam and irrigated to a plantation timber area within the current ALS Premises. The application supporting documentation states that the forestry irrigation system is currently operating at approximately 10% capacity, and therefore there is sufficient capacity for the surplus wastewater from the composting facility leachate dam to be disposed of in this way.

The ALS liquid waste facility may accept up to 20 000kL of liquid wastes per year into the treatment ponds. The existing storage pond has a capacity of approximately 18 100kL (excluding the 0.5m freeboard). Water balance calculations for existing liquid waste facility pond system summarised within the Environmental Assessment Report (EAR) completed for the issue of the ALS Liquid Waste Facility Licence L7827/2001/5 shows that the 18 100kL capacity is sufficient considering all current inputs and outputs; accepted liquid wastes, rainfall from 1 in 20 year rainfall events and a 1 in 10 year wet year, evaporation and irrigation. During a high rainfall year total annual irrigation may need to be up to 15 000kL, based on the acceptance of 20 000kL of liquid waste per annum.

The irrigated volumes that were reported in 2014 and 2013 were 2804kL and 3342kL respectively. While significantly less than the maximum 15 000kL is being irrigated currently, this does not indicate that the transfer of leachate from the proposed leachate dam to the existing treatment ponds is an appropriate contingency. It would only be in the case of a year with particularly high rainfall that there may be a need to transfer leachate from the composting facility leachate dam to the existing treatment ponds. If this were the case, the existing treatment ponds and storage dam may not have sufficient capacity for any excess water from the composting leachate dam. However, there would be capacity within the existing treatment ponds and storage dam if ALS had accepted significantly less liquid wastes into the treatment ponds than the approved maximum of 20 000kL. In 2014 approximately 8734kL of liquid wastes were accepted at the facility.

Emission Description

Emission: Irrigation of leachate (sourced from the composting facility leachate dam via the existing storage dam) to the plantation timber area within the current ALS Premises.
Impact: contamination of land or groundwater in the case that the leachate contains high nutrient or contaminant levels. Excessive irrigation could result in soil erosion. Surface water flow at the site is generally towards the south-south east and the Department of Water has advised that the groundwater flow is also expected to be in a southerly direction. Groundwater monitoring at bores located around the existing ALS Premises indicate that groundwater within the area is approximately 12m - 14m below ground level. The Premises itself is located less than 50m from the boundary of a Priority 2 PDWSA. There are seasonal creeks located approximately 1.5km east, 1.5km south east and 2km south west of the Premises. There are several dams located on neighbouring agricultural properties, the closest of which is located approximately 700m south east of the Premises.
Controls: The transfer of wastewater from the leachate dam to the existing storage dam is proposed only as a contingency measure if the freeboard within the leachate dam is breached. The application supporting documentation does not specify any controls in regards to the irrigation of wastewater. Information in the Environmental Assessment Report (EAR) completed for the issue of the ALS Liquid Waste Facility Licence L7827/2001/5 states that the irrigation area has a buffer of rain fed trees around the boundary of the irrigation area. The buffer is 20m wide on the southern boundary and 10m wide on the remaining boundaries. The irrigation area is also surrounded by a cut off drain to ensure that irrigated water does not flow over the Premises boundary. Flow from the cut off drains is

collected in a clay lined runoff dam. The tree buffer is intended as a means of facilitating the uptake of irrigation water than may have migrated from the irrigation area. The EAR states that the treatment ponds are lined with a synthetic liner material with a permeability of less than $2x10^{-10}$m/s, and the storage dam is clay lined with a permeability of less than $1x10^{-9}$m/s. ALS have an irrigation schedule in place with a Nutrient Irrigation Management Plan for the irrigation of up to 15 000kL per annum. The schedule does not include any irrigation for the 5 month high rainfall period from May to September.

Risk Assessment
Consequence: Moderate
Likelihood: Rare
Risk Rating: Moderate

Regulatory Controls
A condition will be included within the Licence amendment specifying that leachate from the leachate dam may only be transferred to the anaerobic ponds within the Premises. The transfer of the leachate to the anaerobic ponds will ensure that the leachate undergoes treatment within the pond system. This is expected to help maintain the quality of the wastewater discharged from the liquid waste facility storage dam.

There are conditions within Licence L7827/2001/5 which regulate how the treated wastewater from the storage dam is discharged to land, including limits on the quality of the wastewater. Conditions require that no soil erosion or ponding of wastewater occurs as a result of irrigation and that irrigation does not occur during periods of rainfall or onto flooded areas. Wastewater quality limits for Total Nitrogen, Total Phosphorus, Electrical Conductivity and Biochemical Oxygen Demand are included within the licence. The Licence also requires the monitoring of wastewater volumes discharged to the irrigation area, monthly monitoring of parameters corresponding to the emission limits and annual monitoring of a range of metals. Biannual groundwater monitoring is undertaken for seven bores located around the perimeter of the current ALS liquid waste facility Premises.

Residual Risk
Consequence: Minor
Likelihood: Rare
Risk Rating: Low

Emission risk – compost distribution during operation
Emission Description
Emission: Distribution of compost product for unrestricted use in the environment which contain pathogens and contaminants (including heavy metals and pesticides) in excess of AS4454.
Impact: Local contamination of soils, surface water and groundwater from the use of compost which may have unacceptable levels of heavy metals and pathogens. Could result in secondary human health impacts on a regional scale where compost is used in the production of foods.
Controls: Dried sludge (prior to mixing with green waste) and the compost windrows will be tested for pathogen and contaminant levels. The temperature of the composting windrows will be monitored continuously using data loggers. The windrows will be required to reach an internal temperature of 55 degrees Celsius for a minimum of 15 days, for the destruction of pathogens, before being combined to form conditioning piles. The conditioning piles will be tested to determine the pathogen and contaminant levels within the compost, prior to being stockpiled for sale. ALS propose to follow the requirements of Australian Standard AS 4454 *Composts, soil conditioners and mulches* (AS4454) and meet the P1C1 within the document *Western Australia Guidelines for Biosolids Management* (Department of Environment and Conservation 2012). If the appropriate classification level is not achieved, the compost may be returned to a composting windrow for further treatment, or if the P2C2 grading is achieved the compost may be used for spreading on agricultural land.

Risk Assessment
Consequence: Moderate
Likelihood: Possible
Risk Rating: Moderate

Regulatory Controls
The current licence for the Abbotts Liquid Salvage liquid waste facility current restricts the liquid wastes that can be accepted into the pond system (biological waste, non-toxic salts and low strength wastewater). This restriction will be retained within the Licence when it is amended.

A condition will be included within the Licence specifying that the core temperature of the composting windrows must be maintained above 55 degrees Celsius for a period of at least 15 days.

A condition will be included within the Licence specifying the chemical (heavy metals and pesticides) and pathogen requirements (as per AS4454) for final compost quality prior to sale or distribution to the public for unrestricted use. It is considered that this requirement will reduce the risk to public health and the environment where the final use of the product is uncontrolled. 'Unrestricted use' will be defined as 'compost use where the product is marketed or distributed in bags and in bulk in an unrestricted manner in all market sectors including domestic use, urban landscaping, agriculture and land rehabilitation'.

Residual Risk
Consequence: Moderate
Likelihood: Unlikely
Risk Rating: Moderate