Decision Report

Application for Licence

Division 3, Part V *Environmental Protection Act 1986*

Licence Number	L9022/2016/1
Applicant	O.S.I.B. Pty Ltd
ACN	129 818 837
File Number	DER2016/002434-1
Premises	O.S.I.B. Pty Ltd liquid waste facility Lot 783 Pile Road FOREST HILL WA 6324 Lot 783 on Plan 145674 Certificate of Title Volume 1161 Folio 421
Date of Report	12 March 2019
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
AACR	Annual Audit Compliance Report
ACN	Australian Company Number
Category/ Categories	Categories of Prescribed Premises as set out in Schedule 1 of the EP Regulations
CEO	means Chief Executive Officer
Condition	means a condition to which the Issued Licence is subject under Section 62 of the EP Act.
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.
EP Act	*Environmental Protection Act 1986* (WA)
EP Regulations	*Environmental Protection Regulations 1987* (WA)
Issued Licence	refers to the Licence L9022/2016/1, which evidences the grant of a Licence by the CEO under Section 57 of the EP Act, subject to the Conditions.
Licence Holder	O.S.I.B. Pty Ltd
mAHD	means metres Australian height datum
mBGL	means metres below ground level
Occupier	has the same meaning given to that term under the EP Act.
Prescribed Premises	has the same meaning given to that term under the EP Act.
Premises	refers to the premises to which this Decision Report applies, as specified at the front of this Decision Report
Primary Activities	as defined in Schedule 2 of the Revised Licence
Risk Event	being events that involve all of the following: (a) an emission occurring; and (b) a receptor being exposed to the emission through an identified actual or likely pathway; and (c) potential adverse effects to the receptor from exposure to the emission
Works Approval	*Works Approval W6020/2016/1*, granted 2 June 2017 and any amendment notices

2. Purpose and scope of assessment

On 1 December 2016, O.S.I.B. Pty Ltd (Applicant), trading as Great Southern Liquid Waste and e-Teq Resources, applied for a Works Approval and Licence under Part V of the *Environmental Protection Act 1986* (EP Act) to construct and operate a new liquid waste facility (Application) at 481 Pile Road, being Lot 783 on Plan 145674, Forest Hill, Western Australia 6324 (Premises).

Additional supporting information for the Application was submitted on 22 May 2017. The Works Approval was granted on 2 June 2017 for the construction of the liquid waste facility.

After constructing the liquid waste facility, the Applicant submitted the Works Approval Compliance Documents to DWER on 26 November 2018. This included a construction quality assurance validation report, required by Conditions 9 and 10 of the Works Approval.

On 14 January 2019 the Applicant applied for an amendment to the Works Approval under Part V of the EP Act to remove the testing requirements for the clay liner component of the two anaerobic ponds. The amendment application was assessed and on 19 February 2019 Amendment Notice 1 for the Works Approval was granted. Subsequently, the Delegated Officer determined that the Applicant had satisfactorily completed the works in accordance with the conditions of the Works Approval.

This Decision Report presents a risk based assessment of the foreseeable Risk Events to public health, amenity, water resources and the environment as a result of the Primary Activities, being the operation of the liquid waste facility. This Decision Report includes a risk-based assessment undertaken in accordance with the DWER 2018 *Regulatory best practice principles*.

2.1 Application details

The Applicant has applied to accept the liquid wastes described in Table 2 for processing through a pond based liquid waste facility (LWF). The LWF is to treat liquid waste by pond evaporation and off-site removal of sludge. Table 3 describes the prescribed premises category and capacity applied for, being the Primary Activity. Documents and reports submitted by the Applicant that are directly relevant to the risk based assessment are detailed in Table 4. A full list of documents considered within this Decision Report are detailed in Appendix 1. The LWF will comprise of the infrastructure detailed in Section 3.1 of this Decision Report and dispose of all liquid waste by evaporation.

Table 2: Liquid waste types proposed for acceptance in the Application.

Waste type defined in the *Environmental Protection (Controlled Waste) Regulations 2004*	**Waste type defined in the DER 2015, *Controlled Waste Category List***
Non-toxic salts	D300 Non-toxic salts
Waste from grease traps	K110 Waste from grease traps
Sewage	K130 Sewage waste from the reticulated sewage system K210 Septage wastes
Vegetable and food processing waste	K200 Food and beverage processing wastes
Waste oil and water, or hydrocarbons and water, mixtures or emulsions	L100 Car and truck wash waters
Not applicable	L150 Industrial wash water contaminated with a controlled waste
Fire debris and wash waters	N140 Fire debris and wash waters

Table 3: Prescribed Premises Categories.

Classification of Premises	Description	Approved premises production or design capacity or throughput
Category 61	Liquid waste facility: premises on which liquid waste produced on other premises (other than sewerage waste) is stored, reprocessed, treated or irrigated.	10 000 tonnes per annual period

Table 4: Documents submitted by the Applicant relevant to this Application.

Document/ information description	Reference
Great Southern Geotechnics October 2016, *Geotechnical investigation Lot 783 Pile Road, Forest Hill, WA 6324*	GSGa 2016 (A1409771)
Bio Diverse Solutions Pty Ltd December 2016, *Lot 783 Pile Road, Forest Hill WA liquid waste facility, environmental assessment report*	BDS 2016 (A1409772)
Great Southern Geotechnical 2016, *Engineering design: wastewater treatment pond system*	GSG 2016b (A1409773)
Email from Great Southern Geotechnical dated 28 February 2017, *RE: W6020 and L9022 OSIB Pty Ltd liquid waste facility application put on hold update*; includes: • Great Southern geotechnical *Addendum 1*	GSG 2017a (A1386663 and A1383252)
Shire of Plantagenet 3 May 2017, *Town Planning Scheme No.3 – Schedule 8 Notice of determination on application for development approval*	SoP 2017 (A1730681)
Email from OSIB Pty Ltd dated 22 May 2017, *Email # 1 - W6020/2016/1 - Comment on Draft Instrument & Decision Report*; includes: • Great Southern geotechnical *Addendum 2*	OSIB 2017a (A1435726)
Email from OSIB Pty Ltd dated 22 May 2017, *Email # 2 - W6020/2016/1 - Comment on Draft Instrument & Decision Report*; includes: • Bio Diverse Solutions Pty Ltd May 2017, *Lot 783 Pile Road, Forest Hill WA liquid waste facility, hydrological certification report*	OSIB 2017b (A1435728) BDS 2017
Email from OSIB Pty Ltd dated 22 May 2017, *Email # 3 - W6020/2016/1 - Comment on Draft Instrument & Decision Report*; includes: • GSGa 2016	OSIB 2017c (A1435735)
Email from OSIB Pty Ltd dated 22 May 2017, *Email # 4 - W6020/2016/1 - Comment on Draft Instrument & Decision Report*; includes: • Amended engineer drawings; and • Great Southern geotechnical *Addendum* 1	OSIB 2017d (A1435741)
Email from OSIB Pty Ltd dated 22 May 2017, *Email # 5 - W6020/2016/1 - Comment on Draft Instrument & Decision Report*; includes: • Great Southern Geotechnics May 2017, *Geotechnical investigation Great Southern Liquid Waste - Lot 783 Pile Road, Forest Hill, WA 6324*	OSIB 2017e (A1435752) GSG 2017b
OSIB Pty Ltd May 2017, *Pile Road, liquid waste disposal facility (WWTF) operations and maintenance manual*	OSIB 2017f (A1730696)
Office of the Appeals Convenor September 2017, *Report to the Minister for Environment Appeals in objection to the conditions applied to a works approval Works Approval W6020/2016/1: liquid waste facility Lot 783 Pile Road Forest Hill, OSIB Pty Ltd Appeal 017 of 2017*	Office of the Appeals Convenor Report (A1535058)

Document/ information description	Reference
Hon Stephen Dawson MLC Minister for Environment 2 October 2017, *Minister's appeal determination Appeals against conditions of a works approval W6020/2016/1 liquid waste facility, Forest Hill*	Appeal Determination (A1535056)
Email from Works Approval Holder dated 26 November 2018, *Compliance documentation Works Approval L6020/2016/1,* that includes: **a)** Great Southern Geotechnical 2018, *OSIB Pty Ltd liquid waste facility as constructed report*; **b)** Various laboratory reports; **c)** Groundwater monitoring bore log reports; **d)** HDPE liner installation and testing certification (*amended 10/12/2018 ref A1746904*); **e)** Bio Diverse Solutions 2017, *Lot 783 Pile Road Forest Hill WA liquid waste facility Hydrological certification report*; and **f)** As constructed drawings (*corrected 07/12/2018 ref A1746202*).	Works Approval Compliance Documents **a)** GSG 2018 (A1742480)
Amendment Application for Works Approval L6020/2016/1 – O.S.I.B. Pty Ltd, submitted 14 January 2014 that includes: **a)** Attachment 8 A – supplementary note – permeability 11.01.2019. **b)** Attachment 8 B – supplementary note fwd to DWER 24.12.2018. **c)** Attachment 8 C – email from Great Southern Geotechnics. **d)** Attachment 8 D – supplementary information 01. Cover letter departure report fwd to DWER 24.12.2018. **e)** Attachment 8 E – supplementary information fwd to DWER 24.12.2018 GSLW-anaerobic-pond-2-liner. **f)** Attachment 8 F – supplementary information fwd to DWER 24.12.2018 GSLW-anaerobic-pond-1-liner.	Works Approval Amendment Application (A1755326)

3. Overview of Premises

3.1 Construction aspects

The Applicant was approved to construct the infrastructure detailed in Table 5 under Works Approval W6020/2016/1. Some specifications were altered during construction, as addressed by Amendment Notice 1 for the Works Approval. These alterations have been incorporated into Table 5.

Compliance with the construction requirements under the Works Approval is discussed in Sections 3.1.1 and 5.4 of this Decision Report. The Applicant may seek approval to construct a third anaerobic pond at some time in the future. The third anaerobic pond does not form part of the Application and has not been considered in this Decision Report.

Storm water control infrastructure was constructed to effectively isolate the catchment of the LWF infrastructure. Within the Application and in accordance with the Works Approval an external 'V' drain surrounding the LWF was required to be nominally 0.75 m deep and penetrate into the sandy clay soil profile to help manage ephemeral groundwater through the upper sandy/ laterite soil profile and reduce the likelihood of sub-soil hydraulic loading on the pond liner infrastructure.

Three groundwater monitoring bores were constructed as part of the Works Approval.

Table 5: Premises infrastructure specifications (source: GSG 2016b and GSG 2018).

Infrastructure		Specifications
1	Liquid waste acceptance concrete discharge bay	**a)** N40 grade concrete 200 mm thick base slab and 175 mm thick walls. **b)** Three gross matter screens of between ~38 mm and ~12.5 mm aperture. **c)** All liquid waste is directed to the anaerobic ponds.
2	All ponds (anaerobic, facultative and evaporation)	**a)** 300 mm compacted minimum 95% maximum dry density lateritic gravel layer; and **b)** 300 mm (anaerobic ponds) and 600 mm (facultative and evaporation ponds) compacted minimum 95% maximum dry density clay layer with a maximum hydraulic conductivity of 1 x 10^{-9} m/s.
3	Anaerobic ponds	**a)** Geotextile layer covering clay liner; **b)** 1.5 mm HDPE geomembrane free of leak or defect covering the geotextile; **c)** Anaerobic pond one (west) has a base level of 252.3 mAHD, outlet at 245.69 mAHD, maximum operating depth of 2.09m and capacity of 360 kL; **d)** Anaerobic pond two (east) has a base level of 251.85 mAHD, outlet at 253.95 mAHD, maximum operating depth of 2.1m and capacity of 340 kL; and **e)** All overflow is directed to the facultative pond.
4	Facultative pond	**a)** A base level of 251.55 mAHD, outlet at 253.31 mAHD, maximum operating depth of 1.76 m and capacity of 6,420 kL; and **b)** All overflow is directed to the evaporation pond.
5	Evaporation pond	**a)** A base level of 249.3 mAHD, outlet at 252.19 mAHD and capacity of 56,400 kL; and **b)** All overflow is directed to the emergency overflow dam.
6	Emergency overflow dam	None specified.
7	Screened waste bins	Must be impervious and capable of covering all waste.
8	Desludging and drying hardstand	**a)** Gravel hardstand with a maximum hydraulic conductivity of 1 x 10^{-9} m/s surrounded on all sides by a 300 mm bund; **b)** All leachate directed to the anaerobic pond; and **c)** Sludge treated with Pro Tube and polymer dosing.
9	Liquid waste conveyance pipelines and control valves	Must be impervious and free of leaks and defects
10	Storm water management system	**a)** An external 'V' drain, nominally 0.75 m deep, isolating the LWF from surrounding lands, internal V' drains, nominally 0.3 m deep, on both side of access roads. **b)** All storm water directed away from liquid waste containment infrastructure and into the storm water dam; and **c)** The storm water dam must be sized to contain all rainfall arising within the storm water management system during a 1 in 100 year ARI rainfall event.
11	Three groundwater monitoring bores	Constructed in accordance with ASTM D5092-04(2010)e1 for sampling in accordance with AS/NZS 5667.1 and AS/NZS 5667.11 at the locations depicted in Figure 1 of this Decision Report.

3.1.1 Pond liner verification

Certification that the clay and HDPE components of the pond liners referred to in Table 5 of this Decision Report met the specified criteria was required under Condition 5 of the Works Approval. Condition 5 was amendment by Amendment Notice 1 for the Works Approval to remove some of the clay testing requirements for the anaerobic ponds. Information supporting the certification of the pond liner specifications for Condition 5 is summarised in Table 6 of this Decision Report. The Works Approval Compliance Documents included validation of the pond liner clay component by an independent professional engineer and stated:

- that the initial test results for 300 mm clay liners exceeding the hydraulic conductivity of 1 x 10^{-9} m/ s was the result of a non-homogenous clay profile;
- the facultative and evaporation pond liners were reworked and compacted to a 103-107% maximum dry density;
- clay liners were extended from 300 mm to 600 mm in the facultative and evaporation ponds during this process;
- two subsequent clay tests were both below 1 x 10^{-9} m/ s and resulted in an average hydraulic conductivity of 8.4 x 10^{-10} m/s;
- based on the comparison of laboratory and field density ratios that maximum permeability results for the clay liners are likely in the order of 1 x 10^{-10} m/s; and
- the analysis in Table 7 below compares laboratory test permeability results achieved with the maximum dry density (MDD) of 95% in accordance with the Australian Standard AS1289.6.7.1 to the MDD achieved during construction and subsequently the conversion by the independent professional engineer states that the values for all clays liners are less than the maximum hydraulic conductivity of 1 x 10^{-9} m/s.

Table 6: Pond liners construction quality assurance specifications.

Pond	Liner component	Result certification
1) Anaerobic pond 1 and anaerobic pond 2	**a)** ≥300 mm compacted, to AS 1289.5.1.1 ≥95% standard maximum dry density, lateritic gravel layer	300 to 600 mm layer installed (GSG 2018 page 5 and Appendix 8 Drawing GSLW-1026-DWG01-1).
	b) ≥300 mm compacted, to AS 1289.5.1.1 ≥95% standard maximum dry density, compacted clay layer with hydraulic conductivity of 1 x 10^{-9} m/s	**i)** 300 mm layer installed (Works Approval Amendment Application Attachment 8 A). **ii)** Three permeability test results dated 11/10/2016 with average 1.8 x 10^{-7} m/s[1] s; **iii)** Works Approval Amendment Application Attachment 8 A as summarised in Table 7 of this Decision Report. Note: Amendment Notice 1 of *Works Approval W6020/2016/1* removed testing frequency requirement under Condition 5, Table 4, infrastructure item 2, specification (b)(i).
	c) Geotextile completely covering clay and anchor trenched at top of pond embankment.	layer installed (GSG 2018, page 5 and Appendix 8 Drawing GSLW-1026-DWG01-1 and GSLW-1026-DWG06)
	d) ≥1.5 mm HDPE geomembrane, all welds and joins tested to ASTM D5641.	**i)** layer installed (GSG 2018, page 6 and Appendix 8 Drawing GSLW-1026-DWG01-1) **ii)** layer testing certification dated 25 January 2018 (GSG 2018, page 13 and Appendix 6 *Geomembrane & HDPE Liner Certification* as amended 10 December 2018)

Pond	Liner component	Result certification
2) Facultative pond	≥300 mm compacted, to AS 1289.5.1.1 ≥95% standard maximum dray density, compacted clay layer with hydraulic conductivity of 1 x 10^{-9} m/s	**i)** 600 mm layer installed (GSG 2018, page 6 and Appendix 8 Drawing GSLW-1026-DWG02-1); **ii)** Five permeability test results dated 12/04/2018 with average 3.14 x 10^{-9} m/s[1]; **iii)** Two reworked clay liner permeability test results dated 09/07/2018 with average 8.4 x 10^{-10} m/s[1]; and **iv)** Works Approval Amendment Application Attachment 8 A as summarised in Table 7 of this Decision Report.
3) Evaporation pond	≥300 mm compacted, to AS 1289.5.1.1 ≥95% standard maximum dray density, compacted clay layer with hydraulic conductivity of 1 x 10^{-9} m/s	**i)** 600 mm layer installed (GSG 2018, page 7-10 and Appendix 8 Drawing GSLW-1026-DWG02-2); **ii)** Five permeability test results dated 12/04/2018 with average 3.32 x 10^{-9} m/s[1]; and **iii)** Works Approval Amendment Application Attachment 8 A as summarised in Table 7 of this Decision Report.

Table 7: Permeability estimate via density laboratory and field conversion (source Attachment 8 B of the Works Approval Amendment Application).

Evaporative Pond Permeability Tests					
Sample Number	**Date Tested**	**Laboratory Moisture Ratio**	**Tested Density Ratio**	**Co-efficient of Permeability m/sec**	**Corrected Co-efficient of Permeability m/sec**
18G428 (1)	31/3/18	102%	98%	4.01E-09	1.03727E-09
18G429 (2)	31/3/18	99.50%	98.00%	2.6E-09	6.74225E-10
18G430 (3)	31/3/18	102.00%	98.00%	3.1E-09	8.03884E-10
18G431 (4)	31/3/18	103.00%	97.50%	3.6E-09	9.33543E-10
18G433 (5)	31/3/18	98.50%	98.00%	3.3E-09	8.55748E-10
		AVERAGE	**97.90%**	**3.322E-09**	**8.60934E-10**

Facultative Pond Permeability Tests					
Sample Number	**Date Tested**	**Laboratory Moisture Ratio**	**Tested Density Ratio**	**Co-efficient of Permeability m/sec**	**Corrected co-efficient of Permeability m/sec**
18G434 (1)	31/3/18	100.00%	98.00%	2.4E-09	6.22362E-10
18G435 (2)	31/3/18	101.00%	98.00%	2.9E-09	7.52021E-10
18G436 (3)	31/3/18	100.50%	98.00%	3.7E-09	9.59475E-10
18G437 (4)	31/3/18	102.50%	97.50%	2.8E-09	7.26089E-10
18G439 (5)	31/3/18	100.00%	98.00%	3.9E-09	1.01134E-09
		AVERAGE	**97.90%**	**3.23927E-09**	**8.14257E-10**

Anaerobic Pond Permeability Tests Extrapolation				
Number	**Date Tested**	**Tested Density Ratio**	**Co-efficient of Permeability**	**Corrected Co-efficient of Permeability m/sec**
Pond 1 Sample 1	13/7/17	101.50%	3.12757E-09	8.11034E-10
Pond 1 Sample 2	13/7/17	97.50%	3.25588E-09	8.44308E-10
Pond 1 Sample 3	13/7/17	101.00%	3.14306E-09	8.1505E-10
Pond 1 Sample 4	13/7/17	102.00%	3.11224E-09	8.07059E-10
Pond 2 Sample 1	13/7/17	100.00%	3.17449E-09	8.232E-10
Pond 2 Sample 2	13/7/17	98.00%	3.23927E-09	8.4E-10
Pond 2 Sample 3	13/7/17	98.50%	3.22283E-09	8.35736E-10
Pond 2 Sample 4	13/7/17	100.50%	3.15869E-09	8.19104E-10
	AVERAGE	**99.88%**	**3.17926E-09**	**8.24436E-10**

3.2 Operational aspects

The Applicant proposes to accept up to 10,000 tonnes of liquid waste per annual period for treatment within the pond based LWF and for disposal via evaporation. The Applicant will control all access to the LWF. Solid waste residues (sludges) will be periodically removed from the LWF ponds, dewatered and disposed of off-site. The as constructed plans of the LWF is depicted in Figure 1 and the Premises is depicted in Figure 2.

The Applicant intends to operate the LWF year round, nominally during day light hours and at night on demand/ during emergency situations. No direct discharges of liquid waste to the environment are proposed in the Application.

The following commitments are made within the O.S.I.B. Pty Ltd May 2017, *Pile Road, liquid waste disposal facility (WWTF) operations and maintenance manual* (OSIB 2017f):

a) Solid wastes captured by screens in the liquid waste acceptance concrete discharge bay will be disposed of via waste bins;

b) A minimum 500 mm freeboard will be maintained in all ponds at all times;

c) Liquid waste accepted at the Premises shall be visually checked, measured for pH and conductivity and a grab sample taken before discharge to the discharge bay;

d) Desludging will be undertaken as required;

e) Pipework will be checked weekly for blockages; and

f) Routine observations of the LWF and pond conditions.

4. Location and siting

4.1 Siting context

The Premises is located within the Shire of Plantagenet, approximately 25 km west south west of the Mount Barker town site and 32 km north of the Denmark town site in a predominantly rural area. Land uses in the area include forestry and agricultural activities and some adjacent lands are also zoned 'recreation'. A number of conservation reserves are also located in the area and surface water catchment dams are common in the region. A map of the Premises location, including proximate receptors is depicted in Figure 2. Potential receptors are discussed further in the Sections 4.2 - 4.5 of this Decision Report.

4.2 Residential and sensitive human receptors

Table 8: Receptors and distance from the liquid waste facility infrastructure.

Sensitive Land Uses	Distance from Prescribed Activity
Residential Premises	Residences are identified at the following approximate distances from the liquid waste infrastructure: • 1.3 km and 1.6 km north west; • 2.2 km north east; • 2.0 km and 2.7 km south east; • 2.8 km south west; and • 3.0 km west south west.

Figure 1: As constructed plan of liquid waste facility, topography and pond capacities (GSG 2018).

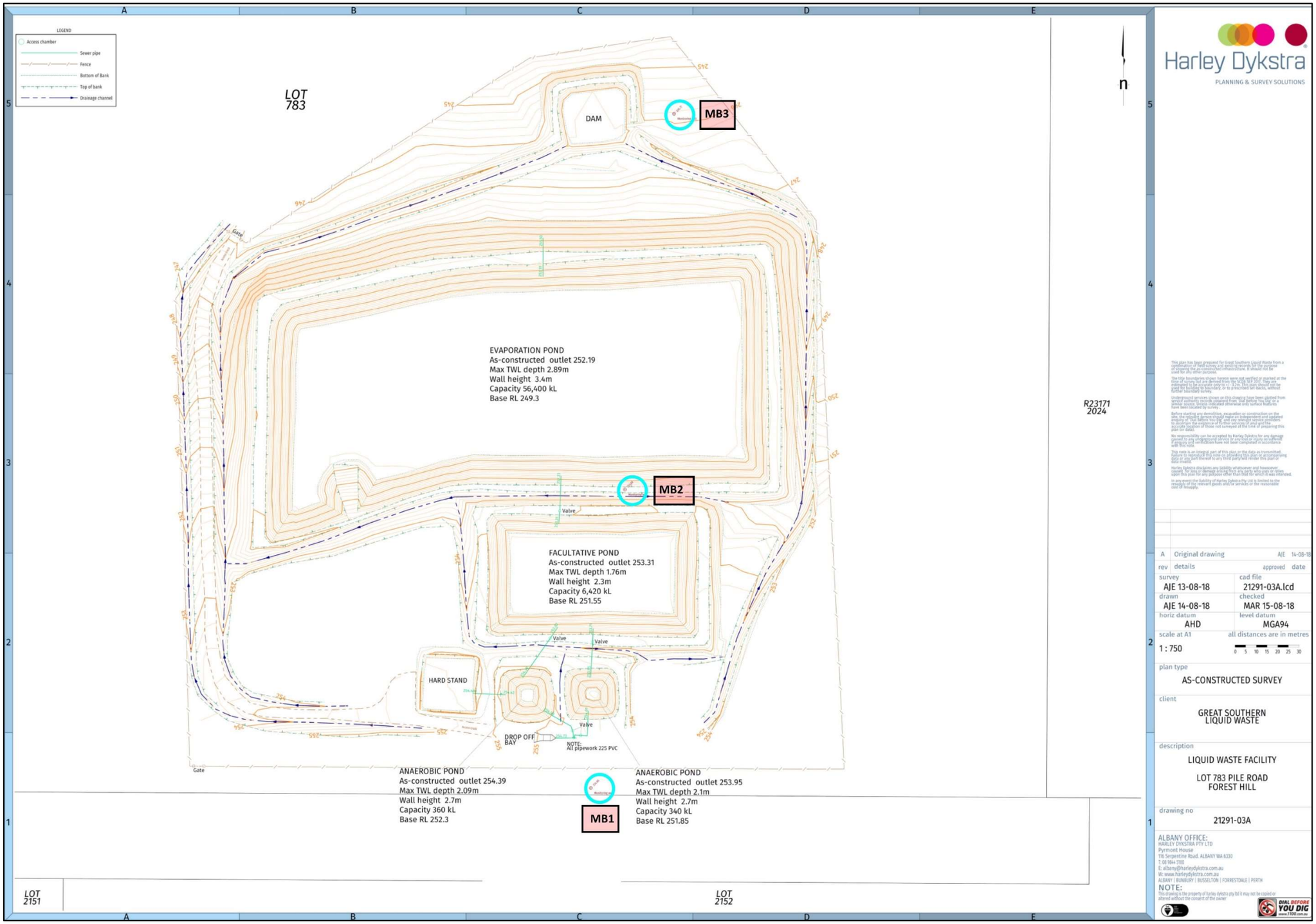
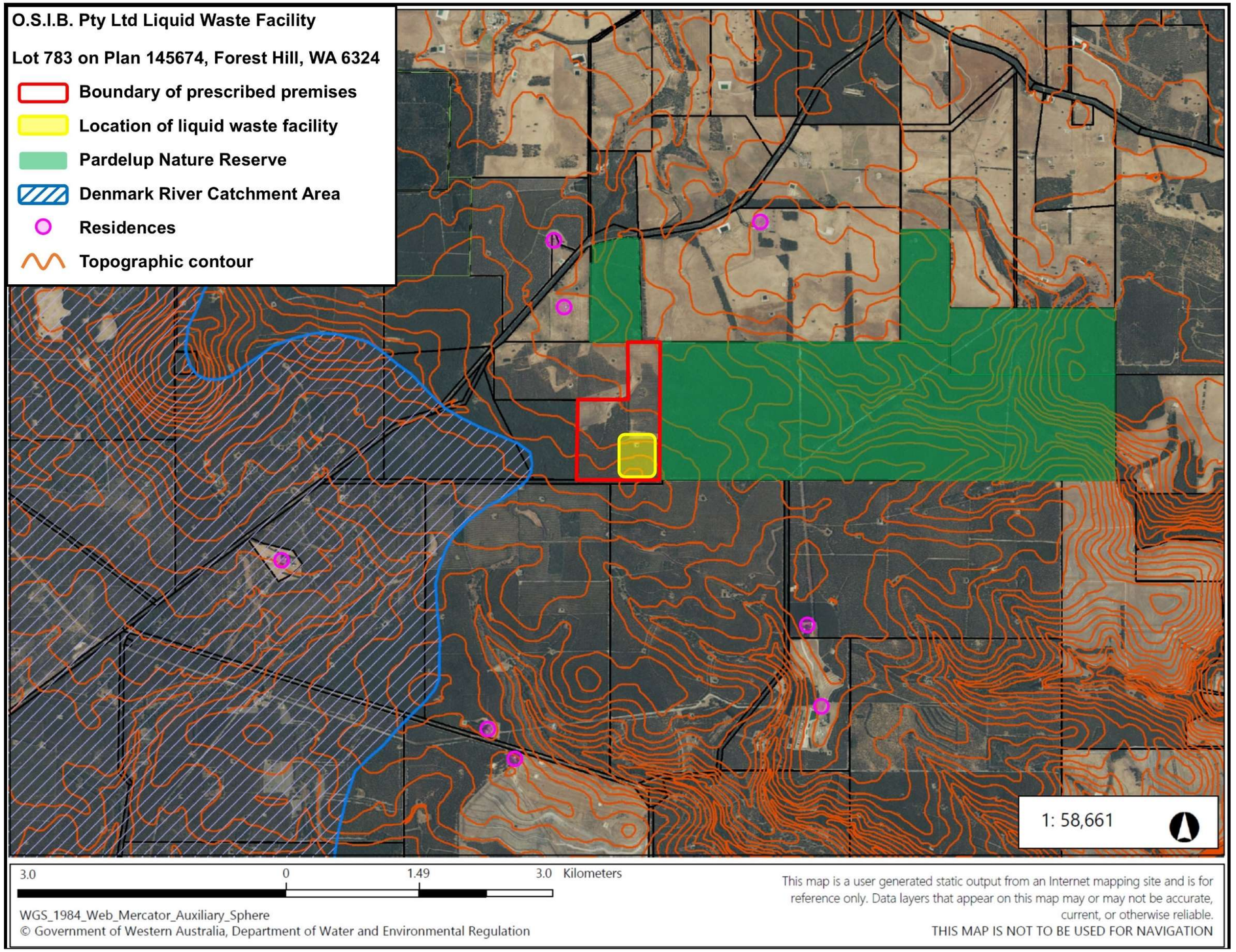


Figure 2: Map of the Premises.



4.3 Environmental receptors and specified ecosystems

Table 9: Specified ecosystems.

Specified ecosystems	Distance from the Premises
Country Area Water Supply Act 1947 Schedule 2 Denmark River Catchment Area (priority not assigned)	Approximately 900 m west of the LWF infrastructure.
Conservation and Land Management Act 1984 Pardelup Nature Reserve	Approximately 100 m east and 900 m north of the LWF infrastructure.
Conservation and Land Management Act 1984 Timber Reserve	Approximately 2.1 km north west of the LWF infrastructure.
Crown reserve vested with the Shire of Plantagenet for the purpose of 'camping and waterway'.	Approximately 450 m west of the LWF infrastructure.

4.4 Groundwater and surface water sources

Groundwater and surface water sources proximate to the Premises are summarised in Table 10.

Table 10: Groundwater and water sources.

Groundwater and water sources	Distance from Premises	Value
Surface water tributaries (minor ephemeral)	Originating in the far north of the Premises, within the Pardelup Nature Reserve to the east and originating south and tending south-east from the south side of the topographical gradient located along the southern boundary for the Premises (all approximately 850m from the LWF infrastructure).	Hay River Catchment of the Wilson Inlet. Wilson Inlet is a declared management area under the *Waterways Conservation Act 1976*. Non-potable beneficial use.
Surface water agricultural dams	Approximately 18 agricultural dams have been identified with a 1.5 km radius of the LWF infrastructure.	Non-potable beneficial use (domestic and agricultural including horticulture and stock watering).
Sump lands (inferred from BDS 2016, page 9)	Within the Pardelup Nature Reserve (estimate 100 – 500 m) from the LWF infrastructure.	Area of high conservation significance.
Groundwater (shallow)	Within the footprint of the LWF infrastructure at depths <600 mm. Water was observed flowing through soil layers 500-600 mm deep and above and pooling of water in all eleven test pits except test pits 1, 2 and 6 during the hydrogeological investigations (GSG 2016a). Considered superficial and potentially present for ~3 months year based on local meteorological conditions.	Non-potable beneficial use and ecosystem services, potential links to: • Agricultural dams. • Pardelup Nature Reserve. • Surface water tributaries.
Groundwater (deep)	Groundwater is present between 6 and 15 mBGL within the Saprolite soil layer and extending into the sandy clays. Groundwater is shallower in the northern parts of the Premises.	

4.5 Hydrogeology

At the time the Works Approval was granted, limited information was available on the groundwater and geology at the Premises. Investigations were limited to 11 test pits dug to a maximum depth of 5.5 mBGL across the area of works proposed for the liquid waste facility. Based on this, at the time the Delegated Officer made the following two assumptions:

> *Groundwater is considered foreseeable near granite bedrock interface (Saprolite layer) and assumed, in the absence of additional verification of site conditions that any groundwater that may be present at the Premises will be of beneficial use.*
>
> *Based on the sites topography, the Delegated Officer considers it reasonable to assume that groundwater would migrate in a north east to east direction, into the adjacent Class A Pardelup Nature Reserve however, due to a lack of site specific information and likely granitic geological basement of the area this assumption is not conclusive.*

Initial information on soils at the Premises was derived from a hydrogeological investigation via 11 test pits (see GSG 2016a; GSG 2017) that found the soil profile to generally consist of:

- Top soil 0 to 100 – 200 mm (±100 mm);
- Sandy gravel 100 – 550 mm (±150 mm);
- Sandy clay with variable amounts of gravel 400 – 5500 mm (±150 mm); and
- Higher levels of trace gravels are found at depth in northern test pits.

- Under Condition 3 of the Works Approval the Works Approval Holder was required to install three groundwater monitoring bores to a maximum depth of 20 mBGL. The results of the groundwater monitoring bore installation, undertaken in early November 2017 are summarised in Figure 1 (bore locations),

Table 12(soil profile) and Table 12 (groundwater water levels). Soil profile data obtained during the installation of three groundwater monitoring bores was relatively consistent with the conditions observed during the test pit investigations.

Table 11: Summary of groundwater and geological profile at the Premises (source: pp 46 – 51, GSG 2018).

Monitoring bore MB1 *(ToC 254.86 mAHD)*		**Monitoring bore MB2** *(ToC 253.89 mAHD)*		**Monitoring bore MB3** *(ToC 246.77 mAHD)*	
mBGL	**Description**	**mBGL**	**Description**	**mBGL**	**Description**
0 – 0.2	Top soil	0 – 0.3	Laterite and top soil	0 – 0.2	Top soil
0.2 – 2	Light brown clay	0.3 – 2	Light brown clay	0.2 – 1	Light brown clay
2 – 4	Grey clay	2 – 7	Cream and pink clay	1 – 5	Cream clay
4 – 8	Cream clay			5 – 6	Light brown clay
8 – 10	Pink clay and decomposed gravel	7 – 11.5	Cream clay	6 – 9	Cream sandy clay *SWL at 6.8 mBGL*
				9 – 11	Pink clay and decomposed granite
10 – 14	Cream sandy clay	11.5 – 15.45	Brown clay and decomposed granite (Saprolite) *SWL at 12.9 mBGL*	11 – 11.96	Decomposed granite (Saprolite)
				11.96	Granite
14 – 16	Decomposed granite (Saprolite)	15.45	Granite		

Monitoring bore MB1 *(ToC 254.86 mAHD)*		Monitoring bore MB2 *(ToC 253.89 mAHD)*		Monitoring bore MB3 *(ToC 246.77 mAHD)*	
mBGL	**Description**	**mBGL**	**Description**	**mBGL**	**Description**
	SWL at 15.6 mBGL				
16 – 17.25	Light brown clay and decomposed granite				
17.25	granite				

Table 12: Initial groundwater monitoring bore results (source pp 46-51, GSG 2018).

Monitoring bore MB1 *(ToC 254.86 mAHD)*		Monitoring bore MB2 *(ToC 253.89 mAHD)*		Monitoring bore MB3 *(ToC 246.77 mAHD)*	
mBGL	**mAHD**[1]	**mBGL**	**mAHD**[1]	**mBGL**	**mAHD**[1]
Standing groundwater level					
15.6	238.36	12.9	240.09	6.8	239.07
Slotted screen interval					
14.25 – 17.25	239.71 – 236.71	12.5 – 15.45	240.49 – 237.54	8.96 – 11.96	236.91 – 233.91

Note 1: All depths in mAHD were calculated applying a standard subtraction for the groundwater bore top of casing (ToC) being above ground level of 0.9m.

Groundwater was identified within the saprolite layer and close to the interface between the saprolite and clays above. The recorded standing water levels (SWL) are not expected to represent maximum SWL due to:

- the observations taking place at the start of summer; and
- following above average rainfall in August and September 2017, October 2017 rainfall was likely between 41% and 68% of the mean monthly rainfall (source http://www.bom.gov.au/climate/data/ station 009581 and 009752 data).

The predominant groundwater flow direction is not clear from the available bore network and further information is required to reduce uncertainty and provide an understanding of groundwater flow directions and gradients at the Premises. A *minimum* of three bores is required to delineate groundwater flow directions and, where three bores have not achieved that, additional bores are typically required. It is important to understand groundwater flow in order to ensure that monitoring bores are suitably located to identify any issues with the integrity of the pond liner system at the earliest opportunity.

At this time the Delegated Officer considers that based on the standing water levels recorded in November 2017 that the following assumption is still valid:

> *Based on the sites topography … groundwater would migrate in a north east to east direction, into the adjacent Class A Pardelup Nature Reserve.*

Monitoring data of groundwater characteristics and quality is yet to be provided.

5. Legislative context

The granting of Licence L9022/2016/1 does not absolve the Applicant from ensuring that all other statutory approvals to operate the Primary Activities at the Premises are in place.

5.1 Planning and development approvals

Development Approval for the Application was granted by the Shire of Plantagenet on 26 April 2017, dated 3 May 2017. Development Approval is subject to controls regarding Shire of Plantagenet road construction requirements, the Application being developed in accordance with approved plans and other matters being '*to the satisfaction of the Department of Health and the Department of Environment Regulation*'.

The Premises is located with the Shire of Plantagenet is an area zoned 'Rural'. The zoning of adjacent lands is described in Figure 3. Adjacent lands are zoned:

- Rural: light green shading.
- Recreation: green cross hatched (*includes the Pardelup Nature Reserve*).
- Forestry: pine green cross hatched.
- Public purposes: yellow cross hatched (*being Department of Corrective Serves*).
- Catchment boundary: blue line (*Hay River and Denmark River catchment areas).*
- Premises boundary: red line.

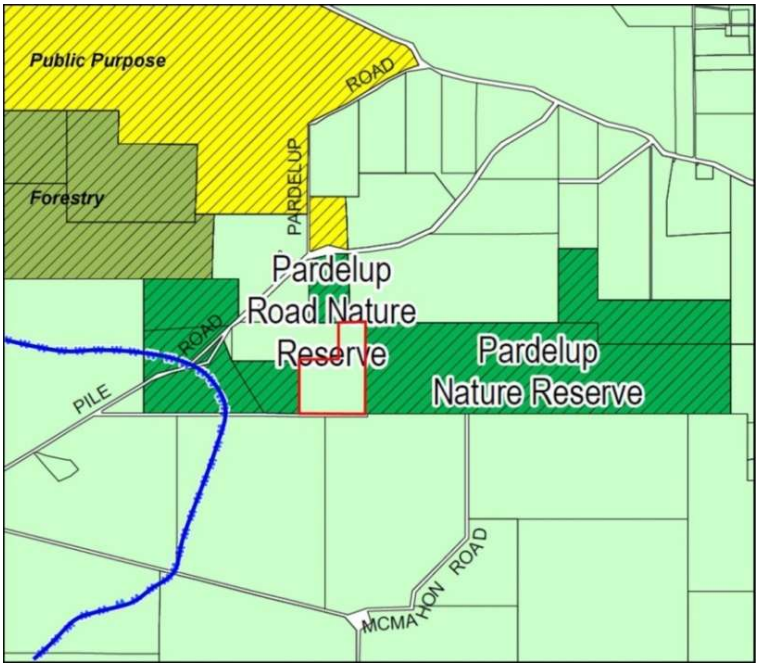


Figure 3: Premises location and zoning of adjacent lands, *Shire Plantagenet Town Planning Scheme No.* 3 (Source: excerpt of *Town Planning Scheme Map No. 1 of 9*).

5.2 Contaminated sites

The liquid waste facility (Sewage/ wastewater treatment plant) is identified as a potentially contaminating land use under the *Assessment and management of contaminates sites*. The site has not been referred or classified under the *Contaminated Sites Act 2003*. No information identified to date indicates that referral is required at this time.

5.3 Controlled waste

Liquid waste accepted at the Premises is a controlled waste. The Applicant will be subject to the provisions of the *Environmental Protection (Controlled Waste) Regulations 2004*. The provisions will apply to the Applicant where they are responsible for the transport, movement, receipt and/ or tracking of a controlled waste.

5.4 Part V of the EP Act

The overarching legislative framework of this assessment is the EP Act and EP Regulations. Guidance Statements that inform this assessment under Part V of the EP Act are detailed in Appendix 1 of this Decision Report.

5.4.1 Compliance inspections and compliance history

The Applicant was granted Licence L8568/2011/1 under Part V of the EP Act on 8 September 2011 for the operation of the Albany Septage Facility that was located on Part of Lot 10 on Diagram 84694, Drome, Western Australia. Licence L8568/2011/1 ceased to have effect on 8 October 2012. The Delegated Officer notes that a search of the DER Incident Complaint Management System did not identify any matters of material concern limiting the ability of the Applicant to construct and operate the LWF.

A compliance inspection at the Premises of the works completed under Works Approval W6020/2016/1 was undertaken by DWER officers on 19 December 2018. Findings were addressed through Amendment Notice 1 of the Works Approval W6020/2016/1.

5.4.2 Works Approval W6020/2016/1

Works Approval W6020/2016/1 was granted on 2 June 2017. Two appeals were lodged in response to the Works Approval being granted on the basis of 'impacts to surface water and ground water' and 'amenity'. On 2 October 2017 the then Minister for Environment dismissed the appeals. The grounds for appeal, consideration of them and determination are documented in Office of the Appeals Convenor Report and Appeal Determination.

Compliance documentation for Works Approval W6020/2016/1 was received from the Applicant on 26 November 2018 with additional supporting information submitted on 14 January 2019. Following the granting of Amendment Notice 1 for the Works Approval on 19 February 2019 the Delegated Officer has determined that the works have been satisfactorily completed in accordance with the conditions of the Works Approval.

6. Risk assessment

6.1 Rating, acceptability and treatment of Risk Events

A risk rating will be determined for Risk Events in accordance with the risk rating matrix set out in Table 13. An assessment of the consequence and likelihood of the Risk Event will be undertaken in accordance with Table 14. The acceptability and treatment of Risk Events will be undertaken in accordance with Table 15.

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. Risk Events for the operation of the Application were assessed within the Decision Report for Works Approval W6020/2016/1. Risk Events for the operation of the Application are again screened, assessed as appropriate and rated through Table 16.

Table 13: 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 14: 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.

Table 15: Risk treatment table.

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

6.2 Determination of emission, pathway and receptor

Table 16: Identification of emissions, pathway and receptors during operation (Risk Events).

Risk Event					Consequence	Likelihood	Risk rating	Reasoning	Regulatory controls (*refer to Conditions of granted Licence L9022/2016/1 and Section 7 of this Decision Report*)
Source/ activities	**Potential emissions**	**Potential receptors**	**Potential pathway & receptor (impact)**	**Applicant controls**					
Liquid waste acceptance and discharge: tankered waste being accepted at the Premises and discharged to the LWF.	Discharge to land: from discharge of liquid waste	Groundwater: • Groundwater; and • Pardelup Nature Reserve is located 100 m east.	Direct discharge to land including via surface water runoff. Nutrient and contaminant build up in local soil/ groundwater, migration to Pardelup Nature Reserve and potential impact to ecosystem services.	Waste acceptance concrete discharge bay Liquid waste conveyance pipes and control valves Storm water management system.	Major	Unlikely	Medium	Contaminant concentrations within untreated liquid waste, proximity to and sensitivity of receptors (Consequence) when considered against purpose built fit for purpose infrastructure and potential for large volume discharges (likelihood).	*Acceptable subject controls.* *Conditions 1, 2, 3 and 4.*
	Noise	From the LWF infrastructure: • Residences are located a minimum of 1.3 km away; • Pardelup Nature Reserve is located 100 m east; and • Agricultural land is located directly south across the road reserve.	Air / wind dispersion Amenity and human/ fauna health impacts	None specified	Minor	Rare	Low	Distance to receptors, scale and type of operations and lack of reasonably foreseeable impact.	Acceptable. Adequately regulated by the Noise Regulations, Section 49 and the general provisions of the EP Act.
	Odour			Waste acceptance types; concrete discharge bay; anaerobic ponds	Moderate	Rare	Medium	Distance to receptors, scale and type of operations and lack of reasonably foreseeable impact.	Acceptable. Adequately regulated by Section 49 and the general provisions of the EP Act.
Liquid waste storage and treatment: liquid waste being stored and treated within the LWF including disposal via evaporation	Discharge to land: overtopping and structural failure of LWF.	From the LWF infrastructure: • Groundwater; and • Pardelup Nature Reserve is located 100 m east.	Direct overland discharge; seepage to groundwater Nutrient and contaminant build up in local soil/ groundwater, migration to Pardelup Nature Reserve and potential impact to ecosystem services.	Liquid waste facility ponds Maintenance of minimum 500 mm Freeboard Storm water management system	Major	Unlikely	Medium	Contaminant concentrations within untreated liquid waste, proximity to and sensitivity of receptors (Consequence) when considered against purpose built infrastructure (likelihood).	*Acceptable subject to controls.* *Conditions 1, 2, 3 and 4.*

Risk Event					Consequence	Likelihood	Risk rating	Reasoning	Regulatory controls (*refer to Conditions of granted Licence L9022/2016/1 and Section 7 of this Decision Report*)
Source/ activities	**Potential emissions**	**Potential receptors**	**Potential pathway & receptor (impact)**	**Applicant controls**					
Liquid waste storage and treatment: liquid waste being stored and treated within the LWF including disposal via evaporation *Continued*	Noise	From the LWF infrastructure: • Residences are located a minimum of 1.3 km away; • Pardelup Nature Reserve is located 100 m east; and • Agricultural land is located directly south across the road reserve.	Air / wind dispersion Amenity and human/ fauna health impacts	None specified	Minor	Rare	Low	Distance to receptors, scale and type of operations and lack of reasonably foreseeable impact.	Adequately regulated by the Noise Regulations and general provisions of the EP Act.
	Odour			Waste acceptance types; concrete discharge bay; liquid waste facility ponds - anaerobic ponds	Moderate	Unlikely	Medium	Distance to receptors, scale of activity and lack and potential for anaerobic pond conditions.	*Acceptable subject to controls.* *Conditions 1, 2, 3 and 4.*
	Sludge	Lands receiving sludge and leachate	Direct discharge to land; at the Premises migration to Pardelup Nature Reserve and potential impact to ecosystem services	Annual check of sludge levels. Desludging method not confirmed. Geo-tube proposed and gravel hardstand draining to ponds.	Major	Unlikely	Medium	Contaminant concentrations within sludge, nature of pond liners and geology, distance to groundwater and sensitivity of receptors (Consequence) when considered against purpose built infrastructure (likelihood).	*Acceptable subject to controls.* *Conditions 1, 2, 3, and 4.*
	Seepage: leachate to groundwater via pond liners and transfer pipelines.	From the LWF infrastructure: • Groundwater; and • Pardelup Nature Reserve is located 100 m east.	Groundwater contamination, suppression of ecosystem services; soil contamination and/ or erosion inhibiting vegetation; contamination of superficial surface water ecosystems	Liquid waste facility ponds, clay and HDPE (anaerobic ponds only) liners; construction quality assurance.	Major	Unlikely	Medium	Contaminant concentrations within liquid waste ponds, nature of pond liners and geology, distance to groundwater and sensitivity of receptors (Consequence) when considered against purpose built infrastructure (likelihood).	*Acceptable subject to controls.* *Conditions 1, 2, 4, 5, 6 and 7.*

Risk Event					Consequence	Likelihood	Risk rating	Reasoning	Regulatory controls (*refer to Conditions of granted Licence L9022/2016/1 and Section 7 of this Decision Report*)
Source/ activities	**Potential emissions**	**Potential receptors**	**Potential pathway & receptor (impact)**	**Applicant controls**					
Management of stormwater: control and discharge of stormwater	Stormwater: contaminated with liquid waste and/ or sediment.	From the LWF infrastructure: • Groundwater; and • Pardelup Nature Reserve is located 100 m east.	Direct discharge Groundwater contamination, suppression of ecosystem services; soil contamination and/ or erosion inhibiting vegetation; contamination of superficial surface water ecosystems	Storm water management system	Moderate	Unlikely	Medium	Potential for offsite impacts, contaminants within storm water, proximity to and sensitivity of receptors (Consequence) when considered against purpose built infrastructure (likelihood).	*Acceptable subject to controls.* *Conditions 1 and 4.*

7. Regulatory controls – Licence conditions

The conditions in the Issued Licence in Attachment 1, as summarised in Table 17, have been determined in accordance with the DWER 2018 *Regulatory best practice principles* and the *Guidance statement: risk assessments* and *Guidance statement: setting conditions*. The *Guidance statement: licence duration* has been applied and the Issued Licence expires in 20 years from date of issue. 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 licence under the EP Act.

Table 17: Summary of grounds for Conditions of Licence L9022/2016/1.

Condition	Summary
Emissions	
1	No specified emissions are granted approval under the Licence. Any emissions arising from the Primary Activities are subject to the provisions of Condition (1)(a) and the EP Act apply and no defence under Section 74A of the EP Act is granted or implied. Additional controls to prevent, control, abate or mitigate pollution or environmental harm consistent with the findings of Table 16 in this Decision Report are specified in the Conditions of the Licence.
Waste classification, acceptance and throughput	
2	Condition 2 restricts the type and volume of waste approved for acceptance consistent with the Application under works approval W6020/2016/1. These controls reflect the Licence Holder's method of operation and set limits to the scope of this risk assessment process. Waste specifications are provided to define controlled waste categories L150 and N140 where the definition may not be clear or additional assessment and controls may be required control risks associated with certain waste types.
Waste processing	
3	Condition 3 is consistent with the Licence Holder's critical stages of the process to treat liquid waste. The acceptance of liquid waste and treatment through an alternate process must be considered with regards to Section 53 of the EP Act.
Infrastructure and equipment	
4	Condition 4 is consistent with the Licence Holder's critical infrastructure specifications and operational requirements of the process to treat liquid waste. The alteration of infrastructure and operations through an alternate process must be considered with regards to Section 53 of the EP Act.
5	Condition 5 requires two additional groundwater monitoring bores to be installed. The bores are required to address observations and assumptions discussed in Section 4.4 of this Decision Report, help delineated groundwater gradients and ensure appropriate location of background and indicator bores to monitor for potential impacts from seepage commensurate to the risk of seepage at the Premises.

Condition	Summary
Monitoring requirements	
6 and 7	Monitoring requirements are appropriate to validate assessment predictions and provide assurance of the effectiveness of Conditions for infrastructure and operation, addressing uncertainty and for transparency. The parameters specified are consistent with those specified for a liquid waste facility (Sewage/ wastewater treatment plant) in the *Assessment and management of contaminates sites*. A single round of the minimum monitoring required for *perfluoroalkyl and polyfluoroalkyl substances*, as specified in the Department of Environment Regulation 2017, *Interim Guideline on the assessment and management of perfluoroalkyl and polyfluoroalkyl substances (PFAS)* is required to establish a baseline at the Premises and ensure that any future sampling can be referenced to conditions prior to the operation at the Premises. In is reasonably foreseeable that PFAS could occur within liquid waste accepted at the Premises and/ or be present at the Premises from other historic activities. Frequency is appropriate to address assumptions regarding groundwater gradients, the assessed risk and expected performance of the pond liners.
8	Monitoring requirements are appropriate to validate operations, address uncertainty, confirm the accuracy in the scope of this risk assessment process and for transparency.
Records and Reporting	
9, 10, 11, 12 and 13	Record keeping requirements are appropriate to validate assessment predictions and provide assurance of the effectiveness of Conditions for infrastructure and operation and for transparency. Submission of an Annual Audit Compliance Report is required consistent with the *Guidance statement: annual audit compliance reports*. Commensurate to the risk rating for the Premises, submission of an Environmental Report every two years is considered appropriate.

8. Consultation

Consultation was undertaken as part of granting works approval W6020/2016/1 as summarised in Table 18.

Table 18: Summary of works approval W6020/2016/1 consultation.

Stakeholder	Risks identified
The then Department of Parks and Wildlife (now Department of Biodiversity, Conservation and Attractions); Shire of Plantagenet; and Community stakeholders.	Amenity and odour Environmental and human health risks Seepage risk, pond liners and groundwater monitoring Siting Storm water management

Further consideration of the risks identified during consultation for Works Approval W6020/2016/1 is documented within the Office of the Appeals Convenor Report dated September 2017 and Appeal Determination dated 2 October 2017.

The Applicant was provided with the draft Decision Report and draft Issued Licence on 6 March 2019. The Applicant waived the consultation period on 7 March 2019.

9. 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 19 December 2018.

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

Rebecca Kelly

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Rebecca Kelly
A/ Senior Manager Waste Industries

Delegated Officer
under section 20 of the *Environmental Protection Act 1986*

Appendix 1: Key documents

	Document title	In text ref	Availability
1.	See Table 4 of this Decision Report		
2.	Hon Stephen Dawson MLC Minister for Environment 2 October 2017, *Minister's appeal determination Appeals against conditions of a works approval W6020/2016/1 liquid waste facility, Forest Hill*	*Appeal Determination*	https://www.appealsconvenor.wa.gov.au/
3.	Office of the Appeals Convenor September 2017, *Report to the Minister for Environment Appeals in objection to the conditions applied to a works approval Works Approval W6020/2016/1: liquid waste facility Lot 783 Pile Road Forest Hill, OSIB Pty Ltd Appeal 017 of 2017*	*Office of the Appeals Convenor Report*	
4.	Department of Water and Environmental Regulation 2018, *Regulatory best practice principles*	*Regulatory best practice principles*	Available from website: http://www.dwer.wa.gov.au; http://www.der.wa.gov.au
5.	Department of Environment Regulation October 2015, *Guidance Statement: Setting conditions*	*Guidance Statement: Setting conditions*	
6.	Department of Environment Regulation August 2016, *Guidance Statement: Licence duration*	*Guidance Statement: Licence duration*	
7.	Department of Environment Regulation February 2017, *Guidance Statement: Risk Assessments*	*Guidance Statement: Risk Assessments*	
8.	Department of Environment Regulation February 2017, *Guidance Statement: Decision Making*	*Guidance Statement: Decision Making*	
9.	Department of Environment Regulation November 2016, *Guidance Statement: Environmental Siting*	*Guidance Statement: Environmental Siting*	
10.	Department of Environment Regulation February 2017, *Guidance Statement: Land Use Planning*	*Guidance Statement: Land Use Planning*	
11.	Department of Environment Regulation May 2016, *Publication of Annual Audit Compliance Reports*	*Publication of Annual Audit Compliance Reports*	
12.	Department of Environment Regulation July 2013, *Enforcement and prosecution policy* and Department of Water and Environmental Regulation 2017, *Compliance and enforcement policy (interim)*	*Enforcement and prosecution policy*	
13.	Department of Environment Regulation 2014, *Contaminated Sites Guidelines: Assessment and management of contaminated sites*	*Assessment and management of contaminated sites*	

Attachment 1: Issued Licence L9022