Government of **Western Australia**
Department of **Environment Regulation**

Your ref L8202/2007/2
Our ref DEC6576
Enquiries Bhabesh Das
Phone 9333 7521
Fax 9333 7550
Email bhabesh.das@der.wa.gov.au

The Manager
Water Corporation
PO Box 100
LEEDERVILLE WA 6902

Dear Sir/Madam

***ENVIRONMENTAL PROTECTION ACT 1986*: LICENCE GRANTED**
Licence Number: L8202/2007/2
Premises: Cunderdin Wastewater Treatment Plant
Lot 250 on Plan 41664
CUNDERDIN WA6407

A licence under the *Environmental Protection Act 1986* (the Act) has been granted for the above premises. The Department of Environment Regulation will advertise the issuing of this licence in the public notices section of *The West Australian* newspaper.

The licence includes attached conditions. Under section 58(1) of the Act, it is an offence to contravene a condition of a licence. This offence carries a penalty of up to $125,000 and a daily penalty of up to $25,000.

In accordance with section 102(1)(c) of the Act, you have 21 days to appeal the conditions of the licence. Under section 102(3)(a) of the Act, any other person may also appeal the conditions of the licence. To lodge an appeal contact the Office of the Appeals Convenor on 6467 5190 or by email at admin@appealsconvenor.wa.gov.au.

Where a licence is issued for more than one year it requires payment of an annual fee and will cease to have effect if the fee is unpaid. It is the occupier's responsibility to lodge a fee application and pay the annual fee in sufficient time to avoid incurring a late payment fee and for processing to be completed before the licence anniversary date.

If you have any queries regarding the above information, please contact Dr Bhabesh Das on 9333 7521.

Yours sincerely

R Dowd.

Ruth Dowd
Officer delegated under section 20
of the *Environmental Protection Act 1986*

Thursday, 10 July 2014

Government of Western Australia
Department of Environment Regulation

LICENCE FOR PRESCRIBED PREMISES

Environmental Protection Act 1986

LICENCE NUMBER: L8202/2007/2 **FILE NUMBER: DEC6576**

LICENSEE AND OCCUPIER OF PREMISES
Water Corporation
PO Box 100
LEEDERVILLE WA 6902

NAME AND LOCATION OF PREMISES
Cunderdin Wastewater Treatment Plant
Lot 250 on Plan 41664
CUNDERDIN WA 6407 (as depicted in Attachment 2)

PRESCRIBED PREMISES CATEGORIES
Schedule 1 of the *Environmental Protection Regulations 1987*

Category	Description	Capacity
54	Sewage facility: premises – (a) on which sewage is treated (excluding septic tanks); or (b) from which treated sewage is discharged onto land or into waters	Not more than 200 cubic metres per day

CONDITIONS OF LICENCE
Subject to the conditions of licence set out in attached 11 pages.

Officer delegated under Section 20
of the *Environmental Protection Act 1986*

ISSUE DATE Thursday, 10 July 2014
COMMENCEMENT DATE Wednesday, 16 July 2014
EXPIRY DATE Monday 15 July 2019

CONDITIONS OF LICENCE

Environmental Protection Act 1986

LICENCE NUMBER: L8202/2007/2 **FILE NUMBER: DEC6576**

DEFINITIONS

In these conditions, unless inconsistent with the text or subject matter:

"APHA-AWWA-WEF" means American Public Health; American Water Works Association; Water Environment Federation,

"cfu/100ml" means coliform count per 100 millilitres,

"Chief Executive Officer" means Chief Executive Officer of the Department of Environment Regulation;

"Chief Executive Officer" and "Department of Environment Regulation" for the purpose of correspondence means-

Manager Licensing (Greater Swan Region)
Department of Environment Regulation
Locked Bag 33
CLOISTERS SQUARE WA 6850
Telephone: (08) 9333 7510
Facsimile: (08) 9333 7550

"Licensed facility" means facility licensed under the *Environmental Protection Act 1986* to accept waste, as determined by reference to the waste type set out in the document titles *Landfill Waste Classification and Waste Defintions 1996 (as amended December 2009)* published by the Chief Executive Officer on 17 December 2009;

"mg/L" means milligrams per litre;

"mg/m^3" means milligram per cubic metre;

"NATA"' means National Association of Testing Authorities;

"Premises" means Cunderdin Wastewater Treatment Plant Lot 250 on Plan 41664, Cunderdin WA 6406 (as depicted in Attachment 2); and

"Relevant Parts of AS/NZS 5667:1998 – Water Quality – Sampling" means sections of the following:

- AS/NZS 5667.10:1998: Water quality - Sampling - Guidance on sampling of waste waters;
- AS/NZS 5667.6:1998: Water quality - Sampling - Guidance on sampling of rivers and streams.

CONDITIONS OF LICENCE

Environmental Protection Act 1986

LICENCE NUMBER: L8202/2007/2 **FILE NUMBER: DEC6576**

MAINTENANCE / SOLIDS MANAGEMENT

MAINTENANCE OF WASTEWATER TREATMENT PONDS

1. The Licensee shall manage the wastewater treatment ponds in a manner such that:
   (i) uncontaminated stormwater runoff resulting from roof and site drainage shall be prevented from entering the wastewater treatment ponds or causing erosion of outer pond embankments;
   (ii) overtopping of the wastewater treatment ponds shall not occur except as a result of an extreme rainfall event;
   (iii) there is no discernible seepage loss from the ponds; and
   (iv) vegetation (emergent or otherwise) shall be prevented from growing in the pond wastewater or on the inner pond embankments.

2. The Licensee shall dispose of collected vegetation and floating debris from the treatment ponds to a licensed facility.

SOLIDS MANAGEMENT

3. The Licensee shall:
   (i) inform the Chief Executive Officer no less than 14 days prior to the removal of sludge from the oxidation pond;
   (ii) inform the Chief Executive Officer no less than 14 days prior to the removal of sludge from the Imhoff tank or the oxidation pond;
   (iii) where sludge is temporarily stored on site, direct sludge to a hard-stand area or approved drying bed which:
      (a) is adequately bunded to prevent surface runoff of leachate or sludge from crossing the boundary of the premises;
      (b) where possible, returns sludge leachate from the storage area back to the treatment pond.

4. The Licensee shall either dispose of sludge and biosolids in accordance with the document *Western Australian Guidelines Biosolids Management,* Department of Environment and Conservation, December 2012 (as amended from time to time).

DISCHARGE TO WATER - WATER POLLUTION CONTROL CONDITIONS

TREATED WASTEWATER DISCHARGE

5. The Licensee shall discharge treated wastewater from the treatment plant to the constructed wetland on Lot 250 on Plan 41664 (as depicted in Attachment 2).

6. The treated wastewater is to be retained in the wetland and discharged in a controlled manner into the Mortlock River. The licensee shall only discharge when the river level is at least 30 cm high at the Cunderdin Bridge located at MGA 509 522119, 6500309.

MONITORING CONDITIONS

FLOW MONITORING

7. The Licensee shall maintain suitable devices for measuring monthly cumulative volumes of treated wastewater discharged from the oxidation pond to the wetland.

8. The monthly flow results required by Condition 7 shall be presented in the Annual Monitoring Reports in a tabular format.

9. The Licensee shall, at the frequencies stated, take representative samples of water from the following monitoring sites depicted in Attachment 3 and have them analysed for the following parameters:

Monitoring Site	Sampling Frequency	Parameters to be Measured*
Oxidation pond discharge site	3 monthly	pH, Biochemical Oxygen Demand, Total Dissolved Solids, Total Suspended Solids, Nitrate + Nitrite-nitrogen, Ammonium-nitrogen, Total Nitrogen, Total Phosphorus and E coli
Wetland discharge valve / outlet pipe	Within 7 days of opening the valve (commencement of discharge), monthly thereafter and/or on the day of valve closure	

**"With the exception of pH and E Coli, all measurements are to be reported in milligrams per litre (mg/L). E Coli shall be measured in cfu/100ml.*

10. The Licensee shall collect, handle and preserve all water samples in accordance with the relevant part(s) of Australian Standard 5667:1998.

11. The Licensee shall submit all water samples to a laboratory with current NATA accreditation for the analyses specified. If the Licensee uses its own laboratory, then at least one set of samples per year shall also be submitted to a laboratory holding NATA accreditation for the analysis specified in condition 9. The Licensee shall report these duplicate results to the Chief Executive Officer in the following annual monitoring report, specifying the laboratory in which each analysis was performed.

CALCULATION OF CONTAMINANT LOAD

12. The Licensee shall determine the 3 monthly loads of each contaminant in the treated wastewater discharged from the premises (except pH and bacteria) using flow-weighted data. The loads shall be based on the treated wastewater discharge rate and the concentration as measured in accordance with conditions 7 and 9. 3-Monthly and annual average loads of the contaminants shall be reported in the Annual Monitoring Report in kilograms per day.

REPORTING CONDITIONS

ANNUAL MONITORING REPORT

13 The Licensee shall provide to the Chief Executive Officer, by **1 September each year**, an Annual Monitoring Report containing data required by any condition for this licence. The Annual Monitoring Report will cover the period from **1 July to 30 June.**

The report shall contain but not be limited to:

(i) monitoring data or other collected data required by any condition of this licence;
(ii) an assessment of the data against any limits set or other environmental guidelines, targets or policies referred to in this licence and data from previous years' monitoring;

(iii) a summary of any data exceeding those limits, guidelines, targets or policies including information on why the exceedance occurred (if known) and action taken by the Licensee to prevent recurrence of such exceedances;

(iv) a summary of the number and type of complaints received;

(v) any changes to site boundaries, location of groundwater monitoring bores, surface drainage channels and on-site or off-site impacts;

(vi) a list of any monitoring methods used to collect and analyse data required by any condition of this licence to demonstrate they comply with the methods specified in this licence; and

(vii) commentary on the operation of the wastewater treatment plant and wetland

14. The Licensee shall use the following units in reports required by part of this condition:

Parameter	**Unit**
Monthly cumulative volume discharged	Cubic metres
pH	pH units
E. coli	cfu/100ml
All other parameters (treated wastewater)	mg/L
Nitrogen and phosphorus load	kilograms per day (monthly average)

ANNUAL AUDIT COMPLIANCE REPORT

15. The Licensee shall by **1 September in each year**, provide to the Chief Executive Officer an Annual Audit Compliance Report in the form in Attachment 1 to this licence, signed and certified in the manner required by Section C of the form, indicating the extent to which the licensee has complied with the conditions of this licence, and any previous licence issued under Part V of the Act for the Premises, during the period beginning **July 1** the previous year and ending on **June 30** in that year.

LICENCE NUMBER: L8202/2007/2 **FILE NUMBER: DEC6576**

SECTION A

LICENCE DETAILS

Licence Number:	Licence File Number:
Company Name: Trading as:	ABN:
Reporting period: _____ to _____	

STATEMENT OF COMPLIANCE WITH LICENCE CONDITIONS

1. Were all conditions of licence complied with within the reporting period? (please tick the appropriate box)

Yes □ Please proceed to Section C
No □ Please proceed to Section B

Each page must be initialed by the person(s) who signs Section C of this annual audit compliance report

INITIAL:_____

LICENCE NUMBER: L8202/2007/2 **FILE NUMBER: DEC6576**

SECTION B - DETAILS OF NON-COMPLIANCE WITH LICENCE CONDITION.

Please use a separate page for each licence condition that was not complied with.

a) Licence condition not complied with?	
b) Date(s) when the non compliance occurred, if applicable?	
c) Was this non compliance reported to DER?	
☐ Yes ☐ Reported to DER verbally Date _____ ☐ Reported to DER in writing Date _____	☐ No
d) Has DER taken, or finalised any action in relation to the non compliance?	
e) Summary of particulars of non compliance, and what was the environmental impact?	
f) If relevant, the precise location where the non compliance occurred (attach map or diagram)	
g) Cause of non compliance	
h) Action taken or that will be taken to mitigate any adverse effects of the non compliance	
i) Action taken or that will be taken to prevent recurrence of the non compliance	

Each page must be initialed by the person(s) who signs Section C of this annual audit compliance report

INITIAL:_____

LICENCE NUMBER: L8202/2007/2 **FILE NUMBER: DEC6576**

SECTION C - SIGNATURE AND CERTIFICATION

This Annual Audit Compliance Report may only be signed by a person(s) with legal authority to sign it. The ways in which the Annual Audit Compliance Report must be signed and certified, and the people who may sign the statement, are set out below.

Please tick the box next to the category that describes how this Annual Audit Compliance Report is being signed. If you are uncertain about who is entitled to sign or which category to tick, please contact the licensing officer for your premises.

If the licence holder is		The Annual Audit Compliance Report must be signed and certified:
an individual	□	by the individual licence holder, or
	□	by a person approved in writing by the Chief Executive Officer of the Department of Environment Regulation to sign on the licensee's behalf.
A firm or other unincorporated company	□	by the principal executive officer of the licensee; or
	□	by a person with authority to sign on the licensee's behalf who is approved in writing by the Chief Executive Officer of the Department of Environment Regulation.
A corporation	□	by affixing the common seal of the licensee in accordance with the Corporations Act 2001; or
	□	by two directors of the licensee; or
	□	by a director and a company secretary of the licensee, or
	□	if the licensee is a proprietary company that has a sole director who is also the sole company secretary – by that director, or
	□	by the principal executive officer of the licensee; or
	□	by a person with authority to sign on the licensee's behalf who is approved in writing by the Chief Executive Officer of the Department of Environment Regulation.
A public authority (other than a local government)	□	by the principal executive officer of the licensee; or
	□	by a person with authority to sign on the licensee's behalf who is approved in writing by the Chief Executive Officer of the Department of Environment Regulation.
a local government	□	by the chief executive officer of the licensee; or
	□	by affixing the seal of the local government.

It is an offence under section 112 of the *Environmental Protection Act 1986* for a person to give information on this form that to their knowledge is false or misleading in a material particular. There is a maximum penalty of $50,000 for an individual or body corporate.

LICENCE NUMBER: L8202/2007/2 **FILE NUMBER: DEC6576**

I/We declare that the information in this annual audit compliance report is correct and not false or misleading in a material particular.

SIGNATURE: _____

NAME:
(printed) _____

POSITION: _____

DATE: _____/_____/_____

SIGNATURE: _____

NAME:
(printed) _____

POSITION: _____

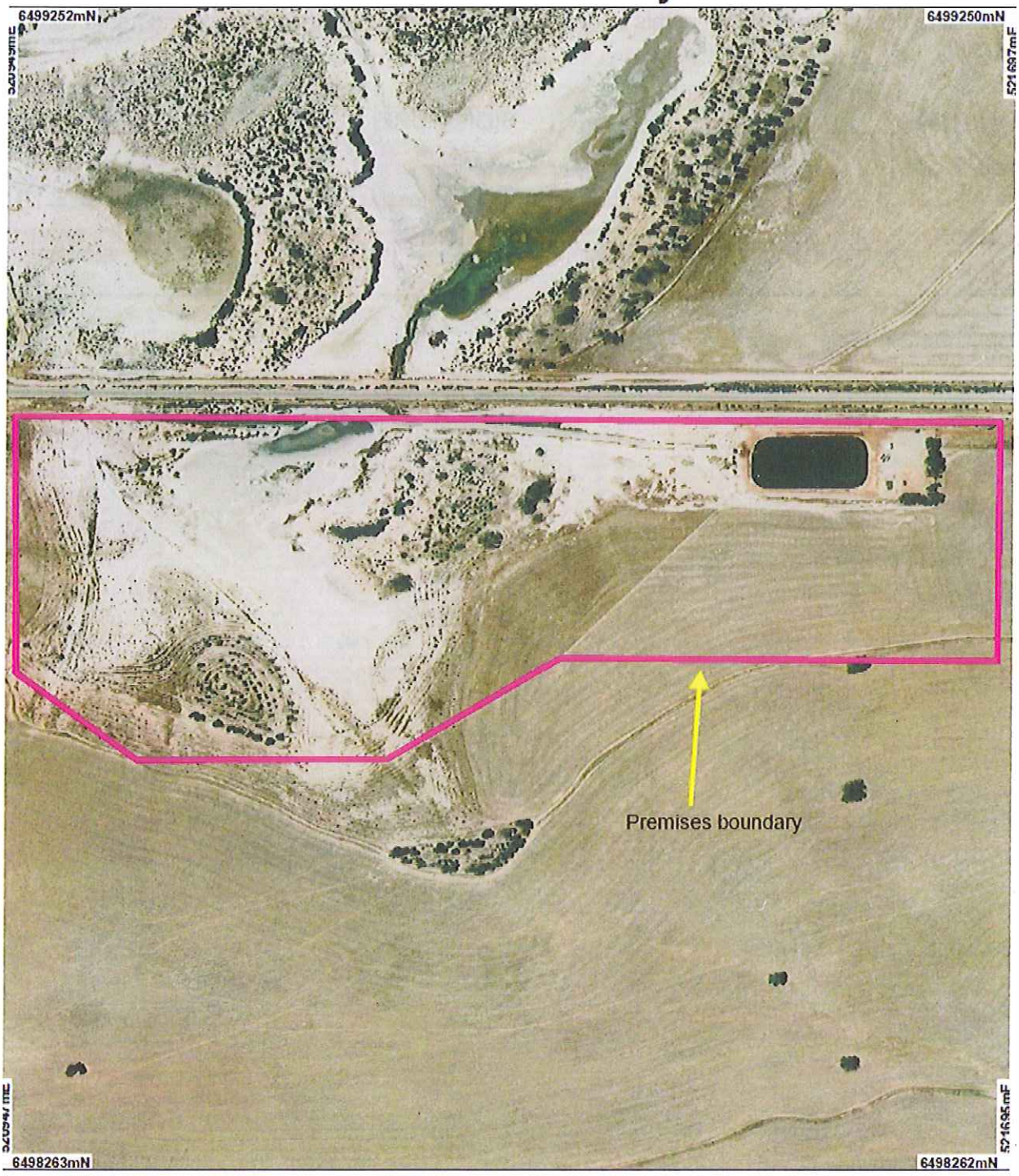
DATE: _____/_____/_____

SEAL (if signing under seal)

ATTACHMENT 2:

LICENCE NUMBER: L8202/2007/2 FILE NUMBER: DEC6576

Premises boundary



LEGEND

- Local Government Authorities
- Swan River Trust Development Control Area
- Road Centrelines

Bruce Rock 1.4m Orthomosaic - Landgate 2001

Bruce Rock - Muntadgin 1.4m Orthomosaic - Landgate 2000/2001

Bruce Rock 1.4m Orthomosaic - Landgate 2001_1

Cunderdin 50cm Orthomosaic - Landgate 2004

N

0 125 m

Scale 1:4577
(Approximate when reproduced at A4)

Geocentric Datum Australia 1994

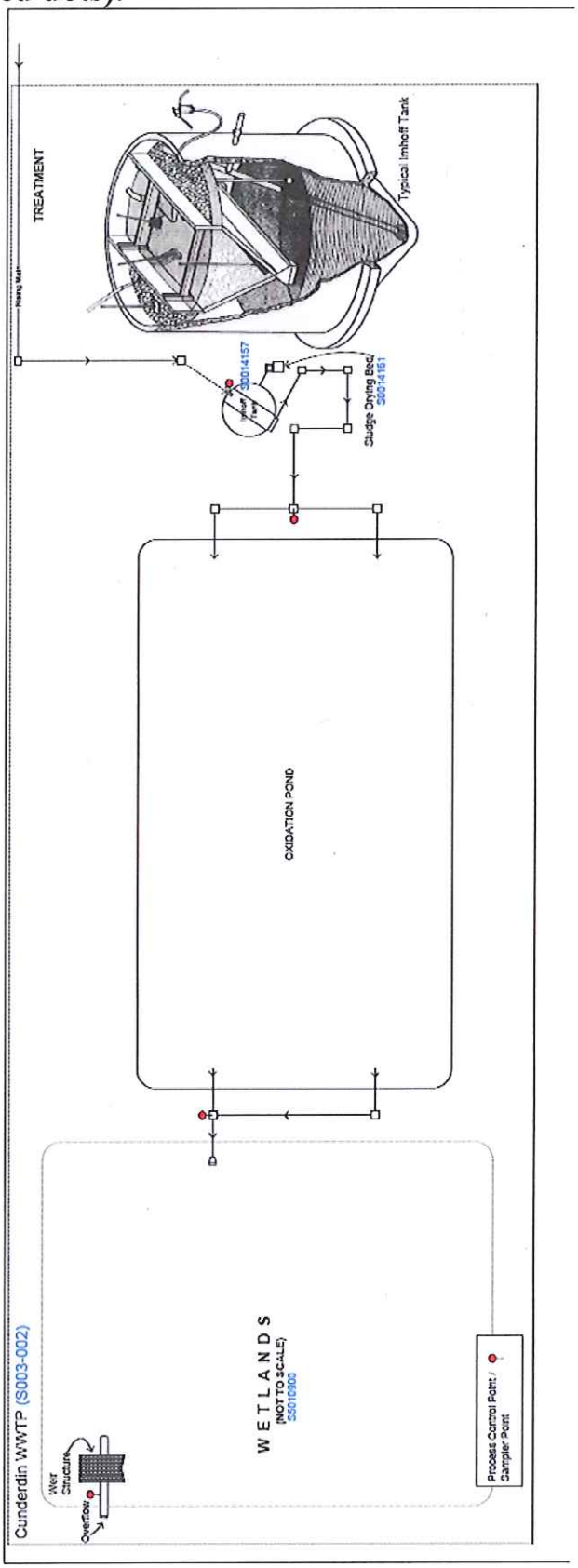
Note: the data in this map have not been projected. This may result in geometric distortion or measurement inaccuracies.

Prepared by: bhabesh
Prepared for:
Date: 3/07/2014 3:55:51 PM

Information derived from this map should be confirmed with the data custodian acknowleged by the agency acronym in the legend.

Government of Western Australia
Department of Environment Regulation

LOCATION OF SAMPLING POINTS
(Illustrated by the red dots).



Government of Western Australia
Department of Environment Regulation

ENVIRONMENTAL ASSESSMENT REPORT

LICENCE NUMBER: L8202/2007/2
LICENCE FILE NUMBER: DEC6576
APPLICATION DATE: 17/04/2014
EXPIRY DATE: 15/07/2019

PREMISES DETAILS

LICENSEE AND OCCUPIER
Water Corporation
629 Leederville Street
LEEDERVILLE WA 6007

PREMISES
Cunderdin Wastewater Treatment Plant
Lot 250 on Plan 41664
CUNDERDIN, WA, 6407

PRESCRIBED PREMISES CATEGORY

Table 1: Prescribed Premises Category from Schedule 1 of the Environmental Protection Regulations 1987

Category number	Description	Production or Design Capacity	Nominated Rate of Throughput	Throughput Classification *
54	Sewage facility: premises a) on which sewage is treated (excluding septic tanks); or b) from which treated sewage is discharged onto land or into waters	100 cubic metres or more per day	Not more than 200 cubic metres per day	Not more than 200 cubic meters per day

* From Schedule 4 of the *Environmental Protection Regulations 1987*

This Environmental Assessment Report (EAR) has been drafted for the purposes of detailing information on the management and mitigation of emissions and discharges from the prescribed premises. The objective of the EAR is to provide a risk assessment of emissions and discharges, and information on the management of other activities occurring onsite which are not related to the control of emissions and discharges from the prescribed premises activity. It is important to note that the licence is not a mechanism to regulate those activities that occur on-site that are not related to the prescribed premises activity.

Basis of Assessment
The Cunderdin Wastewater Treatment Plant, which has been assessed as a "prescribed premises" category number 54, under Schedule 1 of the *Environmental Protection Regulations 1987*.

Category 54 – Sewage Facility; premises –
a) on which sewage is treated (excluding septic tanks); or
b) from which treated sewage is discharged onto land or into waters.

The Cunderdin WWTP treats sewage from the whole town site with approximately 227 connections to residential and commercial properties. The WWTP is designed to treat 900 persons (180m^3/day) with a current inflow of 90m^3/day. The Cunderdin WWTP has been operating since the early 1970's and will remain in operation for as long as the surrounding community requires wastewater treatment. The facility may undergo upgrading when required.

1.0 BACKGROUND

1.1 GENERAL COMPANY DESCRIPTION

The Water Corporation manages the State's water supply of drinking water, and owns and operates over 249 water treatment plants and 104 wastewater treatment plants across Western Australia. In order to operate these facilities, the Corporation currently has about 75 licences and 29 registrations for its wastewater treatment plants.

The Water Corporation currently has several of its business units Environmental Management Systems ISO14001 accredited and is in the process of implementing a corporate-wide ISO14001 accredited EMS. The Water Corporation complies with AS/NZS 5667:1998 and the (internal) document SG100 "Standards for Wastewater Monitoring" when conducting sampling and monitoring activities.

The Water Corporation's Environmental Policy is publicly available on their website www.watercorporation.com.au

1.2 LOCATION OF PREMISES

The Cunderdin WWTP site is located approximately 700m north of the Cunderdin township. The town is located in the centre of the Wheatbelt region on Great Eastern Highway, 158km east of Perth. The township is surrounded by rural lands. Cunderdin township has a population of approximately 850 residents.

The WWTP is located within the Avon River catchment and lies approximately 620m south of the main channel of the Mortlock River.

The WWTP lies adjacent to the railway line and is bordered by the railway reserve to the north and rural lands on the remaining three edges. Industrial and commercial lands lie beyond the immediate adjoining rural lands approximately 500m to the east and south of the WWTP site, with the nearest residential lands approximately 550m distant.

The closest odour sensitive receptors are:

- a residential building located approximately 550m east of the site
- industrial facilities located 500m in east and south east direction of the site.

The site is not located within an environmentally sensitive area and is not within a drinking water supply area. Public drinking water is supplied from the Goldfields and Agriculture Water Supply Scheme main conduit.

The nearest water body is the Mortlock River which is a braided watercourse flowing through a series of salt lakes. The main channel of the Mortlock River (at its closest point) is approximately 620m to the north of the secondary treatment pond of the WWTP.

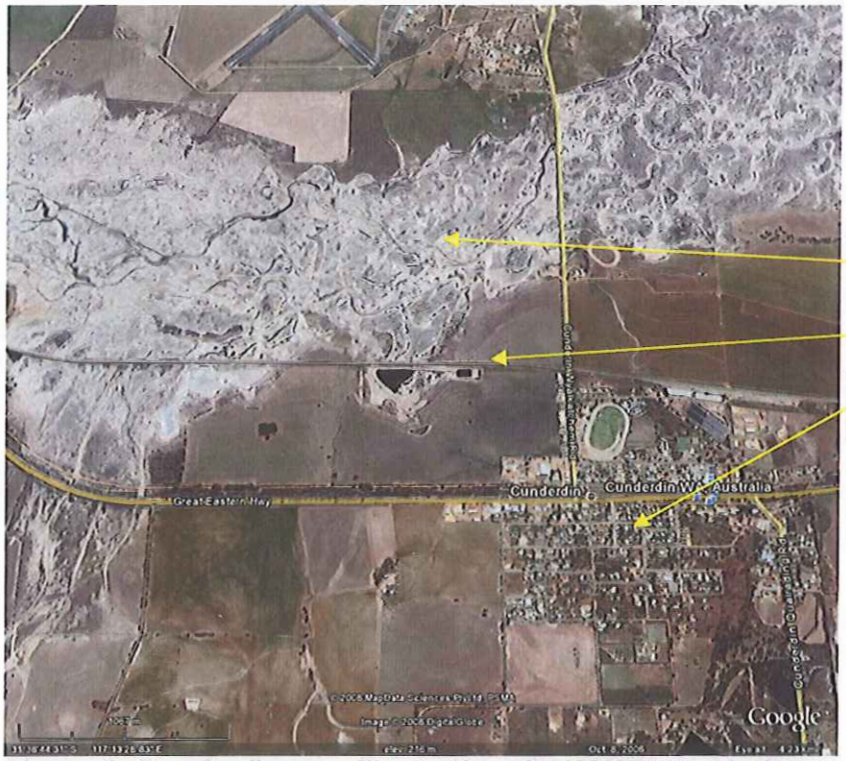


Figure 1. Cunderdin area illustrating the WWTP in relation to the townsite and Mortlock River. (Courtesy of Google Earth 2008)

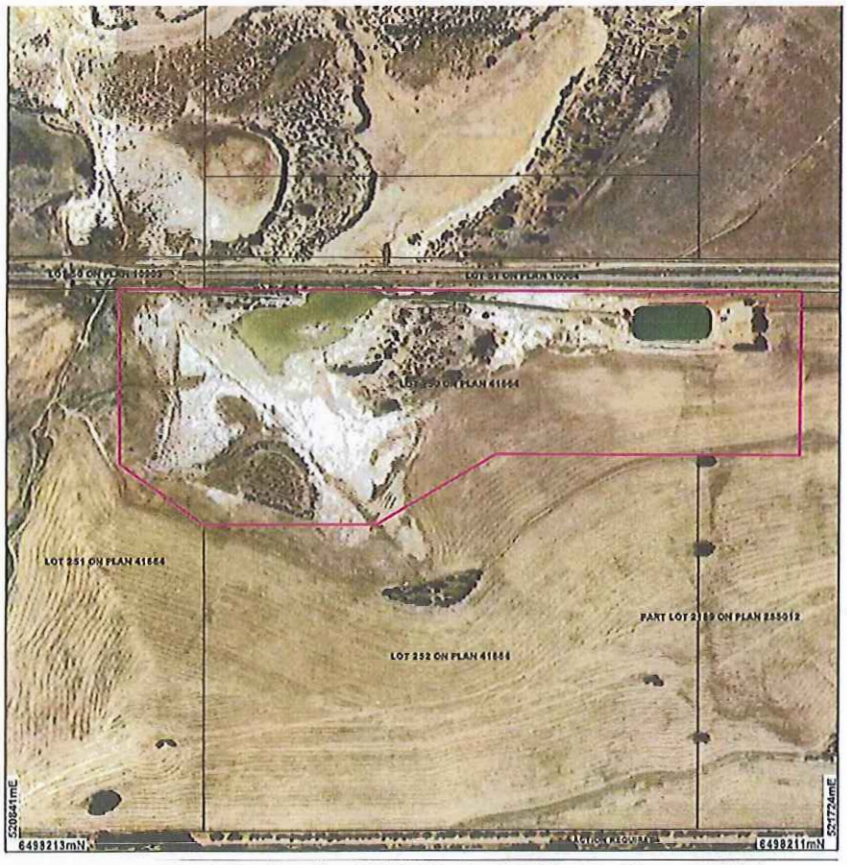


Figure 2. Cunderdin WWTP, Lot 250 on Plan 41664. (Courtesy of the Department of Water GIS Viewer)

1.3 PROCESS DESCRIPTION

The Cunderdin Wastewater Treatment Plant (WWTP) currently treats 142m^3/day of wastewater from the township of Cunderdin. Wastewater receives primary treatment in a below ground Imhoff tank and then secondary treatment in one oxidation pond prior to draining into a constructed wetland. The oxidation pond has a storage volume of 3.3ML whilst the wetland's storage volume is 40ML.

Treated wastewater is retained in the wetland for the majority of the year with controlled discharge occurring over a few weeks in winter when the Mortlock River is flowing (usually during August). The treated wastewater is discharged into a channel which runs into a series of salt lakes that ultimately discharge into Mortlock River North.

Sludge from the Imhoff tank is dried in the drying bed and taken to the Northam Wastewater Treatment Plant. The oxidation pond is cleaned of sludge on an irregular basis when required. All sludge is removed from site.

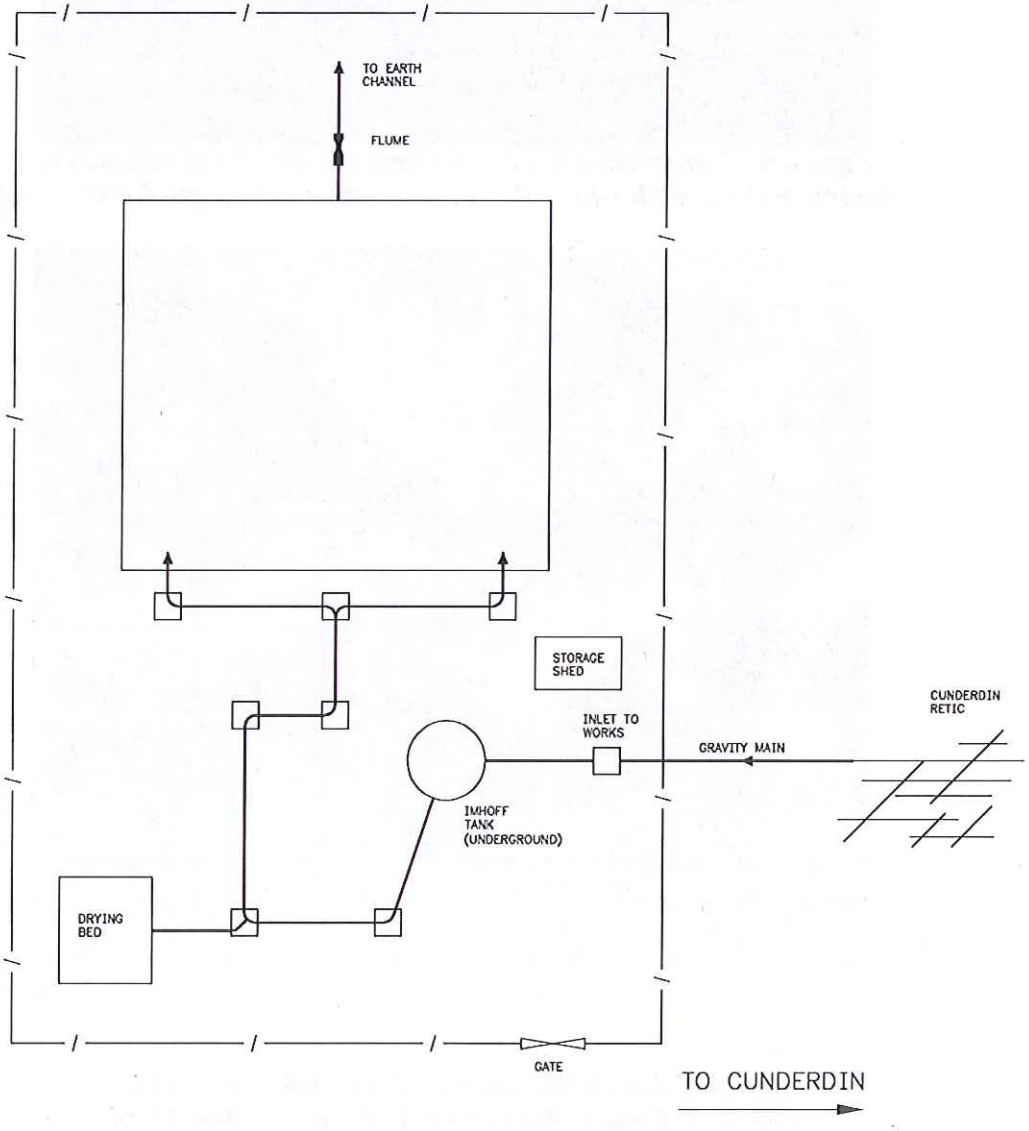


Figure 3. Cunderdin Wastewater Scheme Operating Plan.

1.4 REGULATORY CONTEXT

1.4.1 Part V Environmental Protection Act 1986, Environmental Management

The site has been assessed as a prescribed premises: Category 54 – Sewage Facility.

Other Department of Environment Regulation legislation relevant to this premises include:

- *Environmental Protection Regulations 1987*
- *Environment Protection (Controlled Waste) Regulations 2004*
- *Environmental Protection (Noise) Regulations 1997*
- *Environmental Protection (Unauthorised Discharges) Regulations 2004*

1.4.2 Other DMA's Legislation which applies

Local Government Act 1995

1.4.3 Local Government Authority

There are no local Government Authority issues associated with the site. The site is zoned **"Public Purpose – Sewage Treatment Plant"** under Town Planning Scheme No. 3 within the Shire of Cunderdin.

1.4.4 Guidelines/Codes of Practice

Department of Water – Water Quality Protection Notes that may apply:

- WQPN 22 – Irrigation with Nutrient-rich Wastewater, July 2006
- WQPN 33 – Nutrient and Irrigation Management Plans, June 2006
- WQPN 27 – Liners for containing pollutants, using engineered soils, February 2006
- WQPN 39 – Ponds for Stabilising Organic Matter, February 2006

2.0 STAKEHOLDER AND COMMUNITY CONSULTATION

SUBMISSIONS RECEIVED DURING 21 DAY PUBLIC COMMENT PERIOD

The Application for licence details for this facility was advertised in the West Australian newspaper on 26/05/2014 as a means of advising stakeholders and to seek public comments. No submissions were received.

3.0 EMISSIONS AND DISCHARGES RISK ASSESSMENT

The Department of Environment Regulation (DER) considers that conditions should focus on regulating emissions and discharges of significance. Where appropriate, emissions and discharges which are not significant should be managed and regulated by other legislative tools or management mechanisms.

The following section assesses the environmental risk of potential emissions from the Cunderdin WWTP. In order to determine the site's appropriate environmental regulation, an emissions and discharges risk assessment was conducted of the Cunderdin WWTP using the environmental risk matrix outlined in Appendix B. The results of this are summarized in Table 2.

							of the *Environmental Protection Act 1986*
ter t takes a below nhoff	Insignificant – nuisance complaints only. No health impacts expected.	Unlikely. The nearest receptor is >500m from the facility. The controls in place are acceptable. No history of complaints.	Low	LIC – N/A No specific licence conditions required. Managed by general General provisions of the *Environmental Protection Act 1986.*	Low	N/A	General provisions of the *Environmental Protection Act 1986.*
sources located on the premises.							*Environmental Protection (Noise) Regulations 1997*
sources located on the premises.							General provisions of the *Environmental Protection Act 1986*

Risk factor	Impact	Controls	Consequence	Likelihood	Risk Assess-ment	DER Regulation	Residual Risk	EAR Reference	Other management (legislation,tools, agencies)
Discharges to water	See Appendix A for detailed assessment.								General provisions of the *Environmental Protection Act 1986* *Environmental Protection (Unauthorised Discharges) Regulations 2004*
Discharges to groundwater	There is no groundwater in close proximity to the plant and no direct discharge to groundwater is proposed. The groundwater in the Cunderdin area is generally of poor quality and as result potable water is supplied from Mundaring.								General provisions of the *Environmental Protection Act 1986*
Discharges to land	See Appendix A for detailed assessment.								General provisions of the *Environmental Protection Act 1986.* *Environmental Protection (Unauthorised Discharges) Regulations 2004.*

quired pond ng. dge is from in nce vant es.				of solid wastes will sufficiently manage the risk.			*Protection Act 1986.* *Environmental Protection (Controlled Waste) Regulations 2004.* *Landfill Waste Classification and Waste Definitions 1996 (As amended)*
tities of hydrocarbons or chemicals stored on site.							*Environmental Protection (Unauthorised Discharges) Regulations 2004.*
							Environmental Protection (Clearing of Native Vegetation) Regulations 2004

4.0 GENERAL SUMMARY AND COMMENTS

The Cunderdin Wastewater Treatment Plant (WWTP) currently treats 90m^3/day of wastewater from the township of Cunderdin and is designed to discharge treated wastewater to a wetland where it is retained for the majority of the year.

The WWTP consist of a below ground Imhoff Tank, one oxidation pond and a wetland. Treated wastewater is discharged from the oxidation pond to a channel that flows to a constructed wetland. Treated wastewater is retained in this wetland for the majority of the year and is discharged in a controlled manner to a channel during winter (August) for approximately two weeks. The channel connects to a series of salt lakes which in turn flows into the Mortlock River.

The premises has been assessed as posing a low environmental risk. The licence is to be reissued to manage the regular discharge from the oxidation pond to the wetland, the intermittent controlled discharge from the wetland into the Mortlock River and solids waste management from the treatment plant.

OFFICER PREPARING REPORT

Dr Bhabesh Das

Position: Senior Licensing Officer
Greater Swan Region
Department of Environment Regulation

9333 7521
29 April 2009

Amendment Date: 7 July 2014

ENDORSEMENT

Cristina Angel

Position: Manager Licensing
Greater Swan Region
Department of Environment Regulation

9333 7528
29 April 2009

Amendment Date: 7 July 2014

APPENDIX A

DISCHARGES TO WATER/LAND

The existing facilities consist of a primary treatment below ground Imhoff Tank and a secondary oxidation pond with effluent disposal firstly to a partially artificially-constructed wetland within the premises boundary and then to a natural saline wetland depression which lies in the floodplain of the Mortlock River. The current inflow to the plant is 90m^3/day.

The WWTP was designed to produce the following treated wastewater quality:

- BOD <20 mg/L

As it is a pond system, the level of Nitrogen and Phosphorus removal is limited, however some nutrients will be removed through the wetland.

The treated wastewater is retained on site within the oxidation pond and wetland for the majority of the year, except during winter months where controlled discharge from the wetland into a channel takes place. The wetland is located on the southern side of the railway - downstream of the plant, but within the premises boundary. The discharge channel flows into series of salt lakes that ultimately discharge to the Mortlock River North. This method of disposal has been in operation since the plant was commissioned in the early 1970's. Treated wastewater is not used for irrigation purposes on local ovals by the Shire.

The wetland underwent major modifications in 2005 to block off the culvert at the eastern end of the wetland with a bund, and redirect the flow to the culvert at the western end of the wetland. A weir was constructed at the outlet of the wetland and an outlet pipe with a controllable valve was installed. The base of the wetland was remoulded with existing materials and locally sourced material. The final wetland configuration covers an area of approximately 5.5ha with a maximum water level of RL209.4m.

During summer months, the treated wastewater tends to pond in the wetland and under normal summer conditions the treated wastewater is contained within this area.

During the wet winter months, the wetland receives overland flow from the surrounding rural lands and catchment covering 25ha, in addition to the normal flows from the WWTP. Treated wastewater is discharged through the controlled valve and outlet pipe into the channel, which then flows through a culvert under the railway into the series of lakes prior to flowing into the Mortlock River.

Previous operations have retained treated wastewater in the discharge area for eight months of the year with discharge for four months of the year. Current operations (with the construction of the wetland) have reduced the discharge period to approximately two weeks in August. The change in operations reflects the recent decreases in winter rain periods that have occurred across WA and discharge only takes place if the Mortlock River is flowing. Weekly inspections are undertaken to determine if the river is flowing and to ascertain wetland water levels prior to opening the outlet valve. The outlet is then kept open only whilst the Mortlock River is flowing. Once the river ceases flowing or if the wetland level has lowered to the outlet pipe level (even whilst the river is still flowing), then the outlet valve is closed. The outlet pipe is located halfway up from the wetland base.

A spillway is located beside, but at a higher level than, the outlet pipe for any overflows that may occur from the wetland during a flood or major storm event. Anecdotal evidence indicates that no overflows have occurred since construction.

Treated wastewater samples are taken at the discharge point from the oxidation pond into the wetland on a quarterly basis. Other samples are taken at the outlet pipe at the discharge point of the wetland within seven days upon opening of the outlet valve, and every month thereafter, or on the day the valve is closed.

Table 3. Current water sampling program

Sample Site	Frequency	Parameter	Units
Oxidation pond discharge point	Quarterly	Ammonium-Nitrogen Nitrate – nitrogen Total Nitrogen Total Phosphorus Suspended Solids Filtered BOD pH TDS E-Coli	mg/L cfu/100mL
Wetland Discharge outlet valve	Within 7 days of commencement of discharge and monthly thereafter, or on the day of valve closure		

Table 4. Final effluent monitoring results

	Feb 07	May 07	Aug 07	Nov 07	Feb 08
Site 1 – Oxidation pond discharge					
Suspended Solids (mg/L)	25	15	30	55	<5
TN (mg/L)	15	29	46	100	18
TP (mg/L)	8.4	14	14	16	14
Site 2 – Wetland discharge valve					
Suspended Solids (mg/L)			1/8/07:1800 * 6/8/07: 150		
TN (mg/L)			1/8/07: 16 6/8/07: 13		
TP (mg/L)			1/8/07: 7.3 6/8/07: 6.5		

* The high levels of suspended solids in the wetland discharge sample in August are likely to be algae, as wastewater stored in the wetland is a food source for algae.

Flows can be measured at the:

- Inflow into the Imhoff tank via a magflow
- Discharge point from the oxidation pond to the wetland via a v-notch

The annual inflow into the WWTP is approximately 51465 kL which equates to 141 m^3/day. The annual flow from the oxidation pond to the wetland is estimated to be 21304 kL which equates to 58.37 m^3/day.

It is difficult to estimate flows from the wetland to the channel over the brief period of discharge as there is no v-notch or magflow meter. Based on the above figures, an estimate for a two week discharge period into the Mortlock River can be calculated to be approximately 820kL (1.6% of annual flow).

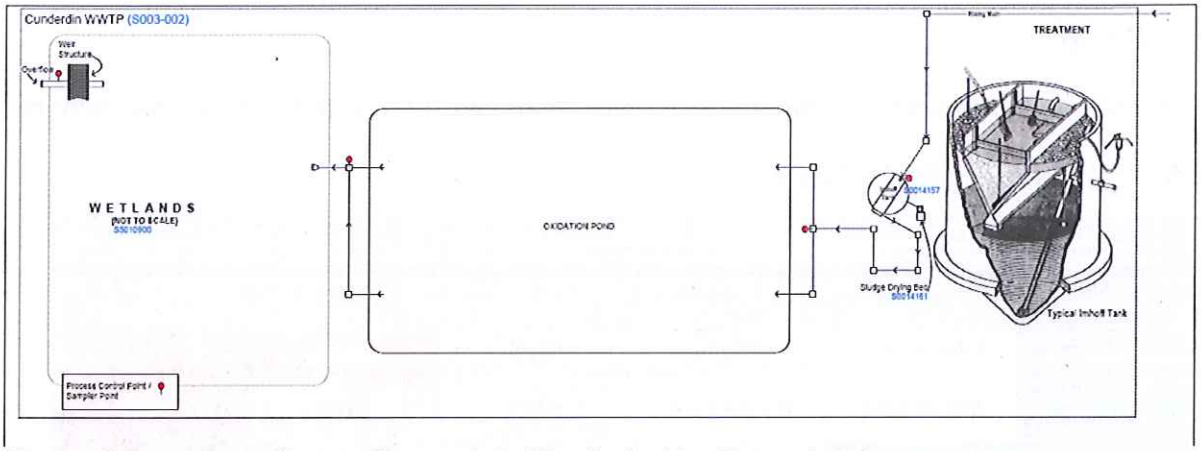


Figure 4. Location of sampling points illustrated by the red dots.

** Note. The first sampling point S0014157 is located at the manhole before the Imhoff tank not actually at the Imhoff tank.*

Risk Assessment

Emission Description
Emission: Treated wastewater discharged from the wetland
Impact: Raised nutrient levels in the saline area and the Mortlock River
Controls: Treated wastewater is discharged through the controlled valve and outlet pipe nto the channel, which then flows through a culvert under the railway into the series of lakes prior to flowing into the Mortlock River. Weekly inspections are undertaken to determine if the river is flowing and to ascertain wetland water levels prior to opening the outlet valve. The outlet is then kept open only whilst the Mortlock River is flowing.

Risk Assessment
Consequence: Minor, the Mortlock River is of a quality that is unknown, but is considered to be influenced by upstream agricultural activities.
Likelihood: Possible, high river flow in the winter months should allow the discharge to be sufficiently diluted but is reliant on weekly inspection of the river flows and manual operation of the outlet valve. The potential remains for treated wastewater to enter the river during low flow periods.
Risk Rating: Moderate

Regulatory Controls
Standard outcome based conditions 6 -13 requiring the following have been added to the licence:

- treated wastewater discharge;
- flow monitoring for cumulative volumes;
- water quality monitoring; and
- calculation of contaminated loads.

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

The controls are sufficient to reduce the likelihood of harm occurring and manage the residual level of risk.

APPENDIX B

Risk assessment matrix from Corporate Policy Statement No. 7 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