



Licence Number	L8807/2013/1
Licence Holder	Rottnest Island Authority
File Number:	2013/000004
Premises	Rottnest Island Wastewater Treatment Plant The Basin ROTTNEST ISLAND WA 6161 Legal description – Part Lot 10976 on Plan 216860
Date of Amendment	13 October 2017

Amendment

The Chief Executive Officer (CEO) of the Department of Water and Environmental Regulation (DWER) has amended the above Licence in accordance with section 59 of the *Environmental Protection Act 1986* (EP Act) as set out in this Amendment Notice. This Amendment Notice constitutes written notice of the amendment in accordance with section 59B(9) of the EP Act.

Date signed: 13 October 2017

Alan Kietzmann

Manager Licensing - Waste Industries

an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

Definitions and interpretation

Definitions

In this Amendment Notice, the terms in Table 1 have the meanings defined.

Table 1: Definitions

Term	Definition
AACR	Annual Audit Compliance Report
AER	Annual Environment Report
Amendment Notice	refers to this document
Annual period	means a 12 month period commencing from 1 July until 30 June in the following year.
Assessment and management of contaminated sites guidelines	means the document titled "Assessment and management of contaminated sites, Contaminated sites guidelines, December 2014" published by the Chief Executive Officer of the Department of Environment Regulation, as amended from time to time.
Assessment levels	means the Tier 1 assessment levels as defined in the <i>Assessment and management of contaminated sites guidelines</i> .
AS3780	means the Australian Standard AS3780-2008 The storage and handling of corrosive substances.
AS 4482.1	means the Australian Standard AS 4482.1 Guide to the investigation and sampling of sites with potentially contaminated soil - Non-volatile and semi-volatile compounds.
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 5667.10	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 ground waters.
Category/ Categories/ Cat.	categories of Prescribed Premises as set out in Schedule 1 of the EP Regulations.
CEO	means Chief Executive Officer. CEO for the purposes of notification means: Director General Department Administering the <i>Environmental Protection Act 1986</i> Locked Bag 33 Cloisters Square

	PERTH WA 6850 info-der@dwer.wa.gov.au
Composite soil sample	has the meaning defined in AS 4482.1
CS Act	<i>Contaminated Sites Act 2003 (WA)</i>
Delegated Officer	an officer under section 20 of the EP Act
Department	means the department established under section 35 of the <i>Public Sector Management Act 1994</i> and designated as responsible for the administration of Part V, Division 3 of the EP Act.
DWER	Department of Water and Environmental Regulation
EPA	Environmental Protection Authority
EP Act	<i>Environmental Protection Act 1986 (WA)</i>
EP Regulations	<i>Environmental Protection Regulations 1987 (WA)</i>
Existing Licence	The Licence issued under Part V, Division 3 of the EP Act and in force prior to the commencement of and during this Review
Field capacity	means the amount of moisture or water content held in the soil without loss to infiltration. It also the capacity of the vegetation and soil to assimilate nutrients and immobilise metals.
Licence Holder	Rottneest Island Authority
m ³	cubic metres
Minister	the Minister responsible for the EP Act and associated regulations
mg/L	means milligrams per litre.
MS	Ministerial Statement
Noise Regulations	<i>Environmental Protection (Noise) Regulations 1997 (WA)</i>
Occupier	has the same meaning given to that term under the EP Act.
Prescribed Premises	has the same meaning given to that term under the EP Act.
Premises	refers to the premises to which this Decision Report applies, as specified at the front of this Decision Report.
Risk Event	as described in <i>Guidance Statement: Risk Assessment</i>
UDR	<i>Environmental Protection (Unauthorised Discharges) Regulations 2004 (WA)</i>

Amendment Notice

This amendment is made pursuant to section 59 of the *Environmental Protection Act 1986* (EP Act) to amend the Licence issued under the EP Act for a prescribed premises as set out below. This notice of amendment is given under section 59B(9) of the EP Act.

The following guidance statements have informed the decision made on this amendment:

- *Guidance Statement: Regulatory Principles (July 2015)*
- *Guidance Statement: Setting Conditions (October 2015)*
- *Guidance Statement: Land Use Planning (February 2017)*
- *Guidance Statement: Licence Duration (August 2016)*
- *Guidance Statement: Decision Making (February 2017)*
- *Guidance Statement: Risk Assessment (February 2017)*
- *Guidance Statement: Environmental Siting (November 2016)*

Amendment description

Rottnest Island Wastewater Treatment Plant (WWTP) was built in 1996 to treat sewage generated on the Island. The WWTP is managed by Rottnest Island Authority (the Licence Holder). The Existing Licence (L8807/2013/1) authorises wastewater to be treated at a rate of 400kL per day using a Cyclic Activated Sludge System with treated wastewater irrigated on the Island's sports oval or discharged to an infiltration basin on the Premises.

On 15 October 2015, Works Approval W5857/2015/1 was granted to authorise an upgrade of the WWTP to provide sufficient capacity to treat all current sewage generated on the island plus an additional 30% capacity to allow for future growth. The upgraded plant is designed to treat up to 500kL per day. Treatment is to a higher standard than the old WWTP as shown in Table 2 below.

Table 2: Wastewater treatment quality

Parameter	Units	Old WWTP	Upgraded WWTP
Total suspended solids	mg/L	<30	<10
Biochemical Oxygen Demand		<20	<10
Total Nitrogen		<10	<10
Total Phosphorous		<1	<1

On 28 October 2016 the Licence Holder advised the Department on the completion of construction works and commencement of commissioning for the upgraded WWTP.

On 13 December 2016 the Licence Holder submitted a licence amendment application (Application) to the Department to amend the Existing Licence. The Application is to incorporate the infrastructure constructed as part of upgrades to the existing WWTP under Works Approval W5857/2015/1, and seeks approval for the irrigation of treated wastewater on the oval and the golf course which surrounds several of the Islands salt lakes.

Subsequent to this on 30 January 2016 the Licence Holder submitted the commissioning (validation) report for the upgrade works.

Table 3 below outlines the proposed changes to the Licence.

Table 3: Proposed design capacity changes

Category	Current design capacity	Proposed design capacity	Description of proposed amendment
54	400kL/day	500kL/day	Upgraded WWTP as approved through Works Approval W5857/2015/1.

Details of the Application are outlined below:

1. Allow the operation of the upgraded WWTP;
2. Increase the wastewater treatment design capacity from 400kL/day to 500kL/day as shown in Table 3;
3. Irrigate 97% of the treated wastewater to the Island's golf course (8.5ha) and to the island's oval (1.1ha); and
4. Infiltrate 3% of the treated wastewater to the existing infiltration basin; and
5. Extend the Premises boundary to include associated treated wastewater storage infrastructure (Tank 3 and 6), the golf course and oval irrigation area.

The upgraded WWTP consists of the infrastructure set out in Table 4.

Table 4: Infrastructure

Infrastructure	
Existing under Licence L8807/2013/1	
Treatment of sewage on-site including discharge to land (oval) and infiltration (basins)	
1	Inlet screening – 40L/s capacity
2	Cyclic Activated Sludge System (CASS)
3	Tank 6 Excess Recycled water storage tank – existing capacity 11 ML
4	Tank 3 Excess Recycled water storage tank – existing capacity 3 ML
Constructed under Works Approval 5857/2015/1	
Wastewater treatment plant	
1	Inlet screening – Initial 6mm screen followed by a grit removal screen to minimise solids entering the flow balance tank. Solids directed to screening bins. Connected to the odour scrubbing system.
2	Flow balance tank – 0.5ML to buffer flows to the biological reactor. Provided with a jet mixer to retain solids in suspension. Connected to the odour scrubbing system. Unbundled.
3	Emergency storage basin – 0.75ML to provide additional storage capacity in the event that the flow

Infrastructure	
	balance tank overflows. Lined with 1.5mm HDPE to achieve a permeability of 1×10^{-9} m/sec.
4	Fine screens – 40L/s - 2mm screen. Solids directed to screening bins.
5	2 x biological reactor trains consisting of : <ul style="list-style-type: none"> • Anoxic tank 105kL per train, • Aerobic tank 210kL per train • Post Anoxic tank 35kL per train.
6	Membrane filtration system consisting of two membrane trains to separate treated wastewater from suspended solids.
7	2 x Chlorination dosing pumps.
8	Recycled water storage and distribution tank – 1ML. Unbundled.
9	Tank 6 Excess Recycled water storage tank – updated capacity 9.1ML (upgraded). Unbundled.
10	Tank 3 Excess Recycled water storage tank – updated capacity 2.5 ML (upgraded). Unbundled.
11	Chemical storage and dosing storage consist of tanks constructed in accordance with AS3780-2008 for the following chemicals: <ul style="list-style-type: none"> • Alum - a coagulant to precipitate phosphorous • Acetic acid – to provide a carbon source in the post anoxic tanks • Sodium hypochlorite – used for final disinfection of the treated wastewater and membrane clearing • Citric acid –for membrane cleaning • Sodium hydroxide (Caustic) – to control pH of the biological process • Polymer – a coagulant for sludge thickening Tanks are located in a concrete hardstand with 230mm high bunding and a sump to capture and recover spilt chemicals.
12	Odour scrubbing system consisting of a biological scrubber and activated carbon filter to treat air from inlet screening, flow balance tank and fine screen. Air is discharged through a 3m high vent stack.
13	Sludge dewatering facility consisting of a belt filter press. Sludge discharged to sealed sludge bins. Sludge dewatering takes place within the Dewatering Building which drains to the Plant Sump.
14	Plant Sump – to capture drainage from bunded areas and buildings. Cylinder constructed with reinforced concrete with approximately 9m^3 volume.
15	Underground pipework – housed in concrete culverts and laid to a fall to the Plant Sump.
16	WWTP control system- SCADA (Supervisory Control and Data Acquisition) system
Irrigation system (golf course and oval)	
17	Manual or automatic controlled sprinkler system controlled through a master computer. Each sprinkler has an electric valve-in-head and can be operated on an individual or simultaneously

Infrastructure
activated. Scour valves are provided to allow draining of the system for maintenance.

The Licence Holder submitted the *Rottnest Island Authority Rottnest Island Recycled Water Scheme Nutrient and Irrigation Management Plan (GHD, 2016)* (NIMP) to support the Application. The NIMP outlines information on the management of the proposed recycled water scheme in order to minimise the potential for environmental and health impacts.

The Application includes commitments to undertake process and environmental monitoring as follows:

- Continuous treated water quality monitoring supplemented by a monthly manual sampling and testing regime;
- Annual soil quality monitoring on both the golf course and oval;
- Six monthly groundwater quality monitoring of five boreholes around the WWTP and an additional 12 boreholes around the oval and gold course. Interim trigger levels for groundwater quality (N and P concentrations) have also been proposed.
- Monthly surface water quality monitoring.

Other approvals

The Licence Holder has provided the following information relating to other relevant approvals as outlined in Table 5.

Table 5: Relevant approvals

Legislation	Number	Approval
Health Act 1911	Approval Number – D98/00000	Department of Health has provided an ‘approval in principle’ for WWTP upgrade and irrigation scheme subject to conditions (8 August, 2016).
Pt IV of the EP Act	Notice of Interim Implementation Conditions 12 October 2017 Ministerial Statement 324	Minister for Environment Pursuant to section 46A(1) of the EP Act, the Notice of Interim Implementation Conditions are to have effect instead of implementation condition 4 of Statement 324 dated 15 October 1993. These Interim Implementation Conditions are to be read in conjunction with Statement 324 and are to have effect until a further statement is published under section 45(5) as applied by section 46(8) of the EP Act. All other conditions of Statement 324 continue to have effect. Implementation Conditions in the afore-mentioned Notice relate to treatment plant wastewater irrigation and require the proponent to not cause the water quality of the Rottnest Island salt lakes catchment area to be adversely affected by nutrients or bacterial contamination. It also includes related conditions to manage the irrigation scheme in accordance with the NIMP.

Amendment history

Table 6 provides the amendment history for L8807/2013/1

Table 6: Licence amendments

Instrument	Issued	Amendment
L8807/2013/1	20/01/2014	Licence granted
L8807/2013/1	13/10/2017	Amendment Notice 1 Incorporate infrastructure (upgrade to WWTP) constructed under works approval and irrigation to the golf course.

Location and receptors

Table 7 below lists the relevant sensitive land uses in the vicinity of the Prescribed Premises which may be receptors relevant to the proposed amendment.

Table 7: Receptors and distance from activity boundary

Residential and sensitive premises	Distance from Prescribed Premises
Golf course club house	Within the golf course; less than 20m north from the 1 st tee (Hole 1)
Camping grounds, adjacent to Strue Road to the north.	80m south-east of the WWTP 60m north of the oval irrigation area 200m north-east of the oval irrigation area
Residential dwellings (permanent and accommodation)	200m south-east of the WWTP 90m east of the oval irrigation area, along Kelly Street and Mapleson Road 200m east of the golf course irrigation area, along Mapleson Road 130m north and 180 west of the excess recycled water storage tanks (3 & 6) at Mount Herschell, along Islander Road and Katemeraire Road

Table 8 below lists the relevant environmental receptors in the vicinity of the Prescribed Premises which may be receptors relevant to the proposed amendment.

Table 8: Environmental receptors and distance from activity boundary

Environmental receptors	Distance from Prescribed Premises
Priority Ecological Communities (PEC) – Rottnest Island Microbial Lake community 5 – Garden Lake – Priority 1	Immediately south of the Premises boundary (golf course irrigation area)
PEC – Rottnest Island Microbial Lake, community 6 – Hershel Lake, Priority 1	45m south of the Premises boundary (golf course irrigation area)
Threatened Ecological Community (TEC) – <i>Callitris preissi</i> (or <i>Melaleuca lanceolata</i>) forests and woodlands, Swan Coastal Plain – listed as Vulnerable	100m and 800m south of the Premises boundary (golf course irrigation area)

Environmental receptors	Distance from Prescribed Premises
under the EPBC Act and PEC under the Wildlife Conservation Act 1950	
PEC – Hypersaline microbial community 1 (Government House Lake, Rottnest), Priority 2	260m south of the Premises boundary (golf course irrigation area)
PEC – Rottnest Island Microbial Lake community 4 – Lake Baghdad, Priority 1	450m west of the Premises boundary (golf course irrigation area)
PEC – Rottnest Island Microbial Lake community 1 – Serpentine Lake, Priority 1	700m south of the Premises boundary (golf course irrigation area)
PEC - Rottnest Island Microbial Lake community 3 – Lake Vincent, Priority 1	1300m south-west of the Premises boundary (golf course irrigation area)
PEC – Rottnest Island Microbial Lake community 2 – Lake Timperley, Priority 1	1400m south-west of the Premises boundary (golf course irrigation area)
PDWSA	The PDWSA is located within the Prescribed Premises boundary at north-west corner of the golf course.
Rottnest Island Marine Reserve	The whole Island is surrounded by the Rottnest Island Marine Reserve. There are five sanctuary zones the closest being approximately 600m to the north-east of the oval.
Hydrography, Lakes (medium scale)	Approximately 40m south of the golf course.
Contaminated sites - reported	There is a 'possibly contaminated – investigation required' report at Forbes Hill Landfill approximately 930m south-west of the golf course.

Table 9 below lists the groundwater and water source receptors in the vicinity of the prescribed premises which may be receptors relevant to the proposed amendment.

Table 9: Groundwater and water sources

Groundwater and water sources	Distance from Premises	Environmental Value
<p>The NIMP indicates that groundwater exists on the Island as a thin lens overlying salt water.</p> <p>The main fresh water reserves are located in groundwater lenses associated with the highest ground on the Island around Wademup and Oliver Hills.</p>	<p>The Licence Holder maintains the following groundwater monitoring bores across the WWTP, golf course and oval irrigation areas:</p> <ul style="list-style-type: none"> • five (5) monitoring bores at the WWTP site; • six (6) monitoring bores across the oval and golf course irrigation areas; • twelve (12) monitoring bores (nested piezometers – shallow, intermediate and deep) along the fringes of Garden and Herschel Lake; • Reference Bore 28/90 – located 2km west of golf course – representative background. <p>Monitoring data from the groundwater levels from the WWTP bores and the golf course and oval bores infer a groundwater flow direction towards the salt lakes (Garden and</p>	<p>Groundwater is considered very sensitive, as the fresh groundwater resource on the Island is limited.</p> <p>Groundwater quality monitoring:</p> <ul style="list-style-type: none"> • Zinc was reported above laboratory limit of reporting (LOR)¹ in a number of samples <p>¹ LOR is the practical limit of detection for a specific chemical parameter</p>

Groundwater and water sources	Distance from Premises	Environmental Value
	<p>Herschel Lake).</p> <p>Monitoring data from the bores located around the proposed irrigation areas indicates that water levels fluctuate across the site from approximately 0.2mBGL (bore GC1 adjacent to Garden Lake) to 3.0mBGL (bore GC4 located immediately adjacent to the north of Hole 4) – refer to the maps in Schedule 1 for the layout of the aforementioned monitoring bore network.</p>	
<p>Priority 3 Public Drinking Water Source Area (PDWSA) – Rottnest Island groundwater area (Longreach Bay saltwater bore field)</p>	<p>A portion of the north-western part of the golf course is located in a Priority 3 PDWSA (Hole 5 tee, Hole 6 green and Hole 7 tee).</p> <p>The WWTP site is located 320m east of the P3 PDWSA.</p> <p>The oval is located 400m west of the P3 PDWSA.</p> <p>The NIMP (GHD, 2016) reports that no drinking water bores are located in the irrigation areas.</p> <p>As indicated above, groundwater level gradients across the WWTP site and irrigation areas indicate flow paths towards the island lakes.</p>	<p>The use of treated wastewater is generally considered an incompatible land use in a PDWSA.</p> <p>As reported in the NIMP (GHD, 2016) the primary source of potable water on Rottnest Island is a 700 kL/day desalination plant which is supplied by five saltwater beach bores located in the sand dunes of Longreach Bay, north of the golf course (P3 PDWSA). The remainder of the drinking water supply is currently sourced through the Wadjemup freshwater lens, located in the north-west portion of the Island approximately 4 km from the golf course (within a P1 PDWSA).</p>
<p>Surface water</p>	<p>The Indian Ocean surrounds the Premises with the shoreline located approximately 100m north from the WWTP site, 170 north of the excess recycled water storage tanks (3 & 6), 220 m north of the golf course irrigation area and 230 north of the oval irrigation area.</p> <p>Inland lakes are located 40m from the golf course.</p>	<p>Ocean – Rottnest Island Marine Reserve.</p> <p>The wetlands on Rottnest consist of the series of salt lakes that occur at the center of the Island as well as freshwater seeps and brackish swamps.</p> <p>All the Rottnest Island wetlands are listed as Wetlands of National Importance under the Directory of Important Wetlands in Australia (Environment Australia 2001).</p>

Consultation

The Application was referred to the former Department of Water, Department of Parks and Wildlife and the Department of Health on 18 January 2017. A summary of the comments received and the Department’s consideration in this assessment is included in Appendix 1.

Risk assessment

Table 10 below describes the Risk Events associated with the amendment consistent with DWER’s *Guidance Statement: Risk Assessments*. The table identifies whether the emissions and discharges present a material risk to human health or the environment, requiring regulatory controls. Operator controls have been considered in the risk assessment.

The risk assessment has only considered the potential impacts associated with the irrigation of treated wastewater to the golf course. Following the submission of the Application, the

Licence Holder identified an urgent need to substitute treated wastewater to supply water to the golf course instead of potable water.

DWER intends to undertake a detailed risk review of the existing Licence to align it with DWER's risk based Regulatory Framework. This detailed review will include an assessment of risks to the environment and public health as a result of the on-going irrigation of treated wastewater to the golf course and oval on an on-going basis.

Table 10: Risk assessment for proposed amendments during operation

Risk Event					Consequence rating	Likelihood rating	Risk	Reasoning	
Source/Activities	Potential Emissions	Potential Receptors	Potential Pathway	Potential Adverse Impacts					
Cat 54 Sewage Facility	Sewage acceptance, storage and treatment including desludging	Odour associated with effluent treatment and disposal	Residents and sensitive premises – see Table 7	Air/ wind dispersion	Health and amenity impacts	Moderate	Possible	Medium	<p>WWTP site: An odour scrubber has been installed to reduce potential odours from the flow balance tanks, inlet screens and fine screens. The Application states that the odour scrubbing system typically achieves a H₂S removal efficiency of >99%.</p> <p>Sludge dewatering takes place within a building.</p> <p>Irrigation areas: no odour controls are proposed for the irrigation areas.</p> <p>Excess recycled water storage tanks (3 & 6): sealed tanks.</p> <p>The Delegated Officer considers that low level off-site odour impacts may occur at a local scale with regards to the WWTP site and that this consequence could occur at some time.</p> <p>Medium Risk is considered tolerable subject to regulatory controls.</p>
	Sewage acceptance, storage and treatment	Seepage of wastewater and sludge waste from containment vessels Overtopping or breach of containment vessels, direct	Groundwater with beneficial use (Groundwater Dependent Ecosystem) Surface water (TEC Lakes & Indian Ocean) – see Table 8 and 9	Through soil Through soil	Adverse impacts to the health and survival of vegetation dependent upon groundwater Reduction in surface water quality and/or contamination of surface water	Moderate Major	Unlikely Unlikely	Medium Medium	<p>WWTP and excess recycled water storage tanks (3 & 6) site: some key pieces of infrastructure and equipment are housed in buildings and within bunded areas that drain to the Plant Sump. Effluent draining into the Plant Sumps is directed back into the WWTP. Chemical storage takes place in tanks that meet AS3780-2000. Underground pipework is housed in concrete culverts. Emergency overflow</p>

Risk Event					Consequence rating	Likelihood rating	Risk	Reasoning
Source/Activities	Potential Emissions	Potential Receptors	Potential Pathway	Potential Adverse Impacts				
	spills of wastewater and stormwater contaminated with wastewater Key contaminants include nitrogen and phosphorous	TEC/PEC – see Table 8	Through soil	Adverse impacts on nearshore marine fauna	Major	Unlikely	Medium	<p>ponds are lined with 1.5mm HDPE to a permeability of 1×10^{-9} m/sec.</p> <p>Some tanks including the Flow Balance Tank and the recycled water storage tanks (3 & 6) are not banded.</p> <p>The Delegated Officer considers that:</p> <ul style="list-style-type: none"> low level impacts to groundwater dependent ecosystems could occur on a local scale but that this risk event will probably not occur in most circumstances local off-site impacts to surface water and the TEC/PEC could occur at a mid-level but that this Risk Event is not expected to occur in most circumstances Local off-site impacts to land could occur at low level and that this risk event could occur at some time. Local off-site impacts to the Class A Nature Reserve could occur at a low level and this risk event is not expected to occur in most circumstances. <p>Irrigation areas: no treated wastewater containment infrastructure is located within the designated irrigation areas.</p> <p>Medium Risks are considered tolerable subject to regulatory controls.</p>
		Land	Infiltration of nutrients, metals and other contaminants	Impacts on local stygofauna	Moderate	Possible (may already be happening with current infiltration scheme)	Medium	
		Class A Nature Reserve (Flora / Fauna)	Infiltration of nutrients, metals and other contaminants	Impact on nutrient-sensitive native vegetation	Moderate	Unlikely	Medium	
		Residents and sensitive premises – see Table 7	Air	Pathogens	Not assessed		Department of Health regulates public health impacts from WWTPs and treated wastewater irrigation schemes.	

Risk Event					Consequence rating	Likelihood rating	Risk	Reasoning
Source/Activities	Potential Emissions	Potential Receptors	Potential Pathway	Potential Adverse Impacts				
<p>Treated wastewater applied to designated irrigation areas:</p> <p>Oval (1.1ha)</p> <p>Golf course (8.5ha)</p>	<p>Discharge to land of treated wastewater at the Oval and Golf Course.</p> <p>Potential for treated wastewater to infiltrate into the groundwater resulting in higher discharge of shallow groundwater (mixed freshwater and treated wastewater) at the seepage faces of the lakes.</p> <p>Key contaminants: Nitrogen, Phosphorous and metals (particularly Zinc)</p>	<p>Priority 3 Public Drinking Water Source Area (PDWSA) – Rottneest Island groundwater Area (Longreach Bay saltwater bore field)</p>	<p>Infiltration of nutrients, metals and other contaminants</p>	<p>Impacts to P3 PDWSA</p>	<p>Major</p>	<p>Possible</p>	<p>High</p>	<p>As outlined in Table 9, the use of treated wastewater is generally considered an incompatible land use in a P3 PDWSA.</p> <p>The Delegated Officer notes that the local groundwater gradient is towards the lakes to the south and also considers the proposed process and ambient environmental monitoring program is sufficient to detect any likely impacts to the underlying groundwater during irrigation.</p> <p>The Delegated Officer also notes that field capacity will be monitored through telemetry. Irrigation activities will be automatically stopped when the moisture levels reach field capacity.</p> <p>The Delegated Officer considers that mid-level off-site impacts could occur and that this risk event could occur at some time.</p> <p>High Risk is considered tolerable subject to regulatory controls.</p>
		<p>Groundwater with beneficial use (Groundwater Dependent Ecosystem)</p>	<p>Infiltration of nutrients, metals and other contaminants</p>	<p>Impacts to hyporheic fauna and microbial mat</p>	<p>Major</p>	<p>Possible</p>	<p>High</p>	<p>The Licence Holder did not commit to adhering to specified nutrient or other contaminant loading rates but identified that irrigation will be manually controlled having regard to a daily review of local climate data.</p>
		<p>TEC/PEC – see Table 8</p>	<p>Through soil and groundwater</p>	<p>Impacts on local stygofauna</p>	<p>Major</p>	<p>Possible</p>	<p>High</p>	<p>Two irrigation water quality scenarios were modelled using MEDLI modelling software. Simulation results from using the design treatment specifications for the upgraded WWTP of treated wastewater containing Nitrogen (N);10mg/L and Phosphorus (P): 1mg/L at a rate of up to 400kL/day</p>

Risk Event					Consequence rating	Likelihood rating	Risk	Reasoning
Source/Activities	Potential Emissions	Potential Receptors	Potential Pathway	Potential Adverse Impacts				
		Surface water – see Table 8 and 9	Through soil and groundwater	Impacts on nearshore marine environment	Major	Possible	High	<p>onto the golf course identified that a small amount of nitrogen may leach below the soil profile.</p> <p>The Delegated Officer notes the modelled annual irrigation nutrient loading rates using the design treatment specifications (as outlined above) for upgraded WWTP are generally in accordance with amounts recommended in the Swan River Trust (SRT) guideline titled <i>Western Australian environmental guidelines for the establishment and maintenance of turf grass areas</i> (SRT, 2014), given the level of Colwell P (i.e. readily bioavailable P) in soils. MEDLI nutrient balance results indicated a N loading of 99 kg/ha/yr and P loading of 11.6 kg/ha/yr.</p>
		Land / soil	Leaching through soil	Bioaccumulation of metals in soils, fauna, possible uptake by birds	Moderate	Possible	Medium	<p>The Delegated Officer notes that elevated Zn levels in groundwater have the potential to affect hyporheic fauna (stygofauna that live in sediments that fringe the salt lakes) and microbial mat that fringe salt lakes.</p> <p>The Delegated Officer considers that mid-level off-site impacts to groundwater, TEC/PEC and surface water on a local scale could occur at some time.</p> <p>The Delegated Officer considers that mid-level on-site impacts and low-level off-site impacts to land could occur and that this risk event could occur at some time.</p> <p>High Risk is considered tolerable subject to regulatory controls.</p>

Risk Event					Consequence rating	Likelihood rating	Risk	Reasoning	
Source/Activities	Potential Emissions	Potential Receptors	Potential Pathway	Potential Adverse Impacts					
	Infiltration to basins	Infiltration of treated wastewater to infiltration basin	Groundwater – see Table 9	Infiltration of nutrients, metals and other contaminants	Impacts to hyporheic fauna and microbial mat	Major	Unlikely	Medium	The Application identified that approximately 97% of the annual volume of treated wastewater will be used for irrigation purposes with only 3% to be subject to infiltration via the infiltration basin on the WWTP site.
		Key contaminants: Nitrogen, Phosphorous and metals (particularly Zinc)	TEC/PEC – see Table 8	Through soil and groundwater	Impacts on local stygofauna	Major	Unlikely	Medium	Data presented in the Water and Nutrient Balance provided in the <i>Recycled Water Quality Management Plan (RWQMP)</i> (Permeate Partners, 2016b) indicates that treated wastewater will only be discharged to infiltration during the month of September with a total volume of 1.66 ML being discharged. This represents a substantial reduction to historical and existing activities where the majority of treated wastewater has been discharged via infiltration.
			Surface water – see Table 8 and 9	Through soil and groundwater	Impacts on nearshore marine environment	Major	Unlikely	Medium	
			Land / soil	Leaching through soil	Bioaccumulation of metals in soils, fauna, possible uptake by birds	Moderate	Possible	Medium	Based on the reduced quantities of treated wastewater being infiltrated the Delegated Officer considers that: <ul style="list-style-type: none"> • mid-level off-site impacts to groundwater, TEC/PEC and surface water could occur but will probably not occur in most circumstances; and • mid-level on-site and low level off-site impacts to land could occur and that this Risk Event could occur at some time. <p>Medium Risk is considered tolerable subject to regulatory controls.</p>
Chemical storage	Liquid waste discharge including foreseeable events spills / leaks	Groundwater – see Table 9 TEC/PEC – see Table 8 Surface water – see Table 8 and 9	Direct spills, contaminated stormwater run-off, seepage	Impacts on local stygofauna and nearshore marine environment, contamination of land	Minor	Rare	Low	The Application states that chemicals will be stored under cover and banded in accordance with AS3780-2008. Any contaminated water will be collected and returned for re-processing within the treatment facility. The Delegated Officer considers that	

Risk Event					Consequence rating	Likelihood rating	Risk	Reasoning
Source/Activities	Potential Emissions	Potential Receptors	Potential Pathway	Potential Adverse Impacts				
			Land					minimal off-site impacts and low level on-site impacts may occur but the risk event will only occur in exceptional circumstances. Low Risk is acceptable.
	Wastewater treatment plant and associated vehicles	Noise	Residents and sensitive premises – see Table 7	Air / wind dispersion	Amenity impacts	Moderate	Possible	Medium Given the proximity to sensitive receptors, the Delegated Officer considers that low level off-site impacts may occur and that this risk event could occur at some time. The Licence Holder is required to comply with the <i>Environmental Protection (Noise) Regulations 1997</i> .

Decision

Having considered the proposed amendments to the Existing Licence, the Delegated Officer has determined that the proposed operation of the upgraded WWTP at a design throughput of 500kL/day, with the irrigation of treated wastewater to the golf course and the extension of the Premises boundary to include the golf course and oval is acceptable for the interim subject to regulatory controls as set out below.

Subsequent to the amendment, DWER intends to undertake a detailed risk based review of the licensed activities to ensure the appropriateness of licence conditions. The licence review will include an assessment of risks to the environment and public health from the irrigation of treated wastewater to the golf course and oval on an on-going basis. The review will be commenced within 12 months from the grant date of this Amendment Notice.

The Delegated Officer has also determined that it is appropriate for DWER to ensure consistency between Part IV and Part V Ep Act approvals, and avoid the duplication of regulatory controls.

There are no other changes to the licence.

Infrastructure and operations

The Delegated Officer has determined that infrastructure and operational controls have been included on the Licence to manage risks associated with seepage and overflow of wastewater from the Premises. Infrastructure and operational controls are also required to manage odour emissions associated with the acceptance and treatment of wastewater.

Condition W1 on the Existing Licence captures requirements for the maintenance of the old WWTP. This condition has been replaced with Condition 1 to ensure that the infrastructure and equipment associated with the upgraded WWTP is maintained in good working order and operated appropriately. The detailed specifications for the infrastructure and operational requirements are provided in this Amendment Notice.

The infrastructure and operational controls are largely derived from the Licence Holder's Application: *Rottnest Island Authority, WWTP Upgrade – DER Licence Amendment, Attachment 3A – Description of Activities (Permeate Partners, 2016a)*.

Intake restrictions

The Premises has restrictions on the waste which is accepted at the Premises. The wastes which has been considered through this assessment is the waste currently accepted, being Sewage Waste which is comes under Controlled Waste Category K130 (Putrescible and organic waste). Condition 2 has been included into the Licence to specify the intake restrictions that apply to the Premises.

Disposal requirements for sludge

Existing licence condition S1 has been replaced with Condition 3 which specifies that sludge from the Premises must be disposed of to a licensed landfill using a Controlled Waste Carrier and that accurate records of the disposal must be maintained.

Reuse of treated wastewater for irrigation

The irrigation of treated wastewater is to be restricted to the oval and the golf course, therefore Condition 4 has been included in the Licence to specify the designated irrigation areas as depicted in Schedule 1.

The Delegated Officer has identified that if the full daily application rate of wastewater (400kL/day) is applied daily to the irrigation areas, excess water could be applied in June, July and August when the rate of wastewater application could exceed the rate of evapotranspiration. The NIMP indicates that irrigation of the golf course using potable water

has not historically occurred over the winter periods and will not occur moving forward when potable water is replaced with treated wastewater. As outlined in Table 10, data presented in the Water and Nutrient Balance provided in the RWQMP (Permeate Partners, 2016) indicates that treated wastewater will not be irrigated during the months of May – August inclusive. The Delegated Officer has determined that irrigation can take place within these months providing the soil moisture meters determine the field capacity can accept the irrigated water.

The Delegated Officer has therefore determined that regulatory controls are required to further manage the risks associated with discharges to the oval and golf course to prevent the over application of treated wastewater when there is no field capacity remaining in the soil of the irrigation areas.

The Delegated Officer has determined that based on the outcomes of the risk assessment that regulatory controls through licence conditions are required for the total amount (loading) of nitrogen and phosphorous applied to the oval and golf course irrigation areas. Condition 6 has been included in the Licence to set limits on nutrient loadings applied through the irrigation of treated wastewater. Determining compliance with limits will be based on monitoring results required by Condition 7 (Wastewater Monitoring).

The Delegated Officer has derived the limits based on the design treatment specification of the upgraded WWTP, the MEDLI modelling and NIMP submitted with the Application and the SRT's *Western Australian environmental guidelines for the establishment and maintenance of turf grass areas* (SRT, 2014).

To complement the nutrient loading limits set in Condition 6, the Delegated Officer also considers it appropriate to ensure that irrigation activities do not take place when soils are equal to or greater than the Field Capacity. The NIMP indicates that soil investigations carried out in 2012 established benchmark Field Capacity measurements for the five proposed soil monitoring sites (GCS01, GCS02, GCS03, GCS04 and GCS05). Further field capacity monitoring has taken place in September 2017 (HA01 – HA11) to complement the monitoring program.

Condition 8 has been included in the Licence to require baseline (pre treated wastewater irrigation) Field Capacity measurements for the 16 soil monitoring sites. The Licence Holder may wish to utilise the measurements obtained in the 2012 soil investigation or use the new samples taken in September 2017 to determine up-to-date Field Capacity measurements.

Condition 9 has been included in the Licence to ensure that irrigation activities do not take place when the soil moisture content (v%) is equal to or greater than the baseline Field Capacity as determined by Condition 8. Condition 10 has also been included in the Licence to require soil moisture monitoring to take place to allow compliance with Condition 9.

The Delegated Officer notes that while the irrigation of treated wastewater to the golf course is considered acceptable, there are a number of issues that will need to be specifically assessed in the proposed licence review to consider whether the irrigation of treated wastewater to the golf course is acceptable on a long term basis to align it with DWER's risk based Regulatory Framework:

- The Application considers that the elevated concentrations of Zinc in groundwater beneath the golf course are naturally occurring. However, it is possible that the changes in irrigation regime (soils that were seasonally dry now being perpetually wet) has caused the release of zinc from soil materials due to the reductive dissolution of iron oxide coatings on sand grains (the zinc could be derived from past fertiliser use or other historical land uses in the area). As identified in the risk assessment, elevated zinc levels in groundwater have the potential to affect hyporheic fauna (stygo fauna that live in sediments that fringe the salt lakes) and microbial mat that fringe salt lakes.
- The interim trigger levels for management for N and P set out in Table 7 of the NIMP may be protective in the short term but may not be protective of microbial mats and stygo fauna

in environments that fringe the salt lakes in the long term.

- Elevated arsenic levels occur in bores GC7i and GC7d next to Garden Lake. These are likely to be caused by natural processes (the reductive dissolution of iron oxides containing arsenic at depth in the sediments), but there is a risk that high BOD levels in groundwater contaminated by wastewater constituents (high organic carbon loading) could release arsenic at shallower depth in this salt lake in the long term.

Monitoring requirements

In order to validate that conditions are being complied with by the Licence Holder and to validate that the authorised activities are not resulting in unacceptable impact on the environment, the Delegated Officer has determined that the following process and environmental monitoring is required:

- General monitoring requirements – Condition 10
- Treated wastewater discharge quality criteria and monitoring – Conditions 11 - 14
- Groundwater monitoring – Conditions 15 - 16
- Surface water monitoring – Condition 17
- Fresh groundwater lens/hyporheic zone monitoring – Condition 18
- Soil monitoring – Condition 19

The Delegated Officer notes that with the exception of the soil moisture monitoring as specified in Condition 19, the monitoring requirements are consistent with the commitments made by the Licence Holder in the Application.

Information and reporting requirements

Conditions 20 to 22 list the revised information and reporting requirements and replace G1 from the Existing Licence.

Licence Holder's comments

The Licence Holder was provided with the draft Amendment Notice on 12 October 2017. The Licence Holder responded on 12 October 2107 by providing the signed 21-day waiver form without additional comment.

Amendment

1. The Licence is amended by the deletion of condition W1:

~~W1 — The licensee shall manage the wastewater treatment plant in a manner such that:~~
~~(i) — uncontaminated stormwater runoff resulting from roof and site drainage shall not enter the treatment tanks;~~
~~(ii) — extreme rainfall events do not cause overtopping of the tanks; and~~
~~(iii) — there is no discernible seepage loss from the tanks.~~

and is replaced with Condition 1 as follows:

Infrastructure and Equipment

1. The Licence Holder must ensure that the infrastructure and equipment specified in Column 1 of Table 1 is maintained in good working order and operated in accordance with the requirements specified in Column 2 of Table 1.

Table 1: Infrastructure and Equipment Controls

Row	Column 1	Column 2
	Site infrastructure and equipment Description	Operational requirements
1	Inlet screening - six mm screen followed by grit removal screen. Inlet screening unit must be connected to the odour scrubbing unit.	<ul style="list-style-type: none"> Screenings must be discharged to enclosed screening bins. Screened wastewater to be directed to flow balance tank In the event of an overflow wastewater must be directed to the Emergency Storage Basin.
2	0.5ML Flow balance tank fitted with a jet mixer constructed of glass lined steel. Flow balance tank must be connected to the odour scrubbing unit.	<ul style="list-style-type: none"> A jet mixer must be used to keep solids in suspension and to prevent short-circuiting within the flow balance tank. In the event of an overflow wastewater must be directed to the Emergency Storage Basin.
3	0.75ML Emergency Storage Basin lined with 1.5mm HDPE to a permeability of 1×10^{-9} m/s which drains via gravity to the Plant Sump.	<ul style="list-style-type: none"> Wastewater directed to the Emergency Storage Basin must be pumped back to the flow balance tank for treatment when there is available capacity to do so.
4	Infiltration basin	<ul style="list-style-type: none"> Only to be used when reuse options are not available.
5	40L/s Fine screens - 2mm punched plate. Fine screen must be connected to the odour scrubbing unit.	<ul style="list-style-type: none"> Screenings must be discharged to enclosed screening bins.
6	2 x biological reactor trains consisting of : <ul style="list-style-type: none"> Anoxic tank 105kL per train, Aerobic tank 210kL per train Post Anoxic tank 35kL per train. Tanks must be provided with mixers.	<ul style="list-style-type: none"> Overflow from the biological reactor must be directed via gravity to the plant sump. Mixers must be used to suspend solids and provide good contact between the incoming wastewater and the mixed liquor.
7	2 x membrane filtration trains	<p>Membrane permeability must be maintained by:</p> <ul style="list-style-type: none"> Aeration at the base of the membrane to dislodge solids from the membrane surface; Periodic relaxing and back-pulsing of the membranes; Periodic chemical cleaning of the membranes. <p>Membrane performance to be continuously monitored via the site SCADA.</p>
8	2 x 100% chlorine dosing pumps and Chlorine Contact Pipe.	<ul style="list-style-type: none"> Residual free chlorine levels must be monitored to ensure sufficient disinfection.
9	1ML Recycled water storage and distribution tank provided with dedicated chlorine dosing pump. Tank constructed of Galvabond steel with 0.6mm heavy duty PVC liner.	<ul style="list-style-type: none"> Residual free chlorine levels must be monitored to ensure sufficient disinfection.
10	Tank 6 - 9.1ML Excess Recycled water storage tank. Tank constructed of Galvabond steel with 0.6mm heavy duty PVC liner.	<ul style="list-style-type: none"> In the event of an overflow treated wastewater must be directed to the Emergency Storage Basin.

Row	Column 1	Column 2
	Site infrastructure and equipment Description	Operational requirements
11	Tank 3 - 2.5 ML Excess Recycled water storage tank. Tank constructed of Galvabond steel with 0.6mm heavy duty PVC liner.	<ul style="list-style-type: none"> In the event of an overflow treated wastewater must be directed to the Emergency Storage Basin.
12	Chemical Storage Tanks - must be sufficient in size to hold chemical volumes for 30 days of continuous operation of the wastewater treatment plant and be located in separate bunded areas in accordance with AS3780-2000: Storage and handling of corrosive substances.	<ul style="list-style-type: none"> Duty/standby pumps must be provided for process dosing systems.
13	Odour Scrubbing Unit consisting of a biological scrubber and activated carbon filter. Treated air discharged from a 3m high vent.	<ul style="list-style-type: none"> Must be operational when screening activities are taking place and/or the Flow balance tank contains wastewater.
14	Sludge dewatering facility - to dewater waste activated sludge from the bioreactors – consisting of two belt filter presses housed within a Dewatering Building and associated polymer storage and dosing. Filter presses to be located in a 7.5m x 4.5m area bunded with one row of 90mm x 190mm x 390mm concrete blocks that drains to the Plant Sump. Polymer storage tank to be located within a concrete bunded area 4.6m x 3.6m and bunded with one row of 90mm x 190mm x 390mm concrete blocks.	<ul style="list-style-type: none"> Sludge must be discharged to enclosed sludge storage bins. Full sludge storage bins must be stored on a concrete hardstand provided with a 600mm wide x 50mm high roll over bund and drain to the Plant Sump.
15	Plant Sump constructed with reinforced concrete with a 110mm thick wall and approximately 9m ³ capacity	N/A
16	Underground pipework associated with the wastewater treatment plant must be housed in concrete culverts and laid to a fall to the Plant Sump.	N/A
17	Wastewater Treatment Control System – SCADA (Supervisory Control and Data Acquisition) system.	<ul style="list-style-type: none"> The system is to have remote monitoring capabilities allowing operators to be notified of alarms off-site and provide control capability from off-site
18	Irrigation System to consist of automatic or manually controlled sprinklers. Each sprinkler to have an electric valve-in-head and be able to be operated on an individual basis or simultaneously activated. Scour valves must be provided to allow draining of the system for maintenance.	<ul style="list-style-type: none"> Sprinklers are to be operated to ensure wastewater is evenly distributed to the designated irrigation areas as depicted in Schedule 1; 'Golf Course and Oval Irrigation Areas' Map

2. The Licence is amended with the insertion of Condition 2 as shown below:

Intake restrictions

2. The Licence Holder must only accept the Waste types onto the Premises:

- (a) Which are of the type specified in Column 1;
- (b) which have the Waste codes specified in Column 2;
- (c) are within the Waste category groups specified in Column 3;
- (d) at the acceptance locations on the Premises specified in Column 4 of Table 2; and
- (e) with the throughput limit specified in Column 5.

Table 2: Waste acceptance requirements

Column 1	Column 2	Column 3	Column 4	Column 5
Waste type	Waste code	Waste category group	Location	Limits
Sewage waste	K130	Putrescible and organic waste	Pressure sewer feed	500m ³ per day

3. The Licence is amended by the deletion of condition S1:

~~S1 — The licensee shall dispose of all solid wastes and sludges generated at the premises by transporting off site to a facility licensed to accept the waste.~~

and is replaced with Condition 3 as shown below:

Disposal and Reuse Requirements

Sludge and biosolids

3. The Licence Holder must:

- (a) dispose of sludge from the Premises to a licensed landfill using a Controlled Waste Carrier; and
- (b) keep accurate and auditable records relating to the disposal of sludge from the Premises including the Controlled Waste Carrier and registration number of the vehicle transporting the sludge and the details of the landfill at which the sludge are disposed.

4. The Licence is amended by the insertion of conditions 4 to 9:

Treated wastewater

4. The Licence Holder must only irrigate treated wastewater to the defined irrigation areas as depicted in Schedule 1 in the 'Oval and Golf Course Irrigation Areas' Map.
5. The Licence Holder must ensure the irrigation of treated wastewater does not exceed the nutrient loading limits specified in Columns 2 and 3 in Table 3.

Table 3: Irrigation limits

Column 1	Column 2	Column 3
Location	Limit	Limit
	Total Nitrogen (kg/ha/yr)	Total Phosphorous (kg/ha/yr)
Golf course and Oval as depicted in Schedule 1; 'Golf Course and Oval Irrigation Areas' Map	99	11.6

6. The Licence Holder must demonstrate compliance with the limits specified in Condition 5 by:
 - (a) undertaking monitoring in accordance with Condition 13; and
 - (b) calculating an actual annual total Nitrogen and Total Phosphorous loading by:
 - i. using monthly Total Nitrogen and Total Phosphorous sampling results for that annual period; and
 - ii. using the annual cumulative volume of treated wastewater applied to the locations specified in Table 3.
7. The Licence Holder must establish baseline Field Capacity measurements for the soil sampling locations detailed in Condition 19 before irrigation of treated wastewater commences.
8. The Licence Holder must ensure that irrigation of treated wastewater to the Golf Course and Oval does not take place when the soil moisture content (v%) is equal to or greater than the baseline Field Capacity as determined by Condition 7.
9. The Licence Holder must demonstrate compliance with Condition 8 by undertaking monitoring in accordance with Condition 19.

5. The Licence is amended by deletion of conditions W8(a) and W8(b):

~~W8(a) The licensee shall collect all water and wastewater samples in accordance with the relevant part of Australian Standard 5667, 1998, or other approved standard.~~

~~W8(b) All water and wastewater samples required by these conditions of licence shall be analysed in a NATA accredited laboratory for the parameters specified in accordance with the current "Standard Methods for Examination of Water and Wastewater APHP-AWWA-WEF".~~

and is replaced with Condition 10 as shown below:

General monitoring

10. Subject to Conditions 13, 15, 16, 17, 18 and 19 the Licence Holder must ensure that 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.

6. The Licence is amended by the deletion of conditions W2, W4 and W5:

~~W2 The licensee shall measure cumulative volumes of effluent discharged from the treatment plant to the infiltration ponds and the irrigation area. The monthly flow results shall be presented in the annual monitoring report in a tabular form.~~

~~W4 The licensee shall operate the wastewater treatment plant to achieve, for at least 3 out of 4 consecutive samples taken, an operational performance for the following parameters of:~~

- | | |
|---|-----------------------------------|
| (i) Total Suspended Solids | less than 30 mg/L; |
| (ii) 5-Day Biochemical Oxygen Demand | less than 20 mg/L; |
| (iii) Total Nitrogen | less than 10 mg/L; and |
| (iv) Total Phosphorus | less than 1 mg/L. |

~~W5 The licensee shall collect samples of treated wastewater from the treatment plant at the sampling point on a monthly basis, at a time when it can be assumed that the treated wastewater discharge is representative of steady state discharge conditions, and shall be analysed to determine the levels of the following parameters:~~

- ~~(i) pH;~~
- ~~(ii) Total Suspended Solids;~~
- ~~(iii) Total Dissolved Solids;~~
- ~~(iv) 5-day Biochemical Oxygen Demand (BOD₅);~~
- ~~(v) Total Nitrogen;~~
- ~~(vi) Ammonium Nitrogen;~~
- ~~(vii) Nitrate plus Nitrite Nitrogen; and~~
- ~~(viii) Total Phosphorus.~~

~~With the exception of pH, all measurements are to be reported in milligrams per litre (mg/L).~~

and is replaced with Conditions 11 to 14 as shown below:

Wastewater discharge quality criteria and monitoring

11. The Licence Holder must ensure that wastewater discharges from the wastewater treatment plant meet the discharge water quality criteria in Table 4:

- (a) at the locations specified in Column 1;
- (b) for the parameters specified in Column 2;
- (c) at the limits specified in Column 3;

in Table 4.

Table 4: Discharge water quality criteria

Column 1	Column 2	Column 3
Location	Parameter	Limits
Discharge point outlet pipe from the treatment plant (so that representative wastewater samples can be collected)	Total Suspended Solids	Less than 10mg/L
	Biochemical Oxygen Demand	Less than 10mg/L
	Total Nitrogen	Less than 10mg/L
	Total Phosphorus	Less than 1 mg/L

12. The Licence Holder must maintain a flow metering device to measure the volume (m³ per day) of Waste entering the Premises.

13. The Licence Holder must undertake the monitoring of treated wastewater discharged from the Premises:

- (a) at the locations specified in Column 1;
- (b) for the parameters specified in column 2;
- (c) at the averaging periods specified in Column 3;
- (d) at the frequencies specified in Column 4; and
- (e) in accordance with the method specified in column 5

in Table 5.

Table 5: Monitoring of treated wastewater

Column 1	Column 2	Column 3	Column 4	Column 5
Location	Parameter	Averaging Period	Frequency	Method
Discharge from Recycled Water Storage Tank as depicted in Schedule 1; 'Site Layout Plan'	<ul style="list-style-type: none"> • pH¹ • Total dissolved solids • Total suspended solids • Total phosphorus • Total nitrogen • 5 day Biochemical oxygen demand • Ammonium Nitrate • Nitrate • Nitrite 	Spot sample	Continuously Monthly	AS/NZS 5667.1 AS/NZS 5667.10:1998
	Volume (m ³) irrigated to the Oval	Continuous	Continuous	Flow metering device -- flow meter to recycled water distribution pumps
	Volume (m ³) irrigated to the Golf course			
Recycled Water Storage Tank overflow line	Volume (m ³) disposed of to the infiltration basin			Water balance calculation.

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

14. The Licence Holder shall ensure that the accuracy of the flow metering device required by Condition 12 and 13 is performed in accordance with the Australian Technical Standards and Australian Standards specified within "Guidelines for Water Meter Installation" Department of Water, 2009).

7. The Licence is amended by the deletion of condition W7

~~W7 The licensee shall take representative water samples from the groundwater monitoring bores every 6 months and have them analysed for the following parameters:-~~

- ~~(i) Standing Water Level (determined prior to collection of water samples);~~
- ~~(ii) pH~~
- ~~(ii) Total Nitrogen;~~
- ~~(iii) Total Phosphorus;~~
- ~~(iv) Total Dissolved Solids; and.~~
- ~~(v) Thermotolerant Coliforms~~

~~All measurements shall be reported in milligrams per litre (mg/L), except for SWL (metres AHD), pH and Thermotolerant Coliforms, and shall be included in the annual monitoring report.~~

and is replaced with Condition 15 as follows:

Groundwater monitoring

15. The licence Holder must undertake groundwater monitoring:

- (a) at the locations specified in Column 1;
- (b) for the parameters specified in Column 2;
- (c) at the averaging periods specified in Column 3;
- (d) at the frequencies specified in Column 4; and
- (e) in accordance with the method specified in Column 5,

In Table 6.

Table 6: Monitoring of Groundwater

Column 1	Column 2	Column 3	Column 4	Column 5
Location	Parameter	Averaging Period	Frequency	Method
WWTP groundwater monitoring bores: MB001, MB002, MB003, MB004 and MB005 as depicted in Schedule 1; 'Groundwater monitoring locations for WWTP' Map	<ul style="list-style-type: none"> • Standing water level • pH¹ • Total nitrogen • Total phosphorous • Total dissolved solids • Thermotolerant Coliforms 	Spot sample	Monthly	AS/NZS 5667.1 AS/NZS 5667.11.1998
Golf Course and Oval irrigation areas groundwater monitoring boreholes OV1, GC1, GC2, GC3, GC4, REF28-90 as depicted in Schedule 1; 'Groundwater and surface water monitoring locations for Irrigation Areas' Map	<ul style="list-style-type: none"> • Standing water level • Electrical conductivity¹ • pH¹ • Temperature¹ • Dissolved Oxygen¹ • Total dissolved solids • Total nitrogen • Total Kjeldahl Nitrogen (TKN) • Ammonia • Nitrate • Nitrite • Total phosphorous • Filterable reactive phosphorous • Thermotolerant coliforms • E-coli • Chloride • 5 day Biochemical oxygen 	Spot sample	Monthly	AS/NZS 5667.1 AS/NZS 5667.11.1998

Column 1	Column 2	Column 3	Column 4	Column 5
Location	Parameter	Averaging Period	Frequency	Method
	demand			
	<ul style="list-style-type: none"> • Sodium • Potassium • Calcium • Manganese • Sulphate • Fluoride • Bicarbonate • Dissolved metals (aluminium, arsenic, cadmium, chromium, copper, lead, nickel, selenium, zinc, boron) 	Spot sample	6 monthly	AS/NZS 5667.1 AS/NZS 5667.11.1998

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

8. The Licence is amended by the deletion of the following condition W6:

~~W6 The licensee shall maintain one groundwater monitoring bore upgradient (background) of the infiltration ponds and two groundwater monitoring bores downgradient of the infiltration ponds.~~

and is replaced with Condition 16 as follows:

16. The Licence Holder must maintain the monitoring bores referred to in Column 1 of Table 6 and as depicted in the map in Schedule 1, in good working order to allow representative water samples to be taken.

9. The Licence is amended by the insertion of conditions 17 to 19:

Surface water monitoring

17. The licence Holder must undertake surface water monitoring:

- (a) at the locations specified in Column 1;
- (b) for the parameters specified in column 2;
- (c) at the averaging periods specified in Column 3;
- (d) at the frequencies specified in Column 4; and
- (e) in accordance with the method specified in column 5, In Table 7.

Table 7: Monitoring of Surface Water

Column 1	Column 2	Column 3	Column 4	Column 5
Location	Parameter	Averaging Period	Frequency	Method
Surface water monitoring points LL1, H1, GL1, GL2 and GH1 as depicted in Schedule 1.	<ul style="list-style-type: none"> • Standing water level • Electrical conductivity¹ • Temperature¹ • Dissolved oxygen¹ • Total dissolved solids • Total nitrogen • TKN • Ammonia • Nitrate • Total phosphorous • Filterable reactive phosphorous • Thermotolerant coliforms • E-coli • Chloride • 5 day Biochemical oxygen demand 	Spot sample	Monthly	AS/NZS 5667.1 AS/NZS 5667.4.1998
	<ul style="list-style-type: none"> • Sodium • Potassium • Calcium • Magnesium • Sulfate • Fluoride • Bicarbonate • Dissolved metals (aluminium, arsenic, cadmium, chromium, copper, lead, nickel, selenium, zinc, boron) 	Spot sample	6 monthly	AS/NZS 5667.1 AS/NZS 5667.4.1998

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

Fresh groundwater lens/hyporheic zone

18. The Licence Holder must undertake monitoring of the fresh groundwater lens/hyporheic zone

- (a) at the locations specified in Column 1;
 - (b) for the parameters specified in column 2;
 - (c) at the averaging periods specified in Column 3;
 - (d) at the frequencies specified in Column 4; and
 - (e) in accordance with the method specified in column 5,
- In Table 8.

Table 8: Monitoring of Fresh groundwater lens/hyporheic zone

Column 1	Column 2	Column 3	Column 4	Column 5
Location	Parameter	Averaging Period	Frequency	Method
<p>Sample locations GC5a, GC5i, GC5d, GC6a, GC6i, GC6d, GC7s, GC57i, GC7d, GC8s, GC8i and GC8d as depicted in Schedule 1.</p>	<ul style="list-style-type: none"> • Standing water level • Electrical conductivity¹ • pH¹ • Temperature¹ • Dissolved oxygen¹ • Total dissolved solids • Total nitrogen • TKN • Ammonia • Nitrate • Total phosphorous • Filterable reactive phosphorous • Thermotolerant coliforms • E-coli • Chloride • 5 day Biochemical oxygen demand 	Spot sample	Monthly	<p>AS/NZS 5667.1 AS/NZS 5667.11.1998</p>

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

Soil Monitoring

19. The Licence Holder must undertake soil monitoring

- (a) at the locations specified in Column 1;
 - (b) for the parameters specified in column 2;
 - (c) at the averaging periods specified in Column 3;
 - (d) at the frequencies specified in Column 4; and
 - (e) in accordance with the method specified in column 5,
- In Table 9.

Table 9: Monitoring of soil

Column 1	Column 2	Column 3	Column 4	Column 5
Location	Parameter	Averaging Period	Frequency	Method
Soil monitoring locations GCS01, GCS02, GCS03, GCS04, GCS05, HA01, HA02,HA03,HA04, HA05, HA06, HA07, HA08, HA08, HA09, HA10 and HA11 as depicted in Schedule 1.	<ul style="list-style-type: none"> PBI Electrical conductivity pH¹ Total nitrogen TKN Total phosphorous Nitrate Nitrite 	Spot sample	Annually	AS 4482.1 A Composite soil sample shall be collected from each monitoring location. Each composite sample shall be derived from five cores at four depth intervals to one metre, within a five metre diameter plot. The four depths should fall within 0–20, 20–40, 40–70 and 70–100 cm depth increments, and positioned within major soil horizons or layers.
Soil monitoring locations GCS02, GCS03, HA01, HA02, HA03 and HA11 as depicted in Schedule 1.	<ul style="list-style-type: none"> v% moisture content of soil or mm/m 	Spot sample	Daily between September and April.	Water potential probe
- Soil monitoring locations GCS01, GCS04, GCS05, HA04, HA05, HA06, HA07, HA08, HA09 and HA10 as depicted in Schedule 1. -			2 times per week between September and April.	

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

10. The Licence is amended by the deletion of condition G1:

~~G1 — The licensee shall provide to the Director an annual report containing data required by conditions W2, W5 and W7 of this licence. The report shall contain data collected from 1 July to 30 June and shall be provided by 30 September each year.~~

and is replaced with Conditions 20, 21 and 22 as follows:

Information and Reporting

20. The Licence Holder must record the number and details of any complaints received by the Licence Holder relating to the Premises, and any action taken by the Licence Holder in response to the complaint. Details of complaints must include:

- i. an accurate record of the concerns or issues raised, for example a copy of any written complaint or a written note of any verbal complaints made;
- ii. the name and contact details of the complainant, if provided by the complainant;
- iii. the date of the complaint; and
- iv. the details and dates of the actions taken by the Licence Holder in response to the complaints.

21. The Licence Holder must submit to the CEO by the 30 September in each year, an Annual Environmental Report satisfying the requirements for the Annual Period for the Condition specified in column 1 and the reporting requirements in column 2 of Table 10.

Table 10: Annual Environmental Report Requirements

Column 1	Column 2
Condition	Reporting Requirements
2 and 12	Wastewater Intake Volumes: <ul style="list-style-type: none"> (a) Summary of daily intake volumes (m³ per day) of Waste entering the Premises. (b) Data should be presented in tabulated form within the report.
5, 6, 11, 13 and 14	Wastewater discharge volumes, quality criteria and monitoring: <ul style="list-style-type: none"> (a) Summary of wastewater discharge volumes to respective discharge areas; golf course, oval and infiltration basin. (b) Summary of calculated nutrient loading rates in accordance with Condition 5. (c) Interpretive summary and assessment of discharge water quality results against previous monitoring results and against discharge water quality criteria as specified in Condition 11. (d) Data should be presented in tabulated form within the report.
15	Groundwater Monitoring <ul style="list-style-type: none"> (a) Data should be presented in tabulated form within the report. (b) An interpretive summary and assessment of results against previous monitoring results and relevant assessment levels for water as published in the Assessment and management of contaminated sites guidelines.
17	Surface water monitoring <ul style="list-style-type: none"> (a) Data should be presented in tabulated form within the report. (b) An interpretive summary and assessment of results against previous monitoring results and relevant assessment levels for water as published in the Assessment and management of contaminated sites guidelines.
18	Fresh groundwater lens/hyporheic zone monitoring <ul style="list-style-type: none"> (a) Data should be presented in tabulated form within the report. (b) An interpretive summary and assessment of results against previous monitoring results and relevant assessment levels for water as published in the Assessment and management of contaminated sites guidelines.
7, 8, 9 and 19	Soil monitoring <ul style="list-style-type: none"> (a) Interpretive summary and assessment of soil monitoring results against

Column 1	Column 2
Condition	Reporting Requirements
	<p>previous monitoring results.</p> <p>(b) Summary of moisture content (v%) with respect to operational irrigation requirements specified in Conditions 7, 8 and 9 (Field Capacity).</p>
20	Complaints – summary of records and actions

22. The Licence Holder must comply with a CEO Request, within 7 days from the date of the CEO Request or such other period specified in the CEO Request.

Schedule 1 MAPS

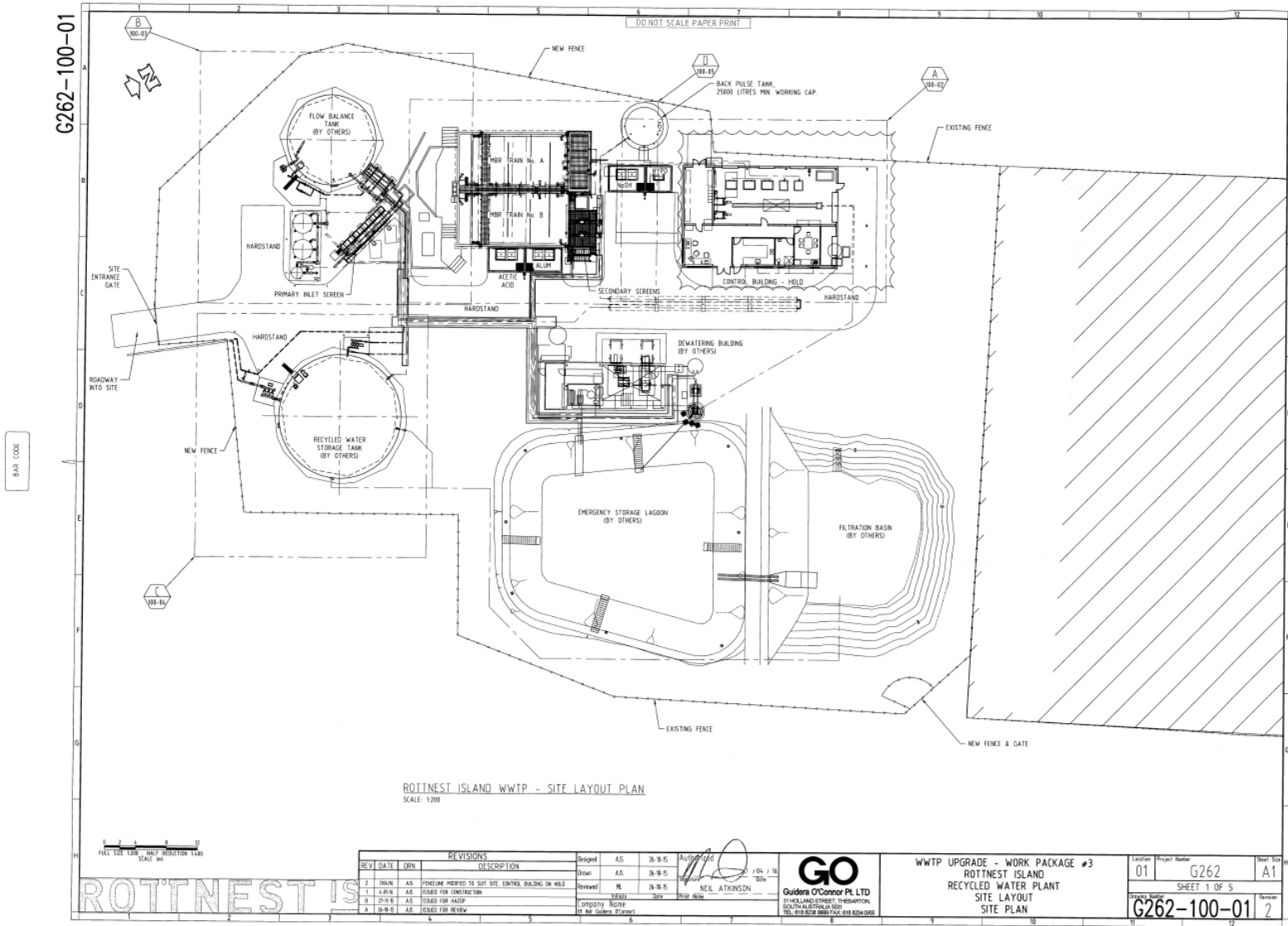
Plan of Premises is amended with the following image:



Licence: L8807/2013/1

IR-T08 Amendment Notice (Major) template v2.0 (July 2017)

Site Layout Plan



Licence: L8807/2013/1

IR-T08 Amendment Notice (Major) template v2.0 (July 2017)

Golf Course and Oval Irrigation Areas

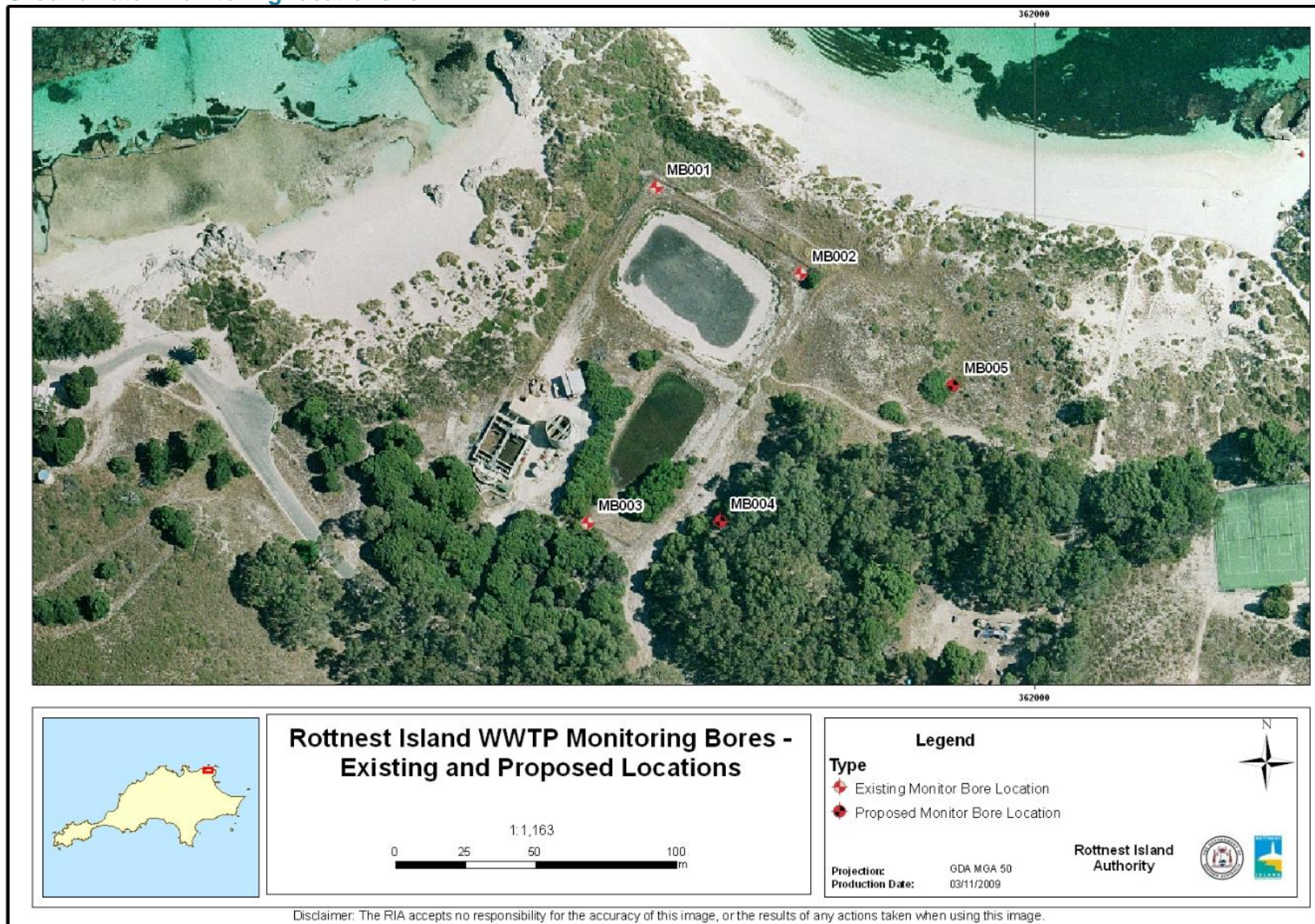


<p>1:3,500 (at A3)</p> <p>0 20 40 80 120 160</p> <p>Metres</p> <p>Map Projection: Transverse Mercator Horizontal Datum: Geocentric Datum of Australia (GDA) Grid: Map Grid of Australia 1994, Zone 50</p>		<p>LEGEND</p> <ul style="list-style-type: none"> Monitoring Well Location Golf Course Lysimeter Location 5m Contours Irrigation Main Pipeline Irrigation Lateral Pipeline Rottneest WWTP Irrigation Area Fairways & Greens Tee Oval 	<p>Rottneest Island Authority Rottneest Recycled Water Scheme Nutrient and Irrigation Management Plan</p>	<p>Job Number 61-33113 Revision 0 Date 28 Oct 2016</p>
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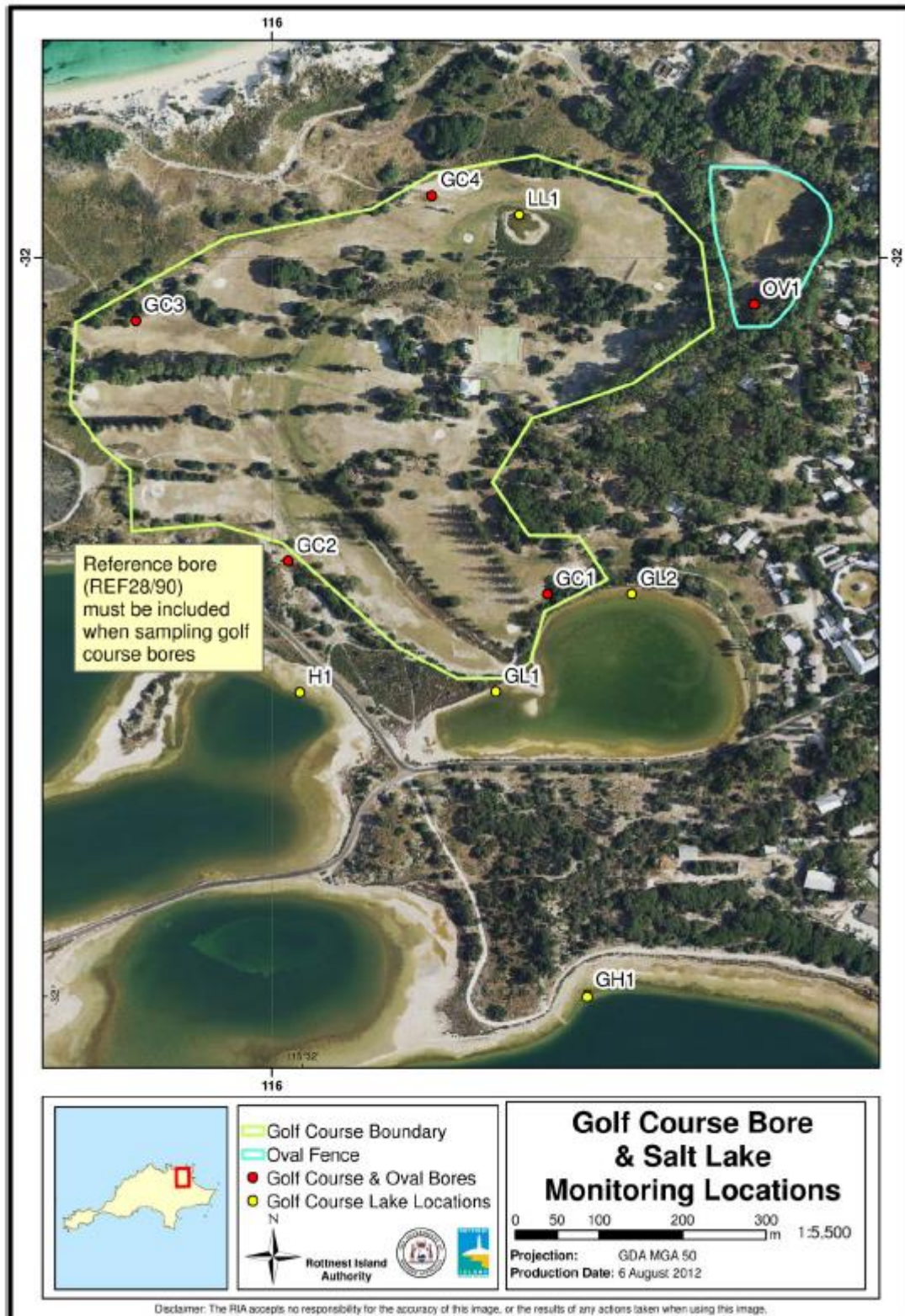
Golf Course Irrigation Areas Figure 14

Is:\proj\projects\6133113\Map\Map\MXD\13113_0000_Fig13_Rev1_Irrigation_areas.mxd
© 2012. While GHD has taken care to ensure the accuracy of this product, GHD, RIA, and IGA make no representations or warranties about its accuracy, completeness or suitability for any particular purpose. GHD, RIA, and IGA cannot accept liability of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred as a result of the product being inaccurate, incomplete or unsuitable in any way and for any reason.
Data source: GHD: Irrigation Area - 20190826; Soil Bore Location (D116) - 20160821; Golf Course Lysimeter Location - 20160821; Landscape: Rottneest_Island_Aerial - 20160821; RIA: rdotnet - 20030408; Irrigation Main Pipeline - 20131016; Irrigation Lateral Pipeline - 20131016; Sampling Location Type - 20120628. Created by: sld2, wha, stock

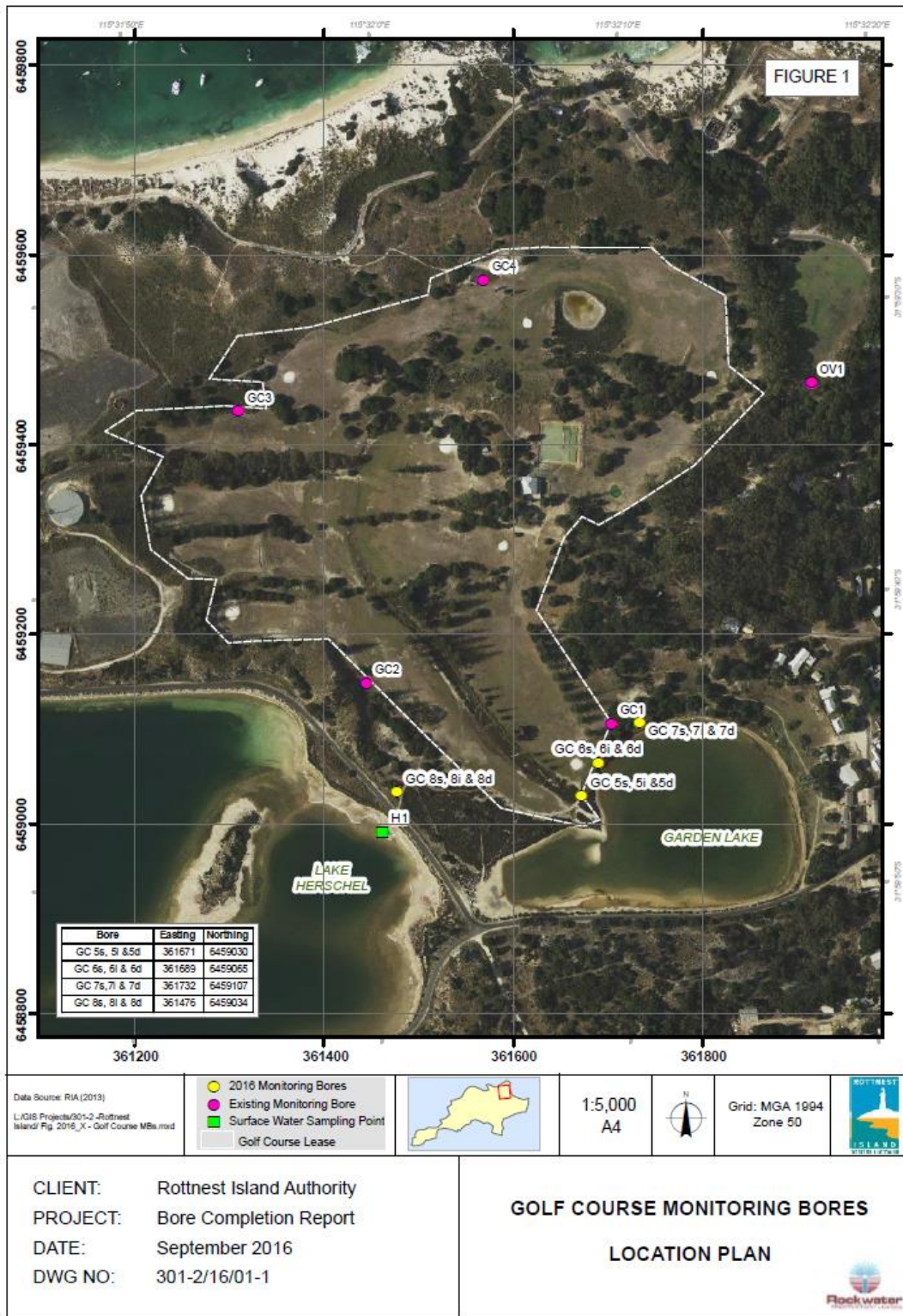
Groundwater monitoring locations for WWTP



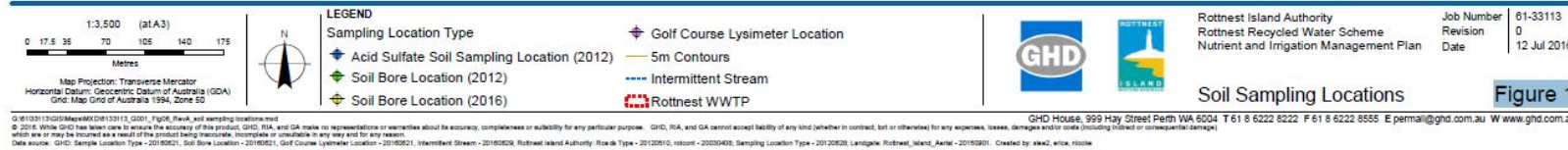
Groundwater and surface water monitoring locations for Irrigation Areas



Fresh groundwater lens/hyporheic zone monitoring locations for Irrigation Areas



Soil monitoring locations for Irrigation Areas GCS01 – GCS05 and HA01 – HA11



Appendix 1: Key documents

	Document Title	In text ref	Availability
1	Licence L8807/2013/1 – Rottnest Island Wastewater Treatment Plant	L8807/2013/1	accessed at http://www.dwer.wa.gov.au
2	Works Approval W5857/2015/1 – Rottnest Island Wastewater Treatment Plant Upgrade (Granted 15 October 2015)	W5857/2015/1	DWER records – A991694
3	Works Approval W5857/2015/ – Rottnest Island Wastewater Treatment Plant Upgrade (Amended 27 May 2016)		DWER records – A1105742
	Ministerial Statement 324	MS 324	accessed at www.dwer.wa.gov.au
4	Permeate Partners, 2016. <i>Rottnest Island Authority, WWTP Upgrade – DER Licence Amendment Application.</i>	Permeate Partners 2016a	DWER records – A1347121
5	GHD, October 2016. <i>Rottnest Island Authority Rottnest Island Recycled Water Scheme Nutrient and Irrigation Management Plan.</i>	GHD 2016	DWER records – A1347142
6	Permeate Partners, 2016. Water and Nutrient Balance provided in the <i>Recycled Water Quality Management Plan (RWQMP)</i>	Permeate Partners 2016b	DWER records – A1350281
7	Swan River Trust, 2014 (revised). <i>Western Australian environmental guidelines for the establishment and maintenance of turf grass areas.</i>	SRT revised 2014	Accessed at http://www.dpaw.wa.gov.au
8	DER, July 2015. <i>Guidance Statement: Regulatory principles.</i>	DER 2015a	accessed at http://www.dwer.wa.gov.au
9	DER, February 2017. <i>Guidance Statement: Decision Making.</i>	DER 2017a	
10	DER, February 2017. <i>Guidance Statement: Land Use Planning.</i>	DER 2017b	
11	DER, October 2015. <i>Guidance Statement: Setting conditions.</i>	DER 2015b	
12	DER, August 2016. <i>Guidance Statement: Licence duration.</i>	DER 2016a	
13	DER, February 2017. <i>Guidance Statement: Risk Assessments.</i>	DER 2017c	
14	DER, November 2016. <i>Guidance Statement: Decision Making.</i>	DER 2016b	

Appendix 2: Summary of Stakeholder comments

The Application was referred to the Department of Health, the former Department of Water and the former Department of Parks and Wildlife on 19 January 2017 for comment on the acceptability of the amended irrigation proposal for a six month duration, and on an ongoing basis. The following comments were received.

Comments received	DER consideration of risk
<p><u>Department of Water (DoW):</u></p> <p><u>Impacts on the ecology and water resources</u></p> <p>The irrigation and the nutrient loading rates of the proposed reuse scheme could adversely impact the ecology of the Rottnest Island salt lakes. The Department is not able to quantify the extent of the ecological impacts to the lakes with the data available and cannot provide acceptable long-term nutrient loading limits. If the proposal is approved, it is recommended that:</p> <ul style="list-style-type: none"> ongoing sediment nutrient monitoring should be undertaken at the same frequency of lake water quality measurements. This monitoring should be used to improve the understanding of the benthic algal mat community response to additional nutrient inputs (particularly phosphorous). Sediment nutrient concentrations may also be a representative metric for benthic algae mat community cohesion than surface water nutrient concentrations; ecological surveys of the salt lakes should be undertaken to identify changes in benthic algal mat community composition; and the proponent should be required to operate to an environmental target. The nutrient concentration trigger values for the Rottenest Island salt lake (GHD 2016) may be an appropriate interim target. However, sediment nutrient content may also be a more representative environmental measure and its use as an environmental target should be discussed further. <p><u>Drinking water source protection</u></p> <p>A small portion of the island's golf course (including parts for holes, 4, 6 and 7) is located within the southern boundary of the Longreach Bay saltwater borefield (P3 area). The <i>Rottnest Island Water Reserve Drinking Water Source Protection Plan</i> (DoW, May 2014) notes the proposed reuse of treated wastewater on the golf course's greens and fairways as an incompatible land use in a public drinking water source area.</p> <p>DoW's, Water Quality Protection Note no. 25: Land use compatibility tables for public drinking water sources areas does allow for reuse of treated wastewater in P3 areas subject to conditions, including:</p> <ul style="list-style-type: none"> need to prepare a nutrient and irrigation 	<p>DWER has imposed treated wastewater process limits, nutrient loading (application) limits and, monitoring requirements for ambient groundwater, surface water, soil and the freshwater lens/ hyporheic zone for Herschel and Garden Lake.</p> <p>Based on DWER's risk assessment, the Delegated Officer considers that the monitoring imposed on the licence is sufficient to identify any movement of Treated Wastewater from the Premises towards sensitive receptors.</p> <p>Following the granting of this Amendment Notice DWER intends to undertake a detailed risk review of the licence to align it with DER's risk based Regulatory Framework. The review will include an assessment of risks to the environment and public health from the irrigation of treated wastewater to the golf course and oval on an on-going basis. As part of the review DER will consider DoW's recommendations in detail and consult further where required.</p> <p>The Licence Holder has prepared a NIMP. While it has not specifically addressed impacts in relation to the P3 area being irrigated, DER has considered potential impacts in the risk assessment in Table 8 of this document.</p> <p>The risk assessment as detailed in Table 8 has only considered the potential impacts associated with the irrigation of treated wastewater to the golf course on a six month time limited approval. Within this period RIA will be restricted from irrigating treated wastewater in the cooler/winter months, thus it is likely that the irrigation period will be less than 3 months.</p>

<p>management plan (NIMP); and</p> <ul style="list-style-type: none"> • use of recycled water for irrigating vegetation needs to be in accordance with the Department of Health's (DoH) Guidelines for the non-potable use of recycled water in Western Australia. It is not clear if the latest update to the scheme has been reviewed by the DoH. <p>The NIMP (GHD 2016) does not provide an environmental risk assessment to determine the potential impacts to the drinking water source (this would also identify any other contaminants of concern, e.g. pathogens) as this was not considered within the spatial boundary of this management plan.</p> <p>If this proposal is approved, it is recommended to:</p> <ul style="list-style-type: none"> • Refer this proposal to DoH; • Undertake a risk assessment, unless already done as part of another report, to identify the potential risks to the quality of the public drinking water source; and • Continue monitoring to establish groundwater quality trends in the vicinity of the discharge areas along the boundary to the Longreach Bay saltwater borefield and make this available to the Department of Water, if required. 	
<p><u>Department of Parks and Wildlife:</u></p> <p>Supportive of a licence amendment with the following recommendations for consideration in the short term approval for irrigation activities (6 months), and any future ongoing licence approval :</p> <ul style="list-style-type: none"> • Licence Holder should instigate effective surface water, groundwater and environmental monitoring programs. This should include monitoring of microbialite Priority ecological communities and the lake waters of Garden and Herschel Lakes, the coastal saltmarsh Threatened Ecological Community, as they are particularly significant and sensitive receptors of the receiving environment. The monitoring program should be developed in consultation with Parks and Wildlife, and the programs and data reviewed regularly. Environmental and water-related monitoring data should also be provided to Parks and Wildlife for review. • Increasing the width of the buffer of saltmarsh to reduce hydrological risks to the microbialite assemblages and other biota, in particular, in Garden Lake. • Monitoring should be expanded to include pharmaceuticals and personal care products as they are likely to occur in the wastewater. Groundwater and surface water flowpaths are quite small on the island, so there are limited dilution pathways. Healthy microbialite systems grow through a series of complex biogeochemical reactions and it is not known if 	<p>DWER has imposed treated wastewater process limits, nutrient loading (application) limits and, monitoring requirements for ambient groundwater, surface water, soil and the freshwater lens/ hyporheic zone for Herschel and Garden Lake.</p> <p>The risk assessment as detailed in Table 8 has only considered the potential impacts associated with the irrigation of treated wastewater to the golf course on a six month time limited approval. Within this period RIA will be restricted from irrigating treated wastewater in the cooler/winter months, thus it is likely that the irrigation period will be less than 3 months.</p> <p>Based on DWER's risk assessment, the Delegated Officer considers that the monitoring imposed on the licence is sufficient to identify any movement of Treated Wastewater from the Premises towards sensitive receptors.</p> <p>Following the granting of this Amendment Notice DWER intends to undertake a detailed risk review of the licence to align it with DWER's risk based Regulatory Framework. The review will include an assessment of risks to the environment and public health from the irrigation of treated wastewater to the golf course and oval on an on-going basis.</p> <p>DWER will consult further with DPaW (now Department of Biodiversity, Conservation and Attractions DBCA), to establish a monitoring program for biological communities, including the coastal saltmarsh TEC and the microbialite PEC.</p>

<p>steroids, drugs and PCPs could interrupt these reactions and if they may be considered a threat to the environment.</p>	
<p><u>Department of Health:</u> Department of Health (DoH) has no objection to the proposal subject to the signed Recycled Water Supply Agreement between the Rottnest Island Authority and the golf course being submitted to the DoH for the final approval to reuse the treated effluent.</p>	<p>It is RIA's responsibility to ensure that they are aware of all relevant statutory obligations under the EP Act and any other statutory instrument or requirement. 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</p>

Appendix 3: Summary of Licence Holder comments

The Licence Holder was provided with the draft Amendment Notice on [insert date] for review and comment. The Licence Holder responded on [insert date] [waiving the remaining comment period (until [insert date])]. [No comments were submitted on the draft Amendment Notice/ the following comments were received on the draft Amendment Notice.]

Condition	Summary of Licence Holder comment	DWER response
Condition 13	General monitoring condition 12 requires NATA testing for conditions 15,16,18,19 and 20. Can you advise if condition 13 (Table 4: Discharge water quality criteria) is excluded from the NATA requirement please?	Condition 13 (Table 4) indicates the quality the recycled water that is required prior to it being irrigated or infiltrated. Condition 15 indicates what parameters are required to be monitored, the frequency and method of sampling. Therefore monitoring is not required in condition 13 or NATA testing.
Condition 13	Table 4: Discharge water quality criteria doesn't seem to have a stated frequency, are you able to advise on the required frequency please?	Condition 13 (Table 4) indicates the quality the recycled water that is required prior to it being irrigated or infiltrated. Condition 15 indicates what parameters are required to be monitored, the frequency and method of sampling. Therefore monitoring is not required in condition 13 or NATA testing.
Condition 15, 17, 19, 20 and 21	Monitoring during non-irrigation periods- Are we required to monitor during no irrigation periods? If so which conditions would DER expect the RIA to monitor?	
Condition 11	Does condition 11 apply to the oval for only irrigating for a 6 month period.	