



## Application for Licence Amendment

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

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**Licence Number** L6378/1987/14

**Licence Holder** Romine Holdings Pty Ltd

**ACN** 009 331 800

**File Number** DER2015/001579

**Premises** Wren Oil

157 Harris Road  
PICTON EAST WA 6229

Legal description -

Lot 1 on Diagram 79008, Lot 4 on Diagram 57840, Lot 12 on  
Diagram 65162 and Lot 8 on Diagram 53241 Harris Road

**Date of Report** 8 January 2018

**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
AER	Annual Environment Report
agl	above ground level
AHD	Australian height datum
ATFE	agitated thin film evaporator
AS 1940-2004	The storage and handling of flammable and combustible liquids
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>
DBCA	Department of Biodiversity, Conservation and Attractions
DG	Dangerous Goods
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>



EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999 (Cth)</i>
Existing Licence	The Licence L6378/1987/14 issued under Part V, Division 3 of the EP Act and in force prior to the commencement of, and during this Review
FCE	forced circulation evaporator
HDPE	High-density polyethylene
Licence Holder	Romine Holdings Pty Ltd
m <sup>3</sup>	cubic metres
Minister	the Minister responsible for the EP Act and associated regulations
MS	Ministerial Statement
NEPM	National Environmental Protection Measure
NMP	n-Methyl-2-Pyrrolidinone
Noise Regulations	<i>Environmental Protection (Noise) Regulations 1997 (WA)</i>
Occupier	has the same meaning given to that term under the EP Act.
PCB	means polychlorinated biphenyls, one or a mixture of synthetic organochlorine chemicals
PM	Particulate Matter
PM <sub>10</sub>	used to describe particulate matter that is smaller than 10 microns (µm) in diameter
Prescribed Premises	has the same meaning given to that term under the EP Act.
Premises	refers to the premises to which this Decision Report applies, as specified at the front of this Decision Report
Primary Activities	as defined in Schedule 2 of the Revised Licence
Review	this Licence review
Revised Licence	the amended Licence issued under Part V, Division 3 of the EP Act following the finalisation of this Review.
Risk Event	<i>As described in Guidance Statement: Risk Assessment</i>
SPDU	short path distillation unit
TFE	thin film evaporator

UDR	<i>Environmental Protection (Unauthorised Discharges) Regulations 2004 (WA)</i>
ULO	used lubricating oil
µg/m <sup>3</sup>	micrograms per cubic metre
µg/L	micrograms per litre
USEPA	United States Environmental Protection Agency
VTB	vacuum tank bottoms
WQPN 68	<i>Water Quality Protection Note 68 – Mechanical equipment wash down, Department of Water (September 2013)</i>

## 2. Purpose and scope of assessment

Romine Holdings Pty Ltd (Licence Holder) currently operate a waste oil recycling facility (Wren Oil) at 157 Harris Road, Picton East under Licence L6378//1987/14.

The Licence Holder is proposing to upgrade their current facility and increase the current production design capacity. This will involve upgrading equipment for various phases of the recycling process in order to maximise process efficiency. The proposed operation of the facility will generally follow the current distillation process; however, the efficiency of the plant is anticipated to increase largely as a result of the improved filtering and distillation process and by shifting from a batch to a continuous mode process.

The proposed changes include the following:

### Phase 1:

- Installation of a two-staged forced circulation evaporator (FCE) to replace the current role of the pre-treatment (dehydration) and centrifuge plant (pre-treatment plant);
- The pre-treatment plant will then only be used to treat the oily water emulsions (not the primary ULO feedstock) prior to the recovered oil feedstock being processed through the FCE;
- Installation of a new main process heater and extension of the concrete pad and general process shed to accommodate the new heater;
- Start of decommissioning of the existing process heater;
- No changes to the thermal oxidiser will occur; however, the thermal oxidiser control system will be integrated into the main plant control systems;
- Above the main process heater, the current 23 m agl, 300 mm diameter stack will be replaced with a 26 m agl, 600 mm diameter stack to manage the additional flue gas that will result from the increased heat generation associated with the new process heater.

### Phase 2:

- Decommissioning and removal of the front-end distillation plant and thin film evaporator (TFE) plant;
- Installation of two new evaporator units (short path distillation units (SPDU)) that will be used in conjunction with the existing agitated thin film evaporator (ATFE) to enable different lube oil cuts to be separated and vacuum tank bottoms (VTB) to be produced.

See Figure 1 for current and Figure 2 for proposed process flow charts for the premises.

Additionally, the Licence Holder has applied to increase the premises boundary to include the adjoining Lot 8 on Diagram 53241, as this Lot will be used to irrigate excess treated stormwater from the stormwater infiltration pond.

Through this licence amendment, DWER has also undertaken a licence review as some of the current licence conditions do not reflect the processes on site, and has taken the opportunity to update to the new format licence and decision report. The intent of all the Existing Licence conditions have been transferred to the Revised Licence with the exception of G3(a) – G3(c), G4(a) – G4(b) and G5(b), as these conditions refer to the sampling of polychlorinated biphenyls (PCB) in waste oil received at the premises and the Licence holder has indicated that no such sampling occurs at the premises. Instead, the Licence Holder requires documentation from generators of waste oil (that are likely to contain PCB) that the waste oil contains less than 2 ppm PCB.

New conditions that have been included on the Revised Licence are detailed in section 10.

## 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
Amendment application	10 April 2017
Revised amendment application and further information	2 June 2017
Response to request for further information	1 September 2017
Licence Holder comments on draft documents	20 November 2017
Licence Holder comments on revised draft documents	21 December 2017

## 3. Background

The Licence Holder has been operating Wren Oil, an oil recycling facility at 157 Harris Road, Picton East, since 1981. The premises recycles bulk waste oil products, including used lubricating oil (ULO), oil filters, radiator coolants, oily rags, used oil adsorbents and fully and empty containers. These used oil products are collected from a range of sources across Western Australia including farms, mine sites, local governments and mechanical workshops. Excess ULO that cannot be used in Australia is exported to Asian markets through a dedicated export storage facility at Bunbury Port. Table 3 shows the prescribed premises categories with the current and proposed design capacity.

**Table 3: Prescribed Premises Categories in the Existing Licence**

Classification of Premises	Description	Approved Premises production or design capacity or throughput	
		Current	Proposed
Category 39	Chemical or oil recycling: premises on which waste liquid hydrocarbons or chemicals are refined, purified, reformed, separated or processed.	40,000 tonnes per annum	≤80,000 tonnes per annum
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 annum*	≤80,000 tonnes per annum
Category 62	Solid waste depot: premises on which waste is stored, or sorted, pending final disposal or re-use.	10,000 tonnes per annum	≤20,000 tonnes per annum

\* Note that the current premises production or design capacity for category 61 is based on the volume of process wastewater produced. On advice from DWER the proposed production or design capacity has been updated to reflect the amount of liquid waste (including used oil, oily water, coolants, solvents, grease etc.) received at the premises.

## 4. Overview of Premises

### 4.1 Operational aspects (from Application)

#### 4.1.1 Current Operations

The premises currently operates 24 hours a day, 7 days a week with administration staff onsite during regular office hours and operational personnel onsite at all times.

The site mainly consists of hardstand (compacted in-situ soils), sealed buildings and concrete bunding around/under buildings and equipment. Concreted areas include the main car park, part of the truck route, laydown area, truck loading bay, main and general process sheds, tank farms and waste oil container storage area.

The current operations include the following (see Figure 1 for a flow diagram):

- Trucks bring ULO (feedstock) onto the premises and unload in the truck unloading bay. The ULO is pumped via an enclosed pipe system into the main tank farm.
- The feedstock is processed by the pre-treatment plant where excess water and suspended material is removed. This is done in a batch process with the process relying on gravity for separation.
- The feedstock then undergoes distillation via the front end distillation skid which produces distillate/gas oil, diesel and lube oil. Some is reused in internal processes, the rest is sold.
- Lube oil is processed through the TFE and ATFE to separate light and heavy lube oil and VTB. VTB are recovered and sold as fuel oil component (FOC).
- Base oil (combined light and heavy lube oil) is fed into the post-treatment n-methyl-2-pyrrolidinone (NMP) solvent extraction system. The lube oil and NMP solvent are fed counter-currently through a rotating disc column (RDC) extractor to further refine the oil. This produces raffinate.
- Raffinate contains residue of NMP solvent which is removed through a multi-step process of evaporation and steaming. The recovered NMP solvent is returned into the post-treatment NMP refinery process.
- The refined raffinate, which is comprised of light and heavy lube oil, is referred to as Group 1 Base Oil, which is transferred to the main tank farm prior to being removed from the site and sold.

Solid waste, which includes oil filters, radiator coolants, oily rags, used oil adsorbents and empty containers, is received onsite and either unloaded directly into the Main Process Shed or stored in the oil drum and waste DG storage area. Solid waste is mixed with sawdust and pH neutralisers within the main process shed using a front end loader with the resulting mix taken to a Class III landfill.

There are various oil / water and sludge sumps and oil / water separators located throughout the premises.

Solid waste sludge, a product of the initial ULO filtration and pre-treatment and centrifuge, is stored within the enclosed main shed prior to disposal (of approximately 120 tonnes per year) to an off-site Class III landfill.

Process wastewater, generated through the initial ULO filtration and post-treatment processes, is evaporated onsite in three double HDPE lined wastewater evaporation ponds. The evaporation ponds are aerated regularly to increase evaporation. Any excess water (approximately 4 million litres per year) is transported offsite and re-used at a composting facility.

Stormwater onsite is directed to a 20 m long, 10 m wide and 2.3 m deep concrete sump located on the southern boundary of the premises not far from the southwest corner. The stormwater is then treated through an oily water separator with the treated stormwater being directed to the stormwater drainage infiltration pond (approximately 48 m x 8 m x 1.3 m deep) in the southwest corner of the premises. Excess treated stormwater is pumped to the

adjoining lot, Lot 8 on Diagram 53241, for disposal.

Off gases from the main tank farm, pre-treatment and dehydration process, distillation process and post treatment NMP refinery are directed to the thermal oxidiser through an enclosed pipe system. The flue gases from the thermal oxidiser are then directed to the main process heater to recover waste heat back into the distillation process, with the resulting flue gases from the main process heater directed to the atmosphere via the main stack.

#### 4.1.2 Proposed Operations

Construction is expected to be in two phases. Construction will occur during daylight hours between 0700 and 1900 hours. No additional lighting for construction will be required.

The proposed operations include the following (see Figure 2 for a flow diagram):

- (Same as current operations.) Trucks bring ULO (feedstock) onto the premises and unload in the truck unloading bay. The ULO is pumped via an enclosed pipe system into the main tank farm.
- The feedstock will then be processed by the FCE where excess water and suspended material will be removed from the feedstock. The FCE will be the primary pre-treatment and is able to operate on a continuous basis (through automated control). Oily water emulsions will be pre-treated within the existing pre-treatment and centrifuge plant prior to passing through the FCE. Distillate / gas oil and diesel will be produced with some to be reused in the internal processes and the rest sold. The remaining feedstock continues in the process.
- The feedstock will then undergo distillation via the ATFE and SPDU. Light, medium and heavy lube oil and VTB will be separated during this process.
- (Same as current operations.) Lube oil will then be fed into the post-treatment NMP refinery where the lube oil and NMP solvent will be fed counter-currently through a RDC extractor to further refine the oil to produce raffinate.
- (Same as current operations.) NMP solvent residue will be removed from the raffinate through a multi-step process of evaporation and steaming. The recovered NMP solvent will be returned into the post-treatment NMP refinery process.
- (Same as current operations.) The refined raffinate, which will comprise of light, medium and heavy lube oil, is referred to as Group 1 Base Oil, which will be transferred to the main tank farm prior to being removed from the site and sold.

Solid waste sludge, a product of the initial ULO filtration will be stored within the enclosed main shed prior to disposal (of approximately 240 tonnes per year) to an off-site Class III landfill.

Process wastewater that will be generated through pre-treatment, FCE and post-treatment processes will be evaporated onsite in three double HDPE lined wastewater evaporation ponds. The evaporation ponds are aerated regularly to increase evaporation. Any excess water (approximately nine million litres per year) will be transported offsite and re-used at a composting facility.

Off gases from the main tank farm, pre-treatment and FCE process, ATFE distillation process, SPDU and post treatment NMP refinery will be directed to the thermal oxidiser through an enclosed pipe system. The flue gases from the thermal oxidiser will then be directed to the main process heater to recover waste heat back into the distillation process, with the resulting flue gases from the main process heater to be directed to atmosphere via the upgraded main stack.

The location of oil / water sumps and separators, stormwater management and solid waste processing, as described in section 4.1.1, will remain unchanged.

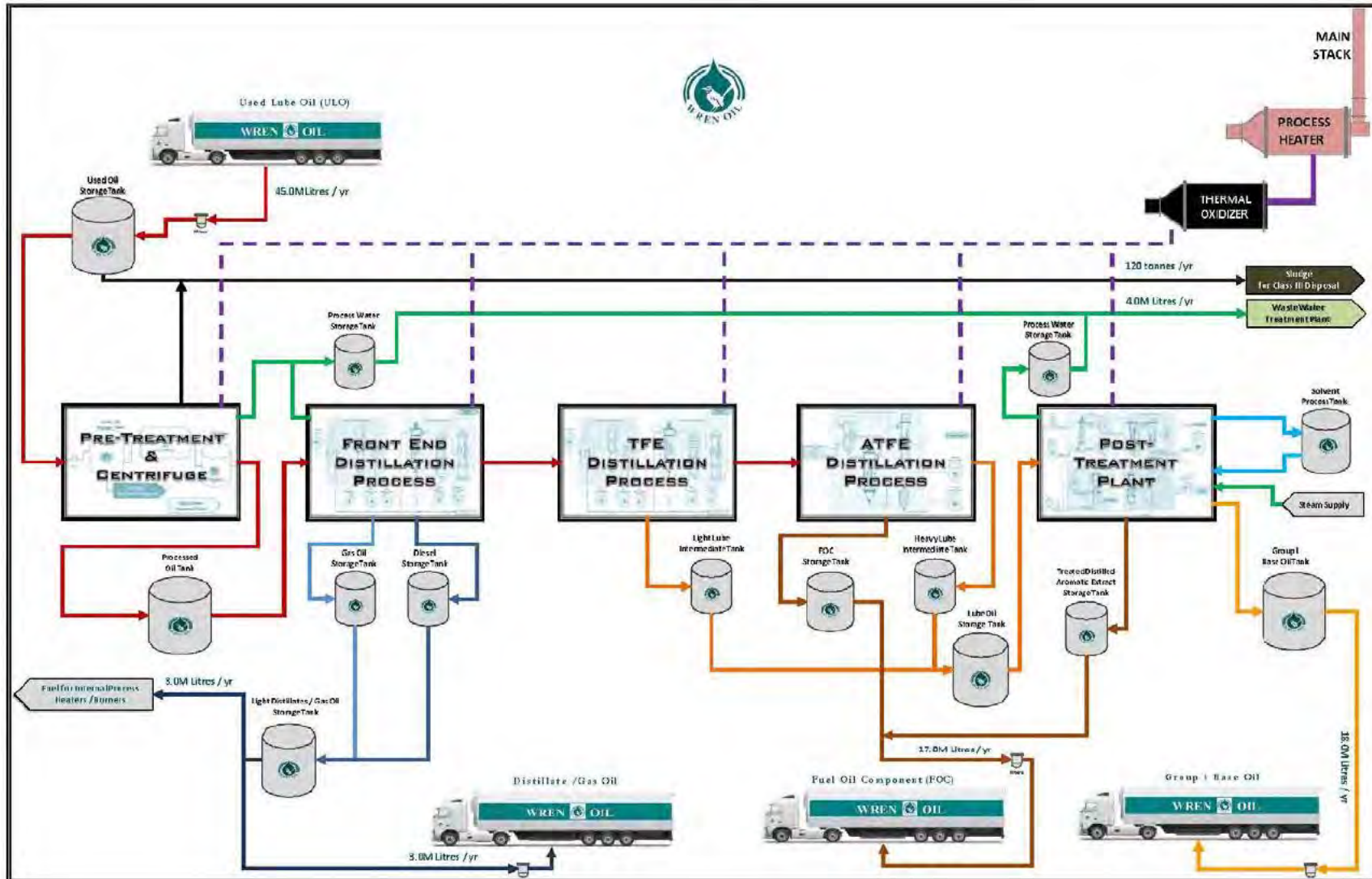


Figure 1: Process flow chart of current operations

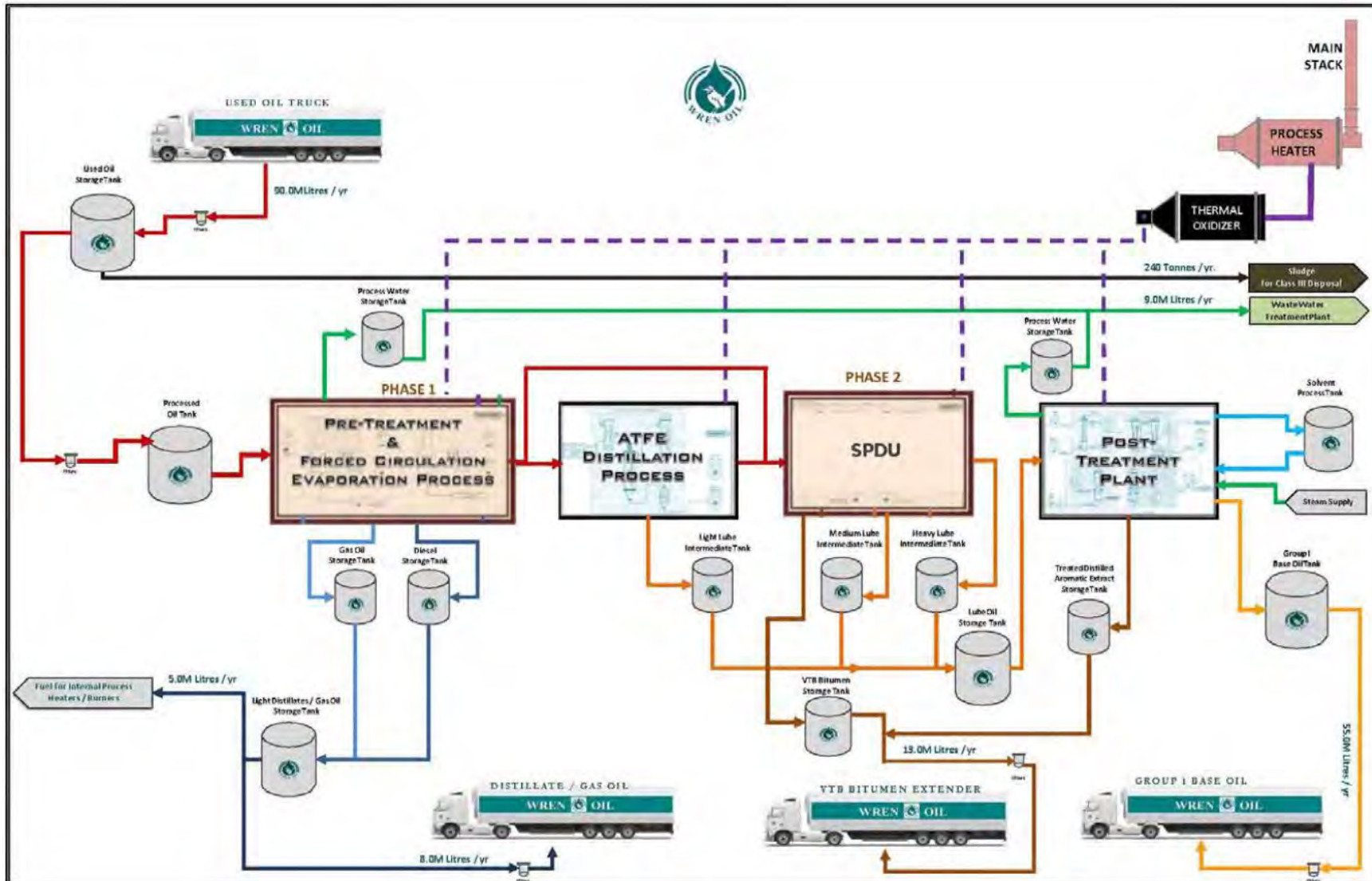


Figure 2: Process flow chart of proposed operations



## 4.2 Infrastructure

The Wren Oil facility infrastructure, as it relates to Categories 39, 61 and 62 activities, is detailed in Table 4 and with reference to the Site Plan. The information in this table has been provided by the Applicant.

**Table 4: Wren Oil facility Categories 39, 61 and 62 infrastructure**

	Infrastructure	Site Plan Reference
<b>Prescribed Activity Categories 39 and 61</b>		
The Licence Holder recycles used lubricating oil with a proposed design capacity of 80,000 tonnes per annum.		
1.	Truck loading / unloading bay	Site plans: General Layout Plan
2.	Main tank farm consisting of: <ul style="list-style-type: none"> <li>• 30 tanks (T1 to T12, T22 and T28 to T44) with a maximum single tank storage capacity of 350 kL and a total capacity of 4,669 kL</li> <li>• Six oil/water sumps and an oil water separator</li> </ul>	
3.	Tank farm south consisting of: <ul style="list-style-type: none"> <li>• 8 tanks (T14 to T21) with a maximum single tank storage capacity of 55 kL and a total capacity of 235 kL</li> <li>• Two oil/water sumps and an oil water separator.</li> </ul>	
4.	Tank farm shed consisting of: <ul style="list-style-type: none"> <li>• 4 tanks (T24 to T27) with a maximum single tank storage capacity of 16 kL and a total capacity of 57 kL</li> </ul>	
5.	General process shed including: <ul style="list-style-type: none"> <li>• Dehydrator and centrifuge;</li> <li>• Front end distillation (to be decommissioned);</li> <li>• Thin film evaporator (to be decommissioned);</li> <li>• Forced circulation evaporator (proposed);</li> <li>• Agitated thin film evaporator;</li> <li>• Short path distillation unit (proposed);</li> <li>• Post treatment NMP refinery and associated stack;</li> <li>• Closed (sealed pipe system) for transfer of off gases;</li> <li>• Thermal oxidiser and main process heater (to be upgraded) and associated main stack (to be increased in height and width);</li> <li>• Pre-treatment heater and associated stack;</li> <li>• Steam boiler and associated stack.</li> </ul>	
6.	Wastewater storage ponds and water heater and associated stack consisting of: <ul style="list-style-type: none"> <li>• Wastewater pond 1 (approximately 27 m x 20 m by 2 m deep) HDPE double lined with 3 m high perimeter fence covered in shade cloth</li> <li>• Wastewater pond 2 (approximately 24 m x 21 m x 1.5 m deep) HDPE double lined with 1.5 m high perimeter fence covered in shade cloth</li> <li>• Wastewater pond 3 (approximately 18 m x 16 m x 1.5 m deep) HDPE double lined with</li> </ul>	

	<b>Infrastructure</b>	<b>Site Plan Reference</b>
	1.5 m high perimeter fence covered in shade cloth. <ul style="list-style-type: none"> <li>Water heater and associated stack (9.31 m agl with an internal diameter of 250 mm)</li> </ul>	
<b>Prescribed Activity Category 62</b>		
The Licence Holder recycles bulk waste oil products including oil filters, radiator coolants, oily rags, used oil adsorbents and empty containers with a proposed design capacity of 20,000 tonnes per annum.		
7.	Main process shed	Site plans: General Layout Plan
8.	Waste oil drum and dangerous goods storage area	
<b>Prescribed Activity Categories 39, 61 and 62</b>		
9.	Stormwater swales / drains	Site plans: stormwater and process water infrastructure
10.	Oil / Water and Sludge sumps	Site plans: sumps and oil water separators infrastructure
11.	Oil and Water Separators (treats water in the concrete sump prior to discharge to stormwater infiltration pond)	
12.	Concrete sump for contaminated stormwater (20 m x 10 m x 2.3 m deep)	Site plans: General Layout Plan
13.	Stormwater infiltration pond (approximately 48 m x 8 m x 1.3 m deep)	
14.	Maintenance shed including oil heater and associated stack	
15.	Irrigation of excess treated stormwater	

### 4.3 Exclusions to the Premises

The following infrastructure is also located on the premises: donga and ablution blocks, main office, Dangerous Goods Storage shed, other offices and fire water tanks and associated infrastructure. These activities are not directly related to the primary activities therefore this Decision Report does not consider emissions associated with this infrastructure.

## 5. Legislative context

Table 5 summarises approvals relevant to the assessment.

**Table 5: Relevant approvals and tenure**

<b>Legislation</b>	<b>Number</b>	<b>Subsidiary</b>	<b>Approval</b>
<i>Rights in Water and Irrigation Act 1914</i>	GWL59017[4]	Romine Holdings Pty Ltd	5C groundwater licence to take water issued for 50,000 kL per year until January 2018 (when there will be an option to renew) for the purposes of industrial uses (process water and firefighting purposes) and the irrigation of 0.5 ha of lawns and gardens.
<i>Dangerous Goods Safety Act</i>	DGS014946	Romine Holdings Pty	DG's licence covers the volume of substances handled within the facility (including the volume proposed to

Legislation	Number	Subsidiary	Approval
2004		Ltd	support the upgrade).

## 5.1 Part IV of the EP Act

The Preston Industrial Park, a 2,950 ha industrial area located 4 km east of Bunbury central business district (CBD) has been reviewed by the Environmental Protection Authority (EPA) and is subject to section 16 advice by the EPA. The EPA reviewed the proposed development of the Preston Industrial Park and provided recommendations on areas of conservation significance and potential ecological linkages (Bulletin 1282, March 2008). The premises is within the Preston Industrial Park, however, no areas within the premises were identified as either a potential conservation area or ecological linkage.

## 5.2 Contaminated sites

The Premises was classified 'possibly contaminated – investigation required' under the CS Act in April 2010, and based on DWER's contaminated sites records, it appears that no investigation or monitoring information has been received since February 2010 and will be required.

## 5.3 Other relevant approvals

### 5.3.1 Planning approvals

Lot 8 is zoned as industry under the City of Bunbury's town planning scheme No. 7. The rest of the premises (Lots 1, 4 and 12) are zoned as general industry under the Shire of Dardanup's town planning scheme No. 3. Planning approval is not required for the proposed expansion (confirmed by correspondence from the Shire submitted with the Application).

### 5.3.2 Department of Biodiversity, Conservation and Attractions

The Application was referred to the Department of Biodiversity, Conservation and Attractions (DBCA), Parks and Wildlife Services on 12 July 2017. DBCA responded on 8 August with advice that Lot 8 contains remnant vegetation identified as being part of and contributing to a core regional ecological linkage and contains the Southern River vegetation complex (which is poorly reserved and below the National Target of 30% retention). DBCA consider that the vegetation within Lot 8 as being important in maintaining the integrity of the Western Ringtail Possum and potential black cockatoo habitat, both of which are listed as threatened species under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and *Wildlife Conservation Act 1950* (WC Act).

## 5.4 Part V of the EP Act

### 5.4.1 Applicable regulations, standards and guidelines

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

Other applicable legislation includes:

- *Environmental Protection (Noise) Regulations 1997*
- *Environmental Protection (Unauthorised Discharges) Regulations 2004*

#### 5.4.2 Works approval and licence history

Table 6 summarises the works approval and licence history for the premises since September 2007.

**Table 6: Works approval and licence history**

Instrument	Issued	Nature and extent of works approval, licence or amendment
L6378/1987/10	20/09/2007	Licence reissue
L6378/1987/11	12/09/2008	Licence reissue
L6378/1987/12	08/09/2011	Licence reissue
W5000/2011/1	17/10/2011	Expansion of facility including site drainage and hardstand upgrades, a second distillation unit in the form of an agitated thin film evaporator, NMP solvent extraction to produce base oil and extension to the bunded storage area at tank farm north.
W5000/2011/1	12/07/2012	Works approval amended to reflect appeal determination of the Minister for Environment. A condition was added to the works approval to ensure the thermal oxidiser stack height was raised to no less than 22 m agl.
W5000/2011/1	12/12/2013	Works approval amended: change from a clay filtration system to a solvent extraction system using NMP.
L6378/1987/13	28/08/2014	Licence reissue
L6378/1987/14	03/09/2015	Licence reissue
L6378/1987/14	29/04/2016	Amendment by Notice to extend expiry date of licence to 11 September 2026
L6378/1987/14	8/01/2018	Licence Amendment to upgrade the current facility processes, increase the current design capacity and increase the prescribed premises boundary to include the adjoining Lot 8.

#### 5.4.3 Compliance inspections and compliance history

The most recent compliance inspection was conducted by DWER in 2016. No compliance issues were identified from the inspection.

In the past two years there have been 22 odour complaints reported to DWER relating to nine incidents, of which Wren Oil was the suspected source. Of these incidents, two were substantiated as Wren Oil being the source of the odour which were caused by operator error. Both of these incidents occurred in 2015 and a letter of warning at the time was issued to the Licence Holder for both incidents. Wren Oil has since taken corrective action, including training/instructing operators and replacing infrastructure to ensure these incidents do not

occur in the future.

One hydrocarbon dust complaint has been reported to DWER in the last year; however, Wren Oil was not substantiated as the source.

## 6. Modelling and monitoring data

### 6.1 Groundwater monitoring

The Licence Holder has been monitoring groundwater quality at the premises from four groundwater monitoring bores, MB01 – MB04, as a requirement of existing licence conditions. The Existing Licence requires them to monitor for total recoverable hydrocarbons (shown in this report as C6-C10 and C10-C40), arsenic (As), nickel (Ni), cadmium (Cd), lead (Pb), chromium (Cr (III+VI)), zinc (Zn), copper (Cu), polycyclic aromatic hydrocarbons (PAH), total dissolved solids (TDS) and pH. In addition to this the Licence Holder has also been monitoring an extra six bores at the premises, MB05 – MB10. Groundwater contours and the location of the monitoring bores on the premises are shown in Figure 3.

The average results of groundwater monitoring data from 2014-2017 has been used to create a map showing levels of groundwater contamination in bores across the monitoring network for pH, electrical conductivity (EC), As, CR (III + VI), Iron (Fe), Manganese (Mn), Ni, Zn, C6-10, C10-C40 and PAH. Data was summarised by calculating concentration averages for each parameter from each bore. MB08A has been used as the background reference bore as it is positioned up gradient of the processing areas.

Averages were calculated from data between 5 June 2014 and 7 June 2017 (total of four samples for each bore, except bore MB03 where only three samples were used). The data was simplified by distributing values over five categories based on a background level multiplier as outlined in Table 7.

A summary of monitoring results for 2014-2017 is provided in Figure 4 showing that the highest contaminant levels are immediately west of the northern most wastewater storage pond (MB04).

The results below provide a snapshot of the quality of groundwater below the Premises. Further data is required to sufficiently characterise groundwater at the Premises.

**Table 7: Groundwater monitoring result comparisons**

Parameter	units	ANZECC Guidelines	Background reference – MB08A	<2x background	<3x background	<4x background	<5x background	>5x background
pH			6.54	5.5 – 7.5	5 – 5.5 or 7.5-8.0	4.5 – 5.0 or 8.0 – 8.5	4 – 4.5 or 8.5-9.5	<4 or >9.5
EC	µS/cm		1720	3439	5159	6878	8598	>8598
As	mg/L	0.024	0.002	0.005	0.007	0.009	0.011	>0.011
Cr (III+VI)	mg/L	0.001	0.002	0.005	0.007	0.009	0.011	>0.011
Fe	mg/L		2.5	5.0	7.5	10.0	12.5	>12.5
Mn	mg/L	1.9	0.004	0.008	0.012	0.016	0.020	>0.020
Ni	mg/L	0.011	0.001	0.002	0.003	0.004	0.005	>0.005
Zn	mg/L	0.008	0.009	0.017	0.026	0.034	0.043	>0.043
C6-C10	mg/L		0.02	0.04	0.06	0.08	0.10	>0.10
C10-C40	mg/L		0.3	0.6	0.9	1.2	1.5	>1.5
PAH	µg/L		0.5	1.0	1.5	2.0	2.5	>2.5

# Fresh water trigger value for slightly-moderately disturbed ecosystems

**Key finding:**

**The Delegated Officer has reviewed the existing monitoring bore network and has found:**

1. The highest levels of contaminants were identified in groundwater bores MB04 and MB09, which are down hydraulic gradient of the process wastewater storage (evaporation) ponds which is potentially indicative of a spill and/or leaking ponds and further investigation is required.
2. Further investigation and monitoring will also be required under the CS Act.



Figure 3: Groundwater contours and location of groundwater monitoring bores

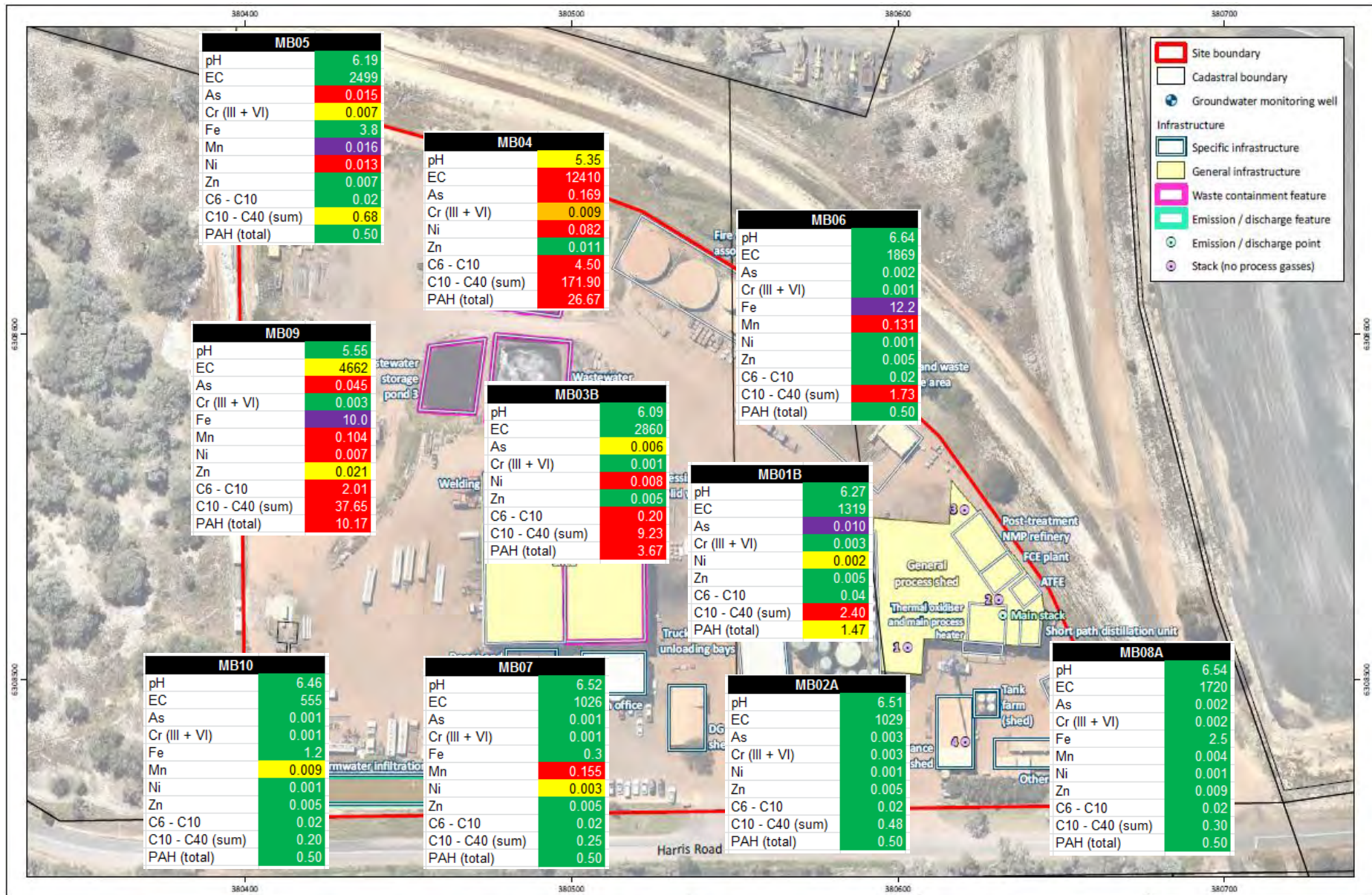


Figure 4: Groundwater monitoring bore average results for 2014 to 2017 compared to MB08A



## 6.2 Stack air emissions monitoring

The Licence Holder has been monitoring air emissions from the main stack as a requirement of their Existing Licence for at least the last six years. The Licence requires them to monitor particulates, VOC, SO<sub>x</sub> and NO<sub>x</sub>. The Licence Holder has also been monitoring carbon monoxide, hydrogen sulphide, PAH and total metals. A summary of the results of this monitoring of the main stack is in Table 8 below.

**Table 8: Summary of stack emissions monitoring of main stack from 2012-2017**

Parameters	Units	2012	2013	2014	2015	2016	2017
		30/04/2012	19/06/2013	1/10/2013	12/05/2015	10/05/2016	11/05/2017
Total particulate matter	g/min	0.659	1.13	3.5	3.0	1.2	2.8
Total VOCs	g/min	0.13	0.09	0.048	0.044	0.017	0.017
Sulphur dioxide	g/min	162	28	125	80	100	130
Oxides of nitrogen	g/min	8.6	14	15.5	13	13	20
Carbon monoxide	g/min	3.7	0.34	0.022	0.7	1.2	3.6
Hydrogen Sulphide	g/min	-	-	0.022	0.061	0.091	0.047
PAH	mg/min	-	-	0.00009	-	0.00055	0.00099
Total metals (Sb, As, Pb, Cr, Co, Cu, Mn, Ni, Cd, Tl and Hg)	g/min	-	-	0.004696	0.003294	0.0028644	0.00345

Monitoring results in Table 8 above show that stack emissions from the main stack have remained mostly consistent over the last six years, even though the volume of used oil processed has increased from 25,000 tonnes to 40,000 tonnes per annum during this period.

## 7. Consultation

DWER referred the application on 12 July 2017 to the Department of Biodiversity, Conservation and Attractions as the Delegated Officer considered that they have a direct interest in the application. See section 5.3.2 for further information. The Shire of Dardanup was consulted and confirmed that no planning approvals were required for the proposal.

## 8. Location and siting

### 8.1 Siting context

The Premises is located on the Swan Coastal Plain approximately 7.5 km southeast of Bunbury's central business district. The land is zoned General Industry under the Shire of Dardanup Town Planning Scheme No. 3 and Industrial under the Greater Bunbury Regional Scheme. The premises is bordered by Harris Road to the south, a rail line to the east and north and a vegetated block to the west. Surrounding land is zoned general farming, general industry, industry and rural under the above two schemes. There are a number of rural residential premises to the southeast, south and west.

## 8.2 Residential and sensitive Premises

The distances to residential and sensitive receptors are detailed in Table 9.

**Table 9: Receptors and distance from activity boundary**

Sensitive Land Uses	Distance from Prescribed Activity
Two rural residential premises	160 m and 320 m south of premises boundary (located within area zoned as General Farming under Shire of Dardanup Town Planning Scheme No. 3; and Industrial under Greater Bunbury Regional Scheme)
Rural residential premises	590 m south southeast of premises boundary (located within area zoned as General Industry under Shire of Dardanup Town Planning Scheme No. 3; and Industrial under Greater Bunbury Regional Scheme)
Four rural residential premises	225 m southwest and 435 m, 575 m and 700 m west of premises boundary (located within area zoned as Rural under City of Bunbury Town Planning Scheme No. 7; and Industrial deferred under Greater Bunbury Regional Scheme)
Industrial premises (storage yard)	90 m north of premises boundary
Industrial premises (Plant nursery)	410 m west of premises boundary
Two industrial premises (fertiliser)	570 m northeast and 900 m northwest of premises boundary
Industrial premises (timber treating)	400 m south of premises boundary
Three industrial areas	250 m east and 700 m west and west northwest of premises boundary
Industrial area (including an abattoir)	1.8 km northwest of premises boundary
Caravan park	1.6 km north northeast of premises boundary

## 8.3 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 10. Table 10 also identifies the distances to other relevant ecosystem values which do not fit the definition of a specified ecosystem.

**Table 10: Environmental values**

Specified ecosystems	Distance from the Premises
Geomorphic Wetlands Swan Coastal Plain	A palusplain multiple use geomorphic wetland (14329) lies across the centre of the premises. Multiple use

(management)	wetlands have few important ecological attributes and functions remaining.
Department of Parks and Wildlife Miscellaneous Reserve	Crown Land – timber reserve located 400 m west southwest of the premises boundary.
Waterways Conservation Areas	Leschenault Management Area – gazetted under the <i>Waterways Conservation Act 1976</i>
Threatened Ecological Communities and Priority Ecological Communities	<p>Within buffer area of the Federal Government Threatened Ecological Community (TEC) <i>Banksia woodlands of the Swan Coastal Plain</i> (BanksiaWld14752 (boundary ID 117469), BanksiaWld14765 (boundary ID 117482) and BanksiaWld14856 (boundary ID 117573).</p> <p>DBCAs have advised that vegetation located on Lot 8 contributes to a core regional ecological linkage and contains the Southern River vegetation complex. The vegetation also supports the Western Ringtail Possum and black cockatoo habitat. See section 5.3.2 for more details.</p>
<b>Biological component</b>	<b>Distance from the Premises</b>
Threatened/Priority Fauna	Schedule 2 – Fauna that is rare or is likely to become extinct as endangered fauna (mammals) located 120 to 650 m northwest and 500 m southwest of premises boundary.

## 8.4 Groundwater and water sources

The distances to groundwater and water sources are shown in Table 11.

**Table 11: Groundwater and water sources**

Groundwater and water sources	Distance from Premises	Environmental value
Ferguson River (major perennial watercourse)	270 m south and 320 m west of premises boundary	Ferguson River flows into the Preston River (approximately 2.8 km downstream) which terminates in the Leschenault Estuary.
Preston Area – Ferguson River surface water management subarea	Whole of premises	The area is included in the Leschenault Estuary water quality improvement plan (DOW 2012).
Groundwater	<p>The premises is located within the Bunbury Groundwater Area proclaimed under the <i>Rights in Water and Irrigation Act 1914</i> (RIWI Act).</p> <p>Groundwater monitoring (conducted by Emerge between 2012 and 2016) indicates that groundwater beneath the site ranges from approximately 11 m AHD in the northwest to 14 m AHD in the southeast. Groundwater is relatively shallow, being approximately 1 to 6 m below ground level. Groundwater was found to generally flow in a westerly direction with groundwater closest to the natural ground surface in the southeast section of the premises.</p> <p>Private bore (61110721) located 440 m west and</p>	<p>Based on groundwater monitoring results, electrical conductivity is typically less than 2900 mg/L, and pH is typically in the range 6.0 – 6.7.</p> <p>Groundwater has beneficial use for industrial purposes, domestic/household use and irrigation.</p>

	company bore (61110665) located 470 m west of premises boundary.	
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## 8.5 Soil type

The topography of the premises is generally flat with an elevation of approximately 15 m AHD. The premises is characterised by sandy soils which make up the Guildford Formation and Bassendean Sands. The Guildford Formation is clay with subordinate sand and gravel and the Bassendean Sand is described as sand and subordinate silt and clay. Table 12 details soil types and characteristics relevant to the assessment.

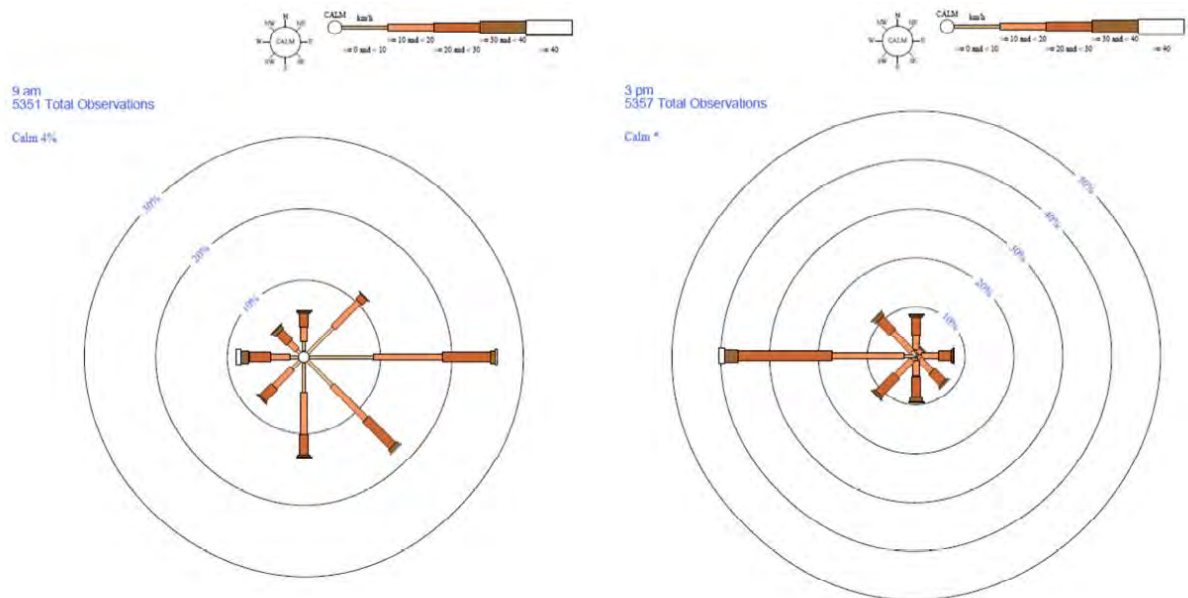
**Table 12: Soil and sub-soil characteristics**

Soil and sub-soil characteristics	Details
DWER's GIS details that the soil at the premises is soil classification type Wd6.	Sandy acidic yellow mottled soils, some of which contain ironstone gravel and associated acid yellow earths.
Acid sulfate soil risk	Moderate to low risk

## 8.6 Meteorology

### 8.6.1 Wind direction and strength

Figure 5 shows the wind direction and strength for 9am and 3pm at Bunbury.



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### Figure 5: Wind direction and strength for 9am and 3pm at Bunbury (site no. 009965).

It is important to note that these wind roses show historical wind speed and wind direction data (22 November 1995 to 30 September 2010) for Bunbury weather station and should not be used to predict future data.

### 8.6.2 Regional climatic aspects

The region experiences cool, wet winters and warm to hot, dry summers. The nearest Bureau

of Meteorology site is 4.2 km north-west of the premises within Bunbury (number 009965).

### 8.6.3 Rainfall and temperature

Figure 6 shows the average monthly maximum temperature and the average monthly rainfall for Bunbury (site number 009965) and is based on data from 1995 to 2017.

Average minimum temperatures range between 7°C and 16°C while the average maximum temperatures range between 17°C and 30°C. The total annual average rainfall is 728 mm.

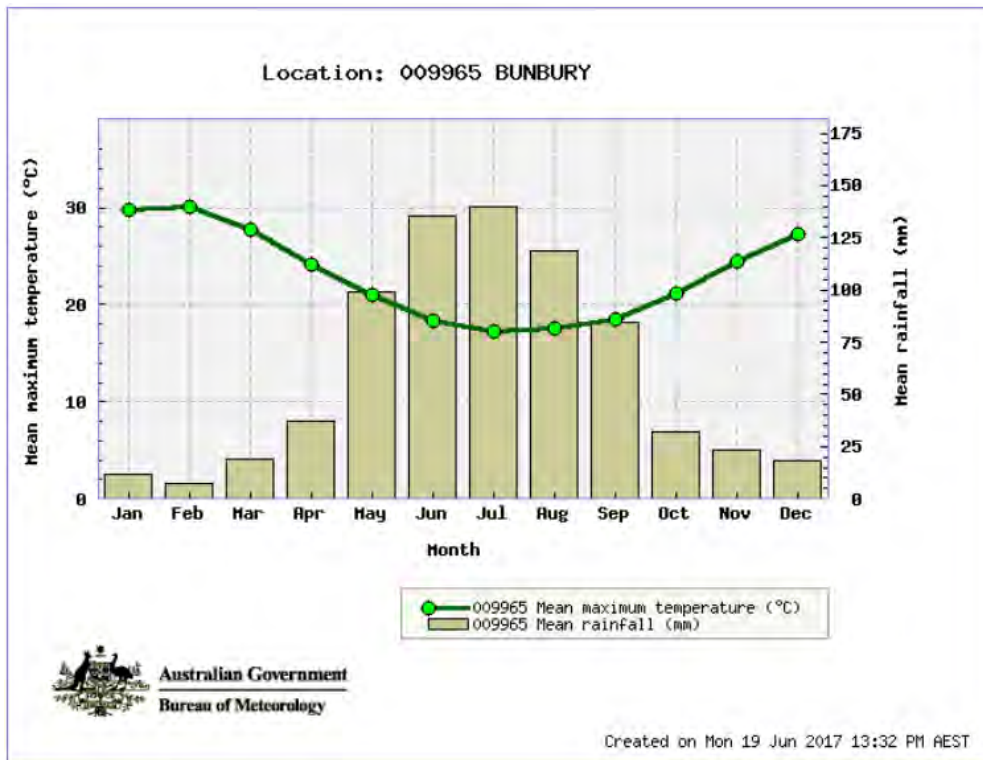


Figure 6: Average monthly maximum temperature and average monthly rainfall

## 9. Risk assessment

### 9.1 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 13 and Table 14.

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

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

Risk Events					Continue to detailed risk assessment	Reasoning
Sources/Activities	Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts		
<b>Transport, delivery and construction / positioning of infrastructure</b>	Vehicle movements and installation of infrastructure.	Noise	Rural residential premises approximately 160 m south, 225 m south-west and 320 m south of the premises boundary.	Air / wind dispersion	Potential amenity impacts	No  The Delegated Officer considers that dust and noise emissions from the proposed construction works to be consistent with existing operations and are unlikely to increase as a result of construction works. The separation distance between the source and potential receptors is sufficient and the existing prescribed premises is located in an established industrial area.  Construction of phase 1 and phase 2 will be of short duration.  The Noise Regulations apply to noise emissions.
	Extension of concrete pad and shed (includes minor ground disturbance)	Dust			Potential health and amenity impacts	

**Table 14: Identification of emissions, pathway and receptors during current and proposed operation**

Risk Events						Continue to detailed risk assessment	Reasoning
Sources/Activities	Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts			
<b>Solid waste processing</b>	Delivery, storage and processing of solid waste.  (Containers or drums that are contaminated with residues of a controlled waste, soils and sludge (soils contaminated with a controlled waste), industrial waste treatment plant residues, used oil filters.)	Noise from vehicle and machinery movements	Rural residential premises approximately 160 m south, 225 m south-west and 320 m south of the premises boundary.	Air / wind dispersion	Potential amenity impacts	No	The Delegated Officer considers that the separation distance between the source and potential receptors is sufficient and noting that the activity is carried out in an existing industrial area.  The Noise Regulations apply to noise emissions.
		Odour from hydrocarbons				Yes	
	Vehicle(s) tracking hydrocarbons (movement of vehicles and machinery in and out of solid waste processing area)	Ferguson River located 270 m south and 400 m west of the premises boundary (see section 8.4)	Direct discharge to land or surface water	Surface water pollution from hydrocarbons	Yes	See section 9.7	
		Soil and groundwater beneath the premises – ranging from 1 to 6 mbgl (see section 8.4)	Contamination of soil and infiltration to groundwater	Soil and groundwater pollution with hydrocarbons			
<b>Delivery and transfer of used lubricating oil (ULO)  Dispatch of distillate/gas oil, fuel oil component (FOC), and</b>	Vehicle and machinery movements	Noise	Rural residential premises approximately 160 m south, 225 m south-west and 320 m south of the premises boundary.	Air / wind dispersion	Potential amenity impacts	No	The Delegated Officer considers that the separation distance between the source and potential receptors is sufficient and noting that the activity is carried out in an existing industrial area.  The Noise Regulations
		Dust		Air / wind dispersion	Potential health and amenity impacts		

Risk Events					Continue to detailed risk assessment	Reasoning	
Sources/Activities	Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts			
<b>group 1 base oil</b>  <b>Proposed dispatch of VTB Bitumen</b>						apply to noise emissions.	
	Transfer of ULO from truck(s) to main tank farm.	Odour from hydrocarbons			Potential amenity impacts	Yes	See section 9.4
	Transfer of distillate/gas oil, FOC and Group 1 Base Oil from tanks to truck(s).  Proposed transfer of VTB bitumen from tank to truck(s).	Leaks, spills, overflows or containment failures	Ferguson River located 270 m south and 400 m west of the premises boundary (see section 8.4)	Direct discharge to land or surface water	Surface water pollution from hydrocarbons	Yes	See section 9.7/9.8
			Soil and groundwater beneath the premises – ranging from 1 to 6 mbgl (see section 8.4)	Contamination of soil and infiltration to groundwater	Soil and groundwater pollution with hydrocarbons		
<b>Waste oil processing</b>	Storage of ULO, processed oil, Gas oil, diesel, lube oil, FOC, treated distilled aromatic extract, group 1 base oil, solvent and VTB bitumen (proposed) in tanks at the main tank farm, tank farm south and tank farm shed.	Leaks, spills, overflows or containment failures	Ferguson River located 270 m south and 400 m west of the premises boundary (see section 8.4)	Direct discharge to land or surface water	Surface water pollution from hydrocarbons	Yes	See section 9.7/9.8
	Storage of sludge (from the ULO storage tanks) and pre-treatment and centrifuge process) within the main process shed prior to disposal offsite.		Soil and groundwater beneath the premises – ranging from 1 to 6 mbgl (see section 8.4)	Contamination of soil and infiltration to groundwater	Soil and groundwater pollution with hydrocarbons		
		Odour from hydrocarbons	Rural residential premises approximately 160 m south, 225 m south-west and 320 m south of the premises boundary.	Air / wind dispersion	Potential amenity impacts	Yes	See section 9.4
	Processing of waste oil onsite through pre-treatment and centrifuge, front end distillation process, TFE and ATFE	Noise from equipment and machinery	Rural residential premises approximately 160 m south, 225 m south-	Air / wind dispersion	Potential amenity impacts	No	The Delegated Officer considers that the separation distance between the source and



Risk Events					Continue to detailed risk assessment	Reasoning	
Sources/Activities	Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts			
<p>distillation processes and post-treatment plant.</p> <p>Proposed processing of waste oil onsite through pre-treatment and FCE process and SPDU process</p>		west and 320 m south of the premises boundary.				potential receptors is sufficient and noting that the activity is carried out in an existing industrial area.  The Noise Regulations apply to noise emissions.	
	<p>Emissions from waste oil processing (pre-treatment and centrifuge, FCE (proposed), front end distillation, TFE and ATFE distillation, SPDU (proposed) and post-treatment) through the main stack (includes thermal oxidiser and main process heater).</p> <p>Emissions from stack 1 (pre-treatment heater), stack 2 (NMP dowtherm heater), stack 3 (steam boiler), stack 4 (oil heater) and stack 5 (water heater).</p>	Odour from all stacks	Rural residential premises approximately 160 m south, 225 m south-west and 320 m south of the premises boundary.	Air / wind dispersion	Potential amenity impacts	Yes	See section 9.6
		Emissions from the main stack including VOC, particulates, SO <sub>2</sub> , CO <sub>2</sub> , NO <sub>x</sub> , CO, H <sub>2</sub> S, PAH, CO <sub>2</sub> and metals			Potential amenity and health impacts	Yes	See section 9.5
	Storage and management of process wastewater in sumps and lined ponds	Odour (hydrocarbons)	Rural residential premises approximately 160 m south, 225 m south-west and 320 m south of the premises boundary.	Air / wind dispersion	Potential amenity impacts	Yes	See section 9.4
		Overflow or containment failure of sumps and lined ponds containing process wastewater	Ferguson River located 270 m south and 400 m west of the premises boundary (see section 8.4)	Direct discharge to land or surface water	Surface water pollution from hydrocarbons	Yes	See section 9.8

Risk Events					Continue to detailed risk assessment	Reasoning	
Sources/Activities	Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts			
			Soil and groundwater beneath the premises – ranging from 1 to 6 mbgl (see section 8.4)	Contamination of soil and infiltration to groundwater	Soil and groundwater pollution with hydrocarbons		
Whole of premises	Processing activities conducted onsite (including waste oil processing and solid waste processing)	Light from 24/7 operations	Rural residential premises approximately 160 m south, 225 m south-west and 320 m south of the premises boundary.	Direct light emissions to potential receptors	Potential amenity impacts	No	The Delegated Officer considers that the separation distance between the source and the potential receptors is sufficient and noting that the activity is carried out in an existing industrial area.
	Contaminated and potentially contaminated stormwater	Contaminated stormwater stored in sumps. Treated stormwater infiltration pond – overtopping and infiltration to groundwater.	Ferguson River located 270 m south and 400 m west of the premises boundary (see section 8.4)	Direct discharge to land or surface water	Surface water pollution from hydrocarbons	Yes	See section 9.9
			Groundwater beneath the premises – ranging from 1 to 6 mbgl (see section 8.4)	Infiltration to groundwater	Groundwater pollution with hydrocarbons		
	Treated stormwater	Irrigation of treated stormwater to land	Ferguson River located 270 m south and 400 m west of the premises boundary (see section 8.4)	Direct discharge to land or surface water	Surface water pollution from hydrocarbons	Yes	See section 9.9
Groundwater beneath the premises – ranging from 1 to 6 mbgl (see section 8.4)			Infiltration to groundwater	Groundwater pollution with hydrocarbons			

## 9.2 Consequence and likelihood of risk events

A risk rating will be determined for risk events in accordance with the risk rating matrix set out in Table 15 below.

**Table 15: Risk rating matrix**

Likelihood	Consequence				
	Slight	Minor	Moderate	Major	Severe
Almost certain	Medium	High	High	Extreme	Extreme
Likely	Medium	Medium	High	High	Extreme
Possible	Low	Medium	Medium	High	Extreme
Unlikely	Low	Medium	Medium	Medium	High
Rare	Low	Low	Medium	Medium	High

DWER will undertake an assessment of the consequence and likelihood of the Risk Event in accordance with Table 16 below.

**Table 16: Risk criteria table**

Likelihood		Consequence		
The following criteria has been used to determine the likelihood of the Risk Event occurring.		The following criteria has been used to determine the consequences of a Risk Event occurring:		
			Environment	Public health* and amenity (such as air and water quality, noise, and odour)
Almost Certain	The risk event is expected to occur in most circumstances	Severe	<ul style="list-style-type: none"> <li>onsite impacts: catastrophic</li> <li>offsite impacts local scale: high level or above</li> <li>offsite impacts wider scale: mid-level or above</li> <li>Mid to long-term or permanent impact to an area of high conservation value or special significance<sup>^</sup></li> <li>Specific Consequence Criteria (for environment) are significantly exceeded</li> </ul>	<ul style="list-style-type: none"> <li>Loss of life</li> <li>Adverse health effects: high level or ongoing medical treatment</li> <li>Specific Consequence Criteria (for public health) are significantly exceeded</li> <li>Local scale impacts: permanent loss of amenity</li> </ul>
Likely	The risk event will probably occur in most circumstances	Major	<ul style="list-style-type: none"> <li>onsite impacts: high level</li> <li>offsite impacts local scale: mid-level</li> <li>offsite impacts wider scale: low level</li> <li>Short-term impact to an area of high conservation value or special significance<sup>^</sup></li> <li>Specific Consequence Criteria (for environment) are exceeded</li> </ul>	<ul style="list-style-type: none"> <li>Adverse health effects: mid-level or frequent medical treatment</li> <li>Specific Consequence Criteria (for public health) are exceeded</li> <li>Local scale impacts: high level impact to amenity</li> </ul>
Possible	The risk event could occur at some time	Moderate	<ul style="list-style-type: none"> <li>onsite impacts: mid-level</li> <li>offsite impacts local scale: low level</li> <li>offsite impacts wider scale: minimal</li> <li>Specific Consequence Criteria (for environment) are at risk of not being met</li> </ul>	<ul style="list-style-type: none"> <li>Adverse health effects: low level or occasional medical treatment</li> <li>Specific Consequence Criteria (for public health) are at risk of not being met</li> <li>Local scale impacts: mid-level impact to amenity</li> </ul>
Unlikely	The risk event will probably not occur in most circumstances	Minor	<ul style="list-style-type: none"> <li>onsite impacts: low level</li> <li>offsite impacts local scale: minimal</li> <li>offsite impacts wider scale: not detectable</li> <li>Specific Consequence Criteria (for environment) likely to be met</li> </ul>	<ul style="list-style-type: none"> <li>Specific Consequence Criteria (for public health) are likely to be met</li> <li>Local scale impacts: low level impact to amenity</li> </ul>
Rare	The risk event may only occur in exceptional circumstances	Slight	<ul style="list-style-type: none"> <li>onsite impact: minimal</li> <li>Specific Consequence Criteria (for environment) met</li> </ul>	<ul style="list-style-type: none"> <li>Local scale: minimal to amenity</li> <li>Specific Consequence Criteria (for public health) met</li> </ul>

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

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

"onsite" means within the Prescribed Premises boundary.

## 9.3 Acceptability and treatment of Risk Event

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

**Table 17: Risk treatment table**

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

## 9.4 Risk Assessment – Fugitive odour impact

### 9.4.1 Description of risk event

Fugitive odour emissions from solid waste delivery and processing, transfer of ULO, storage of ULO and products, storage of sludge and storage of process wastewater in lined ponds causing a nuisance and impacting on the amenity and lifestyle of receptors.

### 9.4.2 Identification and general characterisation of emission

Fugitive odour may be generated by the delivery, storage and processing of solid waste, the storage of sludge onsite, the storage of ULO and products onsite, the storage of process wastewater in lined ponds and the transfer of ULO and products between tanks and trucks.

The amount of solid waste delivered to the premises, sludge produced onsite (from feedstock storage tanks and pre-treatment and FCE process), ULO delivered to the premises and truck movements (for delivering ULO to site and recycled oil collected from site) will increase with the proposed amendments.

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

Potential impacts from fugitive odour emissions include degradation of local air quality. Nuisance, health and amenity impacts on residential receptors located 160 m south, 225 m south-west and 320 m south of the premises.

### 9.4.4 Criteria for assessment

General provisions of the EP Act make it an offence to cause or allow pollution, including odour that unreasonably interferes with the health, welfare, convenience, comfort or amenity of any person.

### 9.4.5 Licence Holder controls

This assessment has reviewed the controls set out in Table 18 below.

**Table 18: Licence Holder’s proposed controls for fugitive odour**

Control	Description
Existing Infrastructure	<p>ULO is transferred from the collection tanks to the waste oil storage tank via a closed pipe system within the truck loading bay.</p> <p>Closed pipe system to direct gases from the main tank farm (storage of ULO) and recycling waste oil process to the thermal oxidiser.</p> <p>Carbon pod filtration system (or similar) on individual storage tanks not connected to the closed pipe system.</p> <p>Thermal oxidiser combusts gases and odours from all stages of the distillation process, including the main tank farm.</p> <p>Other oil products and containers are stored as sealed containers within the truck loading/unloading bay or the oil drum and waste DG storage area.</p> <p>Solid waste is delivered and stored either in the main process shed or oil drum and DG waste storage area. Solid waste processing is within the main process shed (doors are usually open during processing).</p> <p>All three wastewater lined ponds have perimeter fences with shade cloth to limit spray drift and odour.</p>
Management	Sludge is removed offsite via trucks on a regular basis.
Proposed Management	The process telemetry monitoring system will be integrated into a single system enabling improved monitoring and will aid in identifying spills and leaks quicker, with these to be managed in accordance with The Licence Holder’s current odour management policies and procedures and training. The thermal oxidiser system will be integrated into the main plant control systems enabling process alarms to be more easily monitored and addressed.

### 9.4.6 Key findings

**The Delegated Officer has reviewed the information regarding fugitive odour impacts from the premises and has found:**

Licence Holder infrastructure and management controls are suitable to minimise the risk of odour emissions and may be conditioned as regulatory controls in the licence subject to the risk assessment outcomes.

### 9.4.7 Consequence

The Delegated Officer has had regard to the operational controls and proximity of receptors and has determined that low level impacts to amenity of residential receptors located 160 m and 320 m south and 225 m southwest of the premises may be experienced. Therefore, the Delegated Officer considers the consequence to be **Minor**.

### 9.4.8 Likelihood of Risk Event

Based upon the Licence Holder’s proposed controls and history of complaints, the Delegated Officer has determined that the likelihood of low level impacts to amenity could occur at some time. Therefore, the Delegated Officer considers the likelihood to be **Possible**.

#### 9.4.9 Overall rating of fugitive odour impact

The Delegated Officer has compared the consequence and likelihood ratings described above with the risk rating matrix (Table 15) and determined that the overall rating for the risk of fugitive odour emissions on residential receptors is **Medium**.

### 9.5 Risk Assessment – Point source stack emissions normal and abnormal operations

#### 9.5.1 Description of Risk Event

Stack emissions being generated from the Wren Oil main stack due to normal and abnormal operations impacting on the amenity and health of receptors.

#### 9.5.2 Identification and general characterisation of emission

Emissions from the main stack consist of volatile organic compounds (VOC), particulate matter (PM), sulfur dioxide (SO<sub>2</sub>), carbon dioxide (CO<sub>2</sub>), oxides of nitrogen (NO<sub>x</sub>), carbon monoxide (CO), hydrogen sulphide (H<sub>2</sub>S), polycyclic aromatic hydrocarbons (PAH), carbon dioxide (CO<sub>2</sub>) and metals (including Antimony (Sb), Arsenic (As), Lead (Pb), Chromium (Cr), Cobalt (Co), Copper (Cu), Manganese (Mn), Nickel (Ni), Cadmium (Cd), Thallium (Tl) and Mercury (Hg).

The thermal oxidiser destroys organic compounds and gases by burning the compounds at a minimum of 850°C. The resultant flue gases are then transported to the main process heater where waste heat is directed through the process heater with resultant gases released to atmosphere via the main stack. Residence time testing, conducted by the Licence Holder, indicates that gases are present within the thermal oxidiser for 3.75 seconds, in excess of United States Environmental Protection Agency (USEPA) recommendation of 0.75 seconds.

#### Abnormal operations

Stack emissions may be generated from abnormal operations onsite from the failure of the thermal oxidiser.

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

Potential impacts from stack emissions include reduced local air quality, nuisance, health and amenity impacts on residential receptors located 160 m south, 225 m southwest and 320 m south of the premises. The stack emissions listed above have the potential to impact public health and affect the respiratory and cardiovascular systems following both long and short term exposures.

#### 9.5.4 Criteria for assessment

General provisions of the EP Act make it an offence to cause or allow pollution. The National *Environmental Protection (Ambient Air Quality) Measure (NEPM) 2015* recommends assessment criteria for ambient air quality standards of which some are shown Table 19 below. Ambient monitoring at receptors has not been undertaken to determine current air quality, however, Air Quality Modelling was prepared by Air Assessments (Emission Assessments) in July 2016 for the main stack at Wren Oil. The modelling took into account the increase in main stack diameter (above the process heater) from 300 mm to 600 mm with the stack height remaining at 23 agl. Predicted maximum concentration of pollutants from the modelling is shown in Table 20 below.

**Table 19: NEPM standards**

Pollutant	Averaging period	Maximum concentration
-----------	------------------	-----------------------

Pollutant	Averaging period	Maximum concentration
Carbon monoxide	8 hours	9.0 ppm
Nitrogen dioxide	1 hour	0.12 ppm
	1 year	0.03 ppm
Sulphur dioxide	1 hour	0.20 ppm
	1 day	0.08 ppm
	1 year	0.02 ppm
Lead	1 year	0.50 µg/m <sup>3</sup>
Particulates as PM <sub>10</sub>	1 day	50 µg/m <sup>3</sup>
	1 year	25 µg/m <sup>3</sup>
Particulates as PM <sub>2.5</sub>	1 day	25 µg/m <sup>3</sup>
	1 year	8 µg/m <sup>3</sup>

**Table 20: Expected maximum pollutant concentrations as per proposed expansion specifications (Air Assessments 2016)**

Pollutant	Averaging period	NEPM standard (converted to µg/m <sup>3</sup> by Emission Assessments)	Maximum predicted concentration (µg/m <sup>3</sup> )	
			Outside site boundary	At nearest residence
Nitrogen dioxide	1 hour	246	15.2	10.3
	1 year	62	1.13	0.21
Sulphur dioxide	1 hour	570	235	160
	1 day	228	87	60
	1 year	57	8.7	1.6
Particulates as PM <sub>10</sub>	1 day	50	1.04	0.72
Particulates as PM <sub>2.5</sub>	1 day	25	1.04	0.72
	1 year	8	0.10	0.02

The Air Quality Modelling indicates that after the expansion, the pollutants from the main stack will remain below the NEPM with the pollutant closest to the criteria being SO<sub>2</sub>. After the expansion, SO<sub>2</sub> concentrations at the plant boundary are predicted to be 41% and 38% of the NEPM 1 hour and 24 hour standards respectively (Air Assessments, 2016). The highest offsite concentrations are predicted to occur along the site boundary, directly north east of the main stack (Air Assessments, 2016).

The Licence Holder has been monitoring stack emissions on an annual basis for at least the last six years. See section 6.2 for main stack emissions monitoring results. The modelling was based on stack monitoring results for the site. As the stack monitoring results have been consistent over the last six years, it appears the modelling is a representation of concentrations that may occur outside the site boundary and at the nearest residence.

### 9.5.5 Licence Holder controls

This assessment has reviewed the controls set out in Table 21 below.

**Table 21: Licence Holder's controls for point source stack emissions (from Application)**

Control	Description
Existing Infrastructure	<p>Gases generated from the ULO storage tanks and processing of ULO including: pre-treatment and centrifuge, front end distillation process, TFE distillation process, ATFE distillation process and post-treatment plant; are directed via enclosed pipes to the thermal oxidiser where hydrocarbon particles are removed by combustion at a minimum of 850°C.</p> <p>Combusted air (from the thermal oxidiser) is directed to the main process heater where waste heat is recovered and the resultant gases are released to atmosphere through a 23 m agl main stack with an internal diameter of 300 mm.</p> <p>Pre-treatment heater, NMP Dowtherm heater, steam boiler, chainbar oil heater and water heater operated to manufacturers specifications.</p>
Proposed infrastructure	<p>Installation of new main process heater.</p> <p>The main stack is proposed to have the internal diameter, above the process heater, increased to 600 mm to manage the additional flue gas that will result from the increased heat generation associated with the new process heater.</p> <p>Gases generated from the FCE and SPDU processes will be directed via existing enclosed pipes to the thermal oxidiser where hydrocarbon particles are removed by combustion at a minimum of 850°C.</p> <p>The thermal oxidiser plant control system will be upgraded to operate automatically.</p> <p>Failure of the thermal oxidiser is detected by alarms. If the thermal oxidiser fails, the equipment associated with the recycling of used oil ceases.</p>
Management	<p>The thermal oxidiser is regularly inspected and maintained as part of standard operating procedures.</p> <p>Critical plant spares as part of general operations and processes are maintained or the Licence Holder sources relevant parts from appropriate suppliers as required.</p> <p>Relevant employees of the Licence Holder are trained to manage failure of the thermal oxidiser (and related shutdown of associated recycling processes) and training is implemented as part of the scheduled shut-downs required to undertake regular maintenance activities.</p>

### 9.5.6 Key findings

**The Delegated Officer has reviewed the information regarding stack emission impacts from the premises during normal and abnormal operations and has found:**

1. Licence Holder infrastructure and management controls may be conditioned as regulatory controls in the licence subject to risk assessment outcomes.
2. Stack emission impacts could occur if the thermal oxidiser is not operating correctly or managed appropriately.

### 9.5.7 Consequence – normal operation

The Delegated Officer has had regard to the nature of potential stack emissions and has determined that low level impacts to amenity of residential receptors located 160 m south, 225 m southwest and 320 m south of the premises boundary may be experienced. Therefore, the



Delegated Officer considers the consequence to be **Minor**.

### 9.5.8 Likelihood of Risk Event – normal operation

Based upon the Licence Holder's proposed controls, the Delegated Officer has determined that the likelihood of low level impact to amenity during normal operations will probably not occur in most circumstances. Therefore the Delegated Officer considers the likelihood to be **Unlikely**.

### 9.5.9 Overall rating of point source stack emissions – normal operation

The Delegated Officer has compared the consequence and likelihood ratings described above with the risk rating matrix (Table 15) and determined that the overall rating for the risk of stack emissions during normal operations on residential receptors is **Medium**.

### 9.5.10 Consequence – abnormal operation

Based upon the premises being located within 320 m of three residential premises, the Delegated Officer has determined that stack emissions during abnormal operations may have a mid-level impact to amenity on a local scale. Therefore, the Delegated Officer considers the consequence to be **Moderate**.

### 9.5.11 Likelihood of Risk Event – abnormal operation

Based upon the Licence Holder's proposed controls and management measures, the Delegated Officer has determined that the likelihood of impacts from stack emissions from abnormal operations could occur at some time. Therefore, the Delegated Officer considers the likelihood to be **Possible**.

### 9.5.12 Overall rating of point source stack emissions – abnormal operation

The Delegated Officer has compared the consequence and likelihood ratings described above with the risk rating matrix (Table 15) and determined that the overall rating for the risk of stack emissions during normal operations on residential receptors is **Medium**.

## 9.6 Risk Assessment – Point source odour impact– normal and abnormal operations

### 9.6.1 Description of risk event

Point source odour being generated from the pre-treatment heater stack (stack 1), NMP dowtherm heater stack (stack 2), steam boiler (stack 3), chainbar oil heater (stack 4), water heater (stack 5) and thermal oxidiser and main process heater (main stack) due to normal and abnormal operations impacting on the amenity and health of receptors.

### 9.6.2 Identification and general characterisation of emission

#### Normal operations

There is potential for odour emissions from the six stacks located on the premises, this includes: Stack 1 (pre-treatment heater stack), Stack 2 (NMP dowtherm heater stack), Stack 3 (steam boiler stack), Stack 4 (chainbar oil heater stack), Stack 5 (water heater stack) and the main stack (includes the thermal oxidiser and main process heater) with the most significant being odour and stack emissions from the main stack.

The process heaters are fueled by the light distillates and gas oil (a product of the ATFE process).

Gases from the ULO storage tanks and processing of ULO are directed to the thermal oxidiser

and then to the main process heater and vent to atmosphere via the main stack. The existing processing of ULO operations include emissions from the pre-treatment and centrifuge, front end distillation process, TFE distillation process, ATFE distillation process and post-treatment plant being directed to the thermal oxidiser.

Proposed upgrades will also include emissions from the FCE process and SPDU process being directed to the thermal oxidiser with the TFE and front end distillation processes being decommissioned. The main process heater will also be upgraded.

### Abnormal operations

Odour emissions may be generated through the main stack from abnormal operations onsite from the failure of the thermal oxidiser.

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

Potential impacts from point source odour emissions include degradation of local air quality. Nuisance, health and amenity impacts on residential receptors located 160 m south, 225 m south-west and 320 m south of the premises.

### 9.6.4 Criteria for assessment

There are no set threshold or concentration criteria for odour assessment. The general provisions of the EP Act make it an offence to cause or allow unreasonable emissions which includes emissions of odour that unreasonably interfere with the health, welfare, convenience, comfort or amenity of any person.

### 9.6.5 Licence Holder controls

This assessment has reviewed the controls set out in Table 22 below.

**Table 22: Licence Holder’s controls for point source odour emissions**

Control	Description
Existing Infrastructure	<p>Gases generated from the ULO storage tanks and processing of ULO including: pre-treatment and centrifuge, front end distillation process, TFE distillation process, ATFE distillation process and post-treatment plant; are directed via enclosed pipes to the thermal oxidiser where hydrocarbon particles are removed by combustion at a minimum of 850°C.</p> <p>Combusted air (from the thermal oxidiser) is directed to the main process heater where waste heat is recovered and the resultant gases are released to atmosphere through a 23 m agl main stack with an internal diameter of 300 mm.</p> <p>Pre-treatment heater, NMP Dowtherm heater, steam boiler, chainbar oil heater and water heater operated to manufacturers specifications.</p>
Proposed infrastructure	<p>Installation of new main process heater.</p> <p>The main stack is proposed to increase the internal diameter, above the process heater, to 600 mm with a stack height of at least 23 m agl to manage the additional flue gas that will result from the increased heat generation associated with the new process heater.</p> <p>Gases generated from the FCE and SPDU processes will be directed via existing enclosed pipes to the thermal oxidiser where hydrocarbon particles are removed by combustion at a minimum of 850°C.</p> <p>The thermal oxidiser plant control system will be upgraded to operate automatically.</p> <p>Failure of the thermal oxidiser is detected by alarms. If the thermal oxidiser fails,</p>

Control	Description
	the equipment associated with the recycling of used oil ceases.
Management	<p>The thermal oxidiser is regularly inspected and maintained as part of standard operating procedures.</p> <p>Critical plant spares as part of general operations and processes are maintained or the Licence Holder sources relevant parts from appropriate suppliers as required.</p> <p>Relevant employees of the Licence Holder are trained to manage failure of the thermal oxidiser (and related shutdown of associated recycling processes) and training is implemented as part of the scheduled shut-downs required to undertake regular maintenance activities.</p>

### 9.6.6 Key findings

**The Delegated Officer has reviewed the information regarding the odour impacts from the premises during normal and abnormal operations and has found:**

1. Licence Holder infrastructure and management controls are suitable to minimise the risk of odour emissions and may be conditioned as regulatory controls in the licence subject to the risk assessment outcomes.
2. Odour impacts could occur if the thermal oxidiser is not operating correctly or managed appropriately.

### 9.6.7 Consequence – normal operations

If a point source odour risk event occurs, then the Delegated Officer has determined that the adverse impact on amenity and lifestyle of sensitive receptors will be minimal and at a local scale only. Therefore, the Delegated Officer considers the consequence of a point source odour risk event during normal operations to be **Slight**.

### 9.6.8 Likelihood of Risk Event – normal operations

Taking into consideration siting of the facility and Licence Holder controls and history of odour complaints the Delegated Officer has determined that the likelihood of a point source odour risk event occurring and impacting on surrounding sensitive receptors will probably not occur in most circumstances. Therefore, the Delegated Officer considers the likelihood of a point source odour risk event during normal operations to be **Unlikely**.

### 9.6.9 Overall rating of point source odour emissions – normal operations

The Delegated Officer has compared the consequence and likelihood ratings described above with the risk rating matrix (Table 15) and determined that the overall rating for the risk of point source odour emission impacts on sensitive receptors during normal operation is **Low**.

### 9.6.10 Consequence – abnormal operations

If a point source odour risk event occurs, then the Delegated Officer has determined that the adverse impact on amenity and lifestyle of sensitive receptors will be low level and at a local scale only. Therefore, the Delegated Officer considers the consequence of a point source odour risk event during abnormal operations to be **Minor**.

### 9.6.11 Likelihood of Risk Event – abnormal operations

Taking into consideration siting of the facility and Licence Holder controls and history of odour

complaints the Delegated Officer has determined that the likelihood of a point source odour risk event occurring and impacting on surrounding sensitive receptors could occur at some time. Therefore, the Delegated Officer considers the likelihood to be **Possible**.

### 9.6.12 Overall rating of point source odour emissions – abnormal operations

The Delegated Officer has compared the consequence and likelihood ratings described above, for abnormal operations, with the risk matrix (Table 15) and determined that the overall rating for the risk of point source odour emission impacts on sensitive receptors during abnormal operation is **Medium**.

## 9.7 Risk Assessment – Leaks, spills, overflows or containment failures – tanks and transfer infrastructure

### 9.7.1 Description of Risk Event

Failure of containment of hazardous liquids including ULO, processed oil, distillate/gas oil, lube oil, FOC, treated distilled aromatic extract, diesel, solvent and Group 1 Base oil during storage in tanks or transfer of materials from tanks to trucks (or vice versa) causing land, soil and groundwater contamination affecting ecosystem health.

Failure of containment of VTB bitumen during proposed storage in tanks or proposed transfer from tanks to trucks causing land, soil and groundwater contamination affecting ecosystem health.

### 9.7.2 Identification and general characterisation of emission

ULO is brought onto the premises via truck and transferred to tanks in the main tank farm. Distillate, gas oil, FOC, Group 1 Base oil and diesel are all produced during various stages of the oil recycling process. Used oil and the associated products are stored within bunded storage areas/tanks located within the various tank farms and storage areas on the premises as shown within Appendix 2: Site Plans – General Layout Plan.

There is potential for land, soil and groundwater to become contaminated if there are leaks or spills (from the tanks or during transfer of liquids) or the tanks fail to contain the liquids.

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

Hydrocarbons from leaks, spills or containment failure of ULO, oil products, diesel or solvent could lead to contamination of land, soil and groundwater.

### 9.7.4 Criteria for assessment

General provisions of the EP Act make it an offence to cause or allow pollution. Additionally, it is an offence to discharge mineral oil, diesel or other hydrocarbon into the environment under regulation 3 of the UDR.

### 9.7.5 Licence Holder controls

This assessment has reviewed the controls set out in Table 23 below.

**Table 23: Licence Holder’s controls for leaks, spills, overflows or containment failures – tanks and transfer infrastructure**

Control	Description
Existing infrastructure	Bunding around areas associated with storage and transfer of dangerous goods, hazardous materials or hydrocarbons including the main tank farm, tank farm

Control	Description
	<p>south and tank farm shed.</p> <ul style="list-style-type: none"> <li>• Bunding is in accordance with AS1940-2004 The Storage and Handling of Flammable and Combustible Liquids and DG licence.</li> <li>• There is sufficient capacity within the existing bunded areas to accommodate the increase in waste oil feedstock and base oil product.</li> </ul> <p>The truck loading / unloading bay area has a bunded capacity of 98 kL. The bunded capacity is large enough to accommodate any potential spill that may result from a fitting failure with large oil tankers typically holding a total capacity of less than 50 kL. All equipment associated with transfer of ULO will be contained within the truck loading / unloading area.</p> <p>Routine servicing of vehicles and equipment will be undertaken within a bunded area or maintenance sheds that has a capacity appropriate to the volume of liquids used in the maintenance task.</p> <p>Hydrocarbon containing material will be stored in bunded areas or double bunded tanks (in accordance with AS1940-2004) on site prior to being delivered to domestic customers or the Bunbury Port for export.</p>
Management	<p>Oil water separators will continue to be operated and maintained to manufacturer specifications.</p> <p>Material Safety Data Sheets (MSDS) are available at all times where hydrocarbons or other chemical substances are stored.</p> <p>Truck movements are managed to ensure liquid waste transported to the premises can be managed within the available storage.</p> <p>Improved monitoring of process telemetry as part of the upgrade will enable spills and leaks to be identified quicker. If any hydrocarbon or chemical substances are spilt these will be managed in accordance with the Licence Holder's Environmental Risk Management Procedures and include:</p> <ul style="list-style-type: none"> <li>• Spills will be cleaned up immediately, with a spill equal to or less than 20 L considered minor. And anything above 21 L considered major.</li> <li>• Spill kits and absorbents will be used to clean up spills which are readily available at various locations throughout the facility.</li> <li>• Material used in the spill clean up will be processed within the facility. This includes disposal in the designated waste bins for off site disposal.</li> </ul>

### 9.7.6 Key findings

**The Delegated Officer has reviewed the information regarding leaks, spills, overflows or containment failures of hazardous liquids from tanks and transfer infrastructure impacts from the premises and has found:**

Licence Holder infrastructure and management controls are suitable to minimise the risk of leaks, spills, overflows or containment failures of hazardous liquids from tanks and transfer infrastructure and may be conditioned as regulatory controls in the licence subject to the risk assessment outcomes.

### 9.7.7 Consequence

Based upon any leaks, spills, overflows or containment failures being directed to bunded areas with sumps and oil water separators designed to filter for hydrocarbons, the Delegated Officer has determined that the impact of leaks, spills, overflows or containment failures of

hazardous liquids on land, soils and groundwater will have a minimal on-site impact. Therefore, the Delegated Officer considers the consequence to be **Slight**.

### 9.7.8 Likelihood of Risk Event

Groundwater at the premises is 1 to 6 mbgl with all hazardous liquids stored in tanks within bunded areas that contain sumps and oil water separators. Transfers of hazardous liquids are conducted on hardstand areas with potentially contaminated stormwater being directed to a large sump. The Delegated Officer has determined that the likelihood of impacts from leaks, spills, overflows or containment failure of hazardous liquids will probably not occur in most circumstances. Therefore, the Delegated Officer considers the likelihood to be **Unlikely**.

### 9.7.9 Overall rating of release of hazardous liquids from tanks and transfer infrastructure

The Delegated Officer has compared the consequence and likelihood ratings described above with the risk rating matrix (Table 15) and determined that the overall risk of leaks, spills, overflows or containment failure of hazardous liquids impacting on land, soils and groundwater is **Low**.

## 9.8 Risk Assessment – Overflow or containment failure of sumps and lined ponds containing process wastewater

### 9.8.1 Description of Risk Event

Failure of containment of process wastewater in sumps and lined ponds from overtopping (sumps and ponds) or failure of liner of ponds causing land, soil and groundwater contamination affecting ecosystem health.

### 9.8.2 Identification and general characterisation of emission

Process wastewater that is produced through initial ULO filtration and post-treatment processes is stored in various sumps located near the tank farm south and within the general process shed (see Site Plans: Stormwater and Process Water infrastructure). The process wastewater then goes through an oil water separator before being directed to one of three wastewater storage ponds. The wastewater in ponds 2 and 3 are agitated with sprinklers with wastewater pond 3 also being heated to increase evaporation. Any excess wastewater is removed off site via trucks to a licensed composting facility for reuse.

The composition of the process wastewater is not expected to change as part of the upgrade; however, the volume of process wastewater is expected to double.

The wastewater is classified as L150: Industrial wash water contaminated with a controlled waste under the Controlled Waste Category List (DER, April 2015).

There is potential for impacts to land, soil and groundwater if the sumps or ponds overtop or liners in the ponds fail.

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

Contaminated waste containing hydrocarbons from overtopping of sumps or ponds or failure of the liners of the ponds could lead to contamination of land, soil and groundwater.

### 9.8.4 Criteria for assessment

General provisions of the EP Act make it an offence to cause or allow pollution. Additionally, it is an offence to discharge hydrocarbons into the environment under regulation 3 of the UDR.

### 9.8.5 Licence Holder controls

This assessment has reviewed the controls set out in Table 24 below.

**Table 24: Licence Holder’s controls for overflow or containment failure of sumps and lined ponds containing process wastewater**

Control	Description
Infrastructure	<p>Sumps to initially contain process wastewater.</p> <p>Numerous oil water separators treat process wastewater by a physio chemical process to remove as much residual oil and hydrocarbon as possible prior to directing the process wastewater to one of the three wastewater storage ponds.</p> <p>All three wastewater storage ponds are HDPE double lined.</p> <p>The following infrastructure is used in the wastewater storage ponds to aid in evaporation:</p> <ul style="list-style-type: none"> <li>• Sprinklers (to agitate the wastewater) in wastewater ponds 2 and 3; and</li> <li>• Water heater to heat the wastewater in storage pond 3.</li> </ul>
Management	<p>Excess process wastewater will increase with additional volume of ULO processed. The number of trucks removing excess process wastewater off site will increase from 3 to 5 per week (as required).</p> <p>Regular maintenance of the wastewater storage ponds.</p> <p>Oil water separator is checked and maintained regularly by an external contractor to ensure functionality.</p>

### 9.8.6 Consequence

Based upon process wastewater being directed to sumps and then directed through an oil water separator to filter hydrocarbons, the wastewater ponds are HDPE double lined, the depth to groundwater at the premises is 1 to 6 mbgl, the Delegated Officer has determined that the impact of overflows or containment failure of sumps and lined ponds containing process wastewater on land, soils and groundwater will have mid level onsite impacts. Therefore, the Delegated Officer considers the consequence to be **Moderate**.

### 9.8.7 Likelihood of Risk Event

Groundwater monitoring that has been conducted at the premises (see section 6.1) potentially indicates that the wastewater pond liners may be leaking. Therefore, the Delegated Officer has determined that the likelihood of impacts from overflow or containment failure of process wastewater is **Likely**.

### 9.8.8 Overall rating of release of process water from sumps and lined ponds

The Delegated Officer has compared the consequence and likelihood ratings described above with the risk rating matrix (Table 15) and determined that the overall risk of overflow or containment failure of sumps and lined ponds containing process wastewater impacting on land, soils and groundwater is **High**.

## 9.9 Risk Assessment – Contaminated and treated stormwater stored in sumps and infiltration pond – overtopping and infiltration to groundwater

### 9.9.1 Description of Risk Event

Failure of containment of contaminated stormwater containing hydrocarbons stored in sumps and failure of treatment system (oil separators) to adequately remove hydrocarbons from contaminated stormwater discharged to the stormwater infiltration pond and irrigation area, causing land, soil and groundwater contamination affecting ecosystem health.

### 9.9.2 Identification and general characterisation of emission

Contaminated stormwater containing hydrocarbons (from minor spills and uncontained spills (outside of bunded areas) is contained in various small sumps throughout the premises and a larger (approximately 20 m x 10 m x 2.3 m deep) concrete sump located on the southern boundary of the premises. Vehicles tracking solid waste in/out of the main processing shed (where solid waste is processed) also have the potential to contaminate stormwater with hydrocarbons.

Treated stormwater (that has been treated with an oil water separator) is directed to an approximately 48 m x 8 m x 1.3 m deep stormwater infiltration pond located in the southwest corner of the premises.

There is potential for impacts to land, soil and groundwater if the sumps overtop or leak with untreated wastewater or the oil water separators fail causing untreated stormwater to enter the stormwater infiltration pond.

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

Hydrocarbons from stormwater contaminated by spills or vehicles tracking solid waste could lead to contamination of land, soil and groundwater by overtopping or failure of sumps or failure of oil water separators.

### 9.9.4 Criteria for assessment

General provisions of the EP Act make it an offence to cause or allow pollution. Additionally it is an offence to discharge hydrocarbons into the environment under regulation 3 of the UDR.

The Licence Holder has taken a sample of treated stormwater on 10 August 2017 and analysed the sample for a variety of parameters. The results are provided in Table 25 below.

**Table 25: Treated stormwater results compared to guidelines and results from background monitoring bore (MB08A)**

Parameter	Units	ANZECC guidelines <sup>1</sup>	Background reference – MB08A (see section 6.1)	Treated stormwater <sup>2</sup>
TPH C6-9 and C10-14	mg/L		0.02	<0.02
TPH C15-28, C29-36 and >36	mg/L			<0.04
TRH C6-9 and C10-14	mg/L			<0.02
TRH C15-28, C29-36 and C>36	mg/L			<0.04
PAH	µg/L	16 <sup>3</sup>	0.5	<0.1
Arsenic	mg/L	0.024	0.002	<0.001
Cadmium	mg/L	0.0002		<0.002
Chromium	mg/L	0.001	0.002	<0.01
Copper	mg/L	0.0014		<0.01
Nickel	mg/L	0.011	0.001	<0.01
Lead	mg/L	0.0034		<0.01
Zinc	mg/L	0.008	0.009	0.03
Total Nitrogen	mg/L	1.2		0.7
Total Phosphorus	mg/L	0.065		0.4
NO <sub>x</sub> -N	mg/L	0.15		<0.01



Parameter	Units	ANZECC guidelines <sup>1</sup>	Background reference – MB08A (see section 6.1)	Treated stormwater <sup>2</sup>
pH	pH units	6.5 – 8.0	6.54	6.9
Total Dissolved Solids	mg/L			96

1 – Freshwater trigger value for slightly – moderately disturbed ecosystems

2 – Where value is <, equivalent to limit of reporting

3 – Guideline for PAH - naphthalene

### 9.9.5 Licence Holder controls

This assessment has reviewed the controls set out in Table 26 below.

**Table 26: Licence Holder’s controls for contaminated and treated stormwater stored in sumps and infiltration pond – overtopping and infiltration to groundwater**

Controls	Description
Infrastructure	<p>Collection of potentially contaminated and contaminated stormwater via PVC pipe and/or concrete lined open drains in the southern portion of the site.</p> <p>Hardstand areas (concrete/bitumen) (including between main shed and general process shed, truck loading and unloading bay, and carpark) direct stormwater to concrete lined open drains which direct the stormwater to the large concrete sump.</p> <p>Concrete sump (20 m x 10 m x 2.3 m deep) to capture untreated stormwater.</p> <p>Two oil water separators to treat potentially contaminated stormwater. (Untreated stormwater is treated by one of the two oil water separators.)</p> <p>Stormwater infiltration pond (48 m x 8 m x 1.3 m deep) for the storage / discharge of treated stormwater.</p>
Management	<p>Oil water separators are checked and maintained regularly by an external contractor to ensure functionality.</p> <p>The oil water separators will continue to be operated and maintained to accommodate volumes of stormwater generated by the premises and potentially contaminated by the operations.</p> <p>Potentially contaminated stormwater is pumped automatically from the concrete sump to the stormwater infiltration pond via an oil and water separator.</p> <p>Excess treated stormwater is generally pumped to Lot 8 between June and August to prevent overtopping of the stormwater infiltration pond (see section 9.10).</p>

### 9.9.6 Key findings

**The Delegated Officer has reviewed the information regarding overtopping and infiltration to groundwater of contaminated and treated stormwater stored in sumps and the infiltration pond impacts and has found:**

1. Licence Holder infrastructure and management controls may be conditioned as regulatory controls in the revised licence subject to the risk assessment outcomes.
2. The Licence Holder has not proposed any sampling prior to discharge of the treated stormwater to the infiltration pond. Additional controls may be included in the revised licence subject to risk assessment outcomes.

### 9.9.7 Consequence

Based upon contaminated and treated stormwater being directed to a large, impervious concrete sump that is designed to filter hydrocarbons (through oil water separators), the depth to groundwater at the premises is 1 to 6 mbgl, the Delegated Officer has determined that the impact of contaminated and treated stormwater on land, soils and groundwater will have low level on-site impact. Therefore, the Delegated Officer considers the consequence to be **Minor**.

### 9.9.8 Likelihood of Risk Event

Groundwater at the premises is 1 to 6 mbgl and the design of the operational area is such that all potentially contaminated stormwater is directed to a large, concrete sump. The potentially contaminated stormwater is then directed through one of two oil water separators before being discharged to a stormwater infiltration pond; however, no sampling is conducted after the oil water separators and prior to the treated stormwater being directed to the stormwater infiltration pond. Therefore, the Delegated Officer has determined that the likelihood of impacts from overtopping and infiltration to groundwater of contaminated and treated stormwater on land, soils and groundwater could occur at some time. Therefore, the Delegated Officer considers the likelihood to be **Possible**.

### 9.9.9 Overall rating of release of contaminated stormwater and infiltration of treated stormwater

The Delegated Officer has compared the consequence and likelihood ratings described above with the risk rating matrix (Table 15) and determined that the overall risk of contaminated and treated stormwater on land, soils and groundwater is **Medium**.

## 9.10 Risk Assessment – Irrigation of treated stormwater

### 9.10.1 Description of Risk Event

Discharge of treated stormwater, potentially containing hydrocarbons, to land causing surface water, soil and groundwater contamination affecting ecosystem health.

### 9.10.2 Identification and general characterisation of emission

Contaminated and potentially contaminated stormwater is directed to the large concrete sump at the southern boundary of the premises. The contaminated stormwater is then treated via one of two oil water separators and directed to a stormwater infiltration drain (see section 9.9). If the stormwater infiltration drain is predicted to overtop the treated stormwater is pumped using a portable generator and temporary hose to Lot 8 on Diagram 53241, west of the operational area. The Licence Holder has advised that treated stormwater is generally pumped to Lot 8 between June and August. The amount of water discharged is not currently monitored; however, the Licence Holder has estimated that approximately 8,964 kL of treated stormwater is pumped to Lot 8 on an annual basis. Section 9.9.4 shows the results of a treated stormwater sample.

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

The discharge of excessive stormwater (treated or untreated) to land through irrigation has the potential to contaminate surrounding land and adversely impact upon surface water, soil and groundwater.

There is approximately 1 – 6 m separation distance between the irrigation area and groundwater and the Ferguson River is located approximately 290 m south of the irrigation area.

The Application describes Lot 8 as historically been used for agricultural purposes (including

cattle grazing) and containing *Agonis flexuosa* woodland over exotic grasses, with occasional *Xylomelum accidentale* and is generally degraded to completely degraded.

Advice from DBCA; however, described vegetation located on Lot 8 as contributing to a core regional ecological linkage and containing the Southern River vegetation complex with the vegetation also supporting the Western Ringtail Possum and black cockatoo habitat. See section 5.3.2 for more details.

#### 9.10.4 Criteria for assessment

General provisions of the EP Act make it an offence to cause or allow pollution. Additionally it is an offence to discharge hydrocarbons into the environment under regulation 3 of the UDR

#### 9.10.5 Licence Holder controls

This assessment has reviewed the controls set out in Table 27 below.

**Table 27: Licence Holder’s controls for irrigation of treated stormwater**

Control	Description
Infrastructure	Two oil water separators to treat potentially contaminated stormwater. (Untreated stormwater is treated by one of the two oil water separators.)  Excess treated stormwater is manually pumped from the stormwater infiltration pond to Lot 8 using a portable generator and temporary hose.
Management	Oil water separators are checked and maintained regularly by an external contractor to ensure functionality.  The oil water separators will continue to be operated and maintained to accommodate volumes of stormwater generated by the operations.  Excess treated stormwater is generally pumped to Lot 8 between June and August, with approximately 9000kL/per year.  Lot 8 is visually inspected for ponding and water runoff when treated stormwater is pumped from the stormwater infiltration pond.

#### 9.10.6 Consequence

Based on the treated stormwater quality, time of year irrigation usually occurs and quantity irrigated, the Delegated Officer has determined that the irrigation of treated stormwater could result in low level onsite impacts to land, soil and groundwater. Therefore, the Delegated Officer considers the consequence to be **Minor**.

#### 9.10.7 Likelihood of Risk Event

Based on the results of the treated stormwater sample, groundwater at the premises is 1 to 6 mbgl, the potential volume of treated stormwater to be irrigated, and no sampling is conducted after the oil water separators and prior to the treated stormwater being irrigated, the Delegated Officer has determined that the likelihood of impacts from irrigation of treated stormwater on land, soils and groundwater could occur at some time. Therefore, the Delegated Officer considers the likelihood to be **Possible**.

#### 9.10.8 Overall rating of irrigation of treated stormwater

The Delegated Officer has compared the consequence and likelihood ratings described above with the risk rating matrix (Table 15) and determined that the overall risk of contaminated and treated stormwater on land, soils and groundwater is **Medium**.

## 9.11 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 28 below. Controls are described further in section 10.

**Table 28: Risk assessment summary**

	Description of Risk Event			Licence Holder controls	Risk rating	Acceptability with controls (conditions on instrument)
	Emission	Source	Pathway/ Receptor (Impact)			
1.	Fugitive odour	solid waste delivery and processing Transfer and storage of ULO and products Storage of sludge and process wastewater	Air/wind dispersion  Rural residential premises approximately 160 m south, 225 m south west and 320 m south of the premises boundary.	Infrastructure (enclosed pipe system, carbon pod filtration and thermal oxidiser) and Management (monitoring system).	Minor consequence Possible <b>Medium risk</b>	Acceptable, subject to applicant controls conditioned
2.	Point source stack emissions	Main stack	Air/wind dispersion  Rural residential premises approximately 160 m south, 225 m south west and 320 m south of the premises boundary.	Infrastructure (thermal oxidiser), proposed infrastructure (increased main stack diameter) and Management (maintenance and regular inspections).	<b>Normal operations:</b> Minor consequence Unlikely <b>Medium risk</b>  <b>Abnormal operations:</b> Moderate consequence Possible <b>Medium risk</b>	Acceptable, subject to applicant controls conditioned
3.	Point source odour impact	Six stacks (pre-treatment heater, NMP dowtherm heater, steam boiler, oil heater, water heater and	Air/wind dispersion  Rural residential premises approximately 160 m south,	Infrastructure (thermal oxidiser), proposed infrastructure (increased main stack height and diameter) and Management	<b>Normal operations:</b> Slight consequence Unlikely <b>Low risk</b>	Acceptable, subject to applicant controls conditioned

	Description of Risk Event			Licence Holder controls	Risk rating	Acceptability with controls (conditions on instrument)
	Emission	Source	Pathway/ Receptor (Impact)			
		main stack)	225 m south west and 320 m south of the premises boundary.	(maintenance and regular inspections).	<b>Abnormal operations:</b> Minor consequence Possible <b>Medium risk</b>	Acceptable, subject to applicant controls conditioned
4.	Leaks, spills, overflows or containment failures of hazardous liquids	Tanks and transfer infrastructure for hazardous liquids	Direct discharge to land or surface water  Contamination of soil and infiltration to groundwater	Infrastructure (bundling and storage in accordance with dangerous goods licence) and Management (regular maintenance and inspections, monitoring system and spill management).	Slight consequence Unlikely <b>Low risk</b>	Acceptable, subject to applicant controls conditioned
5.	Overflow or containment failure of sumps and lined ponds containing process wastewater	Storage of process wastewater in sumps and lined ponds	Direct discharge to land or surface water  Contamination of soil and infiltration to groundwater	Infrastructure (oil water separators, double lined ponds, sprinklers and heater) and Management (increased number of truck movements to remove excess wastewater, regular maintenance and inspections).	Moderate consequence Likely <b>High risk</b>	Risk event may be tolerated and subject to Licence Holder controls and multiple regulatory controls
6.	Contaminated and treated stormwater stored in sumps and infiltration pond	Storage of contaminated and treated stormwater in sumps and infiltration pond	Direct discharge to land or surface water  Contamination of soil and infiltration to groundwater	Infrastructure (PVC pipe and open drains, hardstand, concrete sump, oil water separators) and Management (regular maintenance and inspections)	Minor consequence Possible <b>Medium risk</b>	Acceptable, subject to applicant controls conditioned
7.	Irrigation of treated stormwater	Irrigation of treated stormwater to land	Direct discharge to land or surface water  Contamination of soil and infiltration to groundwater	Infrastructure (oil water separators) and Management (regular maintenance and inspections).	Minor consequence Possible <b>Medium risk</b>	Acceptable, subject to applicant controls conditioned

## 10. Regulatory controls

A summary of regulatory controls determined to be appropriate for the Risk Event is set out in Table 29. The risks are set out in the assessment in section 9 and the controls are detailed in this section. DWER will determine controls having regard to the adequacy of controls proposed by the Licence Holder. The conditions of the Revised Licence will be set to give effect to the determined regulatory controls.

**Table 29: Summary of regulatory controls to be applied**

		Controls (references are to sections below, setting out details of controls)				
		10.1.1, 10.1.2, 10.1.3 and 10.1.4 Infrastructure and equipment	10.1.5 and 10.1.6 Specified actions	10.1.7, 10.1.8, and 10.1.9 Monitoring requirements	10.1.10 Monitoring reports	10.1.11 Record keeping
Risk Items (see section 9.11)	Fugitive odour	●	●			●
	Point source stack emissions	●		●	●	●
	Point source odour impact	●				●
	Leaks, spills, overflows or containment failures of hazardous liquids	●	●	●	●	●
	Overflow or containment failure of sumps and lined ponds containing process wastewater	●	●	●	●	●
	Contaminated and treated stormwater stored in sumps and infiltration pond	●	●	●	●	●
	Irrigation of treated stormwater	●	●	●	●	●

### 10.1 Revised Licence controls

#### 10.1.1 Proposed Infrastructure and equipment

The infrastructure and equipment in Table 30 below has been proposed by the Licence Holder to be installed. See sections 2 and 4.1.

**Table 30: Proposed infrastructure and equipment**

Location	Infrastructure / Equipment
<b>Phase 1</b>	
General process shed	Installation of two-staged forced circulation evaporator Installation of new main process heater Extension of the concrete pad Thermal oxidiser control system will be automated as part of the main plant control systems Increase diameter of main stack (above the process heater) to 600 mm and height of at least 23 m agl.
<b>Phase 2</b>	
General process shed	Installation of two new evaporator units (short path distillation units) Decommissioning of the Thin Film Evaporator and Front End Distillation Plant

### 10.1.2 Fugitive and point source odour and point source stack emissions management infrastructure and equipment

The following infrastructure and equipment should be maintained and operated onsite for fugitive and point source odour and point source stack emissions management. The requirements in Table 31 are derived from Licence Holder controls as described in sections 9.4, 9.5 and 9.6.

**Table 31: Fugitive and point source odour and point source stack emissions infrastructure and management requirements**

Site infrastructure and equipment	Operational requirements
<b>Fugitive odour and point source stack emissions management</b>	
Waste oil recycling	(a) ULO is transferred from the collection tanks to the waste oil storage tank(s) via a closed pipe system within the truck loading bay. (b) Closed pipe system to direct gases from the main tank farm (storage of ULO) and recycling waste oil processes to the thermal oxidiser. (c) Carbon pod filtration system (or similar) on individual storage tanks not connected to the closed pipe system. (d) Other oil products and containers (not stored in the tanks) are stored as sealed containers within the truck unloading/loading bay of the oil drum and waste DG storage area.
Solid waste delivery and processing	(e) Solid waste is delivered and stored in the main process shed or Oil Drum and Waste DG Storage Area (f) Solid waste processing is conducted within the main process shed.
Wastewater	(g) All three wastewater lined ponds have perimeter fences with shade cloth.

Site infrastructure and equipment	Operational requirements
<b>Fugitive odour and point source stack emissions management</b>	
storage ponds	
<b>Point source odour and Stack emissions management</b>	
Waste oil recycling	<p>(h) Combusted air (from the thermal oxidiser) is directed to the main process heater where the resultant gases are released to atmosphere through the main stack which is at least 23 m agl and with an internal diameter of at least 300 mm.</p> <p>(i) Pre-treatment heater, NMP Dowtherm heater, steam boiler and chainbar oil heater operated to manufacturer specifications.</p>
Wastewater storage ponds	(j) Water heater operated to manufacturer specifications.

**Grounds:** The approved infrastructure and equipment will suitably minimise the risk of fugitive and point source odour and point source stack emissions entering the environment.

### 10.1.3 Leaks, spills, overflows or containment failure of hazardous liquids and process wastewater

The following environmental controls, infrastructure and equipment should be maintained and operated onsite for leaks, spills and overflows of hazardous liquids and process wastewater management. The requirements in Table 32 are derived from Licence Holder controls as described in sections 9.7 and 9.9.

**Table 32: Leaks and spills of hazardous liquids and process wastewater infrastructure and management requirements**

Infrastructure	Operational requirements
<b>Leaks, spills, overflows or containment failure of hazardous liquids</b>	
Whole of premises	<p>(a) Bunding around areas associated with storage and transfer of dangerous goods, hazardous materials or hydrocarbons including the main tank farm, tank farm south, tank farm shed and truck unloading/loading bay with the following requirements:</p> <p>(i) Bunding is in accordance with AS1940-2004 and DG licence.</p> <p>(b) Hydrocarbon containing material will be stored in bunded areas or double bunded tanks (in accordance with AS 1940-2004).</p>
<b>Leaks, spills, overflows or containment failure of hazardous liquids and process wastewater</b>	
Whole of premises	(c) Oil water separators will be operated and maintained to manufacturer specifications.
<b>Overflow or containment failure of process wastewater</b>	
Wastewater storage ponds	<p>(d) Sumps to initially contain process wastewater.</p> <p>(e) Three double HDPE lined wastewater storage ponds.</p>



Infrastructure	Operational requirements
<b>Leaks, spills, overflows or containment failure of hazardous liquids</b>	
	(f) Sprinklers (to aid in evaporation of the wastewater) in wastewater ponds 2 and 3.
	(g) Wastewater in wastewater pond 3 is heated to aid in evaporation.

**Grounds:** The approved infrastructure and equipment will suitably minimise the risk of leaks, spills and overflows of hazardous liquids and process wastewater entering the environment.

#### 10.1.4 Contaminated and treated stormwater infrastructure and management

The following infrastructure and equipment should be maintained and operated onsite for contaminated, potentially contaminated and treated stormwater management. The requirements in Table 33 are derived from Licence Holder controls as described in sections 9.9 and 9.10.

**Table 33: Contaminated and treated stormwater infrastructure and management requirements**

Infrastructure	Operational requirements
Whole of premises	<p>(a) Collection of potentially contaminated and contaminated stormwater via PVC pipe and/or concrete lined open drains.</p> <p>(b) Hardstand areas (concrete/bitumen) (including between main shed and general process shed, truck loading/unloading bay, and carpark) direct stormwater to concrete lined open drains and then to the large concrete sump.</p> <p>(c) Large concrete sump (20 m x 10 m x 2.3 m deep) to capture untreated stormwater.</p> <p>(d) Two oil water separators operated and maintained to manufacturer specifications with at least one of the two oil water separators used to treat potentially contaminated stormwater.</p> <p>(e) Stormwater infiltration pond (48 m x 8 m x 1.3 m deep) for the storage / discharge of treated stormwater.</p>

**Grounds:** The approved infrastructure and equipment will suitably minimise the risk of potentially contaminated stormwater entering the environment.

#### 10.1.5 Specified actions

The following actions should be undertaken for the management of fugitive odour emissions, point source stack emissions, leaks, spills or containment failures of hazardous liquids and process wastewater and management of contaminated and treated stormwater:

- Sludge is removed offsite on a regular basis;
- Spills or leaks of liquids containing hydrocarbons to be removed immediately and disposed of.
- Freeboard markers installed and a minimum of 300 mm freeboard is maintained in the process wastewater storage ponds 1, 2 and 3 and stormwater infiltration pond at all times.
- Excess process wastewater is removed from the premises as required.

- Excess treated stormwater from the stormwater infiltration pond is generally pumped to Lot 8 for irrigation between June and August each year;
- Maintain an irrigation pump to calculate, using pump hours, cumulative volumes of wastewater discharged to the irrigation area;
- System cut off drains installed around the irrigation area;
- No irrigation must occur on land that is waterlogged, on native vegetation or when rainfall is imminent or immediately after a rainfall event; and
- The thermal oxidiser is operational prior to start-up of the waste oil recycling process and operated continuously whilst waste oil is being processed.

**Note:** The requirements above are derived from Licence Holder controls as described in sections 9.4, 9.7, 9.8, 9.9 and 9.10. The 300 mm freeboard is an existing licence condition to minimise the risk of overflow on the process wastewater ponds. A freeboard of 300 mm is also required on the Stormwater Infiltration Pond to minimise the risk of overflow. To minimise risk of contamination of surface water or damage of native vegetation, irrigation should not occur on waterlogged land, when rainfall is imminent or immediately after rainfall, and cut off drains should be installed around the irrigation area. The requirement to ensure the thermal oxidiser is operational prior to waste oil recycling is needed to minimise the potential risk of point source stack and odour emissions causing amenity and health impacts on nearby residential receptors.

**Grounds:** Operations include fugitive odour and point source stack emissions where there is a potential risk to the health and amenity of nearby residential receptors if not managed appropriately. The operations also include the storage of hazardous liquids, process wastewater, and contaminated stormwater where there is potential risk to land, soil, native vegetation and groundwater affecting ecosystem health if not managed appropriately. The Delegated Officer has included operational requirements for the irrigation of treated stormwater to minimise the risk surface water runoff or damage to native vegetation. The Delegated Officer has included operational requirements for the thermal oxidiser to ensure the gas combustion system is operational prior to the recycling of waste oil to minimise the risk of particulate matter, VOC, SO<sub>2</sub>, CO<sub>2</sub>, NO<sub>x</sub> emissions.

### 10.1.6 Specified actions – process wastewater ponds

The Licence Holder will be required to investigate the integrity of the HDPE liners in all three wastewater storage ponds. This will be done through an overnight water balance test and potentially electrical testing of the liner integrity if the overnight water balance test is found not to be satisfactory.

**Grounds:** The Licence Holder has monitored groundwater quality in the ten bores (MB01 – MB10) on the premises since at least 2014. The average results of groundwater monitoring data from 2014-2017 has been used assess levels of groundwater contamination in bores across the premises (see section 6.1 and Figure 4) using MB08A as a background reference bore. Figure 4 shows that the highest levels of contaminants were identified in groundwater bores MB04 and MB09, with the next highest in MB03 and MB05. These bores are all down hydraulic gradient or immediately adjacent to the HDPE double lined process wastewater storage ponds. The Delegated Officer considers that the investigation into the integrity of the HDPE liners of the process wastewater ponds is required as the groundwater quality monitoring indicates groundwater contamination has or is occurring with the source potentially being from a failed HDPE liner.

### 10.1.7 Monitoring requirements – stack emissions

Stack emissions from main stack, during normal operation, will continue to be monitored for

particulates, VOC, SO<sub>x</sub> and NO<sub>x</sub> on an annual basis.

**Grounds:** The Existing Licence requires the Licence Holder to monitor stack emissions on an annual basis (see section 6.2). The Licence Holder has provided air emissions modelling for the upgrade to the premises (see section 9.5). The Delegated Officer considers that the monitoring of stack emissions is required to continue on an annual basis to ensure the waste oil recycling processes are being maintained and emissions minimised.

### 10.1.8 Monitoring requirements – groundwater bore monitoring

Groundwater quality monitoring for total recoverable hydrocarbons, arsenic, nickel, cadmium, lead, chromium, zinc, copper, PAH, SWL, TDS and pH will continue to be required in the Licence. The Licence Holder will be required to monitor the additional six existing groundwater monitoring bores located on the premises and include monitoring for iron and manganese. Previously all parameters with the exception of TDS, SWL and pH were required to be sampled annually. The Revised Licence will have TRH and SWL increased to quarterly.

**Grounds:** The Existing Licence requires the Licence Holder to monitor groundwater quality at groundwater monitoring bores MB01, MB02, MB03 and MB04. These bores are all located across the centre of the premises and do not enable a comparison to background groundwater quality as none of these bores are located up-hydraulic gradient of the operational area. Monitoring bores MB05 – MB10 are located around the outside of the operational area, both up and down hydraulic gradient. The Delegated Officer considers that the monitoring of groundwater quality at monitoring bores MB01 – MB04 and the additional groundwater monitoring bores, MB05 – MB10, is required to determine whether operations at the site are impacting on groundwater quality. Iron and Manganese will be added to the parameters to be monitored on an annual basis as groundwater monitoring results (see section 6.1) has shown elevated levels of these parameters.

The change from annual to quarterly monitoring of TRH and SWL is as a result of the elevated levels of hydrocarbons detected in some of the bores (see section 6.1) and to determine if this is as a result of a spill and/or ruptured liner.

### 10.1.9 Monitoring requirements – treated stormwater monitoring

Treated stormwater will be required to be monitored for TRH on a quarterly basis when there is treated stormwater present in the stormwater infiltration pond. A limit of 15 mg/L for TRH will be required for treated stormwater to be disposed of into the stormwater infiltration pond or the irrigation area.

**Grounds:** Potentially contaminated stormwater is stored in the large concrete sump located on the southern border of the premises. It is then treated through one of two oil water separators and discharged to a stormwater infiltration pond located in the southwest corner of the premises. Advice from DBCA (see sections 8.3 and 5.3.2) indicates that vegetation on Lot 8 (location of irrigation of treated stormwater) contributes to a core regional ecological linkage and contains vegetation that supports the western ringtail possum and black cockatoo habitat. Hydrocarbons that may be present in the treated stormwater could adversely affect this vegetation. WQPN 68 advises that a maximum of 15 mg/L of TRH should be discharged to the environment to minimise environmental impacts. The Licence Holder has not proposed any monitoring of the treated stormwater. The Delegated Officer considers the monitoring of treated stormwater and associated limit to be required to ensure the oil water separators are maintained in good working order and operated to minimise any environmental impact.

### 10.1.10 Monitoring reports

The Licence Holder will continue to be required to submit an annual environmental report that contains results of the monitoring data required by the licence.

**Grounds:** The Existing Licence requires the Licence Holder to submit an annual environmental report. The Delegated Officer considers the submission of an annual environmental report to continue to be required to monitor any trends or impacts the operation of the premises may have on the environment.

### 10.1.11 Record Keeping

The Licence Holder will be required to record the number and details of any complaints received.

**Grounds:** In the past two years, DWER has received 22 odour complaints of which Wren Oil was the suspected source (see section 5.4.3). Two incidents that occurred in 2015 were substantiated to be Wren Oil. The Delegated Officer considers the recording of the number and details of any complaints by the Licence Holder to be required due to the number of complaints received by DWER.

## 11. Determination of Revised Licence conditions

The conditions in the Revised Licence in Attachment 1 have been determined in accordance with the *Guidance Statement: Setting Conditions*.

The duration of the licence has not been extended through this amendment.

Table 34 provides a summary of the conditions to be applied to this licence.

**Table 34: Summary of conditions to be applied**

Condition Ref	Grounds
Emissions Condition 1	This condition is valid and is necessary to mitigate unreasonable emissions and to ensure compliance with the EP Act.
Proposed infrastructure and equipment Conditions 2, 3 and 4	These conditions are valid, risk based and contain appropriate controls.
Infrastructure and equipment Condition 5 and 6	This condition is valid, risk based and contains appropriate controls.
Waste Acceptance Condition 7	These conditions are valid, risk based and contain appropriate controls.
Treated Stormwater and Waste Storage and Disposal Conditions 8, 9, 10, 11, 12 and 13	These conditions are valid, risk based and necessary to monitor infrastructure performance.
Emissions to Air Monitoring and Reporting Conditions 14 and 15	These conditions are valid, risk based and necessary to monitor infrastructure performance.
Ambient groundwater quality monitoring Conditions 16, 17 and 18	These conditions are valid, risk based and necessary to monitor infrastructure performance.
Treated stormwater quality monitoring and limit Conditions 19 and 20	These conditions are valid, risk based and necessary to monitor infrastructure performance.
Record keeping Conditions 21, 22, 23 and 24	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 licence under the EP Act.

## 12. Licence Holder's comments

The Licence Holder was provided with the draft Decision Report and draft revised Licence on 20 October 2017. The Licence Holder provided comments on 20 November 2017 which are summarised, along with DWER's response in Appendix 3.

The Licence Holder was provided with the revised draft Decision Report and draft re-revised Licence

## 13. 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 visit by DWER officers on 27 July 2017.

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

**Caron Goodbourn**  
**A/Manager Licensing – Industry Regulation (Process Industries)**  
Delegated Officer  
under section 20 of the *Environmental Protection Act 1986*

## Appendix 1: Key documents

	Document title	In text ref	Availability
1.	Licence L6378/1987/14 Wren Oil	L6378/1987/14	accessed at <a href="http://www.der.wa.gov.au">www.der.wa.gov.au</a>
2.	Licence Amendment Application and supporting documentation		DWER records (A1409999)
3.	Updated supporting documentation for licence amendment application		DWER records (A1444052)
4.	Emerge Associates – Additional Information – Response to Department of Water and Environmental Regulation information request		DWER records (A1515693)
5.	Wren Oil, Picton, Air Quality Modelling New Main Stack, prepared for Emission Assessments by Air Assessments, July 2016. Appendix H of Updated Licence Amendment Application.	Air Assessments, 2016	DWER records (A1444052)
6.	Emerge Associates – Comments on Draft documents		DWER records (A1564934)
7.	Emerge Associates – Comments on revised draft documents		DWER records (A1584030)
8.	Advice on areas of conservation significance in the Preston Industrial Park, Bulletin 1282, March 2008, Environmental Protection Authority	Bulletin 1282	accessed at <a href="http://www.epa.wa.gov.au">www.epa.wa.gov.au</a>
9.	Response to referral of application from Department of Biodiversity, Conservation and Attractions – Parks and Wildlife Service, dated 8 August 2017		DWER records (A1500836)
10.	National Environmental Protection (Ambient Air Quality) Measure, as amended, prepared on 25 February 2016 taking into account amendments up to Variation 2015, prepared by the Department of the Environment	NEPM	Accessed at <a href="http://www.nepc.gov.au/nepms/ambient-air-quality">www.nepc.gov.au/nepms/ambient-air-quality</a>
11.	DWER <i>Guidance Statement on Regulatory Principles</i> , July 2015		accessed at <a href="http://www.der.wa.gov.au">www.der.wa.gov.au</a>
12.	DWER <i>Guidance Statement on Decision Making</i> , February 2017		

13.	DWER <i>Guidance Statement on Risk Assessments</i> , February 2017		
14.	DWER <i>Guidance Statement on Setting Conditions</i> , October 2015		
15.	DWER <i>Guidance Statement on Environmental Siting</i> , November 2016		
16.	DWER <i>Guidance Statement on Publication of Annual Audit Compliance Reports</i> , May 2016		
17.	DOW, October 2012. Leschenault Estuary water quality improvement plan, Department of Water, Perth.	DOW 2012	accessed at <a href="http://www.water.wa.gov.au">www.water.wa.gov.au</a>
18.	Controlled Waste Category List, Department of Environment Regulation, April 2015	DER, April 2015	accessed at <a href="http://www.der.wa.gov.au">www.der.wa.gov.au</a>
19.	Water Quality Protection Note 68 <i>Mechanical equipment wash down</i> , Department of Water, September 2013	WQPN 68	accessed at <a href="http://www.water.wa.gov.au">www.water.wa.gov.au</a>

## Appendix 2: Site Plans Premises Map

The red line depicts the Premises boundary.





# General Layout Plan

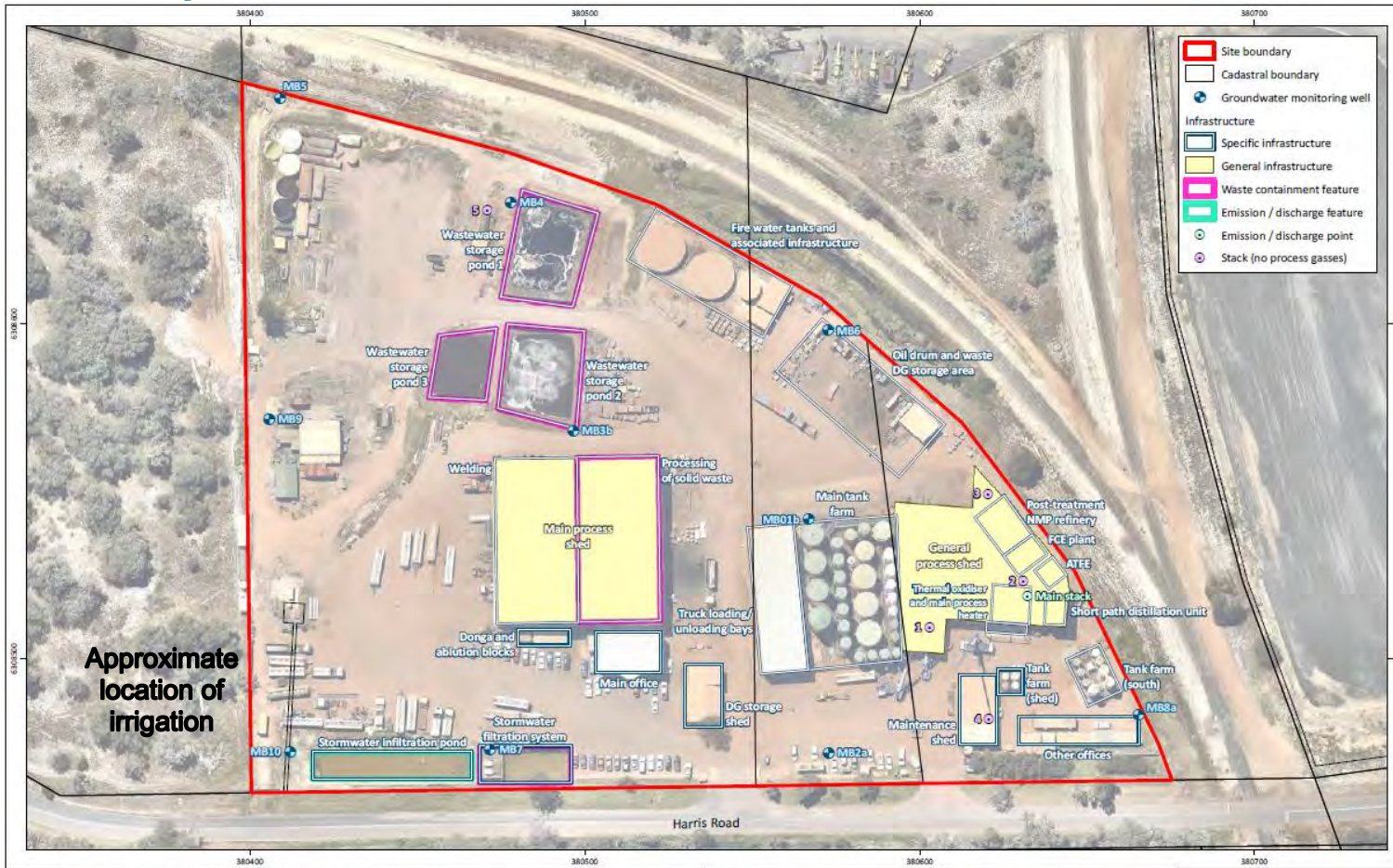
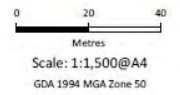


Figure 5: Site Infrastructure and Discharge Points

**Project:** Licence Amendment Supporting Information  
 Wren Oil Picton Facility (L6378/1987/14)  
**Client:** Romine Holdings Pty Ltd

**Plan Number:** EP16-073(01)-F06  
**Drawn:** KNM  
**Date:** 25/05/2017  
**Checked:** KK  
**Approved:** KK  
**Date:** 26/05/2017

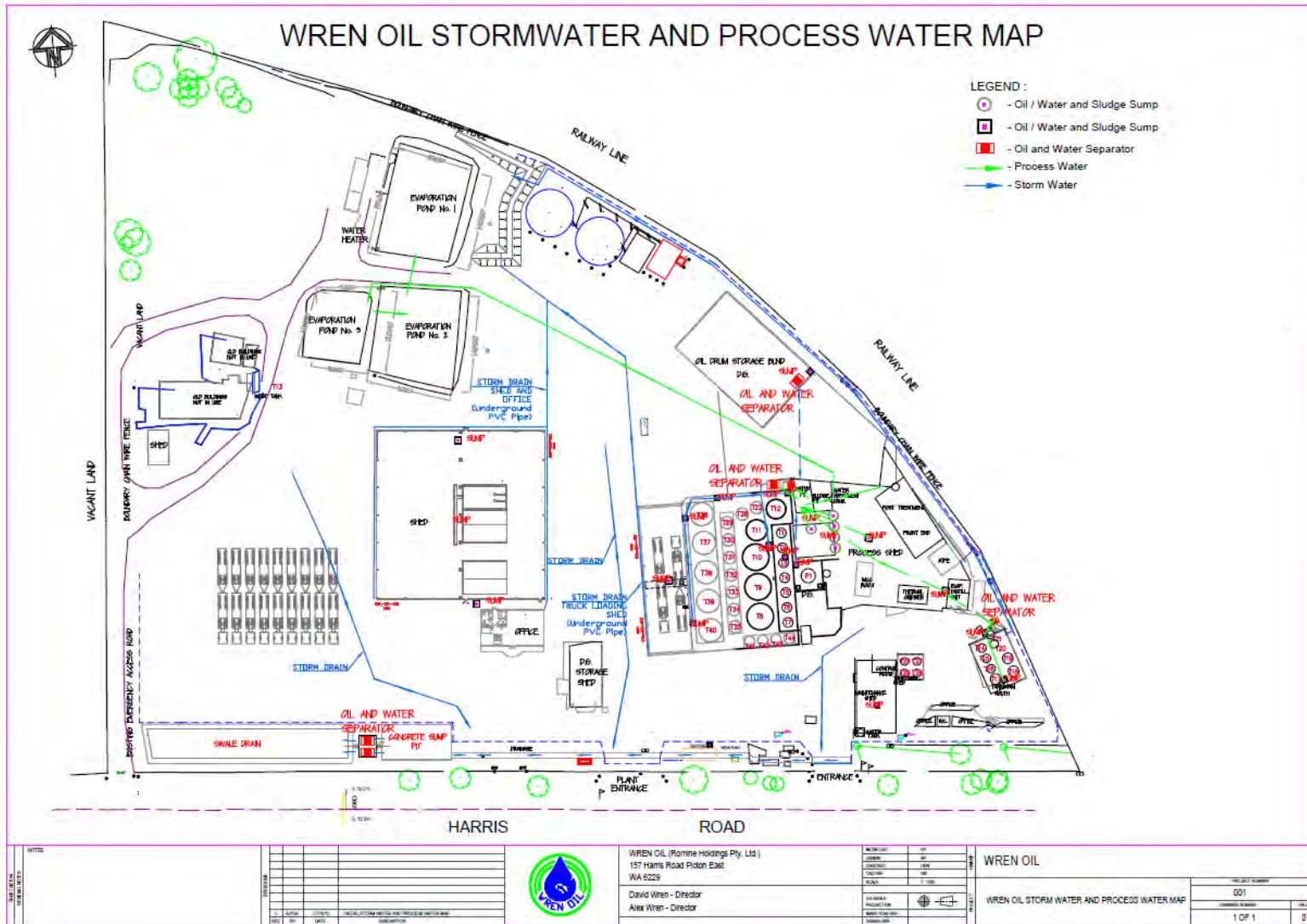


While Emerge Associates makes every attempt to ensure the accuracy and completeness of data, Emerge accepts no responsibility for externally sourced data used.

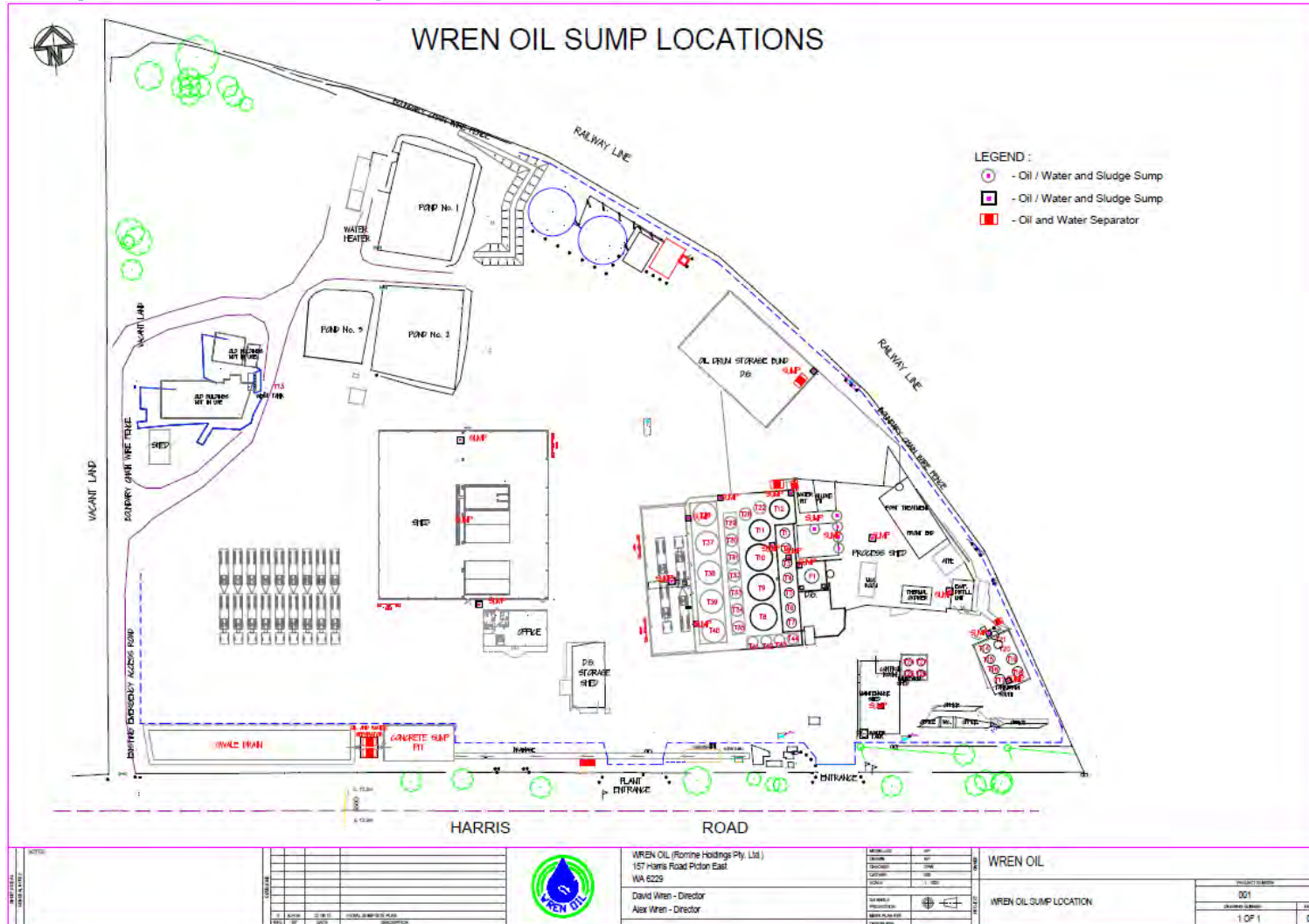
## Groundwater contours and location of monitoring bores



# Stormwater and Process water infrastructure



# Sumps and Oil water separators infrastructure



## Appendix 3: Summary of Licence Holder's comments on risk assessment and draft conditions

Summary of Licence Holder comment	DWER response
<b>Licence Holder comments on the draft Decision Report received 20 November 2017</b>	
Definition for AHD should refer to 'Australian Height Datum' and FCE should refer to 'forced circulation evaporator'.	Accepted - the Decision Report and Licence have been updated.
Request 'treated wastewater' to be referred to as 'treated stormwater' within the documents.	Accepted - the Decision Report and Licence have been updated.
<p>In regards to Section 5.3.2 Wren Oil would like it noted, based on information that has been historically submitted to DWER to support a clearing permit application in the area, the vegetation is in a 'degraded' to 'completely degraded' condition (due to historic clearing and grazing within the lot) and lacks continuity with the vegetation outside the lot boundaries. The dominant tree species was identified as <i>Agonis flexuosa</i>, however, Western Ringtail Possums were not identified as utilising the area (based on day and night surveys) and if do so, this is only likely to occur on an infrequent basis (only evidence of aged scats was found) (Eco Edge 2013). No black cockatoo habitat was identified as part of these previous investigations.</p> <p>In addition in regards to Section 5.1, the Section 16(e) advice prepared for the Preston Industrial Park by the Environmental Protection Authority (2008) did not identify the existing premises or the adjacent Lot 8 as an 'investigation area'. Investigation Areas were those areas identified to contain 'good' or better condition vegetation, which were further investigated for regional significance.</p>	The Delegated Officer has noted the Licence Holder's comments. No updates are required to this Decision Report or the Licence.
In regard to Table 10, Wren Oil would like it noted that the 'threatened / priority fauna' values identified, as per the information provided above, investigations have been undertaken previously (and submitted to DWER) which indicate that this area	The Delegated Officer has noted the Licence Holder's comments. No updates are required to this Decision Report or the Licence.

Summary of Licence Holder comment	DWER response
is unlikely to support either the Western Ringtail Possum or black cockatoos.	
Wastewater (from the oil recycling process) is directed to the each wastewater pond as required. The wastewater storage ponds are not filled in any specific order, apart from consideration of whichever pond has appropriate capacity at the time.	Accepted - relevant sections of the Decision Report updated.
There are multiple oil and water separators throughout the Premises which treat stormwater (not just the two at the end of the treatment process); therefore, the risk of 'hydrocarbons from stormwater contaminated by spills of vehicles tacking solid waste could lead to contamination of land, soil and groundwater' is considered low. Furthermore, with the recent implementation of concrete/bitumen hardstand to the majority of the site, the opportunity for 'potentially contaminated stormwater' to interact with land, soil or groundwater is significantly lower and would only occur if all oil and water separators (and sumps) throughout the premises failed.	Further information has been requested from the Licence Holder. See below for response.
With regard to 'infrastructure' and the description in Table 26 it should be noted that more than two oil and water separators treat potentially contaminated stormwater. Therefore, dot point should be amended to 'A minimum of two oil and water separators to treat potentially contaminated stormwater'.	Further information has been requested from the Licence Holder. See below for response.
The Licence Holder would like relevant sections of Table 26, Section 9.10.2 and Table 27 of the Decision Report updated to reflect that treated stormwater is generally pumped to Lot 8 during periods of high rainfall, when the stormwater infiltration pond is likely to overflow. This typically occurs between June and August when rainfall is highest and evaporation is lowest, but can also occur during other periods of high rainfall that are typically associated with strong low-pressure systems.	The Delegated Officer has considered the Licence Holder's comment regarding discharge of treated stormwater and the Decision Report and Licence have been updated accordingly.
<p>In regard to section 9.10.3, with regard to potential impacts it is worth noting that:</p> <ul style="list-style-type: none"> <li>The portion of Lot 8 irrigated with the treated stormwater is described found in an area identified to have Bassendean B1a soils (Department of Agriculture and Food) and is generally very permeable and well drained.</li> </ul>	The Delegated Officer has noted the Licence Holder's comments. No updates are required to this Decision Report or the Licence.

Summary of Licence Holder comment	DWER response
<p>Based on groundwater level monitoring associated with MB09 (the nearest bore to Lot 8), groundwater is likely to be 3 m or more below the natural soil surface. Therefore, waterlogging is unlikely to be a significant issue.</p> <ul style="list-style-type: none"> <li>• The treated stormwater is able to meet the relevant ANZECC guidelines for 'drinking water', for all parameters except phosphorus. There is no background data provided for phosphorus, so it is difficult to understand if phosphorus is greater than can be expected for the area (and from agricultural practices within the broader region).</li> <li>• Overall, the treated stormwater would be no different to typical surface water collected by the local road network, which typically discharges to nearby waterways without any treatment. Given the stormwater from within the Premises is treated (via multiple oil and water separators), any impact to vegetation would be slight to minor in consequence, particularly compared to stormwater generated from the local road network. No irrigated stormwater is expected to travel offsite.</li> </ul> <p>In addition, as per additional information for previous items, the vegetation within Lot 8 was not historically identified by the EPA as being regionally significant within the Section 16(e) advice prepared for the Preston Industrial Area (which the Premises forms part of).</p>	
<p>With regard to 'infrastructure' in Table 27:</p> <ul style="list-style-type: none"> <li>• A minimum of two oil and water separators treat potentially contaminated stormwater.</li> <li>• Excess treated stormwater is pumped from the stormwater infiltration pond to Lot 8 using a portable generator and temporary hose, based on a visual inspection of water levels.</li> </ul> <p>With regard to 'management' in Table 27:</p> <ul style="list-style-type: none"> <li>• Stormwater is generated from within the Premises which may or may not occur as a result of operations (ie stormwater would be generated</li> </ul>	<p>Further information on the oil and water separators has been requested from the Licence Holder. See below for response.</p> <p>The Delegated Officer has considered the Licence Holder comments and updated the Decision Report and Licence accordingly.</p>

Summary of Licence Holder comment	DWER response
<p>regardless of whether used oil recycling was occurring). Amend the second dot point to the following: <i>The oil and water separators will continue to be operated and maintained to accommodate volumes of stormwater generated by the Premises.</i></p> <ul style="list-style-type: none"> <li>• Wren Oil confirm that Lot 8 is visually inspected for ponding / water runoff when treated stormwater is pumped from the stormwater infiltration pond to Lot 8.</li> </ul>	
<p>In regard to Table 30:</p> <p>Phase 1 – General process shed</p> <ul style="list-style-type: none"> <li>• Thermal oxidiser control system will be automated as part of the main plant control systems. The control system for the thermal oxidiser is already in operation; however, is currently responded to manually when alarms sound etc.</li> </ul> <p>Phase 2 – General process shed</p> <p>No mention has been made of the equipment that will be decommissioned as part of the proposed upgrade to the Premises. The following equipment will be decommissioned as part of Phase 2:</p> <ul style="list-style-type: none"> <li>• Thin Film Evaporator</li> <li>• Front End Distillation Plant</li> </ul>	<p>Table 30 within the Decision Report and Table 3 within the Licence have been updated.</p>
<p>In regard to Table 31 of the Decision Report – solid waste processing: Amend (f) to the following: <i>Solid waste processing is conducted within the main shed.</i></p> <p>In regards to Table 4 of the Licence - Item (l) – solid waste is typically transported to the facility within containers, but may be stored in other areas of the site (such as the oil drum and waste DG storage area prior to processing. Amend wording to the following: <i>Solid waste processing to be conducted in the main process shed.</i></p>	<p>The Delegated Officer has considered the Licence Holder's comments and amended Table 31 of the Decision Report and Table 4 of the Licence to state that solid waste processing is conducted within the main process shed and that solid waste is delivered and stored in the main process shed or Oil Drum and Waste DG Storage Area.</p>
<p>In regard to Table 32 of the Decision Report: Items (f) and (g) are not necessary to</p>	<p>The Delegated Officer has considered the Licence</p>



Summary of Licence Holder comment	DWER response
<p>ensure appropriate management of the wastewater ponds. These are measures undertaken by Wren Oil to aid in increasing evaporation but if ceased would not impact the management of the process wastewater.</p> <p>In regards to Table 4 of the Licence: Item (o) – Remove item from table. Sprinklers may or may not be used to assist in the evaporation of process wastewater and is not required in order for management of process wastewater to occur as outlined.</p>	<p>Holder’s comments and considers that the sprinklers in wastewater ponds 2 and 3 and the heating of the wastewater in wastewater pond 3 contribute to the evaporation of the wastewater and therefore contribute to the management of the ponds not overtopping and will remain as conditions on the Licence.</p>
<p>In regard to section 10.1.5 of the Decision Report:</p> <ul style="list-style-type: none"> <li>• The dot point related to irrigation of treated stormwater be amended to the following: <i>Excess treated stormwater from stormwater infiltration pond is only pumped to Lot 8 for irrigation during periods of high rainfall, when the stormwater infiltration pond is likely to overflow.</i></li> <li>• The dot point related to the requirement to install a ‘system of cut off drains around the irrigation area’ be removed. The quality of the water that is irrigated within this portion of the site is similar to and/or better than surface water that is typically directed to natural areas/waterways from local road networks. Therefore, specific control or management of the treated stormwater seems excessive compared to the potential risk.</li> </ul> <p>In regard to the Licence: Table 4, Item (aa) – disagree with the requirement for this condition and request removal. The quality of water that is irrigated within this portion of the site is similar to and/or better than surface water that is typically directed to natural areas/waterways from local road networks. Therefore, specific control or management of the treated stormwater seems excessive compared to the potential risk. In addition, the vegetation within Lot 8 is in ‘degraded’ to ‘completely degraded’ condition based on previous work undertaken to support operations.</p> <p>If condition is to remain, request that wording be amended: <i>A system cut-off drains must be installed and maintained around the irrigation area to ensure that treated stormwater does not flow out of the irrigation area and access</i></p>	<p>The Decision Report has been amended to reflect that Lot 8 is generally irrigated between June and August each year.</p> <p>The Delegated Officer has included the requirement to install a system of cut off drains around the irrigation area to ensure that in the event that any runoff was to occur, the treated stormwater would be contained within the premises boundary. The Delegated Officer has amended the wording of the condition to refer to “treated stormwater” rather than “wastewater”.</p>

Summary of Licence Holder comment	DWER response
<p><i>native vegetation.</i></p> <ul style="list-style-type: none"> <li>The dot point related to irrigation be amended. The requirement to not irrigate when the land is waterlogged would address any concerns associated with irrigating during or immediately after a rainfall event.</li> </ul> <p>In regards to the Licence: Table 4, Item (cc) – Remove item (cc) as item (aa) would address any concerns associated with irrigating during or immediately after a rainfall event.</p>	<p>The Delegated Officer has considered the Licence Holder’s comments and considers that waterlogging may occur on Lot 8 when rainfall is not imminent or immediately after a rainfall event. Lot 8 may continue to be waterlogged for days or weeks after a rainfall event. Land can also become waterlogged with a rise in the groundwater table. The Delegated Officer, therefore, considers that this condition should remain.</p>
<b>Licence Holder comments on the draft licence</b>	
<p>Date of amendment: The date indicated is the same as the existing licence. Section 59(1)(k) enables the duration of the licence to be amended. Given this licence is intended to support ongoing operation of the facility, extending the duration to align with when the licence was issued seems reasonable. Can the date be updated to the current date? For example 15 November 2017 to 15 November 2027.</p>	<p>The duration of Licence L6378/1987/14 was extended on 29 April 2016 by Notice of Amendment from 11 September 2016 to 11 September 2026. The duration of the Licence will remain the same (12 September 2015 to 11 September 2026); however, the date of amendment will reflect when this licence amendment is granted. No changes are required to the Licence.</p>
<p>In regards to Table 2: Authorised Emissions, with regard to ‘emissions of treated wastewater to land’ only treated stormwater is discharged to land. Process wastewater is stored in HDPE-lined ponds, where it is evaporated, or is transported off site for disposal at appropriately licensed facilities. Recommend amending wording or provide separate discussions for process wastewater and treated stormwater. Treated stormwater is less of a risk to the surrounding environment than process wastewater.</p>	<p>Table 2 of the Licence has been updated to state emissions of “treated stormwater” to land rather than “wastewater”; as it is referring to the irrigation of treated stormwater on Lot 8 and not storage of wastewater in the wastewater storage ponds.</p>
<p>In regards to Table 3: Proposed infrastructure and equipment requirements: Clarify location of the increase in the main stack diameter: <i>Main stack diameter above the process heater increased to 600 mm with a height of at least 23 m agl.</i></p>	<p>Accepted - the Decision Report and Licence have been updated accordingly.</p>
<p>In condition 5: No infrastructure and equipment are listed within column 1 of Table</p>	<p>The column titles have been amended.</p>

Summary of Licence Holder comment	DWER response
<p>4. Instead, column 1 of table 4 appears to refer to the general stage of the waste oil recycling process undertaken by Wren Oil rather than 'site infrastructure and equipment'. Consider amending column title.</p>	
<p>In regards to Table 4: Infrastructure and Equipment: Column 2 – Operational requirements:</p> <p>Waste oil recycling</p> <ul style="list-style-type: none"> <li>• Item (e) – the (ii) 'front end distillation unit' and (iii) 'thin film evaporator' are being decommissioned as part of this licence amendment. Remove these two pieces of equipment from the equipment list.</li>   <li>• Item (i) – clarification on the meaning of 'oil product' is required. Does this refer to 'used oil' which is the material that is processed; or does it refer to the 'oil product' produced by the recycling process.</li>   <li>• Item (j) – to reduce potential odour from the waste oil recycling process, off gases are directed through the thermal oxidiser. Wren Oil choose to then direct the combusted gases through the process heater to recover heat/energy. This is not a requirement for pollution control, and instead is an innovation Wren Oil may or may not choose to continue to implement to improve energy efficiency in their process. Amend wording to the following: <i>Combusted air (from the thermal oxidiser) must be released to the atmosphere through the main stack which is at least 23 m agl.</i></li> </ul> <p>Irrigation area</p> <p>With regard to this item, in general Wren Oil are concerned that DWER have not understood that the surface water managed through the stormwater management system is very similar to surface water that would typically occur within local road</p>	<p>The words “to be decommissioned” have been added at the end of the front end distillation unit and thin film evaporator. As this equipment is currently still being operated at the premises until they are decommissioned in Phase 2, they will remain in Table 4.</p> <p>Definition of 'oil products' added to the Licence.</p> <p>The Delegated Officer agrees that combusted gases from the thermal oxidiser must be released to atmosphere through the main stack which is at least 23 m agl and it is not a pollution control requirement for the combusted gases to be directed to the main process heater. Wording in the Licence has been changed.</p> <p>The Delegated Officer has considered the risk of treated stormwater, potentially containing hydrocarbons, being discharged to land and potentially causing surface water, soil and groundwater contamination affecting ecosystem health in section</p>

Summary of Licence Holder comment	DWER response
<p>networks. However, given Wren Oil treat the water through multiple oil and water separators the surface water within the premises would be better quality than surface water runoff travelling through the local road network.</p> <ul style="list-style-type: none"> <li>Item (y) – the water managed through this process is treated stormwater, not wastewater. All stormwater from the facility passes through multiple oil and water separators (which are a recognised industry tool for reducing potential hydrocarbon impacts). Request wording to be amended as follows: <i>Maintain irrigation pump to calculate, using pump hours, cumulative hours of treated stormwater discharged to the irrigation area.</i></li> </ul> <p>Column 3 Site plan reference</p> <p>For each item where ‘in Schedule 1 – Maps’ is referenced amend to ‘in Schedule 1 – General Layout Map’. This is the most relevant map with regard to understanding the location of equipment.</p>	<p>9.10 of this document.</p> <p>The wording ‘treated wastewater’ has been changed to ‘treated stormwater’.</p> <p>There are numerous maps within Schedule 1: Maps, including Premises Map, Proposed Infrastructure and General Layout Plan. Column 3 of Table 4 in the Licence refers to “Schedule 1: Maps” as there may be more than one map relevant to the location of the equipment, infrastructure or operational area. No changes to the Licence are required.</p>
<p>In regards to Condition 7 and 14, can the wording be simplified?</p>	<p>This is standard condition wording and will remain on the Licence to ensure the conditions are unambiguous.</p>
<p>In regards to Table 6: Waste Management Specifications</p> <p>Column 1: Waste type – Amend ‘treated contaminated stormwater’ to ‘treated stormwater’.</p> <p>Column 2: Disposal strategy – For ‘wastewater from waste oil processing operations’ amend the disposal strategy to the following: <i>Evaporation, or where required excess process wastewater to be removed from the Premises to a facility authorised to accept such waste.</i></p> <p>Column 3: Specified requirement</p> <ul style="list-style-type: none"> <li>For ‘sludge and solid waste’ solid waste is often stored in the main process</li> </ul>	<p>‘Treated contaminated stormwater’ has been amended to ‘treated stormwater’.</p> <p>Disposal strategy has been amended to include evaporation (in the wastewater storage ponds).</p> <p>The assessment of fugitive odour impact (which</p>

Summary of Licence Holder comment	DWER response
<p>shed prior to disposal offsite, which has a concrete floor and is fully enclosed to prevent material being blown or creating odour. Amend specified requirements to: <i>Must be stored in the main process shed or in covered leak proof containers.</i></p> <ul style="list-style-type: none"> <li>• For 'treated contaminated stormwater' stormwater is treated through oil and water separators, not a 'stormwater filtration system'. Within previous information provided, 'stormwater filtration system' was used as a general term to describe the infrastructure associated with the storage and treatment of the stormwater (i.e. concrete basin and oil and water separators). In addition, irrigation to Lot 8 occurs during high rainfall periods, when the stormwater infiltration pond is likely to overflow. This typically occurs between June and August when rainfall is highest and evaporation lowest (as per the additional information submitted), but can also occur during other periods of high rainfall, typically associated with strong low-pressure systems. Amend specified requirements to the following: <ul style="list-style-type: none"> <li>(a) <i>Potentially contaminated stormwater to be directed to the concrete sump and treated with an oil and water separator prior to discharge to the stormwater infiltration pond.</i></li> <li>(b) <i>Excess treated stormwater from stormwater infiltration pond is only irrigated to Lot 8 during periods of high rainfall, when stormwater infiltration pond is likely to overflow.</i></li> </ul> </li> </ul>	<p>includes the storage of sludge from feedstock storage tanks and pre-treatment and the FCE process) is in section 9.4 of this document. During a site visit to the Premises, DWER officers observed processing of solid waste within the main process shed during which the doors were open. The storage of sludge may emit fugitive odours that may cause a nuisance and impact on the amenity and lifestyle of receptors; therefore, the requirement to store sludge within covered, leak proof containers will remain on the licence. The words "and solid" will be removed from column 1 to avoid confusion as the intent of this row was to refer only to the sludge waste and not to solid waste that will be processed.</p> <p>Wording has been amended to ensure potentially contaminated stormwater is directed to the concrete sump and treated with an oil and water separator prior to discharge to the Stormwater Infiltration Pond.</p> <p>Conditions 5 and 6 and associated Table 4 of the Licence include infrastructure and operational requirements for the irrigation of treated stormwater. Amending column 3 of Table 6 in relation to the irrigation of treated stormwater to state that irrigation only occurs during periods of high rainfall could contradict the irrigation requirements in Table 4. Therefore, Table 6 has been amended to state that excess treated stormwater is irrigated to Lot 8 generally between June and August each year.</p>

Summary of Licence Holder comment	DWER response
<p>In regards to condition 10, Wren Oil request that the requirement for the ‘liner integrity testing’ be conditional on the outcomes of the seepage testing. If the water levels monitored as part of the seepage testing indicate that a leak may be present (i.e. water levels decrease), then liner integrity testing should be undertaken.</p> <p>However, related to the above, subsequent to the licence amendment information (and associated additional information) being submitted, Wren Oil would like to note that the wastewater ponds have a ‘leakage collection layer’ (also called a ‘leak detection system’) that was installed between the two HDPE layers at the time the wastewater ponds were upgraded, with the leakage collection layer sloping to a low point (sump) that is connected to a pipe for monitoring. The system was originally installed to monitor the performance of the geomembrane and to detect leaks if/when these occurred. This detection system has not been in operation and is currently being re-commissioned by Wren Oil to assist with monitoring the performance of the wastewater ponds. The South Australian EPA (2014) indicates the leak detection systems can provide a high level of certainty regarding liner integrity, similar to electrical testing.</p> <p>Therefore, it is proposed that the following be required to support the testing of the wastewater ponds:</p> <ul style="list-style-type: none"> <li>• Seepage rate testing (overnight water balance test) to be completed by 28 February 2018.</li> <li>• Monitoring of the leak detection pipes, to be completed by the 31 March 2018.</li> </ul> <p>Initial enquiries with regard to contractors able to complete the electrical testing of the liner integrity (as per ASTM D7007) and at this stage it appears that the majority of contractors able to undertake this testing are located interstate (South Australia). Given the ponds have a leak detection system, which will be re-commissioned over the coming months, this would be the preferred approach for determining whether the wastewater ponds are leaking.</p> <p>Can the condition be amended to: <i>The Licence Holder must test the seepage rate</i></p>	<p>The requirement to investigate the integrity of the HDPE liners in all three wastewater storage ponds is discussed in section 10.1.6 of this document. The Delegated Officer has considered the Licence Holder’s comments and agree that liner integrity testing is only required if the seepage rate testing indicates that a leak may be present.</p> <p>As the Licence Holder has committed to recommissioning of the leak detection system, this has been added to the requirements in Table 4 and 7 of the Licence. Another condition has also been added to the Licence to require the Licence Holder to report the results of the leak detection pipe monitoring to DWER.</p>

Summary of Licence Holder comment	DWER response
<p><i>and, if required based on the outcomes of the seepage rate indicating a leak may be present, integrity of the ponds in accordance with Table 7 and the specifications in that table.</i></p> <p>Typically for 'leak detection systems' a maximum 'allowable leakage rate' is determined and for the wastewater ponds would suggest that this would be the same as the proposed 'liner action criterion'.</p> <p>Amend the date in condition 11 in line with the above.</p> <p>Amend condition 13 to refer to leak detection pipes rather than electrical testing.</p>	
<p>In regards to Table 8: Emissions to Air Monitoring, Column 5: Method:</p> <ul style="list-style-type: none"> <li>Amend all methods to 'approved methods' rather than listing the specific method. Historically, Wren Oil have had issues with demonstrating compliance when the testing methods had been updated (and adopted by laboratories) but the licence was not updated to reflect the change in methodology.</li> </ul>	<p>The Delegated Officer has considered the Licence Holder's comments and disagrees with the removal of the specific testing methods for the monitoring of stack emissions. Inclusion of the specific test methods ensure that each parameter is tested in an appropriate manner. The Licence Holder can submit an application for licence amendment, that will be assessed by DWER, if they require one or more of the methods to be amended.</p>
<p>In regards to Table 10, in condition 20: rather than condition 6(z) being used to monitor the cumulative volume of stormwater discharged could this be added to Table 10?</p>	<p>The Delegated Officer has considered the Licence Holder's comments and disagrees to include condition 6(z) as part of Table 10 (condition 20) of the Licence. Table 10 is specific to monitoring the quality of treated stormwater whereas condition 6(z) refers to the quantity of treated stormwater irrigated.</p>
<p>In regards to Table 11: Treated stormwater emission limit – for 'irrigation area' can the limit (including units) be amended or removed. The volume indicated in the supporting information was indicative only and may vary year to year depending upon the amount of rainfall received during periods of high rainfall.</p>	<p>The Delegated Officer has considered the Licence Holder's comments and agrees with the removal of the limit on the volume of treated stormwater irrigated to Lot 8. Conditions 5, 6 and 8 contain requirements for the irrigation of treated stormwater to Lot 8 and are sufficient to manage the risk of treated stormwater, potentially containing hydrocarbons, being irrigated to</p>

Summary of Licence Holder comment	DWER response
	<p>land potentially causing surface water, soil and groundwater contamination and therefore affecting ecosystem health.</p> <p>Additionally the Licence Holder will still be required to monitor the volume of treated stormwater irrigated to Lot 8.</p>
<p>In regards to Table 12: Annual Environmental Report requirements – amend wording for condition 6(z) to refer to ‘treated stormwater’ not ‘wastewater’.</p>	<p>The wording in the Licence has been amended.</p>
<p>In regards to Schedule 1: Maps, is the ‘proposed infrastructure map’ required particularly given decommissioning of the thin film evaporator and front-end distillation plant is not referenced? All equipment relevant to the ongoing operation of the facility is show in the ‘General Layout Plan’.</p>	<p>The Licence amendment is for a proposed upgrade to the facility which will occur in two phases. Schedule 1: Maps – Proposed Infrastructure includes reference to some infrastructure that will be decommissioned in phase 2; however, as the infrastructure is still being operated at present, and is referred to in some conditions of the Licence, the Delegated Officer has determined that the map should remain in the Licence.</p>
Summary of Licence Holder comment	DWER response
<b>Licence Holder comments on the draft Decision Report and Licence received 21 December 2017</b>	
<p>The Licence Holder confirmed that untreated stormwater is captured in the concrete sump. Two oil water separators are located adjacent to the concrete sump. One of the two oil water separators (at any one time) treat the potentially contaminated stormwater water from the concrete sump before discharging treated stormwater into the stormwater infiltration pond.</p>	<p>This information is in accordance with information submitted previously by the Licence Holder; therefore, no changes were required to this Decision Report or Licence. Clarification, where required, was made to this Decision Report and Table 4 of the Licence to reflect that potentially contaminated stormwater only passes through one of the oil water separators and not both in succession.</p>
<p>Consider adding definitions for ATFE, DG and FCE to the Licence as the acronyms appear within Schedule 1 – Maps.</p>	<p>Accepted - relevant section of the Licence updated.</p>



Summary of Licence Holder comment	DWER response
<p>In regards to Table 4 of the Licence:</p> <p>Amend (e)(iv) from “forced circulation evaporation” to “forced circulation evaporation”.</p> <p>Amend (v) to remove the word “two” so that it states “<i>oil and water separators maintained and operated to manufacturer specifications to treat all water prior to discharge to the Stormwater Infiltration Pond</i>”.</p> <p>Within column 3, associated with “solid waste delivery and processing” row, consider amending the map reference to “...in Schedule 1 – General Layout Plan”.</p>	<p>Accepted – Licence has been updated.</p> <p>Section (v) of Table 4 of the Licence has been amended to state that at least one oil water separator treats all water prior to discharge to the Stormwater Infiltration Pond.</p> <p>The solid waste delivery and processing areas/locations are referred to in more than one of the maps within Schedule 1, therefore, the map reference will be left as “...Schedule 1 – Maps”.</p>
<p>In regards to condition 13 of the Licence: consider amending to include “if required” at the end of the condition.</p>	<p>Condition 13 of the Licence requires the Licence Holder to provide results of the electrical testing of liner integrity (specified in condition 10 of the Licence) within 1 month of the completion of that testing.</p> <p>The words “if required” are not appropriate for this condition as, if the electrical testing is completed, then the results will be required to be submitted. However, if the electrical testing is not required (as per wording in condition 10), the electrical testing will not be completed and no results are required to be submitted (as per wording in condition 13).</p>