



Application for Works Approval

Division 3, Part V *Environmental Protection Act 1986*

Works Approval Number W6419/2020/1

Applicant Shire of Dundas

ACN NA

File Number DER2020/000267

Premises Norseman Liquid Waste Facility
Part of Crown Reserve 3476
Denison Drive
NORSEMAN WA 6443
As defined by the coordinates in Schedule 1 of the Works Approval

Date of Report 14 September 2020

Status of Report Final

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1. Definitions of terms and acronyms

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

Table 1: Definitions

Term	Definition
ACN	Australian Company Number
Category/ Categories/ Cat.	Categories of Prescribed Premises as set out in Schedule 1 of the EP Regulations
CS Act	<i>Contaminated Sites Act 2003 (WA)</i>
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 <i>Public Sector Management Act 1994</i> and designated as responsible for the administration of Part V, Division 3 of the EP Act.
DWER	Department of Water and Environmental Regulation As of 1 July 2017, the Department of Environment Regulation (DER), the Office of the Environmental Protection Authority (OEPA) and the Department of Water (DoW) amalgamated to form the Department of Water and Environmental Regulation (DWER). DWER was established under section 35 of the <i>Public Sector Management Act 1994</i> and is responsible for the administration of the <i>Environmental Protection Act 1986</i> along with other legislation.
EPA	Environmental Protection Authority
EP Act	<i>Environmental Protection Act 1986 (WA)</i>
EP Regulations	<i>Environmental Protection Regulations 1987 (WA)</i>
Existing Licence	The Licence issued under Part V, Division 3 of the EP Act and in force prior to the commencement of, and during this Review
m ³	cubic metres
Minister	the Minister responsible for the EP Act and associated regulations
NEPM	National Environmental Protection Measure
Noise Regulations	<i>Environmental Protection (Noise) Regulations 1997 (WA)</i>
Occupier	has the same meaning given to that term under the EP Act.
Prescribed Premises	has the same meaning given to that term under the EP Act.

Premises	refers to the premises to which this Decision Report applies, as specified at the front of this Decision Report
Primary Activities	as defined in Schedule 2 of the Revised Licence
Risk Event	As described in <i>Guidance Statement: Risk Assessment</i>
UDR	<i>Environmental Protection (Unauthorised Discharges) Regulations 2004 (WA)</i>
Works Approval Holder	Shire of Dundas

2. Purpose and scope of assessment

On 22 June 2020, Shire of Dundas (Applicant) submitted a Works Approval application (the Application) for the construction of a liquid waste evaporation pond, a filter bed and all the associated infrastructure within part of crown reserve 3476, Denison Drive, Norseman (the Premises).

The scope of the assessment includes:

- the proposed construction works (refer to section 4);
- the location of the proposed works (refer to section 6); and
- a risk-based assessment of the emissions and discharges associated with the operation of Norseman Liquid Waste Facility (refer to section 7).

This assessment has resulted in the issue of Works Approval W6419/2020/1 which is contained in Attachment 1 of this report. In completing the assessment documented in this Decision Report, the department has considered and given due regard to its Regulatory Framework and relevant policy documents which are available at <https://dwer.wa.gov.au/regulatory-documents>.

2.1 Application details

Table 2 lists the documents submitted during the assessment process.

Table 2: Documents and information submitted during the assessment process

Document/information description	Date received
Application form including following supporting information; <ol style="list-style-type: none">1. Summary of proposal;2. Design/Plan;3. Cost of project4. Bore monitoring information5. Siting / Climate information6. Groundwater information7. Monitoring data	22 June 2020
Email: Response from Richard Brookes to request for further information (Emissions and Discharges).	14 July 2020
Email: Response from Richard Brookes to request for further information (Boundary map and shape file).	21 July 2020

3. Background

Works approval (W5704/2014/1) was granted for the construction of 2 concrete ponds in September 2014. The applicant undertook the construction of the ponds as per the design. The two concrete anaerobic ponds does not have a discharge outlet though. These two concrete ponds have an area of approximately 32m² each and a design depth of 2m. It has now been noted by the applicant that the design is not adequate to cater for the licenced required waste input of 300 tonnes/annum. These ponds can allow for the temporary storage of effluent however they are not large enough in area to allow for sufficient evaporation. In order to improve the evaporative efficiency of the ponds a larger surface area needs to be available for evaporation therefore the applicant is proposing to construct a concrete drying bed in close proximity to the existing liquid waste ponds to enable liquid waste to be pumped

from the two secondary liquid waste ponds as and when required. The applicant is also proposing to construct an additional deep sump to allow for pumping as and when required as well as a filter bed to accommodate a monofilament polypropylene rapid flow dewatering tube to provide initial separation of solids from liquids.

Proposed activities under this Works Approval include:

- Construction of a 32m x 32m evaporative drying bed;
- Construction of 1000mm x 1000mm x 600mm deep sump; and
- Construction of 8m x 5m filter bed.

Table 3 lists the prescribed premises categories that have been applied for.

Table 3: Prescribed Premises Categories in the Existing Licence

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.	300 tonnes per year

4. Overview of Premises

4.1 Operational aspects

The Norseman Liquid Waste Facility (NLWF) primarily treats residential and town retail septate waste which has typically undergone partial treatment prior to receipt

The operational aspects as outlined within the works approval application supporting document are detailed below:

Operation and maintenance

- The licensed liquid waste transporters will discharge liquid waste directly into the filtration tube fitted with a standard camlock coupling;
- The filter bed will be designed to accommodate the dewatering tube to provide initial separation of solids and liquids;
- Consolidation of the solids within the filtering tube starts occurring after the cycle of filling and dewatering through desiccation with residual water continuing to escape through the pore structure of the tube textile;
- When the material within the filtering tube has reached capacity and dried sufficiently the tube will be relocated to the drying bed and left to further air dry;
- At the completion of the drying process the fill material within the filter tube is to be disposed to the refuse waste site NWMF
- Ongoing sludge removal program will be carried out periodically as well as periodic flushing out of the underdrains

Sampling and Monitoring

Groundwater surrounding the site has been monitored as a part of the ongoing liquid waste facility license conditions (L8658/2012/1). Four groundwater monitoring bores were installed as a result, the location with respect to the NLWF is demonstrated in Figure 1. Bores were installed at these locations in order to adequately capture a potential groundwater plume, to confirm the direction of the groundwater flow, to provide a baseline data set and to identify potential consequences as a result of future upgrades.

The applicant has proposed the following monitoring:

- Inspection of the appearance of pond/waste water (colour, extent of gas bubbling, presence of floating matter) (weekly);
- In the event of odours, pond organic loading and organic acid concentrations will be checked (immediately BOD & pH);
- Log maintenance actions taken in dealing with exceptional rainfall events, equipment malfunctions and erosion problems (weekly);
- Inspect for indications of discharge (weekly or after heavy rain); and
- Pond performance (influent & effluent) analysis of pH, electrical conductivity (salinity), Biological Oxygen Demand (BOD), suspended solids and nutrients (Kjeldahl nitrogen, oxidised nitrogen and total phosphorous), six monthly.

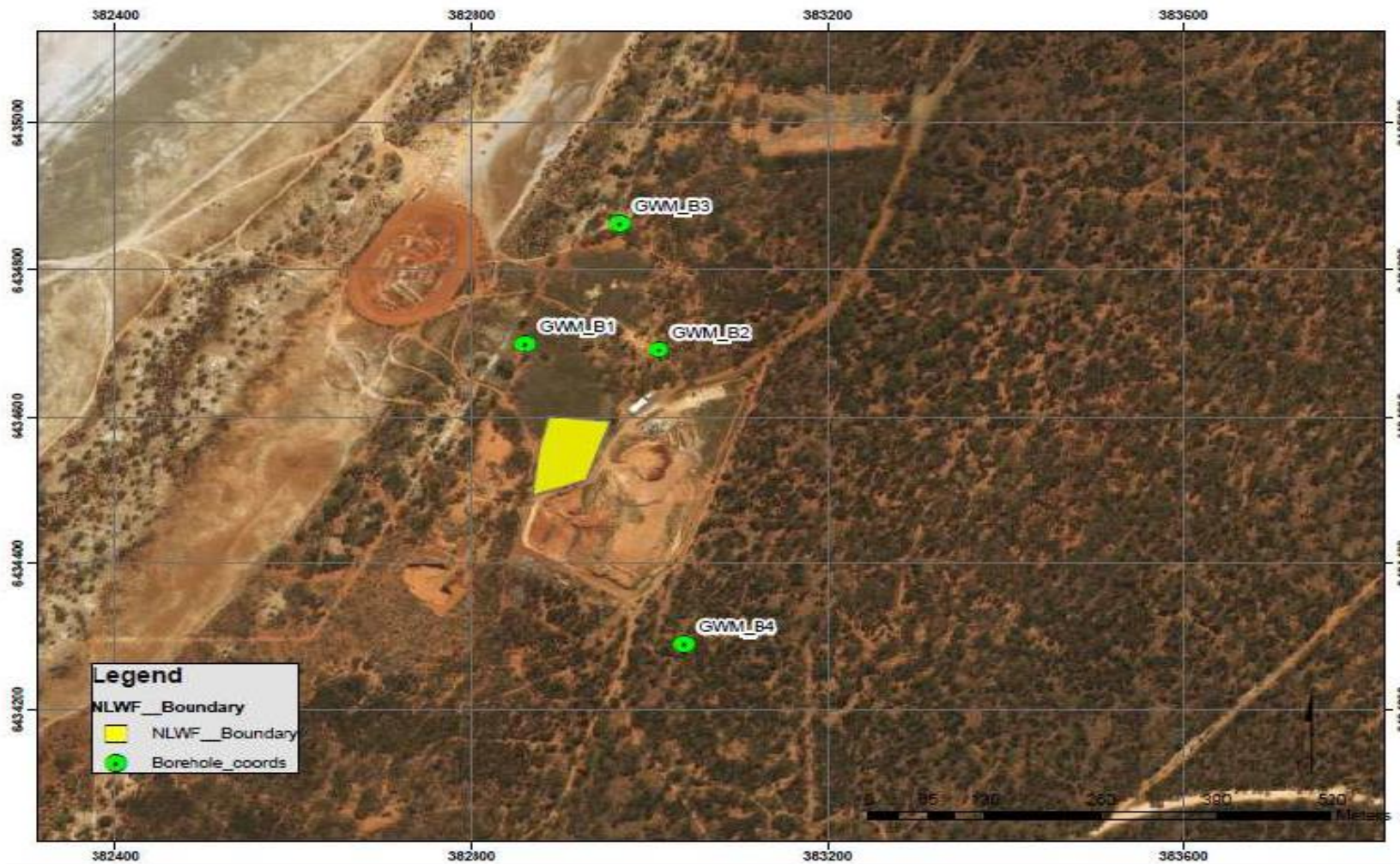


Figure 1: Site layout

4.2 Infrastructure

The NLWF infrastructure, as it relates to Category 61 activities, is detailed in Table 4 and with reference to the design and drawings plan in the works approval (Schedule 3).

Table 4 lists infrastructure associated with each prescribed premises category.

Table 4: NLWF Category 61 infrastructure

	Infrastructure	Site Plan Reference
	Prescribed Activity Category 61	
The discharge from the liquid waste transporters will be directly into the dewatering tube located on the filter bed. The filter bed will have sufficient fall to discharge the separated liquids into the adjacent existing liquid waste pond and the proposed evaporative drying bed where anaerobic and aerobic action will commence.		
1	An 8m x 5m filter bed (permeability of $\leq 1 \times 10^{-9}$ m/s or equivalent) designed to accommodate a monofilament polypropylene rapid flow dewatering tube.	Schedule 3 : Works Approval
2	A 32m x 32m evaporative drying bed (permeability of $\leq 1 \times 10^{-9}$ m/s or equivalent) with a minimum 300mm deep bund wall to ensure that all liquid waste is contained within the drying bed area. The larger surface area will improve evaporation rate.	
3	A 1000mm x 1000mm x 600mm sump pit (permeability of $\leq 1 \times 10^{-9}$ m/s or equivalent)	

5. Legislative context

Table 5 summarises approvals relevant to the assessment.

Table 5: Relevant approvals and tenure

Legislation	Number	Subsidiary	Approval
<i>Planning and development Act 2005</i>	NA	<i>Shire of Dundas</i>	<i>The Shire of Dundas currently owns and operates the Norseman Liquid Waste Facility. The facility is located within the area of the Shire of Dundas Local Planning Scheme No. 2. Planning approval for the construction of the ponds or drying bed is not required.</i>

5.1 Contaminated sites

A search of the DWER's contaminated sites database (2011) shows no known contamination at the liquid waste facility, however Shire of Dundas were sent a letter from DWER contaminated sites team on the 23rd of April 2007 stating that the Norseman Refuse Site had been deemed potentially contaminated and further investigation is required. Originally, R3476 was reserved for the purpose of Sanitary Site and Rubbish Depot and adjacent Reserve 8718 was reserved for the purpose of Rubbish Depot. However, on the 20th of May 2010 Reserve 3476 & 8718 were consolidated to become Reserve 3476. The boundary for the NLWF itself was within Reserve 3476

5.2 Other relevant approvals

5.2.1 Planning approvals / Development approvals

The application details that The Shire of Dundas currently owns and operates the Norseman Liquid Waste Facility. The facility is located within the area of the Shire of Dundas Local Planning Scheme No. 2. Planning approval for the construction of the ponds or drying bed is therefore not required.

5.3 Part V of the EP Act

5.3.1 Applicable regulations, standards and guidelines

The overarching legislative framework of this assessment is the EP Act and EP Regulations.

The guidance statements which inform this assessment are:

- *Guidance Statement: Regulatory Principles (July 2015)*
- *Guidance Statement: Setting Conditions (October 2015)*
- *Guidance Statement: Land Use Planning (February 2017)*
- *Guidance Statement: Licence Duration (August 2016)*
- *Guidance Statement: Publication of Annual Audit Compliance Reports (May 2016)*
- *Guidance Statement: Decision Making (February 2017)*
- *Guidance Statement: Risk Assessments (February 2017)*
- *Guidance Statement: Environmental Siting (November 2016)*

5.3.2 Works approval and licence history

Table 6 summarises the works approval and licence history for the premises.

Table 6: Works approval and licence history

Instrument	Issued	Nature and extent of works approval, licence or amendment
L8658/2012/1	20/09/2012	New licence application
L8658/2012/1	03/10/2013	Licence amended, requiring the Licensee to submit a works approval application for the construction of two liquid waste ponds.
W5704/2014/1	25/10/2014	Works Approval issued for the construction of two concrete liquid waste ponds.
L8658/2012/1	29/04/2016	Licence expiry date amended to 19 September 2035.
L8658/2012/1	29/04/2016	Licence amended to allow for the operation of two liquid waste ponds constructed under works approval W5704/2014/1.
W6419/2020/1	10/09/2020	Works approval to construct an evaporative drying bed, a deep sump pit and a filter bed

6. Consultation

The works approval application was advertised in the West Australian on 3 August 2020 for a comment period ending on 19 August 2020. No submissions have been received.

6.1 Siting context

The Norseman Liquid Waste Facility (NLWF) is located approximately 5km south south-west (SSW) of the Norseman township. The NLWF is situated within Crown Reserve 3476 (R3476), Denison Drive, Norseman. The reserve also encompasses the already registered (R1491/2003/1) Norseman Waste Management Facility (NWMF).

6.2 Residential and sensitive receptors

The distances to residential and sensitive receptors are detailed in Table 7.

Table 7: Receptors and distance from activity boundary

Sensitive Land Uses	Distance from Prescribed Activity
<i>Closest residential property</i>	<i>Approximately 2.4km</i>
<i>Township of Norseman</i>	<i>Approximately 5 km</i>

6.3 Specified ecosystems

Specified ecosystems are areas of high conservation value and special significance that may be impacted as a result of activities at or Emissions and Discharges from the Premises. The distances to specified ecosystems are shown in Table 8. Table 8 also identifies the distances to other relevant ecosystem values which do not fit the definition of a specified ecosystem.

The table has also been modified to align with the *Guidance Statement: Environmental Siting*.

Table 8: Environmental values

Specified ecosystems	Distance from the Premises
<i>Lake Cowan</i>	<i>Approximately 25 kilometres from the proposed liquid waste facility.</i>
<i>Lake Kirk</i>	<i>20 kilometres to the west</i>
<i>A number of small remnant lakes/swamps</i>	<i>Greater than 20 kilometres to the east</i>

6.4 Groundwater and water sources

The distances to groundwater and water sources are shown in Table 9.

Table 9: Groundwater and water sources

Groundwater and water sources	Distance from Premises	Environmental value
<i>Groundwater</i>	<i>Depth to groundwater encountered -approximately- 20m. Four groundwater monitoring bores were installed at the locations shown in fig 1.</i>	<i>Groundwater in the area is hypersaline and low in dissolved oxygen and will not support stygofauna populations.</i>

6.5 Soil type

Table 10 details soil types and characteristics relevant to the assessment.

Table 10: Soil and sub-soil characteristics

Groundwater and water sources	Soil Type	Environmental Value
Soil type classification	Heavy clay loam	May potentially be suitable for the containment/retardation of liquid waste.. An assessment of the soil has not been carried out.

6.6 Meteorology

6.6.1 Wind direction and strength

The prevailing wind direction at the Leonora BOM Site (number 012046) is from the east, especially in the morning. Winds are between 0 and 10km/hr for approximately 20% of the time and greater than 10 km/hr for the remaining time in the morning. Wind direction in the morning afternoon is predominantly from the east, however wind direction in the afternoon can be from the west and slightly stronger from this direction. The 9am and 3pm wind rose for the Leonora Meteorological Site (number 012046) are shown in figure 2 and figure 3 respectively.

9 am wind rose

NORSEMAN AERO
 Site No: 012009 • Opened Dec 1999 • S88 Open • Latitude: -32.2147° • Longitude: 121.7547° • Elevation 262 m
 An asterisk (*) indicates that calm is less than 0.5%.
 Other important info about this analysis is available in the accompanying notes.

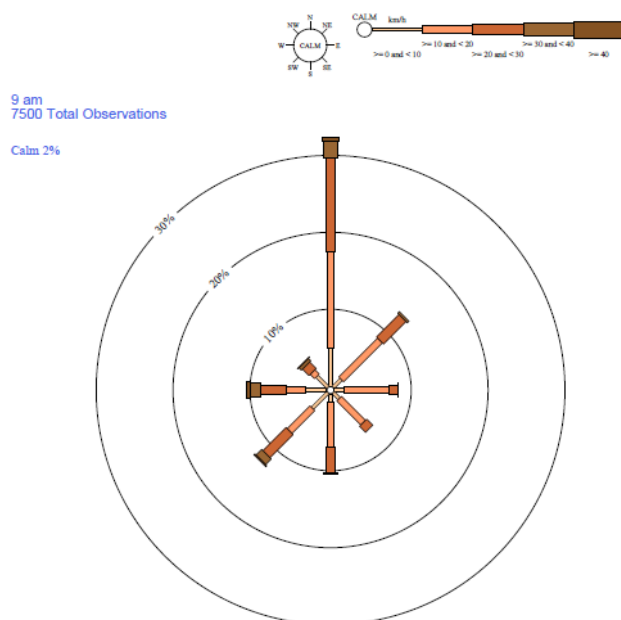


Figure 2: Norseman Aero weather station 9 am average wind speed and direction showing bias to Northerly, westerly, north easterly and south easterly wind

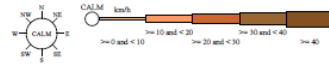
3 pm wind rose

NORSEMAN AERO

Site No: 012009 • Opened Dec 1999 • Still Open • Latitude: -32.2147° • Longitude: 151.7547° • Elevation 262m

An asterisk (*) indicates that calm is less than 0.5%.

Other important info about this analysis is available in the accompanying notes.



3 pm
7492 Total Observations

Calm *

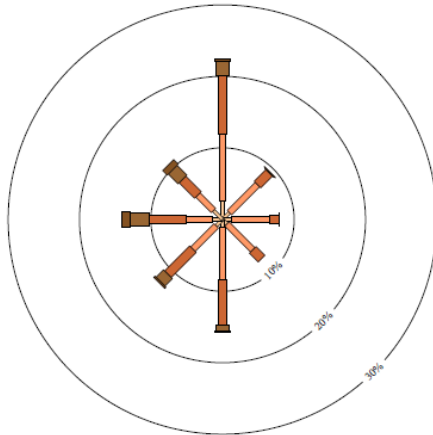


Figure 3: Norseman Aero weather station 3 pm average wind speed and direction showing bias to Northerly wind and sometimes stronger westerly, south westerly, north westerly and southerly wind

6.6.2 Rainfall and temperature

Mean annual rainfall is approximately 289.6 mm, with annual rainfall recorded at the closest meteorological station (Nosreman Airport) ranging from 17 mm to 35.5 mm (BOM 2020). Norseman Airport located approximately one kilometre from the premise. Evaporation data was not available for the Norseman Airport site, the closest available station was Salmon Gums (station ID 012071), approximately 80 kilometres to the south. The mean daily evaporation rate fluctuates from 1.4 mm to 7.9 mm.

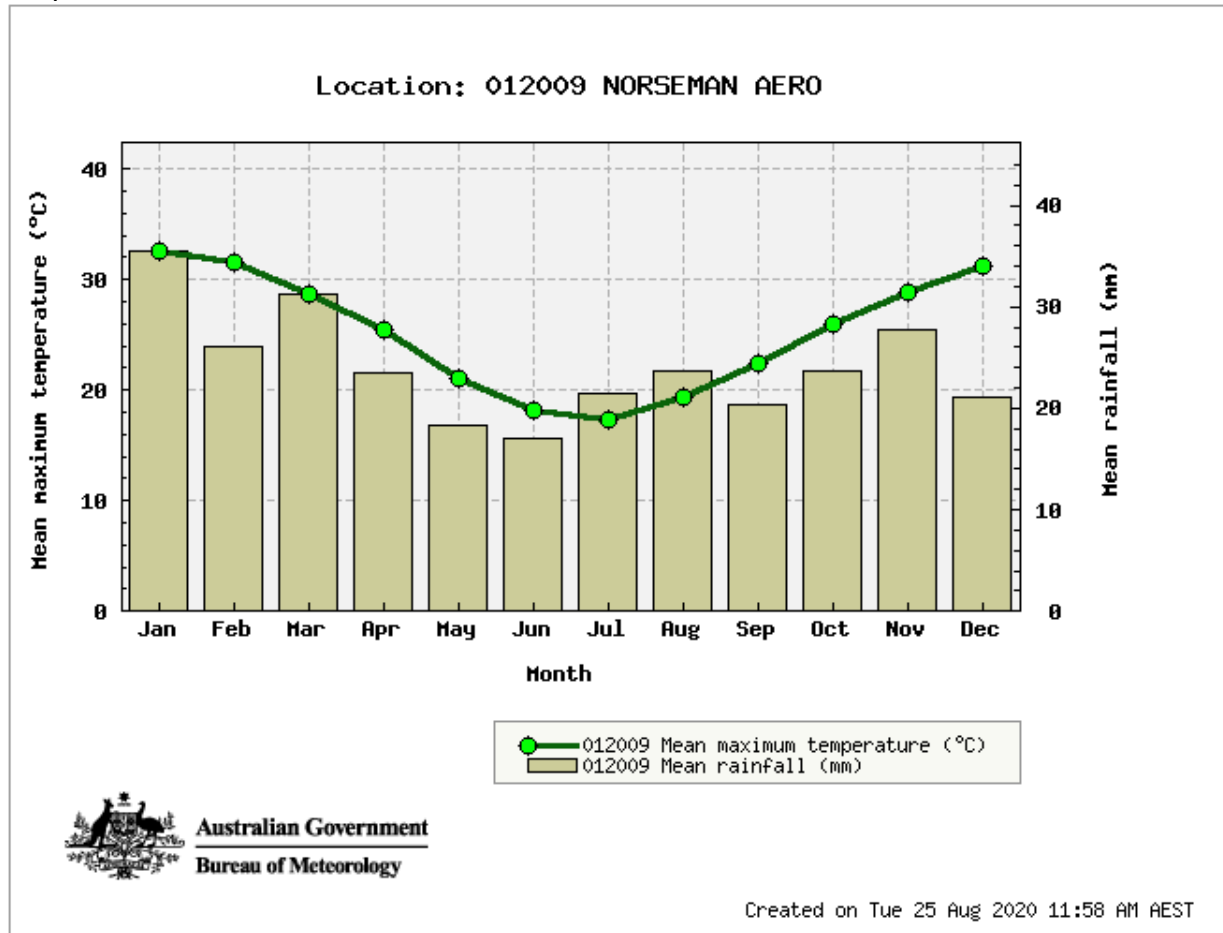


Figure 4: Mean maximum temperature and mean rainfall for Norseman Aero weather station

7. Risk assessment

7.1 Determination of emission, pathway and receptor

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

To establish a Risk Event there must be an emission, a receptor which may be exposed to that emission through an identified actual or likely pathway, and a potential adverse effect to the receptor from exposure to that emission. Where there is no actual or likely pathway and/or no receptor, the emission will be screened out and will not be considered as a Risk Event. In addition, where an emission has an actual or likely pathway and a receptor which may be adversely impacted, but that emission is regulated through other mechanisms such as Part IV of the EP Act, that emission will not be risk assessed further and will be screened out through Table 12.

The identification of the sources, pathways and receptors to determine Risk Events are set out in Tables 11 and 12 below.

Table 11. Identification of emissions, pathway and receptors *during construction*

Risk Events					Continue to detailed risk assessment	Reasoning
Sources/Activities	Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts		
Construction, mobilisation and positioning of infrastructure - liquid waste ponds	Noise	No residences or other sensitive receptors in proximity- The closest residential property is approximately 2.4 km from the property boundary.	Air / wind dispersion	None	No	With no sensitive receptors in the near vicinity, if any noise impacts arise, management under the <i>Environmental Protection (Noise) Regulations 1997</i> will be adequate. No further risk assessment is required.
	Dust	Native vegetation along premises boundary		<i>Health/Amenity impacts</i> <i>Potential suppression of photosynthetic functions due to the emissions from the project area</i>	No	The Delegated Officer considers that the separation distance between the source and potential receptor is sufficient to prevent dust impacts from occurring. The Delegated Officer also considers that minor amount of dust potentially generated will not cause vegetation impacts. There are also no Declared Rare Flora, Threatened Ecological Communities or Priority Ecological Communities within close proximity.

Risk Events						Continue to detailed risk assessment	Reasoning
Sources/Activities		Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts		
	Storage and use of hydrocarbons and chemicals	Spills and breach of containment	Soil and vegetation adjacent to the area of spill or breach Groundwater, depending on volume discharged	Direct discharges to land	Soil contamination inhibiting vegetation growth and survival. Deterioration of groundwater quality and health impacts to fauna	No	Storage of dangerous goods in accordance with the Dangerous Good Safety Act 2004, and associated Regulations. The general provisions of <i>the EP Act and Environmental Protection (Unauthorised Discharges) Regulations 2004</i> apply.

Table 12: Identification of emissions, pathway and receptors *during operation*

Risk Events						Continue to detailed risk assessment	Reasoning
Sources/Activities		Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts		
Category 61 Liquid waste facility	Receipt and storage of Liquid waste, unloading, vehicle movements	Dust	No residences or other sensitive receptors in proximity- The closest residential property is approximately 2.4 km from the property boundary. Native vegetation along premises boundary	Air/wind dispersion	Dust deposition on foliage reducing photosynthesis, inhibiting plant growth	No	The Delegated Officer considers that the dust emissions will be sporadic and localised, further reducing the likelihood of vegetation impacts. The Delegated Officer also considers that the provisions of section 49 of the EP Act is sufficient to regulate dust emissions during construction..
		Noise	No residences or other sensitive receptors in proximity- The closest residential property is approximately 2.4 km from the property boundary.	Air/wind dispersion	None	No	The Delegated Officer considers that the separation distance between the source and potential residential receptor is sufficient to prevent noise impacts from occurring. If any noise impacts arise, management under the <i>Environmental Protection (Noise) Regulations 1997</i> will be adequate. No further risk assessment is required.
		Leachate-infiltration through base or from the sides	Adjacent vegetation, soil & Groundwater	Leachate infiltrating through soil, migrating to groundwater	Groundwater contamination and contaminated soils impacting growth of vegetation	Yes-Refer to section 7.4	Potential soil/groundwater contamination from the release of untreated liquid waste.
		Contaminated stormwater		Stormwater containing sediment discharging to drainage lines	Soil contamination inhibiting vegetation growth and survival, and health impacts to fauna and increased sedimentation	Yes-Refer to section 7.4	Potential soil/groundwater contamination from the release of untreated liquid waste.

Risk Events						Continue to detailed risk assessment	Reasoning
Sources/Activities		Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts		
		Odour	No residences or other sensitive receptors in proximity	Air / wind dispersion	None	No	<p>No receptor present.</p> <p>The Delegated Officer has reviewed the information regarding the use of rapid flow dewatering tube to provide initial separation of solids from liquids. The solids will remain inside the tube until it has been assessed that the material within the tube has dried sufficiently for disposal to a suitable waste facility.</p>
		Overtopping/ overflow/ spillages resulting in liquid waste discharge to land	No residences or other sensitive receptors in proximity. Adjacent vegetation, soil & Groundwater	Air / wind dispersion	None	Yes-Refer to section 7.4	Potential soil/groundwater contamination from the release of untreated liquid waste.

7.2 Consequence and likelihood of risk events

A risk rating will be determined for risk events in accordance with the risk rating matrix set out in Table 13 below.

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

DWER will undertake an assessment of the consequence and likelihood of the Risk Event in accordance with Table 14 below.

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	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> onsite impacts: low level offsite impacts local scale: minimal offsite impacts wider scale: not detectable Specific Consequence Criteria (for environment) likely to be met 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> onsite impact: minimal Specific Consequence Criteria (for environment) met 	<ul style="list-style-type: none"> 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.

7.3 Acceptability and treatment of Risk Event

DWER will determine the acceptability and treatment of Risk Events in accordance with the Risk treatment table 15 below:

Table 15: Risk treatment table

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

7.4 Risk Assessment – Risk Event 1 – Overtopping, spillages and pond failure during operation

7.4.1 Description of overtopping, spillages and pond failure during operations

The loading/ unloading and storage of septage waste will be carried out on a concrete hardstand. If there is a breach of containment at the waste facility (such as overtopping, pond failure, spills and leaks) there is the potential for untreated liquid waste to be released to the environment. Stormwater at the Premises also has the potential to become contaminated and can result in ecosystem disruption.

7.4.2 Identification and general characterisation of emission

Septage waste may contain high levels of pathogens, nutrients and some heavy when discharge occurs.

7.4.3 Description of potential adverse impact from the emission

Septage waste when accidentally discharged to the environment may cause localised soil contamination, off-site impacts on vegetation and groundwater contamination.

7.4.4 Criteria for assessment

- Australian water quality guidelines (*ANZECC and ARMCANZ 2000*) provide recommended trigger values for fresh and marine water.
- *DER Guideline: Assessment and Management of Contaminated Sites (2014)* provides

ecological and human health assessment levels for soil.

- General provisions of the *EP Act* and the *Environmental Protection (Unauthorised Discharges) Regulations 2004* apply as well.

7.4.5 Applicant/Licence Holder controls

This assessment has reviewed the controls set out in Table 19 below.

Table 16: Applicant's/Licence Holder's proposed controls for Risk Event 1 – Overtopping/overflow and containment pond failure

Site infrastructure	Description	Operation details	Reference
Controls for discharge			
Liquid waste ponds	Infrastructure	<p>All pipelines will be HDPE with welded joints;</p> <p>Pipelines will be inspected daily to identify leaks, spills or failures.</p> <p>Standby pumps, during emergencies.</p> <p>Pipelines will be located within bunds to ensure that in the event of a spill or leak, effluent is captured and not released to the environment.</p> <p>A sump pit will be constructed where during times of emergency such as overtopping/overflow, liquid waste will be contained within a sump pit located in the close proximity. A pump will then be used to pump liquid waste from the pit into septage waste trucks for disposal at a licensed facility.</p> <p>The containment ponds will be designed to achieve a permeability of $\leq 1 \times 10^{-9}$ m/s or equivalent;</p> <p>Pond and liner specifications have been developed around good practice industry standards.</p>	Schedule 3 : Works Approval
	Overtopping	<p>The 500mm freeboard level will be maintained and will be inspected daily;</p> <p>The evaporation pond has been designed to hold the volume of liquid waste for 24</p>	NA

Site infrastructure	Description	Operation details	Reference
		<p>hours duration during a 1 in 20 year ARI critical rainfall event without overflow</p> <p>If for some reason the liquid waste from the ponds will overflow, then it will be contained within a sump pit with standby pumps during emergencies.</p> <p>Standby pumps, during emergencies.</p> <p>The evaporation pond will have a minimum 300mm deep bund wall to ensure that all liquid waste is contained within the drying bed area and that no infiltration of storm water will be possible.</p> <p>The current concrete ponds are raised 500 mm above ground level therefore the chances of the infiltration of stormwater will be very low.</p>	
	Containment ponds	<p>The evaporative drying bed to be free of leaks and defects and are designed to achieve a permeability of $\leq 1 \times 10^{-9}$ m/s or equivalent.</p> <p>The evaporation pond has been designed to have a free board level of 500mm to hold the volume of liquid waste for 24 hours duration during a 1 in 20 year ARI critical rainfall event without overflow</p> <p>If for some reason the liquid waste from the ponds will overflow, then it will be contained within a sump pit with standby pumps during emergencies.</p> <p>The heavy loam soil in the area will be able to act as a clay liner making it impossible to infiltrate through the clay liner.</p> <p>To ensure that the upgraded liquid waste facility is not impacting on the underlying groundwater, the</p>	Schedule 3 : Works Approval

Site infrastructure	Description	Operation details	Reference
		bores will be sampled biannually as per current licence condition 2.3.1.	

7.4.6 Key findings

The Delegated Officer has reviewed the information regarding overtopping, spillages and pond failure and has found:

1. *Pipelines and the proposed evaporation pond will be located within bunds to ensure that in the event of a spill or leak, septage waste is captured and not released to the environment; and*
2. *Septage waste will be appropriately contained with sumps located at low points along pipeline routes to capture and store spills and leaks.*
3. *Infiltration of leachate into groundwater will probably not occur in most circumstances since the ponds will be designed to achieve a permeability of $\leq 1 \times 10^{-9}$ m/s or equivalent.*
4. *Current licence condition 1.3.5 requires all storage ponds to maintain a freeboard of 500mm.*

7.4.7 Consequence

Based on the applicant controls (any overflow events or spillages can be contained within the sump pit with a pump on standby), and given the soil in that area is largely clay which can act as a liner during discharge, the impact from overtopping, spillages and pond failure will result in low level on-site impacts. Therefore the Delegated Officer considers the consequence to be **minor**.

7.4.8 Likelihood of Risk Event

Based on the information detailed above and applicant controls to be put in place, an environmental impact from pond failure, overtopping or spillages will not occur in most circumstances. Therefore, the likelihood of the consequence is **unlikely**.

7.4.9 Overall rating of overtopping, spillages and storage tank failure

The Delegated Officer has compared the consequence and likelihood ratings described above with the risk rating matrix (Table 16) and determined that the overall rating for the risk of discharges to land from overtopping, spillages and storage tank failure is **medium**.

7.5 Summary of acceptability and treatment of Risk Events

A summary of the risk assessment and the acceptability or unacceptability of the risk events set out above, with the appropriate treatment and control, are set out in Table 17 below. Controls are described further in section 9.

Table 17: Risk assessment summary

	Description of Risk Event			Applicant controls	Risk rating	Acceptability with controls (conditions on instrument)
	Emission	Source	Pathway/ Receptor (Impact)			
1.	Discharge of liquid waste	NLWF storage pond failure/over topping, spillages and pump breakdown	Direct discharge to land potentially causing soil contamination Facilitated growth of weeds Increase in nutrients in soil	Refer to Applicant controls as detailed in section 7.4.5	Minor consequence Unlikely likelihood Medium Risk	Acceptable subject to regulatory controls
2.	Discharge to land from contaminated stormwater and material spills	Contaminated stormwater	Directed stormwater to nearby environment potentially causing impacts/ disruptions to the ecosystem.	Infrastructure and management controls as detailed in section 7.4.5.	Minor consequence Unlikely likelihood Medium risk	Acceptable subject to proponent controls conditioned / outcomes based controls

8. Regulatory controls

A summary of regulatory controls determined to be appropriate for the Risk Event is set out in Table 18. The risks are set out in the assessment in section 7 and the controls are detailed in this section. DWER will determine controls having regard to the adequacy of controls proposed by the *Applicant*. The conditions of the *Works Approval* will be set to give effect to the determined regulatory controls.

Table 18: Summary of regulatory controls to be applied

		Controls (references are to sections below, setting out details of controls)		
		8.1.1 Infrastructure and equipment	8.1.2 Reports	8.1.3 Monitoring
Risk Items (see risk analysis in section 7)	1. NLWF, storage pond failure, spillages and over topping	•	•	•
	2. Contaminated stormwater runoff	•	•	•

8.1 Works Approval controls

8.1.1 WWTP infrastructure and equipment

The following infrastructure should be constructed to manage discharge resulting from overtopping/overflow, spillages and pond failures.

Table 19: Infrastructure requirements to manage discharge

Infrastructure	Requirements (Design and Construction)
NLWF: Evaporative drying bed	<ul style="list-style-type: none"> The evaporative drying bed to be free of leaks and defects and are designed to achieve a permeability of $\leq 1 \times 10^{-9}$ m/s or equivalent; The drying bed must be approximately 32m x 32m in dimension; constructed with a concrete bund wall of at least 300 mm to ensure all liquid waste is contained within the drying bed and no infiltration of stormwater during wet weather events; All pipelines will be HDPE with welded joints; Capacity to store a 24-hour duration, 1 in 20 year ARI critical rainfall event without overflow; and Designed so that a minimum top of embankment freeboard of 300 mm is able to be maintained during operation.

Infrastructure	Requirements (Design and Construction)
NLWF: Filter bed	<ul style="list-style-type: none"> The filter bed must be approximately 8m x 5m in dimension; The filter bed must be designed to accommodate a monofilament polypropylene rapid flow dewatering tube to provide initial separation of solids from liquids; Must have sufficient fall to discharge the separated liquids into the adjacent existing liquid waste pond where anaerobic and aerobic action will commence; All pipelines will be HDPE with welded joints; and have hydraulic conductivity of at least 1×10^{-9} m/s;
NLWF: Deep Sump	<ul style="list-style-type: none"> The sump must be located at the extremity of the drying bed to allow for pumping as and when required; The sump must be approximately 100mm x 1000mm x 600mm in dimension; The sump must be free of leaks and defects and are designed to achieve a permeability of $\leq 1 \times 10^{-9}$ m/s or equivalent; Capacity to store a 24-hour duration, 1 in 20 year ARI critical rainfall event without overflow; and All pipelines will be HDPE with welded joints.

8.1.2 Monitoring reports

The Applicant has stated that construction is scheduled to commence following receipt of relevant approvals. Compliance reporting will be required for the construction works. A suitably qualified person will be required to confirm that each item of infrastructure specified in the Works Approval has been constructed to the specified requirements.

The Applicant will require an amendment to the current Licence (L8658/2012/1), prior to prescribing the operation of the evaporation pond, filter bed and deep sump pit.

8.2 Licence controls

It should be noted that these controls are not final and will be subject to compliance with conditions of the Works Approval and may change if additional information becomes available to further inform the risk assessment (as per *Guidance Statement: Risk Assessments*).

8.2.1 Monitoring requirements for NLWF

Current licence conditions (1.2.1, 2.2.1 and 2.3.1), relating to Waste acceptance criteria (including waste type, quantity limit and specifications; monitoring of inputs and outputs (volume – each load arriving); and biannual monitoring of ambient ground water quality will remain on the amended Licence for the NLWF.

8.2.2 Licence reporting

As per current Licence conditions (3.1.2 and 3.2.1) the licence holder will be required to submit Annual Environmental Report and Annual Audit Compliance Report annually.

9. Determination of Works Approval conditions

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

The issued works approval expires in 5 years from date of issue.

Table 20 provides a summary of the conditions to be applied to this works approval.

Table 20: Summary of conditions to be applied

Condition Ref	Grounds
Infrastructure and Equipment Condition 1	These conditions are valid, risk-based and contain appropriate controls.
Environmental Compliance reporting 2 and 3	Environmental compliance is a valid, risk-based condition to ensure appropriate linkage between the licence and the EP Act.
Information 4, 5 and 6	These conditions are valid and are necessary administration and reporting requirements to ensure compliance.

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

10. Applicant's comments

The Applicant was provided with the draft Decision Report and draft issued Works Approval on 4 September 2020. The Applicant advised on 4 September 2020 that they have no further comments on the draft Works Approval and waived the remaining consultation period.

11. Conclusion

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

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

Steve Checker

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.	Application form including following supporting information; 1. Summary of proposal; 2. Design/Plan; 3. Cost of project 4. Bore monitoring information 5. Siting / Climate information 6. Groundwater information 7. Monitoring data	W6419/2020/1	DWER records (A802852)
2.	Email: Response from Richard Brookes to request for further information (Emissions and Discharges).	W6419/2020/1	14 July 2020 DWER records (A1927319)
3.	Email: Response from Richard Brookes to request for further information (Boundary map and shape file).	W6419/2020/1	21 July 2020 DWER records (A1927320)
4.	DER, July 2015. <i>Guidance Statement: Regulatory principles</i> . Department of Environment Regulation, Perth.	DER 2015a	accessed at www.dwer.wa.gov.au
5.	DER, October 2015. <i>Guidance Statement: Setting conditions</i> . Department of Environment Regulation, Perth.	DER 2015b	
6.	DER, November 2016. <i>Guidance Statement: Risk Assessments</i> . Department of Environment Regulation, Perth.	DER 2016b	
7.	DER, November 2016. <i>Guidance Statement: Decision Making</i> . Department of Environment Regulation, Perth.	DER 2016c	

Attachment 1: Issued Works Approval W6419/2020/1
