



# Licence

## *Environmental Protection Act 1986, Part V*

**Licensee:**        **Water Corporation**

**Licence:**        **L6786/1991/11**

**Registered office:**    629 Newcastle Street  
LEEDERVILLE WA 6007

**Premises address:**    Albany Wastewater Treatment Plant  
100 Timewell Road  
MCKAIL WA 6330  
Being Lot 1 on Diagram 44295, Lot 2 on Diagram 43845, Lot 749 on Plan 100633, Lot 815 on Plan 101284, Lot 3325 on Plan 79932, Lot 4822 on Plan 157224 and Lot 10 on Diagram 84694 (excluding the Albany Septage Facility), as depicted in Schedule 1.

**Issue date:**        Thursday, 27 September 2012

**Commencement date:**    Tuesday, 02 October 2012

**Expiry date:**        Sunday, 01 October 2023

**Prescribed premises category**

Schedule 1 of the *Environmental Protection Regulations 1987*

Category number	Category description	Category production or design capacity	Approved Premises production or design capacity
54	Sewage facility: premises: a) on which sewage is treated (excluding septic tanks); or b) from which sewage is discharged onto land or into waters.	12 000 cubic metres/day	5 700 cubic metres/day
61	Liquid waste facility: premises on which liquid waste produced on other premises (other than sewerage waste) is stored, reprocessed, treated or irrigated.	100 tonnes or more per year	3.75 megalitres (approximately 3750 tonnes) per annual period

**Conditions**

This Licence is subject to the conditions set out in the attached pages.

Date signed: 28 September 2016

.....  
**Caron Goodbourn**  
A/Manager Licensing (Waste Industries)  
Officer delegated under section 20  
of the *Environmental Protection Act 1986*



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## Introduction

This Introduction is not part of the Licence conditions.

### DER's industry licensing role

The Department of Environment Regulation (DER) is a government department for the state of Western Australia in the portfolio of the Minister for Environment. DER's purpose is to advise on and implement strategies for a healthy environment for the benefit of all current and future Western Australians.

DER has responsibilities under Part V of the *Environmental Protection Act 1986* (the Act) for the licensing of prescribed premises. Through this process DER regulates to prevent, control and abate pollution and environmental harm to conserve and protect the environment. DER also monitors and audits compliance with works approvals and licence conditions, takes enforcement action as appropriate and develops and implements licensing and industry regulation policy.

### Licence requirements

This Licence is issued under Part V of the Act. Conditions contained within the Licence relate to the prevention, reduction or control of emissions and discharges to the environment and to the monitoring and reporting of them.

Where other statutory instruments impose obligations on the Premises/Licensee the intention is not to replicate them in the licence conditions. You should therefore ensure that you are aware of all your statutory obligations under the Act and any other statutory instrument. Legislation can be accessed through the State Law Publisher website using the following link: <http://www.slp.wa.gov.au/legislation/statutes.nsf/default.html>

For your Premises relevant statutory instruments include but are not limited to obligations under the:

- *Environmental Protection (Unauthorised Discharges) Regulations 2004* – these Regulations make it an offence to discharge certain materials such as contaminated stormwater into the environment other than in the circumstances set out in the Regulations.
- *Environmental Protection (Controlled Waste) Regulations 2004* - these Regulations place obligations on you if you produce, accept, transport or dispose of controlled waste.
- *Environmental Protection (Noise) Regulations 1997* – these Regulations require noise emissions from the Premises to comply with the assigned noise levels set out in the Regulations.



You must comply with your licence. Non-compliance with your licence is an offence and strict penalties exist for those who do not comply.

Licence holders are also reminded of the requirements of section 53 of the Act which places restrictions on making certain changes to prescribed premises unless the changes are in accordance with a works approval, licence, closure notice or environmental protection notice.

#### **Licence fees**

If you have a licence that is issued for more than one year, you are required to pay an annual licence fee prior to the anniversary date of issue of your licence. Non payment of annual licence fees will result in your licence ceasing to have effect meaning that it will no longer be valid and you will need to apply for a new licence for your Premises.

#### **Ministerial conditions**

If your Premises has been assessed under Part IV of the Act you may have had conditions imposed by the Minister for Environment. You are required to comply with any conditions imposed by the Minister.

#### **Premises description and Licence summary**

The Albany Wastewater Treatment Plant for the purposes of this licence includes two separate properties: the 'Albany Wastewater Treatment Plant' (AWWTP) and 'Tree Farm 1' (TF1); which are linked by a wastewater pipeline and collectively involved in the treatment of reticulated sewage and discharge of treated wastewater to the environment via controlled irrigation.

##### Albany Wastewater Treatment Plant (AWWTP)

The AWWTP located at Timewell Rd handles all of Albany's sewage using an Intermittent Decanted Extended Aeration (IDEA) wastewater treatment system. In this facility raw sewage enters the plant through a 6mm step screen which captures large solids, which are later disposed of at a licensed landfill. The screened wastewater then enters one of two IDEA pond systems through a splitter. The IDEA ponds use powerful intermittent aerators and activated sludge to treat the water by consuming nutrients. Aerators are turned off intermittently allowing the particulates to settle so that treated water can be decanted from the surface. Once treated, wastewater is stored on site at the AWWTP within a storage dam, prior to being transferred off-site to the separately located Tree Farm 1 (TF1) on Gunn Rd, approximately 9km from the AWWTP.

##### Tree Farm 1 (TF1)

Water is pumped from the Albany WWTP via pipeline to one of two large connected storage dams at TF1, from which it is filtered and chlorinated before being irrigated through 275 ha of Australian Bluegum irrigation groups at TF1, or further transferred via the second dam to another separate premises, "Tree Farm 2" (not regulated under a Part V licence) for direct irrigation of 130.3 ha of Australian Bluegums.

##### Licence amendment

This Licence is the result of an amendment sought by the Licensee to vary the soil moisture monitoring conditions at TF1 and for the temporary storage of brackish water at the AWWTP.

Since 2012, soil monitoring conditions have set on the licence specific monitoring locations and parameters to be measured, based on a network of soil moisture probes which were installed at TF1; however the Licensee had difficulties commissioning the probes and getting them operational to meet the monitoring requirements and has effectively been non-compliant with the conditions since that time. In November 2014, the Licensee completed works to the probes (disconnecting them from existing SCADA system and installing Next G remote telemetry data loggers) and requested an amendment to the monitoring conditions to remove one monitoring location and the measuring of milliampes. This does not impact on the intent of the soil moisture monitoring.

The Licensee also applied to DER in July 2015 for an amendment to the licence to allow the temporary storage of brackish water. The brackish water is the result of reverse osmosis treatment of water from the Denmark Water Treatment Plant and is proposed to be delivered and



stored temporarily in an existing 3.75ML pond (previously a lined sludge drying pond, but proposed to be re-lined with HDPE) at the AWWTP, until the permanent disposal option is determined. The amendment involves the addition of Category 61: Liquid waste facility to the licence, to enable the receipt of the water which will be categorised as controlled waste category D300 'non-toxic salts'.

Surrounding landuse of the AWWTP is predominantly rural residential in nature, with the nearest residence approximately 500m south of the centre of the treatment plant at Lot 12 on Diagram 23899, South Coast Highway. There are no reserves, EPP areas, declared wetlands or bush plan areas on or close to the site. The site is not within a drinking water supply area. The closest surface water system located to the site is the Five Mile Creek headwater located approximately 2km to the northwest of the treatment plant.

The Licensee applied for an amendment to L6786/1991/10 on 29 July 2016 seeking approval to undertake hydrostatic testing on the HDPE liner laid on the "brackish water storage pond" as shown in the premises map. The hydrostatic test will determine the integrity of the liner and will be conducted using 3000 kL of treated wastewater from the Albany WWTP.

The licences and works approvals issued for the Premises since 4/10/2000 are:

Instrument log		
Instrument	Issued	Description
L6786/1991/5	04/10/2000	Licence re-issue
L6786/1991/6	10/09/2001	Licence re-issue
L6786/1991/7	11/10/2002	Licence re-issue
L6786/1991/8	06/10/2003	Licence re-issue
L6786/1991/9	21/09/2004	Licence re-issue
L6786/1991/10	27/09/2007	Licence re-issue
L6786/1991/10	20/01/2011	Licence amendment – significant review of operations
L6786/1991/10	28/04/2011	Licence amendment – improvement condition to install soil probes
L6786/1991/10	08/09/2011	Licence amendment – removal of septage plant
L6786/1991/11	27/09/2012	Licence re-issue
L6786/1991/11	24/09/2015	Licence amendment – changes to soil moisture monitoring and addition of brackish water storage
L6786/1991/11	29/09/2016	Licence amendment – authorise hydrostatic testing of the brackish water storage pond, using treated wastewater

### Severance

It is the intent of these Licence conditions that they shall operate so that, if a condition or a part of a condition is beyond the power of this Licence to impose, or is otherwise *ultra vires* or invalid, that condition or part of a condition shall be severed and the remainder of these conditions shall nevertheless be valid to the extent that they are within the power of this Licence to impose and are not otherwise *ultra vires* or invalid.

**END OF INTRODUCTION**



## Licence conditions

### 1 General

#### 1.1 Interpretation

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

1.1.2 For the purposes of this Licence, unless the contrary intention appears:

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

**'AHD'** means the Australian height datum;

**'Albany Wastewater Treatment Plant'** means the Water Corporation wastewater treatment plant located on Timewell Road as depicted in the Premises Map of the Albany Wastewater Treatment Plant in Schedule 1;

**'annual period'** means the inclusive period from 1 July until 30 June in the following year;

**'applicable guidelines and standards'** means, but is not limited to, all guidelines and standards referred to and defined within this licence, including the following documents:

- Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand 2000, *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*; and
- Department of Environment and Conservation 2010, *Contaminated Sites Management Series Assessment levels for Soil, Sediment and Water*.

**'AS/NZS 2031'** means the Australian Standard AS/NZS 2031 *Selection of containers and preservation of water samples for microbiological analysis*;

**'AS/NZS 5667.1'** means the Australian Standard AS/NZS 5667.1 *Water Quality – Sampling – Guidance of the Design of sampling programs, sampling techniques and the preservation and handling of samples*;

**'AS/NZS 5667.4'** means the Australian Standard AS/NZS 5667.4 *Water Quality – Sampling – Guidance on sampling from lakes, natural and man-made*;

**'AS/NZS 5667.6'** means the Australian Standard AS/NZS 5667.6 *Water Quality – Sampling – Guidance on sampling of rivers and streams*;

**'AS/NZS 5667.10'** means the Australian Standard AS/NZS 5667.10 *Water Quality – Sampling – Guidance on sampling of waste waters*;

**'AS/NZS 5667.11'** means the Australian Standard AS/NZS 5667.11 *Water Quality – Sampling – Guidance on sampling of groundwaters*;

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

**'brackish water'** means resulting from the reverse osmosis of water that has been processed through the Denmark Water Treatment Plant from the Denmark River Dam;



**'brackish water storage pond'** means the lined pond at the Albany Wastewater Treatment Plant for the storage of brackish water, as depicted in the Premises Map of the Albany Wastewater Treatment Plant in Schedule 1;

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

**'CEO'** for the purpose of correspondence means;

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

**'controlled waste'** has the definition in *Environmental Protection (Controlled Waste) Regulations 2004*;

**'Gunn Road Gauging Station'** means the gauging station located on Gunn Rd for stream monitoring of Seven Mile Creek as depicted on the Premises Map of Tree Farm 1 in Schedule 1;

**'hardstand'** means a surface with a permeability of  $10^{-9}$  metres/second or less;

**'IDEA'** means Intermittent Decanted Extended Aeration, the wastewater treatment process in use at the Albany Wastewater Treatment Plant as depicted in the Premises Map of the Albany Wastewater Treatment Plant in Schedule 1;

**'Licence'** means this Licence numbered L6786/1991/11 and issued under the Act;

**'Licensee'** means the person or organisation named as Licensee on page 1 of the Licence;

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

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

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

**'RTU'** means remote terminal unit;

**'Schedule 1'** means Schedule 1 of this Licence unless otherwise stated;

**'Schedule 2'** means Schedule 2 of this Licence unless otherwise stated;

**'spot sample'** means a discrete sample representative at the time and place at which the sample is taken;

**'Tree Farm 1'** means the Water Corporation irrigated tree farm (excluding the Albany Septage Facility), and associated irrigation infrastructure and storage dams located at Gunn Road as depicted in Premises Map of Tree Farm 1 in Schedule 1;

**'Tree Farm 2'** means the Water Corporation irrigated tree farm and associated irrigation infrastructure as depicted in the Map of emission points and monitoring locations for Tree Farm 2 in Schedule 1;

**'usual working day'** means 0800 – 1700 hours, Monday to Friday excluding public holidays in Western Australia; and



**'WA Biosolids Guidelines'** means the "Western Australian Guidelines for Direct Land Application of Biosolids and Biosolids Products", (as amended). Department of Environmental Protection, Water and Rivers Commission, Department of Health.

- 1.1.3 Any reference to an Australian or other standard in the Licence means the relevant parts of the the standard in force from time to time during the term of this Licence.
- 1.1.4 Any reference to a guideline or code of practice in the Licence means the version of that guideline or code of practice in force from time to time, and shall include any amendments or replacements to that guideline or code of practice made during the term of this Licence.

**1.2 Premises operation**

- 1.2.1 The Licensee shall manage the wastewater treatment and wastewater storage ponds in a manner such that:
  - (a) stormwater runoff resulting from site drainage shall be prevented from entering the IDEA wastewater treatment ponds, wastewater storage ponds and sludge drying beds or causing the erosion of any outer pond embankments;
  - (b) overtopping of the IDEA wastewater treatment and wastewater storage ponds does not occur;
  - (c) there is no discernible seepage loss from the IDEA wastewater treatment ponds, wastewater storage ponds and sludge drying beds;
  - (d) vegetation (emergent or otherwise) is prevented from growing in the IDEA pond or on the inner pond embankments; and
  - (e) all treated wastewater from the IDEA wastewater treatment plant is directed to the Treated Wastewater Storage Pond (as depicted in the Premises Map of the Albany Wastewater Treatment Plant in Schedule 1) for transfer to the Tree Farm 1 site.
- 1.2.2 The Licensee shall maintain a fence around the boundary of the Albany Wastewater Treatment Plant, and ensure that any entrance is securely locked when the plant is unattended, to help prevent people and animals from accessing the premises.
- 1.2.3 The Licensee shall maintain a fence around the boundary of Tree Farm 1, and ensure that any entrance is securely locked when the plant is unattended, to help prevent people and animals from accessing the premises.
- 1.2.4 The Licensee shall conduct monthly inspections of the Albany Wastewater Treatment Plant treatment ponds for excessive build-up of sludge and to take action as necessary for de-sludging
- 1.2.5 Where sewage sludge is temporarily stored on the premises, the Licensee shall direct sludge to a hardstand area which:
  - (a) is adequately bunded to effectively contain all leachate and sludge; and
  - (b) is designed to return all sludge leachate from the storage area back to the treatment ponds.
- 1.2.6 The Licensee shall not dispose of sewage sludge material by application to Tree Farm 1.
- 1.2.7 Subject to condition 1.2.6, the Licensee shall dispose of all sewage sludge material in accordance with the WA Biosolids Guidelines.
- 1.2.8 The Licensee shall ensure that where the storage of brackish water is undertaken at the Albany Wastewater Treatment Plant, it is done so in accordance with the documentation detailed in Table 1.2.1.

**Table 1.2.1: Construction Requirements<sup>1</sup>**

Document	Parts	Date of Document
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'Albany Wastewater Treatment Plant: Licence Amendment Request – Additional Information' (Water Corporation) v2	All	10 August 2015
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Note 1: Where the details and commitments of the documents listed in condition 1.3.8 are inconsistent with any other condition of this Licence, the conditions of this Licence shall prevail.

1.2.9 The Licensee shall submit a compliance document to the CEO, following the completion of works to re-line the brackish water storage pond in accordance with the documentation in condition 1.2.8, and prior to commissioning of the same.

1.2.10 The compliance document shall:

- (a) certify that pond has been lined in accordance with the documentation in condition 1.2.8; and
- (b) be signed by a person authorised to represent the Licensee and contain the printed name and position of that person within the company.

1.2.11 The Licensee shall ensure that hydrostatic testing on the liner of the brackish water storage pond is undertaken in accordance with, but not limited to the following:

- (a) the brackish water storage pond be filled with no more than 3000 kl of treated wastewater sourced from the treated wastewater storage pond on the premises;
- (b) if any leaks are detected during the test, wastewater must be immediately returned to the treated wastewater storage pond, prior to leaks being repaired ;
- (c) repairs must undergo retesting as per condition 1,2.11(a)-(b); and
- (d) hydrostatic testing be completed within 10 days.

1.2.12 The Licensee shall submit a compliance document to the CEO, following the completion of hydrostatic testing as outlined in condition 1.2.11, and prior to the acceptance of brackish water. The compliance document shall include the following:

- (a) certify integrity of the liner on the brackish water storage pond; and
- (b) certify suitability of the pond for the storage of brackish water

1.2.13 The Licensee shall not accept more than 3.75ML of brackish water for storage at the Premises.

## 2 Emissions

### 2.1 General

2.1.1 The Licensee shall record and investigate the exceedance of any descriptive or numerical limit specified in any part of section 2 of this Licence.

### 2.2 Emissions to land

2.2.1 The Licensee shall ensure that where waste is emitted to land from the emission points in Table 2.2.1 and identified on the Maps of emission points and monitoring locations in Schedule 1, it is done so in accordance with the conditions of this Licence.

**Table 2.2.1: Emissions to land**

Emission point reference and location	Description	Source including abatement
'Irrigated Areas' at Tree Farm 1 (as depicted in the Map of emission points and monitoring locations for Tree Farm 1 in Schedule 1)	Treated wastewater irrigation network feeding 275 ha of Australian Bluegums at Tree Farm 1	Wastewater treated through IDEA treatment process at





'Irrigated Areas' at Tree Farm 2 (as depicted in the Map of emission points and monitoring locations for Tree Farm 2 in Schedule 1)	Treated wastewater irrigation network feeding 130.3 ha of Australian Bluegums at Tree Farm 2	Albany Wastewater Treatment Plant
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2.2.2 The Licensee shall not cause or allow emissions to land that do not meet the limits listed in Table 2.2.2.

<b>Table 2.2.2: Emission limits to land</b>			
<b>Emission point reference</b>	<b>Parameter</b>	<b>Limit</b>	<b>Averaging period</b>
'Irrigated Areas' at Tree Farm 1 (as depicted in the Map of emission points and monitoring locations for Tree Farm 1 in Schedule 1); and	Total nitrogen loading rate	< 150 kg/ha	Annual
	Total phosphorus loading rate	< 78 kg/ha	
'Irrigated Areas' at Tree Farm 2 (as depicted in the Map of emission points and monitoring locations for Tree Farm 2 in Schedule 1).	Hydraulic loading	At a rate that does not result in surface ponding	Continuous
		At a rate that does not result in surface runoff of treated wastewater beyond the boundary of any of the "Irrigated Areas" at Tree Farm 1 or Tree Farm 2	
		Onto soils which are not saturated or flooded from rainfall or surface flow	

### 3 Monitoring

#### 3.1 General monitoring

3.1.1 The Licensee shall ensure that:

- (a) all water samples are collected and preserved in accordance with AS/NZS 5667.1;
- (b) all wastewater sampling is conducted in accordance with AS/NZS 5667.10;
- (c) all surface water sampling is conducted in accordance with AS/NZS 5667.4, AS/NZS 5667.6 or AS/NZS 5667.9 as relevant;
- (d) all groundwater sampling is conducted in accordance with AS/NZS 5667.11;
- (e) all microbiological samples are collected and preserved in accordance with AS/NZS 2031;
- (f) all laboratory samples are submitted to and tested by a laboratory with current NATA accreditation for the parameters being measured unless indicated otherwise in the relevant table.

3.1.2 The Licensee shall ensure that :

- (a) monthly monitoring is undertaken at least 15 days apart; and
- (b) annual monitoring is undertaken at least 9 months apart.

3.1.3 The Licensee shall ensure that all monitoring equipment used on the Premises to comply with the conditions of this Licence is calibrated in accordance with the manufacturer's specifications.

3.1.4 The Licensee shall, where the requirements for calibration cannot be practicably met, or a discrepancy exists in the interpretation of the requirements, bring these issues to the attention of the CEO accompanied with a report comprising details of any modifications to the methods.

#### 3.2 Monitoring of emissions to land



3.2.1 The Licensee shall undertake the monitoring in Table 3.2.1 according to the specifications in that table.

<b>Table 3.2.1: Monitoring of emissions to land</b>			
<b>Emission point reference</b>	<b>Parameter</b>	<b>Units</b>	<b>Frequency</b>
'Irrigated Areas' at Tree Farm 2 (as depicted in the Map of emission points and monitoring locations for Tree Farm 2 in Schedule 1)	Volume irrigated to Tree Farm 1	kL	Monthly and annual totals
'Irrigated Areas' at Tree Farm 1 (as depicted in the Map of emission points and monitoring locations for Tree Farm 1 in Schedule 1)	Volume irrigated to Tree Farm 2	kL	Monthly and annual totals
	Total Dissolved Solids	kg/day	Monthly and annual loading rates
	Biochemical Oxygen Demand		
	Total Nitrogen		
	Total Phosphorus	kg/ha	Annual loading rate
	Total Nitrogen		
Total Phosphorus			

### 3.3 Monitoring of inputs and outputs

3.3.1 The Licensee shall undertake the monitoring in Table 3.3.1 according to the specifications in that table.

<b>Table 3.3.1: Monitoring of inputs and outputs</b>				
<b>Input/ Output</b>	<b>Parameter</b>	<b>Units</b>	<b>Averaging period</b>	<b>Frequency</b>
Brackish water	Volume received at Albany Wastewater Treatment Plant	ML	Annual period	Continuous

### 3.4 Process monitoring

3.4.1 The Licensee shall undertake the monitoring in Table 3.4.1 according to the specifications in that table.

<b>Table 3.4.1: Process monitoring</b>					
<b>Monitoring point reference</b>	<b>Process description</b>	<b>Parameter</b>	<b>Units</b>	<b>Frequency</b>	<b>Method</b>
Flow Meter (as depicted in the Premises Map for Albany Wastewater Treatment Plant in Schedule 1)	Treated wastewater transferred to Tree Farm 1 from the Albany Wastewater Treatment Plant	Volume	kL	Monthly	None specified
Septage Plant outflow meter	Treated wastewater transferred to Tree Farm 1 from the Septage Plant	Volume	kL	Monthly	None specified
Dam 1 Sample Point and Dam 2 Sample Point (as depicted in the	Treated wastewater quality	Total Suspended Solids	mg/L	Monthly	None specified
		Total Dissolved Solids	mg/L		



Map of emission points and monitoring locations for Tree Farm 1 in Schedule 1)	Biochemical Oxygen Demand	mg/L		
	Total Nitrogen	mg/L		
	Ammonium-Nitrogen	mg/L		
	Nitrate + Nitrite-Nitrogen	mg/L		
	Total Phosphorus	mg/L		
	<i>E. coli</i>	orgs/100mL		
	pH <sup>note1</sup>			

Note 1: In-field non-NATA accredited analysis permitted

### 3.5 Ambient environmental quality monitoring

3.5.1 The Licensee shall undertake the monitoring in Tables 3.5.1, 3.5.2 and 3.5.3 according to the specifications in those tables and record and investigate results that do not meet any limit specified.

**Table 3.5.1: Monitoring of ambient surface water quality**

Monitoring point reference and location	Parameter	Units	Averaging period	Frequency
Gunn Road Gauging Station (as depicted in the Map of emission points and monitoring locations for Tree Farm 1 in Schedule 1)	Volume	kL	Monthly	Continuous
	Total Suspended Solids	mg/L	Spot sample	Monthly when flowing
	Total Dissolved Solids	mg/L		
	Biochemical Oxygen Demand	mg/L		
	Total Nitrogen	mg/L		
	Ammonium-Nitrogen	mg/L		
	Nitrate + Nitrite-Nitrogen	mg/L		
	Total Phosphorus	mg/L		
	<i>E. coli</i>	orgs/100ml		
	Enterococci	orgs/100ml		
pH <sup>note1</sup>				

Note 1: In-field non-NATA accredited analysis permitted

**Table 3.5.2: Monitoring of ambient soil quality**

Monitoring point reference and location	Parameter	Units	Averaging period	Frequency
One soil moisture probe within each of the following locations: (i) RTU1 / Plot 4; (ii) RTU2 / Plot 7; (iii) RTU3 / Plot 9; (iv) RTU4 / Plot 13; (v) RTU5 / Plot 17; (vi) RTU6 / Plot 18; (vii) RTU7 / Plot 24; (viii) RTU9 / Plot 34; and (ix) RTU13 / Plot 29. (As depicted in the Map of emission points and monitoring locations for Tree Farm 1 in Schedule 1)	Moisture	mm	Spot sample	Continuous (with the exception when the probes are removed for tree harvest works)

**Table 3.5.3: Monitoring of ambient groundwater quality**

Monitoring point reference	Parameter	Units	Averaging	Frequency
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and location			period	
Monitoring Bores A2 - 15, DB1, DB4, DB9, DB11, DB16, 1-11, DB18, 4-11, FM20, FM23, CN3, 2-11, 3-11 (As depicted in the Map of emission points and monitoring locations for Tree Farm 1 in Schedule 1)	Total Dissolved Solids	mg/L	Spot sample	September, December, March, June
	Total Nitrogen	mg/L		
	Ammonium-Nitrogen	mg/L		
	Nitrate + Nitrite-Nitrogen	mg/L		
	Total Phosphorus	mg/L		
	Standing Water Levels	metres AHD		
	pH. <sup>note1</sup>			

Note 1: In-field non-NATA accredited analysis permitted

## 4 Improvements

### 4 Improvement program

- 4.1.1 The Licensee shall complete the improvements in Table 4.1.1 by the date of completion in Table 4.1.1.
- 4.1.2 The Licensee, for improvements not specifically requiring a written submission, shall write to the CEO stating whether and how the Licensee is compliant with the improvement within one week of the completion date specified in Table 4.1.1.

**Table 4.1.1: Improvement program**

Improvement reference	Improvement	Date of completion
IR1	The Licensee shall prepare and submit to the CEO the 5-yearly Soil Condition Monitoring Report for Tree Farm 1 which includes the analysis of soil samples which: <ul style="list-style-type: none"> <li>(a) have been taken during late Summer to early Autumn (February to March);</li> <li>(b) are from variable depths from at least 7 appropriate reference areas across the site; and</li> <li>(c) shall be analysed for inorganic nitrogen, soil moisture, gravel, salinity, soil reaction (pH), exchangeable cations and cation exchange capacity, soil sodicity, phosphorus, potassium, copper and zinc, in terms of calculating impact from irrigation.</li> </ul>	30 June 2017
IR2	The Licensee must submit to the CEO a report which demonstrates the calibration, installation and operation of an inflow monitoring device capable of continuously monitoring all sewage inflow to the Albany Wastewater Treatment Plant at Timewell Road.	1 December 2017

## 5 Information

### 5.1 Records

- 5.1.1 All information and records required by the Licence shall:
- (a) be legible;
  - (b) if amended, be amended in such a way that the original and subsequent amendments remain legible or are capable of retrieval;
  - (c) except for records listed in 5.1.1(d) be retained for at least 6 years from the date the records were made or until the expiry of the Licence or any subsequent licence; and
  - (d) for those following records, be retained until the expiry of the Licence and any subsequent licence:



- (i) off-site environmental effects; or
- (ii) matters which affect the condition of the land or waters.

5.1.2 The Licensee shall complete an Annual Audit Compliance Report indicating the extent to which the Licensee has complied with the conditions of the Licence, and any previous licence issued under Part V of the Act for the Premises for the previous annual period.

5.1.3 The Licensee shall:

- (a) implement a complaints management system that shall record the following information (if known or provided) about complaints received at the Premises concerning any environmental impact of the activities undertaken at the Premises:
  - (i) name and address of the complainants (if consented);
  - (ii) date and time of complaint;
  - (iii) date and time of alleged incident;
  - (iv) alleged source of the incident;
  - (v) general description of the alleged incident, including any environmental or health impacts reported by the complainant;
  - (vi) wind direction, wind speed and temperature at time of alleged incident;
  - (vii) likely source of the alleged incident; and
  - (viii) actions taken by the Licensee to address the complaint, including the outcome of any investigation(s) and action(s) to verify any impacts.
- (b) complete an annual analysis and review of complaints recorded under 5.1.4(a) to identify any common factors and root cause of complaints and proposals to address these.

## 5.2 Reporting

5.2.1 The Licensee shall submit to the CEO an Annual Environmental Report within 63 calendar days after the end of the annual period. The report shall contain the information listed in Table 5.2.1 in the format or form specified in that table.

<b>Table 5.2.1: Annual Environmental Report</b>		
<b>Condition or table (if relevant)</b>	<b>Parameter</b>	<b>Format or form<sup>1</sup></b>
-	Summary of any failure or malfunction of any pollution control equipment and any environmental incidents that have occurred during the annual period and any action taken	None specified
Table 3.2.1	Monitoring of emissions to land for the annual period	
Table 3.3.1	Monitoring of inputs and outputs for the annual period	
Table 3.4.1	Process monitoring for the annual period	
Table 3.5.1	Monitoring of ambient surface water quality for the annual period	
Table 3.5.2	Monitoring of ambient soil quality for the annual period	
Table 3.5.3	Monitoring of ambient groundwater quality for the annual period	
5.1.2	Compliance for the annual period	Annual Audit Compliance Report (AACR). Form available at the DER website: <a href="http://www.der.gov.wa.au">www.der.gov.wa.au</a> under the publication section.
5.1.3	Complaints summary for the annual period	None specified

Note 1: Forms are in Schedule 2



- 5.2.2 The Licensee shall ensure that the Annual Environmental Report also contains:
- (a) an assessment of the information contained within the report against previous monitoring results, Licence limits and applicable guidelines and standards; and
  - (b) any changes to site boundaries, location of monitoring sites, surface drainage channels, key infrastructure and tenure.

### 5.3 Notification

- 5.3.1 The Licensee shall ensure that the parameters listed in Table 5.3.1 are notified to the CEO in accordance with the notification requirements of the table.

<b>Table 5.3.1: Notification requirements</b>			
<b>Condition or table (if relevant)</b>	<b>Parameter</b>	<b>Notification requirement<sup>1</sup></b>	<b>Format or form<sup>2</sup></b>
2.1.1	Breach of any limit specified in section 2 of this Licence	Part A: As soon as practicable but no later than 5pm of the next usual working day.  Part B: As soon as practicable	N1
1.3.4	The removal of sewage sludge from a treatment pond	No less than 14 days prior	None specified
3.1.4	Calibration report	As soon as practicable.	None specified
n/a	Taking a treatment pond offline for maintenance works	No less than 72 hours prior	None specified
n/a	Any discharge of treated or untreated wastewater to the environment that has occurred as a result of: (a) an emergency; (b) accident or malfunction; (c) very heavy precipitation days; or (d) otherwise than in accordance with any condition of this licence.	Within 72 hours of becoming aware	(a) The date(s) and time period(s) of the discharge; (b) a map showing the location of the discharge; (c) the known or probable cause of the discharge; (d) the composition and quantity of the discharge; (e) the known or probable end fate of the discharge; and (f) action taken to minimise the effect of the waste discharge on the environment.



		Within 7 working days of the discharge	<p>(a) the extent and the total volume of the discharge, estimated nutrient loads and their significance in terms of potential or known environmental impacts;</p> <p>(b) consultation taken with relevant stakeholders to determine corrective action in the case of any discharges that may impact on Seven Mile Creek;</p> <p>(c) corrective action taken or planned to mitigate adverse environmental impact;</p> <p>(d) whether or not the waste involved in the discharge has been removed, dispersed, destroyed, disposed of or otherwise dealt with, and if so, the manner in which the waste was removed, dispersed, destroyed, disposed of or otherwise dealt with; and</p> <p>(e) corrective action taken or planned to prevent a recurrence of a discharge, including a timeline for implementation.</p>
1.2.11	Hydrostatic testing results	Within 7 days after completion	None specified
	Taking soil moisture probes offline for tree harvest works	Not less than 14 days prior to taking the probes offline.	None specified

Note 1: Notification requirements in the Licence shall not negate the requirement to comply with s72 of the Act

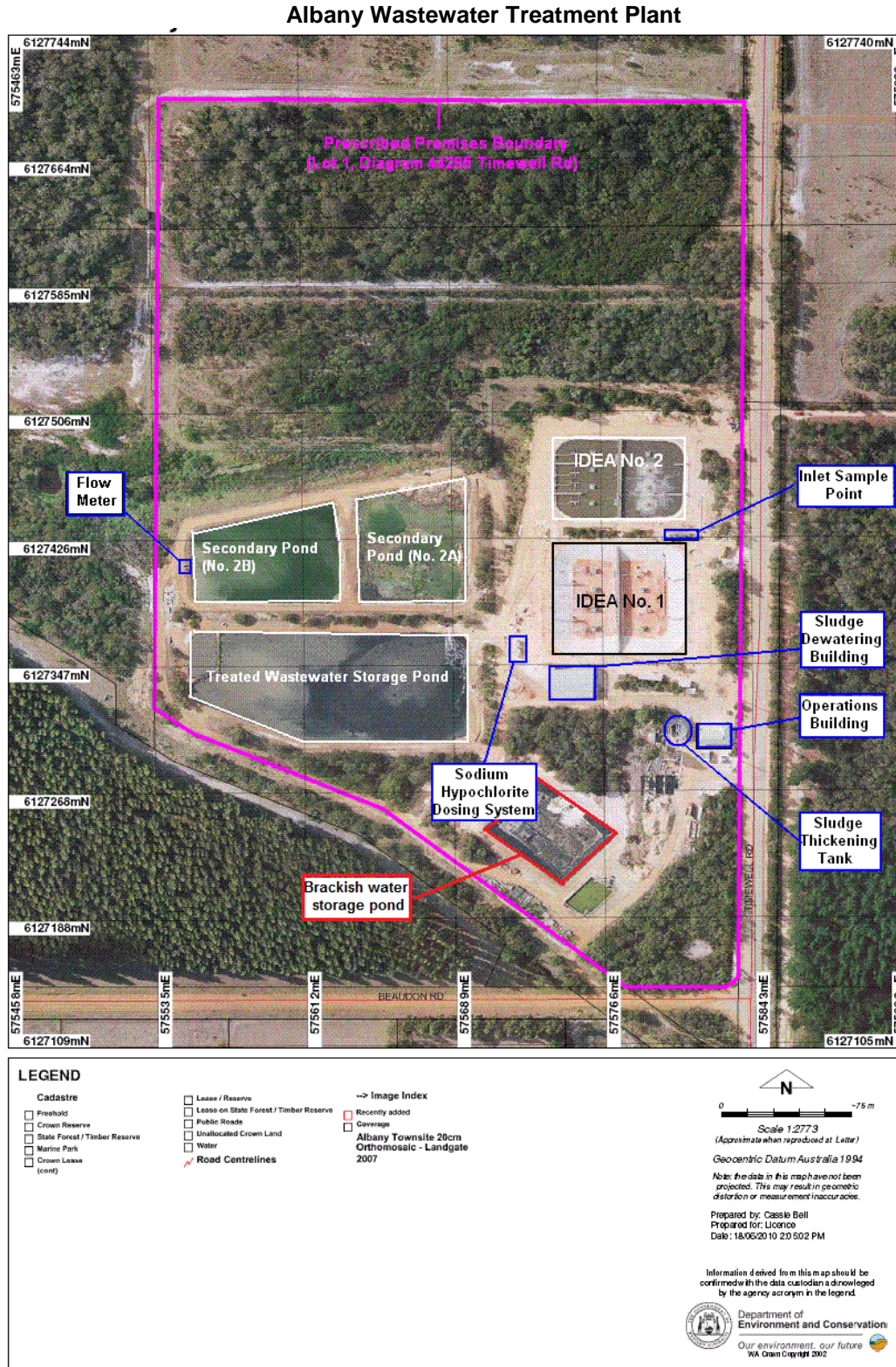
Note 2: Forms are in Schedule 2



## Schedule 1: Maps

### Premises maps

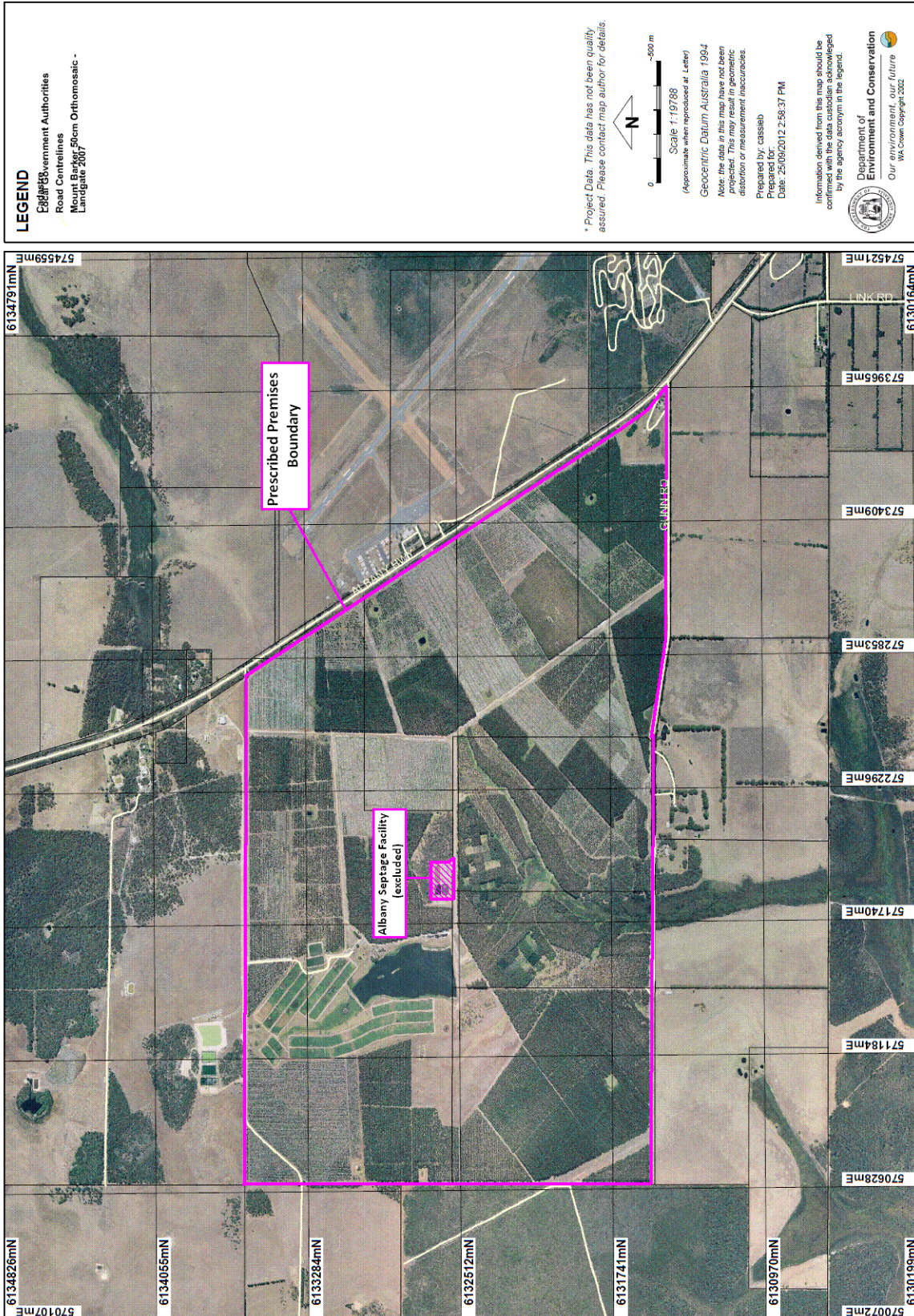
The Premises and monitoring location defined in Table 3.5.1 is shown in the maps below. The pink line depicts the Premises boundary.







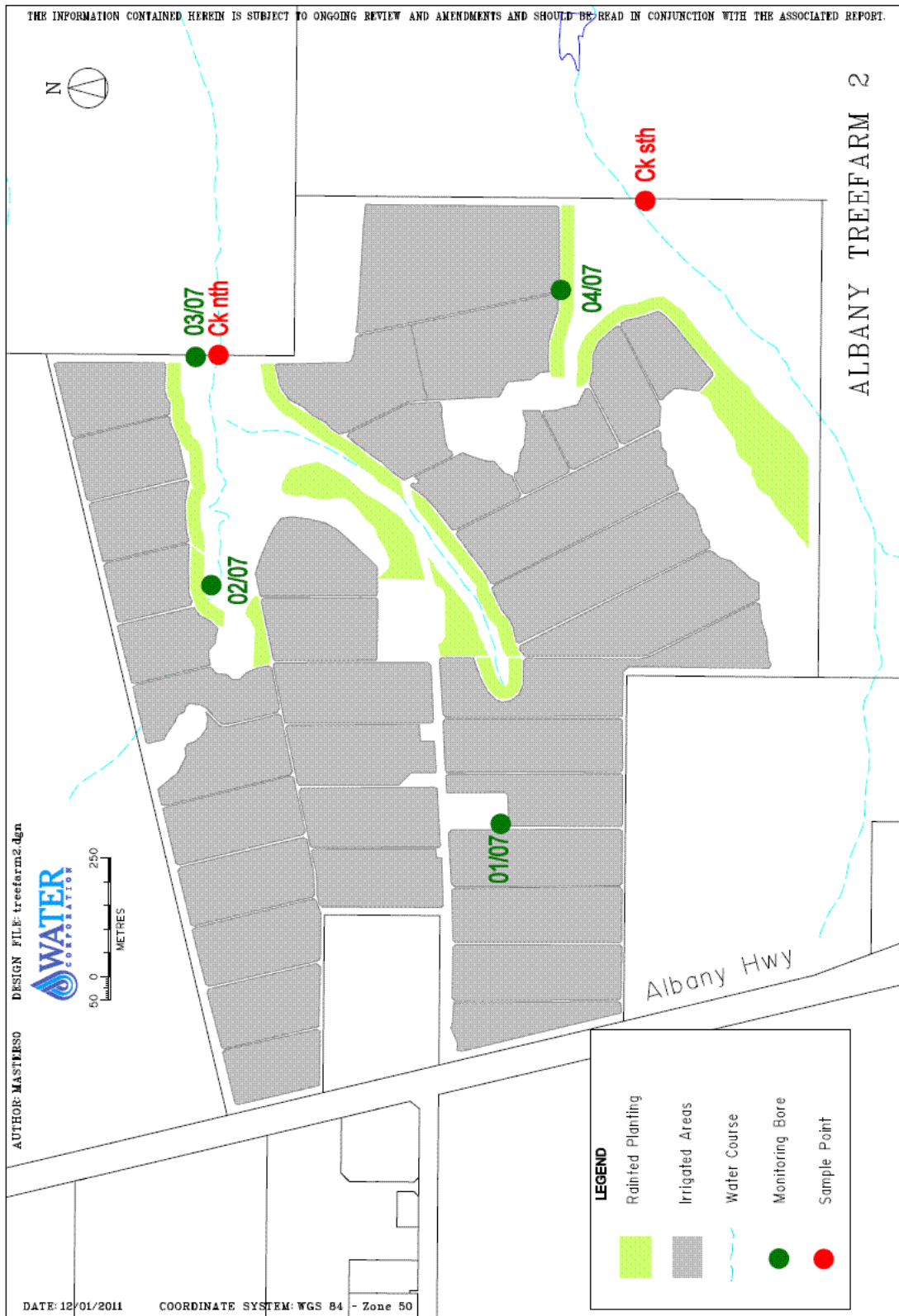
Tree Farm 1







### Tree Farm 2





## Schedule 2: Reporting & notification forms

Licence: L6786/1991/10 Licensee: Water Corporation  
 Form: N1 Date of breach:

### Notification of detection of the breach of a limit.

These pages outline the information that the operator must provide.  
 Units of measurement used in information supplied under Part A and B requirements shall be appropriate to the circumstances of the emission. Where appropriate, a comparison should be made of actual emissions and authorised emission limits.

### Part A

Licence Number	
Name of operator	
Location of Premises	
Time and date of the detection	

Notification requirements for the breach of a limit	
Emission point reference/ source	
Parameter(s)	
Limit	
Measured value	
Date and time of monitoring	
Measures taken, or intended to be taken, to stop the emission	



## Part B

Any more accurate information on the matters for notification under Part A.	
Measures taken, or intended to be taken, to prevent a recurrence of the incident.	
Measures taken, or intended to be taken, to rectify, limit or prevent any pollution of the environment which has been or may be caused by the emission.	
The dates of any previous N1 notifications for the Premises in the preceding 24 months.	

Name	
Post	
Signature on behalf of Water Corporation	
Date	



# Decision Document

## *Environmental Protection Act 1986, Part V*

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**Proponent:** Water Corporation

**Licence:** L6786/1991/11

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**Registered office:** 629 Newcastle Street  
LEEDERVILLE WA 6007

**Premises address:** Albany Wastewater Treatment Plant  
100 Timewell Road  
MCKAIL WA 6330  
Being Lot 1 on Diagram 44295 as depicted in Schedule 1; and  
  
Tree Farm 1  
35790 Albany Highway (Access via Gunn Road)  
DROME WA 6330  
Being Lot 2 on Diagram 43845, Lot 749 on Plan 100633, Lot 815 on  
Plan 101284, Lot 3325 on Plan 79932, Lot 4822 on Plan 157224 and  
Lot 10 on Diagram 84694 (excluding the Albany Septage Facility), as  
depicted in Schedule 1.

**Issue date:** Thursday, 27 September 2012

**Commencement date:** Tuesday, 02 October 2012

**Expiry date:** Sunday, 01 October 2023

### **Decision**

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

Decision Document prepared by: Dr Bhabesh Das  
Senior Licensing Officer

Decision Document authorised by: Caron Goodbourn  
Delegated Officer



## Contents

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### 1 Purpose of this Document

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



## 2 Administrative summary

Administrative details		
Application type	Works Approval <input type="checkbox"/>	
	New Licence <input type="checkbox"/>	
	Licence amendment <input checked="" type="checkbox"/>	
	Works Approval amendment <input type="checkbox"/>	
Activities that cause the premises to become prescribed premises	<b>Category number(s)</b>	<b>Assessed design capacity</b>
	54 – Sewage facility	5 700 cubic metres/day
	61 – Liquid waste facility	3.75 megalitres (approximately 3750 tonnes) per annual period
Application verified	Date:	
Application fee paid	Date: Not applicable (amendment)	
Works Approval has been complied with	Yes <input type="checkbox"/>	No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>
Compliance Certificate received	Yes <input type="checkbox"/>	No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>
Commercial-in-confidence claim	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Commercial-in-confidence claim outcome		
Is the proposal a Major Resource Project?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Was the proposal referred to the Environmental Protection Authority (EPA) under Part IV of the <i>Environmental Protection Act 1986</i> ?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Is the proposal subject to Ministerial Conditions?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the <i>Environmental Protection Act 1986</i> )?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Is the Premises within an Environmental Protection Policy (EPP) Area <i>Environmental Protection South West Agriculture Zone Wetlands Policy 1998</i> .	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Is the Premises subject to any EPP requirements?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>





### 3 Executive summary of proposal and assessment

The Albany Wastewater Treatment Plant for the purposes of this Licence includes two separate properties linked by a wastewater pipeline and collectively involved in the treatment of reticulated sewage and discharge of treated wastewater to the environment via controlled irrigation.

#### Albany Wastewater Treatment Plant (AWWTP)

The AWWTP located at Timewell Rd handles all of Albany's sewage using an Intermittent Decanted Extended Aeration (IDEA) wastewater treatment system. In this facility raw sewage enters the plant through a 6mm step screen which captures large solids, which are later disposed of at a licensed landfill. The screened wastewater then enters one of two IDEA pond systems through a splitter. The IDEA ponds use powerful intermittent aerators and activated sludge to treat the water by consuming nutrients. Aerators are turned off intermittently allowing the particulates to settle so that treated water can be decanted from the surface. Once treated, wastewater is stored on site within a storage dam, prior to being transferred off-site to the separately located Tree Farm 1 (TF1) on Gunn Rd, approximately 9km from the AWWTP.

Surrounding land use is predominantly rural residential in nature, with the nearest residence approximately 500m south of the centre of the treatment plant at Lot 12 on Diagram 23899, South Coast Highway. There are no reserves, EPP areas, declared wetlands or bush plan areas on or close to the site. The site is not within a drinking water supply area. The closest surface water system located to the site is the Five Mile Creek headwater located approximately 2km to the northwest of the treatment plant.

#### Tree Farm 1

Water is pumped from the Albany WWTP via pipeline to one of two large connected storage dams at TF1, from which it is filtered and chlorinated before being irrigated through 275 ha of Australian Bluegum irrigation groups at TF1, or further transferred via the second dam to another separate premises, "Tree Farm 2" (not regulated under a Part V licence) for direct irrigation of 130.3 ha of Australian Bluegums. Tree Farm 1 is 550 ha in size; however this is made up of rain fed trees and mixed native vegetation (124 ha) serving as a buffer for excess irrigation water and nutrients, the overland flow treatment area (14 ha) and the storage dams (30 ha), as well as the 275 ha irrigation area.

Tree Farm 1 is located within the Torbay Inlet Catchment, in the headwaters of the Seven Mile Creek Catchment. Immediate surrounding land-use is cleared agricultural land for grazing and plantation forestry to the north, however the Albany Airport is located to the east of the tree farm. To the west is DEC Reserve 20948, which is reserved for conservation. The nearest private residence to the septage plant is approximately 1100m to the south (lot 4/D59924).

#### Licence amendment

Water Corporation has submitted an application with supporting documentation on 29 July 2016 for the amendment to Albany WWTP licence L6786/1991/11. This Licence is the result of an amendment for the Licensee to undertake hydrostatic testing on the HDPE liner laid on the brackish water storage pond as shown on the premises map. The brackish water is the result of Water Corporation's Reverse Osmosis (RO) treatment of water facility at Denmark. The hydrostatic test will determine the integrity of the liner laid on the pond for the storage of brackish water. It is proposed that approximately 3000 kL of treated wastewater will be taken from the treated wastewater storage pond at the Albany WWTP premises to conduct this test. The treated wastewater storage pond is located within close proximity to the brackish water storage pond. The Licensee proposes to undertake hydrostatic testing on the liner of the pond according to the following:

- undertake hydrostatic testing in September 2016;
- approximately 3000 kL of treated wastewater will be required for the test;
- it will take 24 – 48 hours to fill the pond;
- hydrostatic testing will take approximately 5 -10 days to accurately detect any leaks;
- visual monitoring will be conducted twice a day throughout the testing period; and
- it will take less than 24 hours to drain empty the pond.



The main emission from this activity is discharges of treated wastewater (maximum possible 3000kL in a catastrophic failure event) to land and groundwater through leaks being present in the HDPE liner. The licensee has a number of control measures in place to reduce the impacts from this emission. The treated wastewater that will be used for the test has the quality as attached in Appendix 1. Given the pond can be completely drained back to the treated wastewater storage pond in less than 24 hours, the environmental risk of the proposed testing is low. If any leaks are detected, the pond will be immediately emptied, repaired, filled again and retested. Leaks will be detected by setting up an evaporation pan and stilling well to measure pond level accurately. The seepage rate will be assessed over 24 hour intervals for a minimum of 7 days. If seepage exceeds that of the permeability of the HDPE, then the leak is confirmed. The pond will be emptied and further investigation will be carried out to ascertain the location of the leak.

This partial Decision Document explains in further detail how DER has assessed the proposed amendment and determined the amendment application made by the Licensee and the recommended changes to the licence as a result.



## 4 Decision table

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

DECISION TABLE			
Works Approval / Licence section	Condition number W = Works Approval L = Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
Interpretation	L1.1.5	Previous condition 1.1.5 is removed from the licence because the condition is not valid, enforceable or risk based.	Schedule 1 Redundant conditions
General conditions	L1.2.1 - L1.2.2 L5.1.2	<p>Previous condition 1.2.1 regarding maintenance of pollution control and monitoring equipment is removed from the licence because the condition is not enforceable as it is not sufficiently clear or certain.</p> <p>Previous condition 1.2.2 regarding recovery, removal and disposal of spilled hazardous materials is removed from the licence because the condition is not enforceable as it is not sufficiently clear or certain.</p> <p>Previous condition 5.1.2 removed because the condition is not valid, enforceable or risk based.</p>	Schedule 1 Redundant conditions
Premises operation	L1.2.11 – 1.2.12	<p><b>Operation</b></p> <p><u>Emission Description</u></p> <p><i>Emission:</i> Seepage of treated wastewater from the brackish water storage pond under test during hydrostatic testing for 5 to 10 days. Only 3000kL is proposed to be used in the testing process. The quality of the treated water used for the test is attached in Appendix 1.</p> <p><i>Impact:</i> Local pollution of soil or groundwater with contaminants from the treated wastewater such as Nitrogen, Phosphorus, Biochemical Oxygen Demand and E.Coli.</p> <p><i>Controls:</i> The pond will be immediately emptied to the treated wastewater storage pond if any leaks are detected, which may take less than 24 hours. An evaporation pan and stilling well will be set up to measure pond level accurately. If seepage exceeds that of the permeability of the HDPE, then the leak is confirmed. The pond will be</p>	<p>Albany Wastewater Treatment Plant: Licence Amendment Application dated 29 July 2016 (Water Corporation)</p> <p>Additional information –</p>



DECISION TABLE			
Works Approval / Licence section	Condition number W = Works Approval L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
		<p>emptied and inspections of the liner will be carried out to ascertain the location of the liner. The leaks will then be repaired or replaced with a new liner, pond will be refilled and retested. Hydrostatic testing is to ensure the integrity of the HDPE liner laid on the pond for the storage of brackish water. The lined pond has 3.75 ML capacity only 300kL of treated wastewater will be used for the testing.</p> <p><u>Risk Assessment</u>  <i>Consequence:</i> Insignificant  <i>Likelihood:</i> Unlikely  <i>Risk Rating:</i> Low</p> <p><u>Regulatory Controls</u>            Condition 1.2.11 has been included to the licence requiring the Licensee to undertake hydrostatic testing on the liner of the pond in accordance with the condition.</p> <p>Condition 1.2.12 has been included to the licence requiring the Licensee to submit a compliance document upon the completion of hydrostatic testing on the liner of the pond and prior to commissioning.</p> <p><u>Residual Risk</u>  <i>Consequence:</i> Insignificant  <i>Likelihood:</i> Unlikely  <i>Risk Rating:</i> Low</p>	<p>treated water quality Appendix 1</p> <p>QA/QC Manual for the Installation of Geomembranes, March 2015</p>
<b>Licence Duration</b>	N/A	In processing this amendment, DER has not reassessed any of the operations or emissions and discharges. There has been no change to licence duration as part of this amendment. The licence duration was extended to 1 October 2023 via an amendment in 2015. There are no circumstances in the operation of the facility that warrant amending the expiry date	N/A



## 5 Advertisement and consultation table

Date	Event	Comments received/Notes	How comments were taken into consideration
7/09/2016	Proponent sent a copy of draft instrument	<p>Comments received on 22/09/2016 are as follows:</p> <ul style="list-style-type: none"> <li>• Condition 1.2.11 - If a leak is found and repaired will we be required to report this as a part of the compliance report issued?</li> <li>• Condition 3.4.1, 3.5.1 and 3.5.3 – These conditions require sampling of pH and there is a requirement under Standard 5667 that lab pH analysis is completed with 6 hours of the sample being taken. This is generally not achievable due to the distance to the laboratory and request that the licence permits 'In-field non-NATA accredited analysis' under Standard 5667 by means of a reference and Note against the pH parameter.</li> <li>• Condition 5.3.1, Table 5.3.1 – The Licensee requested to add a row with notification requirement “no less than 14 days prior’ for parameter “taking soil moisture probes offline for tree harvest works.</li> <li>• Condition 3.5.1, table 3.5.3 - Bore A2 has been capped and is no longer able to be pumped for sampling. A new bore has been installed in close vicinity. Replace Bore A2 with A2-15.</li> </ul>	<ul style="list-style-type: none"> <li>• Technically this is not required under the licence</li> <li>• Conditions 3.4.1, 3.5.1 and 3.5.3 are amended with a foot note to permit infield non-NATA accredited analysis. Other licensed premises have that option.</li> <li>• A row is added to the Table 5.3.1 requiring the Licensee to notify no less than 14 days prior to taking probes offline for tree harvesting works. This notification is appropriate because tree harvesting will take place from time to time.</li> <li>• Table 3.5.3 has been updated with the new bore A2-15. This bore has been installed within close proximity to the bore A2.</li> </ul>



Date	Event	Comments received/Notes	How comments were taken into consideration
		<ul style="list-style-type: none"><li>Condition 3.5.1, Table 3.5.2 - 6 of the nine specified soil moisture probes have been removed from their location as the plots have been harvested. This will reoccur with additional harvest activity in the future and will result in administrative non-compliance. Request that the licence adds an exemption for soil moisture monitoring when the probes are no longer operational in the instance of harvest.</li></ul>	<ul style="list-style-type: none"><li>It is considered that there will be a break in continuous monitoring during tree harvesting works when the probes are no longer operational. The Table 3.5.2, frequency column has been amended by adding "(with the exception when the probes are no longer operational for tree harvest works)".</li></ul>



## 6 Risk Assessment

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

**Table 1: Emissions Risk Matrix**

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



# Appendix 1

Reading Date	NH4	TKN	TP	FRP	TN	NO32	ECOLI	BOD	BOD_FILT	COND	SS	PH_LAB	TDS
14/07/2015	<0.05	1.3	6.2	6.22	10	8.9	10000	<5	<5	105	<5	7.8	600
11/08/2015	<0.05	1.3	5.9	5.5	10	9.1	1700	<5	<5	107	<5	7.82	620
9/09/2015	0.6	2.2	5.4	5.18	4.8	2.6	720	<5	<5	103	<5	7.91	600
14/10/2015	1.8	3.8	6.9	6.18	5.8	2	20000	<5	<5	114	20	7.94	630
10/11/2015	0.12	2.4	4.8	4.23	10	7.7	14000	<5	<5	114	10	7.94	670
8/12/2015	0.22	2.5	5.9	5.7	8.7	6.2	1800	<5	<5	104	<5	7.89	610
12/01/2016	1.4	3.4	7		5.1	1.7	490	<5	<5	112	10	7.92	660
9/02/2016	20	20	4.4	4.15	21	0.83	20000	<5	<5	127	10	7.94	620
8/03/2016	1.2	2.8	7.7	6.88	4.1	1.3	2500	<5	<5	115	15	7.94	600
12/04/2016	0.4	1.6	5.7	5.93	14	12	2200	<5	<5	105	<5	7.82	600
10/05/2016	<0.05	1	5.5	5.23	15	14.3	1900	<5	<5	113	10	7.84	670
14/06/2016	1.8	3	4.9	4.85	5.3	2.3	1300	<5	<5	101	<5	7.87	590
12/07/2016	1.4	2.4	4.2	4.58	8.8	6.5	210	<5	<5	100	<5	8.02	550
9/08/2016	3.2	4.8	5	4.3	8.5	3.7	3100	<5	<5	105	10	7.8	590