Government of Western Australia
Department of Water and Environmental Regulation

Licence

Licence Number	L9115/2018/1
Licence Holder	Department of Justice
Registered business address	Level 4, 141 St Georges Terrace PERTH WA 6000
File Number	DER2018/000194
Duration	15/06/2018 to 14/06/2038
Date of issue	15 June 2018
Prescribed Premises	Category 54 – Sewage facility
Premises	Greenough Regional Prison Edward Road NARNGULU WA 6532 Legal description - Lot 11750 on Deposited Plan 217028 Crown Reserve 39544 As defined by the coordinates in Schedule 1

This Licence is granted to the Licence Holder, subject to the following conditions, on 15 June 2018, by:

[redacted]

Steve Checker
MANAGER LICENSING (WASTE INDUSTRIES)
an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

Explanatory notes

These explanatory notes do not form part of this Licence.

Defined terms

Definition of terms used in this Licence can be found at the start of this Licence. Terms which are defined have the first letter of each word capitalised throughout this Licence.

Department of Water and Environmental Regulation

The Department of Water and Environmental Regulation (DWER) is established under section 35 of the *Public Sector Management Act 1994* and designated as responsible for the administration of Part V, Division 3 of the *Environmental Protection Act 1986* (WA) (EP Act). The Department also monitors and audits compliance with licences, takes enforcement action and develops and implements licensing and industry regulation policy.

Licence

Section 56 of the EP Act provides that an occupier of Prescribed Premises commits an offence if Emissions are caused or increased, or permitted to be caused or increased, or Waste, noise, odour or electromagnetic radiation is altered, or permitted to be altered, from Prescribed Premises, except in accordance with a works approval or licence.

Categories of Prescribed Premises are defined in Schedule 1 of the *Environment Protection Regulations 1987* (WA) (EP Regulations).

This Licence does not authorise any activity which may be a breach of the requirements of another statutory authority including, but not limited to the following:

- conditions imposed by the Minister for Environment under Part IV of the EP Act;
- conditions imposed by DWER for the clearing of native vegetation under Part V, Division 2 of the EP Act;
- any requirements under the *Waste Avoidance and Resource Recovery Act 2007;*
- any requirements under the *Environmental Protection (Controlled Waste) Regulations 2004*; and
- any other requirements specified through State legislation.

It is the responsibility of the Licence Holder to ensure that any action or activity referred to in this Licence is permitted by, and is carried out in compliance with, other statutory requirements.

The Licence Holder must comply with the Licence. Contravening a Licence Condition is an offence under s.58 of the EP Act.

Responsibilities of a Licence Holder

Separate to the requirements of this Licence, general obligations of Licence Holders are set out in the EP Act and the regulations made under the EP Act. For example, the Licence Holder must comply with the following provisions of the EP Act:

- the duties of an occupier under section 61; and
- restrictions on making certain changes to Prescribed Premises unless the changes are in accordance with a works approval, Licence, closure notice or environmental protection notice (s.53).

Strict penalties apply for offences under the EP Act.

Reporting of incidents

The Licence Holder has a duty to report to DWER all discharges of waste that have caused or are likely to cause Pollution, Material Environmental Harm or Serious Environmental Harm, in accordance with s.72 of the EP Act.

Offences and defences

The EP Act and its regulations set out a number of offences, including:

- Offence of emitting an Unreasonable Emission from any Premises under s.49.
- Offence of causing Pollution under s.49.
- Offence of dumping Waste under s.49A.
- Offence of discharging Waste in circumstances likely to cause Pollution under s.50.
- Offence of causing Serious Environmental Harm (s.50A) or Material Environmental Harm (s.50B).
- Offence of causing Emissions which do not comply with prescribed standards (s.51).
- Offences relating to Emissions or Discharges under regulations prescribed under the EP Act, including materials discharged under the *Environmental Protection (Unauthorised Discharges) Regulations 2004 (WA).*
- Offences relating to noise under the *Environmental Protection (Noise) Regulations 1997 (WA).*

Section 53 of the EP Act provides that a Licence Holder commits an offence if Emissions are caused, or altered from a Prescribed Premises unless done in accordance with a Works Approval, Licence or the requirements of a Closure Notice or an Environmental Protection Notice.

Defences to certain offences may be available to a Licence Holder and these are set out in the EP Act. Section 74A(b)(iv) provides that it is a defence to an offence for causing Pollution, in respect of an Emission, or for causing Serious Environmental Harm or Material Environmental Harm, or for discharging or abandoning Waste in water to which the public has access, if the Licence Holder can prove that an Emission or Discharge occurred in accordance with a Licence.

This Licence specifies the Emissions and Discharges, and the limits and Conditions which must be satisfied in respect of Specified Emissions and Discharges, in order for the defence to offence provision to be available.

Authorised Emissions and Discharges

The Specified and General Emissions and Discharges from Primary Activities conducted on the Prescribed Premises are authorised to be conducted in accordance with the Conditions of this Licence.

Emissions and Discharges caused from other activities not related to the Primary Activities at the Premises have not been Conditioned in this Licence. Emissions and Discharges from other activities at the Premises are subject to the general provisions of the EP Act.

Amendment of licence

The Licence Holder can apply to amend the Conditions of this Licence under s.59 of the EP Act. An application form for this purpose is available from DWER.

The CEO may also amend the Conditions of this Licence at any time on the initiative of the CEO without an application being made.

Amendment Notices constitute written notice of the amendment in accordance with s.59B(9) of the EP Act.

Duration of Licence

The Licence will remain in force for the duration set out on the first page of this Licence or until it is surrendered, suspended or revoked in accordance with s.59A of the EP Act.

Suspension or revocation

The CEO may suspend or revoke this Licence in accordance with s.59A of the EP Act.

Fees

The Licence Holder must pay an annual licence fee. Late payment of annual licence fees may result in the licence ceasing to have effect. A licence that has ceased to have effect due to non-payment of annual licence fees continues to exist; however, it ceases to provide a defence to an offence under s.74A of the EP Act.

Late fees are a component of annual licence fees and should a Licence Holder fail to pay late fees within the time specified the licence will similarly cease to have effect.

Definitions and interpretation

Definitions

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

Table 1: Definitions

Term	Definition
ACN	Australian Company Number
Annual Period	means a 12 month period commencing from 1 October until 30 September.
AS 3565	means Australian Standard AS3565-2007 *Meters for Water Supply*
AS/NZS 2031	means the Australian Standard AS/NZS 2031 Selection of containers and preservation of water samples for microbiological analysis
AS/NZS 5667.1	means the Australian Standard AS/NZS 5667.1 Water Quality – Sampling – Guidance of the Design of sampling programs, sampling techniques and the preservation and handling of samples;
AS/NZS 5667.10	means the Australian Standard AS/NZS 5667.10 Water Quality – Sampling – Guidance on sampling of waste waters;
AS/NZS 5667.11	means the Australian Standard AS/NZS 5667.11 Water Quality – Sampling – Guidance on sampling of groundwaters;
Condition	means a condition to which this Licence is subject under s.62 of the EP Act.
Books	has the same meaning given to that term under the EP Act.
CEO	means Chief Executive Officer. CEO for the purposes of notification means: Director General Department Administering the *Environmental Protection Act 1986* Locked Bag 33 Cloisters Square PERTH WA 6850 info@dwer.wa.gov.au
Compliance Report	means a report in a format approved by the CEO as presented by the Licence Holder or as specified by the CEO (guidelines and templates may be available on the Department's website).
Department	means the department established under section 35 of the *Public Sector Management Act 1994* and designated as responsible for the administration of Part V, Division 3 of the EP Act.

Department Request	means a request for Books or other sources of information to be produced, made by an Inspector or the CEO to the Licence Holder in writing and sent to the Licence Holder's address for notifications, as described at the front of this Licence, in relation to: (a) compliance with the EP Act or this Licence; (b) the Books or other sources of information maintained in accordance with this Licence; or (c) the Books or other sources of information relating to Emissions from the Premises.
Discharge	has the same meaning given to that term under the EP Act.
DWER	Department of Water and Environmental Regulation.
Emission	has the same meaning given to that term under the EP Act.
Environmental Harm	has the same meaning given to that term under the EP Act.
EP Act	means the *Environmental Protection Act 1986* (WA).
EP Regulations	means the *Environmental Protection Regulations 1987* (WA).
Freeboard	means the distance between the maximum water surface elevations and the top of retaining banks or structures at their lowest point.
Fugitive emissions	means all emissions not arising from point sources identified in Sections 2.2, 2.3, 2.4 and 2.5.
Hardstand	means a surface with a permeability of 10^{-9} metres/second or less.
Inspector	means an inspector appointed by the CEO in accordance with s.88 of the EP Act.
Licence	refers to this document, which evidences the grant of a Licence by the CEO under s.57 of the EP Act, subject to the Conditions.
Licence Holder	refers to the occupier of the premises being the person to whom this Licence has been granted, as specified at the front of this Licence.
L/m	means litres per minute.
Material Environmental Harm	has the same meaning given to that term under the EP Act.
NATA	means the National Association of Testing Authorities, Australia.
NATA accredited	means in relation to the analysis of a sample that the laboratory is NATA accredited for the specified analysis at the time of the analysis.

Nutrient Irrigation Management Plan	means the *'Nutrient Irrigation Management Plan, November 2010'*, as reviewed by DEC.
Operation and Maintenance Management, and Monitoring Plan	means the document '*Operations and Maintenance Management, and Water Monitoring Plan, Greenough Regional Prison, 6 May 2013, AECOM.*
Placard quantity	meaning defined in the *Dangerous Goods Safety (Storage and Handling of Non-explosives) Regulations 2007.*
Pollution	has the same meaning given to that term under the EP Act.
Premises	refers to the premises to which this Licence applies, as specified at the front of this Licence and as shown on the map in Schedule 1 to this Licence.
Prescribed Premises	has the same meaning given to that term under the EP Act.
Primary Activities	refers to the Prescribed Premises activities listed on the front of this Licence as described in Schedule 2, at the locations shown in Schedule 1.
Quarterly period	means the 4 periods from 1 January to 31 March, 1 April to 30 June, 1 July to 30 September, and 1 October to 31 December in the same year.
Reportable Event	means an exceedance above the trigger limit specified in Column 4 of Table 6, in Schedule 3.
Serious Environmental Harm	has the same meaning given to that term under the EP Act.
Schedule 1	means Schedule 1 of this Licence unless otherwise stated.
Unreasonable Emission	has the same meaning given to that term under the EP Act.
Waste	has the same meaning given to that term under the EP Act.

Interpretation

In this Licence:

(a) the words 'including', 'includes' and 'include' will be read as if followed by the words 'without limitation';

(b) where any word or phrase is given a defined meaning, any other part of speech or other grammatical form of that word or phrase has a corresponding meaning;

(c) where tables are used in a Condition, each row in a table constitutes a separate Condition;

(d) any reference to an Australian or other standard, guideline or code of practice in this Licence means the version of the standard, guideline or code of practice in force at the time of granting of this Licence and includes any amendments to the standard, guideline or code of practice which may occur from time to time during the course of the Licence; and

(e) unless specified otherwise, any reference to a section of an Act refers to that section of the EP Act.

Conditions

Emissions

1. The Licence Holder must not cause any Emissions from the Primary Activities on the Premises except for specified Emissions and general Emissions described in Column 1 of Table 2 subject to the exclusions, limitations or requirements specified in Column 2 of Table 2.

Table 2: Authorised Emissions table

Column 1	**Column 2**
Emission type	**Exclusions/Limitations/Requirements**
Specified Emissions	
• Wastewater discharges (treated discharges to lands) • Waste and leachates (sludge)	Subject to compliance with Conditions 1, 2 - 12, 16-18 and Schedule 3. Subject to compliance with Conditions 2-5, 9, 10, 15, 16-18 and Schedule 3.
General Emissions (excluding Specified Emissions)	
Emissions which: • arise from the Primary Activities set out in Schedule 2; or • arise from a Material Change (except where Condition **Error! Reference source not found.** applies).	Emissions excluded from General Emissions are: • Unreasonable Emissions; or • Emissions that result in, or are likely to result in, Pollution, Material Environmental Harm or Serious Environmental Harm; or • Discharges of Waste in circumstances likely to cause Pollution; or • Emissions that result, or are likely to result in, the Discharge or abandonment of Waste in water to which the public has access; or • Emissions or Discharges which do not comply with an Approved Policy; or • Emissions or Discharges which do not comply with a prescribed standard; or • Emissions or Discharges which do not comply with the conditions in an Implementation Agreement or Decision; or

Column 1	Column 2
Emission type	**Exclusions/Limitations/Requirements**
	• Emissions or Discharges the subject of offences under regulations prescribed under the EP Act, including materials discharged under the Environmental *Protection (Unauthorised Discharges) Regulations 2004*.

Infrastructure and equipment

2. The Licence Holder must ensure that the infrastructure and equipment specified in Column 1 of Table 3 is maintained in good working order and operated in accordance with the requirements specified in Column 2 of Table 3.

Table 3: Infrastructure and equipment controls table

Column 1	Column 2
Site infrastructure and equipment	**Operational requirements**
1. Ponds 1-4 (wastewater)	(a) Lined to achieve a permeability of at least $1x10^{-9}$ m/s or equivalent; (b) Pond 1: Volume of 5,529 m^3, depth of 2.1 m. Hydraulic retention time is approximately 30 days. (c) Pond 2: Volume of 3,789 m^3, depth of 2.4 m. Hydraulic retention time is approximately 20 days. (d) Pond 3: Volume of 2,753 m^3, depth of 2.4 m. Hydraulic retention time is approximately 15 days. (e) Pond 4: Volume of 2,424 m^3, depth of 2.4 m. Hydraulic retention time is approximately 13 days. (f) Treated wastewater discharged from Irrigation Tank 4 only to irrigation areas.
2. Pond 5 - overflow treated wastewater (P5)	(a) Unlined pond, which receives seasonal overflow from pond 4. Uncontaminated storm water and path wash down water is also gravity fed from prison grounds into pond 5. (b) Volume of 1,855 m^3, depth of 1.8m.
3. Irrigation tanks 1-4 (IT1-4)	(a) Four irrigation tanks with one water outflow point, with flow meter attached, from which treated wastewater is extracted for irrigation to the L1, L2 and L3. (b) Treated wastewater stored within the irrigation tanks for a minimum of two hours to ensure adequate chlorine contact time. (c) Treated and chlorinated wastewater pumped from

Column 1	Column 2
Site infrastructure and equipment	**Operational requirements**
	irrigation tank 4 via filtration plant to irrigation area. (d) Capacity of 22,000 L each.
4. Irrigation areas - Old oval, new oval and access road (L1-L3)	(a) Vegetated and maintained with grass across the entire area used for irrigation; (b) Old oval: 2.4 ha size, irrigated through 12 spray irrigators between 7pm and 5am. (c) New Oval: 0.4 ha size, irrigated through subsurface irrigators. (d) Access Road verge: 0.6 ha size, irrigated through subsurface irrigators. Driplines are 16 mm unibiolines. Disposal capacity of 133 L/m.
5. 'Shandy' water tank	(a) HDPE tank - 60,000L; (b) Located on a concrete hardstand.
6. Filtration unit	(a) Located within an enclosed, lockable shed on a concrete hardstand. (b) Consists of two sand filters and a micro filter and is automatically operated. (c) All backwash water to be returned to Pond 4.
7. Chlorination unit	(a) Chlorination unit located within an enclosed, lockable, vented shed on a concrete hardstand. (b) Chlorine dosing system to include an automated dosing pump, low pressure and thermal overload switches, residual free chlorine analyser, and dosing tank with associated pipework infrastructure. (c) Dosing and recirculation of chlorine liquid into irrigation tank 1. (d) Compliance to Department of Health treatment requirements and approval (B48/00000). (e) Weekly visual inspections of the plant for any leaks, unusual noise or vibration, air conditioner and checking of Sodium hypochlorite levels in dosing tank. (f) Monthly maintenance of: recirculation pump; dosing pump; Feed Water Tank; Potable Water Tank; level switches; fatigue and corrosion of connections, joints and valves; Hose Supply and instrument calibration. (g) Recording of all inspections to be kept within a log sheet/ register (h) Unit fitted with a warning light inside the shed and externally on the outward facing wall, and designed to shut down pumps in the event of a breakdown or low chlorine levels.

Column 1	Column 2
Site infrastructure and equipment	**Operational requirements**
8. Coagulant dosing unit	(a) Located between pond 2 and pond 3 on a 2 x 3 m concrete hardstand with a continuous dosing system for the release of sodium aluminate, ($Na_2Al_2O_4$).
9. Temporary sludge storage ponds (2)	(a) Two HDPE lined temporary holding ponds to assist with the management of sludge removal and drying from the ponds 1-4; (b) dispose of sludge and biosolids to a licenced landfill facility that is licenced to receive such waste in accordance with the Landfill Waste Classification and Waste Definitions 1996 (as amended) guidelines.

Throughput restrictions

3. The Licence Holder must only allow waste to be accepted on to the Premises if:
(a) it is of a type listed in Table 4;
(b) the quantity accepted is below any limit listed in Table 4; and
(c) it meets any specification listed in Table 4.

Table 4: Waste acceptance			
Waste	**Waste Code**	**Quantity Limit**	**Specification[1]**
Putrescible and Organic wastes			
Sewage	K130	189 m^3/ day	• Accepted through sewer inflow(s) or tankered acceptance during emergency or maintenance work requirements, from within the Premises only.
Septage wastes	K210		• Removed from ponds 1-4 as a result of desludging works at the premises, as required.

Note 1: Additional requirements for the acceptance of controlled waste are set out in the *Environmental Protection (Controlled Waste) Regulations 2004*

4. The Licence Holder must monitor and record the volumes of incoming and outgoing waste types at the Premises for the inputs/ outputs stipulated in column 1 of Table 5, using the monitoring point reference and parameter specified in columns 2 and 3 of Table 5 and for the units, averaging period and frequency stated in columns 4 to 6 of Table 5.

Table 5: Monitoring of inputs and outputs

Table 5: Monitoring of inputs and outputs					
Column 1	**Column 2**	**Column 3**	**Column 4**	**Column 5**	**Column 6**
Input/ Output	**Monitoring point reference**	**Parameter**	**Units**	**Averaging period**	**Frequency**
Sewage - Inlet Flow	Inflow meter (W1)	Volumetric flow rate	m^3/day	Continuous	Monthly

		(cumulative)			
Treated wastewater discharged to Pond 5	Outflow meter (W2)	Volumetric flow rate (cumulative)	m^3/day	Continuous	Monthly
Treated wastewater discharged to irrigation areas	Outflow meter (W3)	Volumetric flow rate (cumulative)	m^3/day	Continuous	Monthly
Sludge	Temporary storage ponds 1 and 2	N/A	m^3	Spot sample	Annually

Waste type restrictions and classifications

5. The Licence Holder must ensure that the wastes accepted onto the Premises are only subjected to the process(es) set out in Table 6 and in accordance with any process limits described in that table.

Table 6: Waste processing

Waste type	Process	Process limits
1. Sewage	Physical, biological and chemical treatment	(a) Minimum top of embankment freeboard of 300 mm is maintained; (b) Storm water runoff is prevented from entering the wastewater treatment ponds or causing the erosion of outer pond embankments; (c) Overtopping of the wastewater treatment ponds does not occur except as a result of an extreme rainfall event (greater than 1 in 10 year event of 72 hours duration); (d) Vegetation and floating debris (emergent or otherwise) is prevented from encroaching onto pond surfaces or inner pond embankments; (e) Trapped overflows must be maintained between treatment ponds to prevent carry-over of surface floating matter to subsequent ponds; (f) Prevent the un-controlled loss of wastewater from the wastewater treatment plant and its associated pipework; (g) Make treated wastewater available for reuse and maintain a suitable off-take point for treated wastewater at all times and (h) No overflow is to leave the Premises boundary.
	Irrigation of treated wastewater	(a) Bunding/cut-off drains are maintained adjacent to treated wastewater irrigation areas such that run-off only discharges to a designated location; (b) No irrigation generated run-off, spray drift or discharge occurs beyond the boundary of the Premises; (c) Wastewater is evenly distributed over the grassed irrigation area; (d) No soil erosion occurs; (e) Grass cover is maintained over the wastewater irrigation areas; and (f) The approved 'Nutrient Irrigation Management Plan (2010)' is implemented; (g) The WWTP is managed in accordance with the 'Operation and Maintenance Management, and Monitoring Plan'.

2. Sewage sludge	Storage	(a) No more than 200 m^3 at any one time; (b) Stored within geobags on a bunded, HDPE lined area adjacent to ponds 1-3; (c) Waste activated sludge leachate returned to Pond 1; (d) Removal of sludge to a licenced landfill for final disposal; and (e) Sludge disposed in accordance with the 'Landfill Waste Classification and Waste Definitions 1996 (as amended)' guidelines.

Wastewater emission controls

6. The Licence Holder is permitted, subject to conditions in the Licence, to emit waste to land through the emission points listed in Table 7 and identified in Schedule 3.

Table 7: Emission points to land

Emission point reference	Emission point reference on Map	Description	Source
P5 (Pond 5 - Overflow)	P5	Discharge from pond 4 to stormwater overflow pond 5	Wastewater
L1 (Old oval), L2 (New Oval) & L3 (Access road)	L1, L2 & L3	Discharge to on-site grassed irrigation areas	Treated wastewater

7. The Licence Holder must not cause or allow emissions to land greater than the limits listed in Table 8.

Table 8: Emission limits to land

Emission point	Parameter	Limit (including units)	Averaging period
L1; L2; L3	Total Nitrogen[1]	≤180kg/ha	Annually
L1; L2; L3	Total Phosphorus[1]	≤20kg/ha	Annually
L1, L2, L3 and P5	Aluminium[2]	≤ 5 mg/L	Spot sample

Note 1: Based on Department of Water, Water Quality Protection Note 22.
Note 2: Long-term irrigation water value as per ANZECC & ARMCANZ (2000), Australian Water Quality Guidelines for fresh and marine waters.

8. The Licence Holder must monitor emissions to land at or below the levels specified in Table 9.

Table 9: Discharges to land: irrigation and overflow

Emission point Reference	Monitoring point reference	Parameter	Trigger value (including units)	Averaging period
L1; L2; L3; and P5	IT4 and P5	BOD	≤ 20 mg/L[1]	Quarterly
		TSS	≤ 30mg/L[1]	
		Escherichia coli	≤ 1000 cfu/100ml[1]	
		Residual chlorine	≤ 1 mg/L[1]	
		pH	6.5-8.5	
		Total Nitrogen	≤ 11 mg/L[2]	
		Total Phosphorus	≤ 1.2 mg/L[2]	
		Aluminium	≤ 5 mg/L	

Note 1: Based on Department of Health standards and the recycled water classes classification system.
Note 2: Based on Department of Water, Water Quality Protection Note 22.

Wastewater monitoring

9. 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.

10. The Licence Holder must undertake groundwater monitoring in accordance with AS/ NZS 5667.1, AS/NZS 5667.10 and Schedule 3 – Wastewater monitoring.

Groundwater monitoring

11. 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.

12. The Licence Holder must undertake groundwater monitoring in accordance with AS/ NZS 5667.1, AS/ NZS 5667.11 and Schedule 3 – Groundwater monitoring.

Reporting

13. The Licence Holder must submit to the CEO, no later than 1 November annually, a Compliance Report indicating the extent to which the Licence Holder has complied with the Conditions in this Licence for the preceding Annual Period.

14. The Compliance Report must contain:

(a) any relevant process, production or operational data recorded including all monitoring data; and

(b) an assessment of the information contained within the report against previous monitoring results and Licence limits and/or trigger values.

15. The Licensee must submit the information in Tables 10 and 11 to the CEO according to the specifications in those tables.

Table 10: Non-annual reporting requirements

Condition or table (if relevant)	Parameter	Reporting period	Reporting date (after end of the reporting period)	Format or form[1]
Table 9	Trigger value exceedences	Quarterly	28 calendar days	None specified
Schedule 3	Monitoring of groundwater quality	Quarterly	28 calendar days	

Table 11: Notification requirements

Management action	Notification requirement[1]	Format or form
Taking a treatment pond offline for maintenance works	No less 72 hours in advance of works	None specified
Removal of sewage sludge from a treatment pond	No less than 14 days in advance of works	
Calibration report	Comment within Compliance Report	
Breach of any limit specified in the Licence	Part A: As soon as practicable, but no later than 5PM of the next usual working day.	
Any failure or malfunction of		

any pollution control equipment or any incident which has caused, is causing or may cause pollution	Part B: As soon as practicable	

Note 1: No notification requirement in the Licence shall negate the requirement to comply with s72 of the Act.

Record-keeping

16. The Licence Holder must maintain accurate and auditable Books including the following records, information, reports and data required by this Licence:

(a) the calculation of fees payable in respect of this Licence;

(b) the maintenance of infrastructure required to ensure that it is kept in good working order in accordance with Condition 2 of this Licence;

(c) monitoring undertaken in accordance with Conditions 9 to 12 and Schedule 3 of this Licence;

(d) Reportable Events reported in accordance with Condition 15 and Schedule 3 of this Licence; and

(e) complaints received under Condition 17 of this Licence;

In addition, the Books must:

(f) be legible;

(g) if amended, be amended in such a way that the original and subsequent amendments remain legible and are capable of retrieval;

(h) be retained for at least 7 years from the date the Books were made; and

(i) be available to be produced to an Inspector or the CEO.

17. The Licence Holder must record the number and details of any complaints received by the Licence Holder relating to its obligations under this Licence and its compliance with Part V of the EP Act at the Premises, and any action taken by the Licence Holder in response to the complaint. Details of complaints must include:

(a) 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;

(b) the name and contact details of the complainant, if provided by the complainant;

(c) the date of the complaint; and

(d) the details and dates of the actions taken by the Licence Holder in response to the complaints.

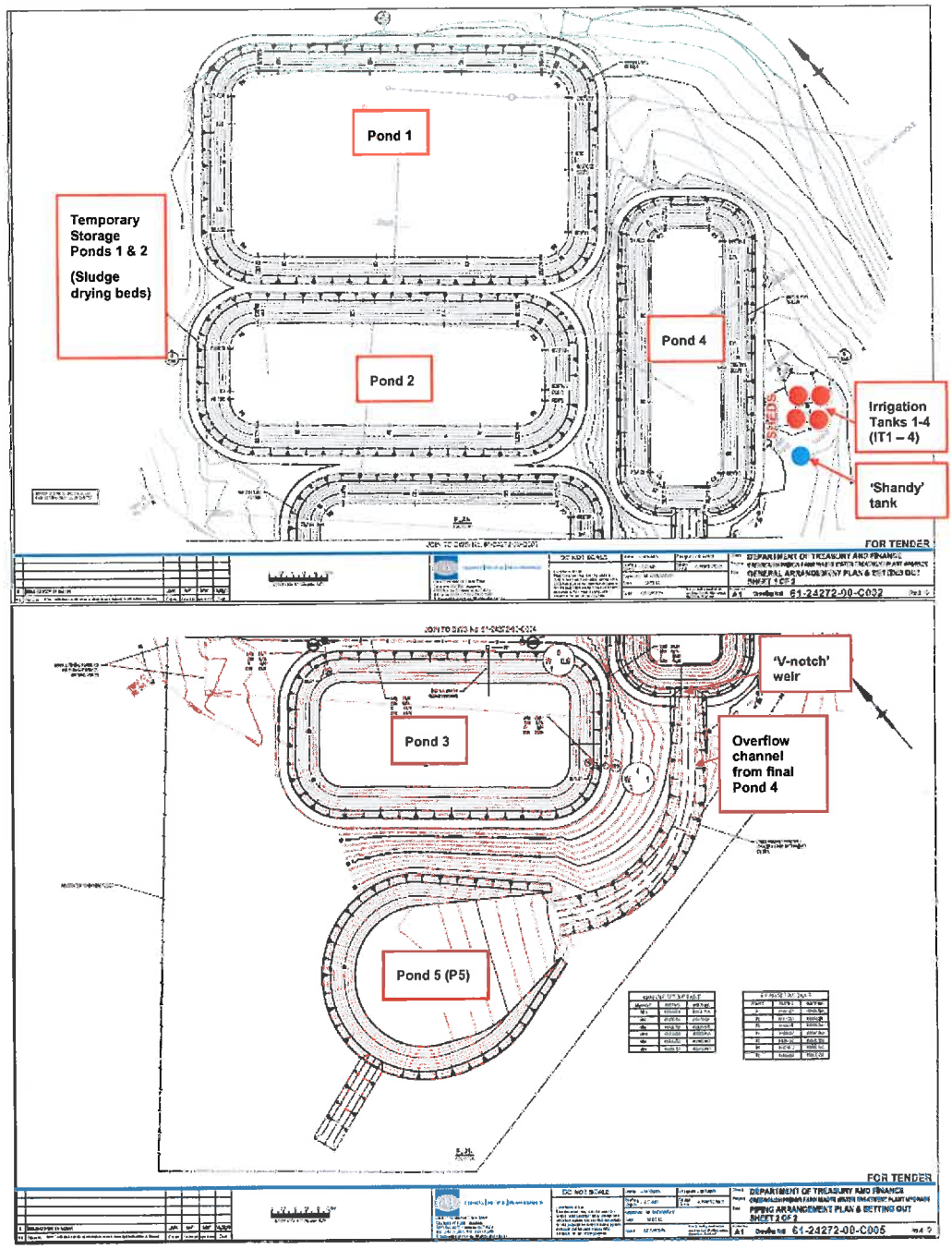
18. The Licence Holder must comply with a Department Request, within 14 days from the date of the Department Request or such other period as agreed to by the Inspector or the CEO.

Schedule 1: Maps

Premises map

The Premises are shown in the map below.

Map of wastewater treatment plant layout



Schedule 2: Primary Activities

At the time of assessment, Emissions and Discharges from the following Primary Activities were considered in the determination of the risk and related Conditions for the Premises.

The Primary Activities are listed in Table 12:

Table 12: Primary Activities

Primary Activity	Premises production or design capacity
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.*	*189 cubic meters per day*

Infrastructure and equipment

The Primary Activity infrastructure and equipment situated on the Premises is listed in Table 13.

Table 13: Infrastructure and equipment

	Infrastructure	Site Plan Reference
	Prescribed Activity Category 54	
Treatment and irrigation of wastewater from the Greenough Regional Prison to three irrigation areas at the premises.		
1	Four treatment ponds (lined)	Schedule 1: Maps
2	One stormwater overflow pond (unlined)	
3	Irrigation tanks (4) – 22,000 ltrs each	
4	Shandy tank (1) - 60,000 ltrs	
	Directly related activities	
Wastewater treatment units and maintenance equipment		
1	Chlorination unit & shed (1)	Schedule 1: Maps
2	Coagulant unit (1) – 100 ltr tank, enclosed, bunded with pump and control panel	
3	Sand Filtration system & shed (1)	
4	Sludge drying beds (2)	
5	Aerators: (4 x 2.2kW Aquasol) within pond 2; (1 aerator) within pond 4	
	Other activities and monitoring equipment	

	Infrastructure	Site Plan Reference
1	Inflow (1) and outflow (1) meters	Map of monitoring locations and irrigation areas
2	V-notch weir meter (1)	
3	Groundwater monitoring bores (5)	
4	Irrigation areas (3) – Old oval, new oval and access road verge	
5	Irrigation controllers (2)	

Site layout

The Primary Activity infrastructure and equipment is set out on the Premises in accordance with the site layout specified on the Premises map in Schedule 1.

Schedule 3: Monitoring

Monitoring reports

All laboratory samples are to be:

1. collected, sampled and preserved according to the relevant Australian Standard identified within the relevant table; and
2. submitted to and tested by a laboratory with current NATA accreditation for the parameters being measured, unless indicated otherwise in the relevant table.

The monitoring reports must contain in relation to a Reportable Event:

1. the Reportable Event date(s);
2. the sampling or measurement date;
3. the raw monitoring data for the Reportable Event in tabulated form;
4. time series graphical plots for the day on which the Reportable Event occurred;
5. where there is an exceedance to Reportable Event criteria, details of investigation and mitigation measures must be provided and include the following:
    - o confirmation that data received is correct (no instrument fault);
    - o determination of the source of the exceedance to establish whether exceedance is attributed to the Licence Holder's activities through review of:
        - *wastewater sampling results against Licence limits;*
        - *processing specifications; and*
        - *design capacity limits.*
    - o where a Reportable Event may be attributed to the Licence Holder's activities through the investigation steps above, a review of:
        - *operational and maintenance actions undertaken at the premises through the daily management of the facility.*
    - o where a Reportable Event is determined to be attributed to the Licence Holder's activities, corrective and mitigation measures undertaken including an *audit of process controls; reporting of events to stakeholders and DWER, completion of necessary remedial works/ mitigation measures to ensure the reportable event does not occur.*

The Licence Holder must monitor the Emissions specified in Column 1 from the locations specified in Column 2 for the parameter/ units specified in column 3 of Tables 14 and 15 below. Emissions must be calculated at the frequency specified in Column 4, in accordance with the method specified in Column 5, and assessed against any exceedences as defined in column 6 with the relevant corrective action undertaken, as stated in column 7.

Wastewater monitoring

Table 14: Wastewater monitoring table

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
Emission point	**Monitoring Location**	**Parameter/ unit**	**Frequency**	**Method**	**Reportable event/ action**	**Corrective action**
Treated wastewater - L1; L2; L3; P5.	IT4; P5	*E. coli*[1]/ (cfu/100 ml)	Quarterly	AS/NZS 5667.1 AS/NZS 5667.10	Exceedance of trigger level values, as defined in conditions 10 and 11.	1. Identify actions to be undertaken to reduce parameter values. 2. Determine timeframe within which to implement remedial actions. 3. Implement actions to mitigate potential harm or pollution. 4. Notify DWER of plan of action/s to be undertaken.
		pH[2]				
		Total Nitrogen; Total Phosphorus; BOD; TSS; TDS/ (mg/L)				
		Aluminium/ mg/L				
		Residual chlorine[2] / (mg/L)				
		Arsenic; Cadmium; Chromium; Nickel; Zinc; Copper; Lead; Mercury; Molybdenum; Manganese/ (mg/L)	Annually		Exceedance of Long-term irrigation water values, as defined in ANZECC guidelines	

Note 1: Actual units are to be reported except where the result is greater than the highest detectable level of 24,000 cfu/100mL. In this case the reporting of the highest detectable level is permitted.

Note 2: In situ non-NATA accredited sampling permitted.

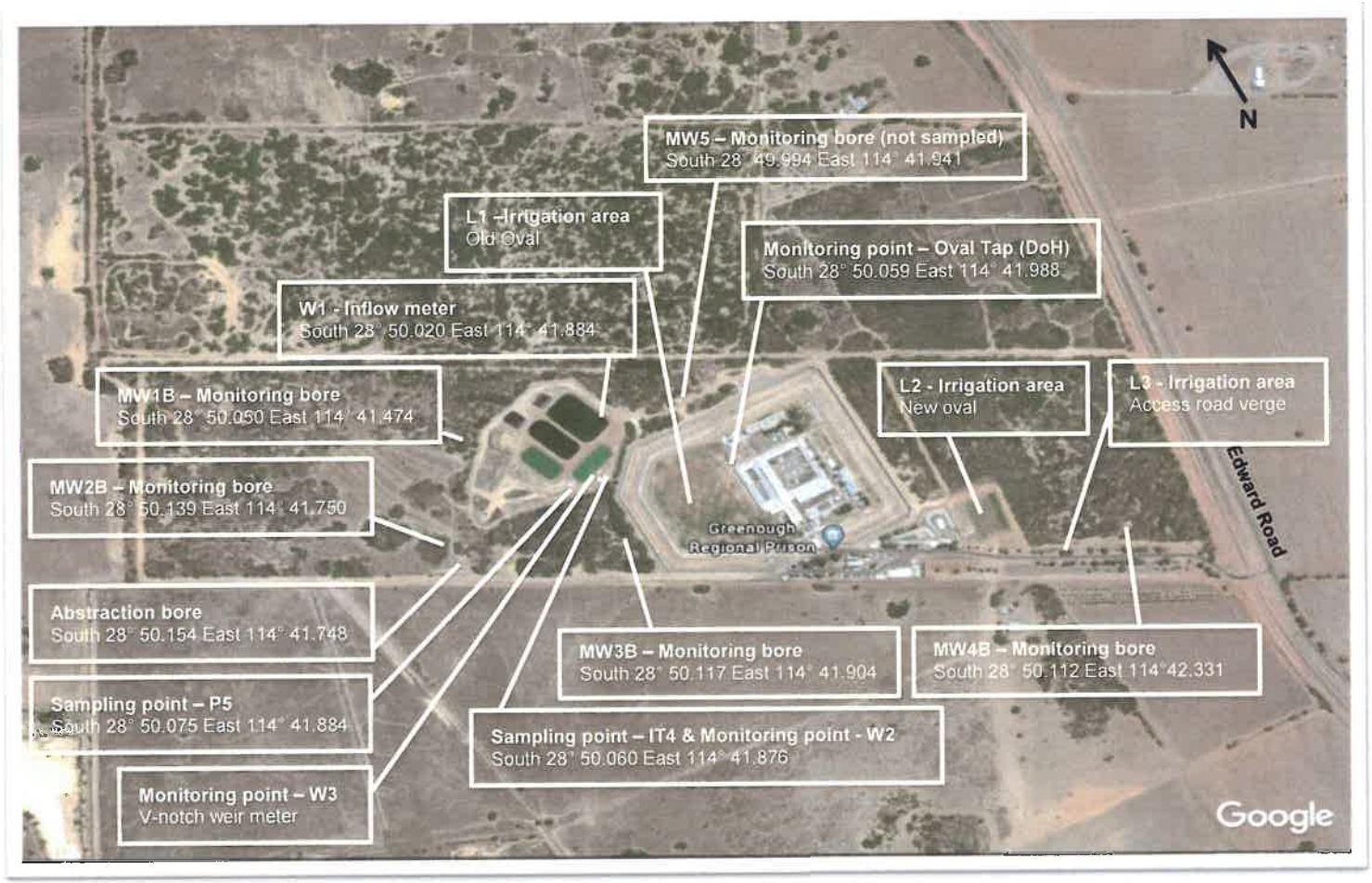
Groundwater monitoring

Table 15: Groundwater monitoring table

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
Emission point	**Monitoring Location**	**Parameter/ unit**	**Frequency**	**Method**	**Reportable event/ action**	**Corrective action**
Treated wastewater - L1; L2; L3; P5.	MW1B-MW4B	Standing water level/ mBGL	Quarterly	AS/NZS 5667.1 AS/NZS 5667.11	Exceedance against up-gradient groundwater directional flow groundwater data, collected from MW4B	1. Identify actions to be undertaken to reduce parameter values. 2. Determine timeframe within which to implement remedial actions. 3. Implement actions to mitigate potential harm or pollution. 4. Notify DWER of plan of action/s to be undertaken.
		pH[1]				
		Total Phosphorus/ mg/L				
		Total Nitrogen/ mg/L				
		Residual chlorine[1]/ mg/L				
		Total Dissolved Solids / mg/L				
		Escherichia coli [2] / cfu/ 100 ml				
		Aluminium / mg/L				

Note 1: In situ non-NATA accredited sampling permitted.
Note 2: Actual units are to be reported except where the result is greater than the highest detectable level of 24,000 cfu/100mL. In this case the reporting of the highest detectable level is permitted.

Map of monitoring locations and emission points



Decision Report

Application for Licence

Division 3, Part V *Environmental Protection Act 1986*

Licence Number	L9115/2018/1
Applicant	Department of Justice
File Number	DER2018/000194
Premises	Greenough Regional Prison Edward Road NARNGULU WA 6532 Legal description - Lot 11750 on Deposited Plan 217028 As defined in Schedule 1 of the Licence
Date of Report	15 June 2018
Status of Report	Final

Table of Contents

1. Definitions of terms and acronyms

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

Table 1: Definitions

Term	Definition
AACR	Annual Audit Compliance Report
ACN	Australian Company Number
AER	Annual Environment Report
Category/ Categories/ Cat.	Categories of Prescribed Premises as set out in Schedule 1 of the EP Regulations
CS Act	*Contaminated Sites Act 2003* (WA)
DEC	Department of Environment and Conservation (now known as DWER)
Decision Report	refers to this document.
Delegated Officer	an officer under section 20 of the EP Act.
Department	means the department established under section 35 of the *Public Sector Management Act 1994* and designated as responsible for the administration of Part V, Division 3 of the EP Act.
DoH	means Department of Health
DWER	Department of Water and Environmental Regulation As of 1 July 2017, the Department of Environment Regulation (DER), the Office of the Environmental Protection Authority (OEPA) and the Department of Water (DoW) amalgamated to form the Department of Water and Environmental Regulation (DWER). DWER was established under section 35 of the *Public Sector Management Act 1994* and is responsible for the administration of the *Environmental Protection Act 1986* along with other legislation.
EFR	Environmental Field Report
EPA	Environmental Protection Authority
EP Act	*Environmental Protection Act 1986* (WA)
EP Regulations	*Environmental Protection Regulations 1987* (WA)
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cth)
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

Freshwater Guidelines	means the Australian and New Zealand Environment and Conservation Council (ANZECC) & Agricultural and Resource Management Council of Australia and New Zealand (ARMCANZ) (2000) Australian Water Quality Guidelines for Fresh and Marine Water Quality. National Water Quality Management Strategy
GDE	Groundwater Dependent Ecosystems
Geobag	means a geotextile dewatering bag that allows solids to dewater over time while containing the solid component
Hardstand	means a surface with a permeability of 10^{-9} metres/second or less
ICMS	means DWER's Incident and Complaints Management System
Licence Holder	Department of Justice
m^3	cubic metres
Minister	the Minister responsible for the EP Act and associated regulations
MS	Ministerial Statement
NEPM	National Environmental Protection Measure
Noise Regulations	*Environmental Protection (Noise) Regulations 1997* (WA)
Non-Potable Groundwater Use Guidelines	means the Department of Environment Regulation (DER) (2014) Assessment and Management of Contaminated Sites. Contaminated Sites Guidelines, December 2014. Government of Western Australia. Non-Potable Groundwater Use Guidelines.
NIMP	means the Nutrient Irrigation and Management Plan document known as *"Building Management and Works: Report for Greenough Regional Prison Wastewater Treatment Plant: Nutrient and Irrigation Management Plan: November 2010"*
Occupier	has the same meaning given to that term under the EP Act.
Operation, Maintenance and Monitoring Plan	means the document '*Operations and Maintenance Management, and Water Monitoring Plan, Greenough Regional Prison, 6 May 2013, AECOM.*
Prescribed Premises	has the same meaning given to that term under the EP Act.
Premises	refers to the premises to which this Decision Report applies, as specified at the front of this Decision Report
Primary Activities	as defined in Schedule 2 of the Revised Licence
Risk Event	As described in *Guidance Statement: Risk Assessment*
TDS	means Total Dissolved Solids

UDR	*Environmental Protection (Unauthorised Discharges) Regulations 2004* (WA)
µg/m^3	micrograms per cubic metre
µg/L	micrograms per litre
WIN	means Water Information database
WIN Site Id	A numeric database key generated by the WIN system and that uniquely identifies a site. It contains no codified information, in contrast with site references, which usually have meaningful codes.

2. Purpose and scope of assessment

An application for a new licence was received by DWER on 30 January 2018 from Department of Justice for Greenough Regional Prison Wastewater Treatment Plant (WWTP).

The applicant has made the submission for a new licence due to the previous Licence L8025/1992/3 ceasing to have effect (14/11/2017), in accordance with section 5DA(5) of the *Environmental Protection Act 1987.*

No additional works or changes to the premises category type, design or operation are proposed as part of the submission.

2.1 Application details

The following table lists the documents submitted for assessment as part of the application for a new licence for the WWTP. Additional historical information has also been incorporated into the assessment from previously submitted AER's.

Table 2 lists the documents submitted during the assessment process.

Table 2: Documents and information submitted during the assessment process

Document/information description	Date received
Email: RE: Reapplication – Dec 2017 received from Dennis Gilleland, Assistant Superintendent Offender Services, Department of Justice. Includes one attachment: 1. Submission Jan 2018.	30/01/2018 DWER record (A1603522)

3. Background

Greenough Regional prison was opened in 1984 and was upgraded in 1990 to a medium security prison. The number of prisoners is approximately 380 with approximately 165 employees and up to 100 employees on the prison at any one time. The premises is approximately 57 ha in size, with the WWTP approximately 1.6 ha and the irrigation area approximately 4.49 ha.

The premises was first licenced, in accordance with the *Environmental Protection Act 1986* in 1992 as a Category 54 – Sewage Facility under L143/92, issued 15 April 1992 for Greenough Regional Prison. The Licence number was amended to L8025/1 under a reissue on 22 August 2005. Due to the late payment of annual fees the Licence ceased to have effect, in

accordance with section 5DA(5) of the *Environmental Protection Regulations 1987*.

An application to reinstate the prescribed premises licence was received on 30 January 2018 for the Greenough Regional Prison Wastewater Treatment Plant (WWTP).

The last upgrade of the premises operation was undertaken (between 2010 to 2013) in accordance with Works Approval W4712/2010/1, to increase the throughput capacity of the facility.

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

Table 3: Prescribed Premises Categories in the Existing Licence

Classification of Premises	Description	*Approved Premises production or design capacity or throughput*
Category 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.	189 m^3/ day

4. Overview of Premises

4.1 Operational aspects

The WWTP has a maximum design capacity of 189 m^3/ day and is enclosed with a 1.8 m high diamond mesh and barb wire fence that is locked at all times. Wastewater from the Greenough Prison is gravity fed to the WWTP for treatment and reuse. There is no grit removal or screening other than manual removal of solid debris that may accumulate at the inflow pipe to pond 1. The WWTP is a facultative aerated pond system comprising a series of four connected ponds, with overflow from the fourth pond into a storm water overflow basin (Pond 5). In the event of the storm water basin overflowing, the discharge flows into the environment. Treatment within the ponds relies on primary settling of solids (sedimentation) and facultative aerobic degradation. The first four ponds are clay-lined. The liquid wastewater is disposed by evaporation and irrigation. Water for irrigation is currently pumped from aerobic wastewater treatment Pond 4 via a chlorination plant to the prison oval.

The Prison operates a wastewater treatment plant (WWTP) which consists of:

- Two sludge drying bed areas;
- Chlorination store room with liquid chlorine dosing system (Sodium hypochlorite);
- Filtration (sand) unit and V-notch weir meter reading shed;
- A series of four clay-lined ponds with an unlined fifth unlined pond acting as a storm water overflow pond;
- Four holding tanks used to irrigate treated wastewater to the ovals and access road verge;
- One 'shandy' tank for the storage of bore water;
- Coagulant dosing unit (for the management of phosphorus);
- Inflow and outflow metres;

- V-notch weir system to monitor seasonal outflow into Pond 5 that is recorded within the filtration unit and V-notch weir meter shed; and
- Five groundwater monitoring bores (MW1B-MW4B & MW5).

The wastewater is discharged from the fourth pond into four holding tanks for chlorination and then shandied (from a fifth tank) with bore water prior to being discharged to three areas (old and new oval and access road verge) under irrigation.

The chlorination unit doses liquid chlorine (Sodium hypochlorite) through an automated system which consists of an inline chlorine analyser that monitors residual free chlorine and a dosing pump. The liquid chlorine dosing system is skid mounted for storage inside the shed with air-conditioning to avoid chlorine degradation, and designed to recirculate and automatically maintain the correct chlorine levels into irrigation tank 1 prior to filtration and irrigation. This ensures that there is sufficient holding time to ensure that the residual chlorine meets the required treatment levels in accordance with DoH limit requirements.

The filtration unit consists of two sand filter tanks and a microfilter which receives chlorinated wastewater from tank 4 prior to being pumped through to the irrigation areas.

The coagulant dosing system was installed by 'MAKWater'. The dosing system was preassembled and tested prior to installation which occurred in September 2017. MAKWater offer a 24/7 days per week call out and emergency contact number for technical support as part of the service and maintenance agreement. The new dosing system includes:

- Coagulant dosing unit;
- Skid with roof;
- Pump and dosing bunds.

The skid is located at the overflow pipeline to pond 2 which allows the aerators to assist with the flocculation process prior to settling in ponds 3 and 4. Sodium aluminate is being used as a flocculant to facilitate the drop out of phosphorus held within suspended solids within the wastewater. The phosphorus is then held within the solids within the wastewater treatment plant which is then removed as sludge through de-sludging works, every 5-7 years. The premises has had an extensive history of phosphorus loading rate exceedences to the irrigation areas, as a result of elevated phosphorus emissions from the treatment plant.

Effluent supplied to the ponds is received from:

- the prison compound facilities;
- staff and daily visitor facilities;
- the prison laundry, which is operated as a commercial laundry and services both the prison population and outside clients; and
- storm water from the storm water basin, which includes runoff from the compound and path wash down water.

During winter (approximately mid-June until mid-September), reuse of wastewater for irrigating the ovals and verge ceases. The upgraded system allows for overflow from Pond 4 to flow into the unlined storm water basin (Pond 5). The storm water basin has been designed to have a retention time of five days which allows for further aerobic degradation of the wastewater, and subsequently infiltrate into the ground (referred to as Pond 5). The storm water basin has been designed such that direct discharge to environment (no retention) will occur after a 1:20 year average recurrence interval (ARI) rainfall event. Storm water from the prison complex flows directly into the storm water basin as well. A flow meter is in place to measure flow from Pond 4 to Pond 5, with parameter monitoring occurring from Pond 4.

A Nutrient and Irrigation Management Plan, 2010 (NIMP) has been in operation for the Premises since November 2010, along with an 'Operations and Maintenance Management, and Water Monitoring Plan' (6 May 2013, AECOM).

Department of Health (DoH) has approved irrigation of the prison ovals and verge with wastewater. Advice submitted by the Department of Health (18/09/2012, Ref. F-AA-14609), regarding parameters for the premises, was also considered in the setting of Licence targets for the Premises.

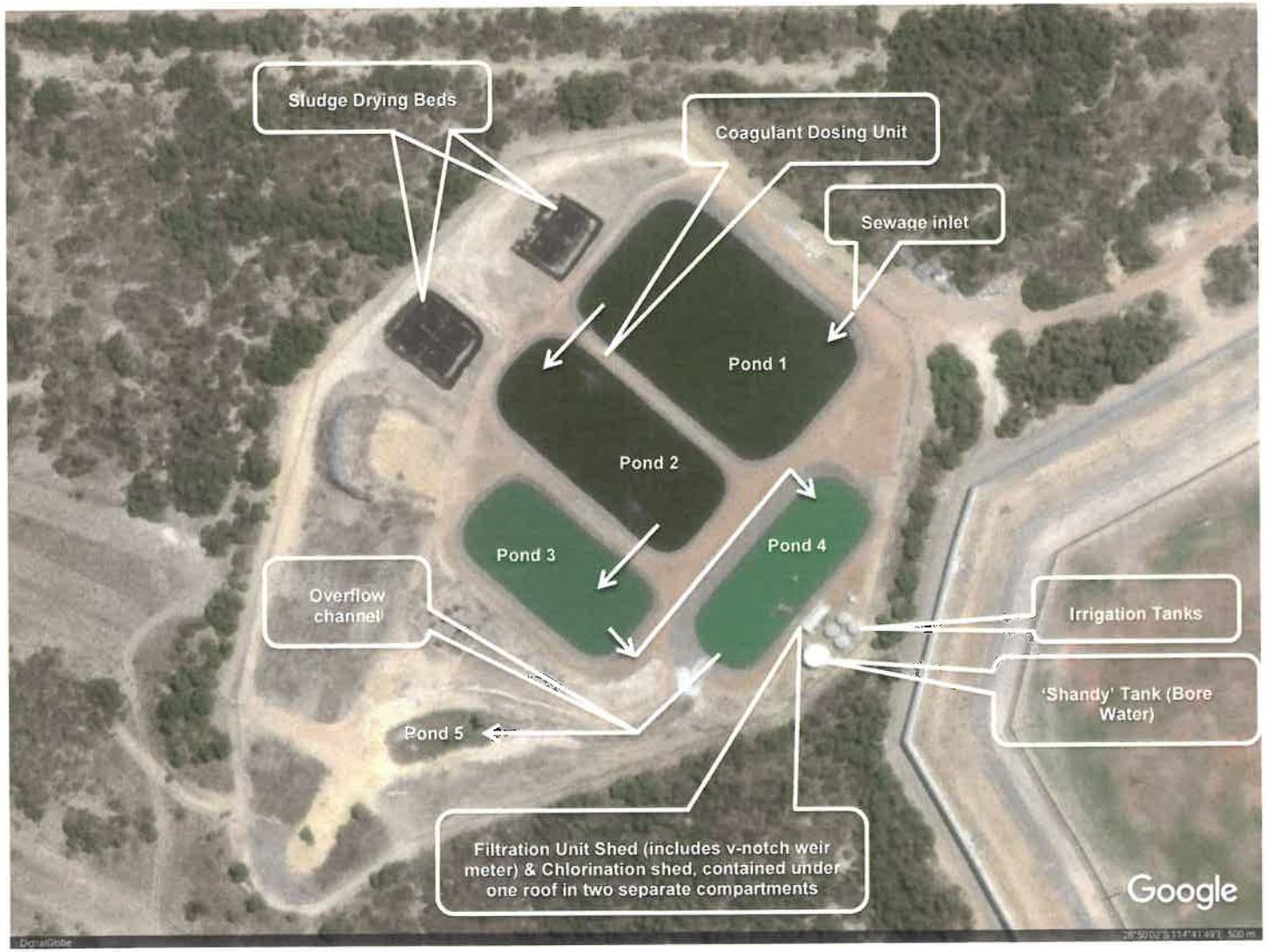
The Prison is required to meet Department of Health standards for irrigation to public use areas.

The main emissions to environment include discharge to land from the premises. Nutrient loads in the old oval are considered high with historical monitoring bore data showing elevated nutrient levels in the groundwater (MW3). As a result, additional irrigation areas were required at the Premises (W4712/2010/1) to try address the issue of contaminant loading rates.

There are five groundwater monitoring bores at the premises for the ongoing monitoring of emissions to land.

The following maps identify the location of the primary infrastructure and associated operation within the premises.

Premises map: location of primary infrastructure



Premises map: location of associated operations (irrigation areas)

4.2 Infrastructure

The Greenough Regional Prison Wastewater Treatment Plant infrastructure, as it relates to Category 54 - Sewage facility activities, is detailed in Table 4 and with reference to the Site Plan (attached in the Licence).

Table 4 lists infrastructure associated with the prescribed premises category.

Table 4: Greenough Regional Prison Wastewater Treatment Plant - Category 54 infrastructure

	Infrastructure	Site Plan Reference
	Prescribed Activity Category 54	
Treatment and irrigation of wastewater from the Greenough Regional Prison to three irrigation areas at the premises.		
1	Four treatment ponds (lined)	Section 4.1 of the Decision Report and Schedule 1: Maps of the proposed Licence.
2	One stormwater overflow pond (unlined)	
3	Irrigation tanks (4) – 22,000 ltrs each.	
4	Shandy tank (1) - 60,000 ltrs	
	Directly related activities	
Wastewater treatment units and maintenance equipment		
1	Chlorination unit & shed (1) with automated dosing pump, low pressure and thermal overload switches, residual free chlorine analyser, air-conditioner and dosing tank with associated infrastructure.	Section 4.1 of the Decision Report and Schedule 1: Maps of the proposed Licence.
2	Coagulant unit (1) - 100 ltr tank, enclosed, bunded with pump and control panel	
3	Sand Filtration system & shed (1)	
4	Sludge drying beds (2)	
5	Aerators: (4 x 2.2kW Aquasol) within pond 2; (1 aerator) within pond 4	
	Other activities and monitoring equipment	
1	Inflow and outflow meters (2)	Section 4.1 of the Decision Report and Schedule 1: Maps of the proposed Licence.
2	V-notch weir meter (1)	
3	Groundwater monitoring bores (5)	
4	Irrigation areas (3) – Old oval, new oval and access road verge	
5	Irrigation controllers (2)	

4.3 Exclusions to the Premises

The Licence does not include any activities undertaken within the Greenough Regional Prison or associated areas of operation and is solely based on the operation of the related WWTP and irrigation areas.

There are no other activities, as defined under the *Environmental Protection Regulations 1987* under operation at the premises that would trigger regulation under the EP Act or related subsidiary legislation or that are being undertaken and are below trigger level.

4.4 Contaminated sites

The premises has not been reported or recorded as a contaminated site in accordance with the *Contaminated Sites Act 2002.*

4.5 Other relevant approvals

4.5.1 Planning approvals

The prescribed premises Certificate of Crown Land Title (11750/DP217028) was issued to the Minister for Corrective Services for the entire premises, in accordance with the *Transfer of Land Act 1893* and the *Land Administration Act 1997*. The Crown Land Title was issued for the purpose of a prison site, and has one easement to Water Corporation with no limitations.

As a result of government department mergers in July 2017, the Department of Corrective Services is now known as the Department of Justice.

4.5.2 Department of Health (DoH)

The DoH approved a Recycled Water Scheme (B48/00000) for the Greenough Regional Prison Wastewater Treatment Plant on 18 August 1993, which was amended on 31 August 2012. The approval allows irrigated of treated wastewater from the WWTP to the old oval, new oval and the access road verge, under specified conditions, in accordance with the *Health Act 1911* and Guidelines for Non-potable Uses of Recycled Water in Western Australia 2011.

The conditions specify recycled water parameter limits which will be incorporated into the new Licence L9115/2018/1 (condition 4 of the Recycled Water Scheme Approval), as well as specification of labelling of wastewater taps and areas to be irrigated, and exclusion of people during irrigation times.

4.5.3 Rights in Water Irrigation Act 1911

The Applicant hold a Groundwater Licence under the *Rights in Water Irrigation Act 1911* (RIWI). Licence number GWL61652 allocates groundwater from the Dongara / Arrowsmith aquifer to the property, allowing abstraction of 33,500 kL per annum for watering of the vegetable garden and prison oval.

4.6 Part V of the EP Act

4.6.1 Applicable regulations, standards and guidelines

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

The guidance statements which inform this assessment are:

- *Guidance Statement: Regulatory Principles (July 2015)*

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

4.6.2 Works approval and licence history

Table 5 summarises the works approval and licence history for the premises.

Table 5: Works approval and licence history

Instrument	Issued	Nature and extent of works approval, licence or amendment
L143/92	15/04/1992	New Application, Licensee: Department of Corrective Services
L143/92	15/04/1993	Licence Re-issue
L143/92	15/04/1994	Licence Re-issue
L143/92	15/04/1995	Licence Re-issue
L143/92	15/04/1996	Licence Re-issue
L143/92	15/04/1997	Licence Re-issue; Registration No. 0597
L143/92	15/04/2003	Licence Re-issue
W143/92/0	19/05/2003	Works Approval 3797
L8025/1	22/08/2005	Licence Re-issue
L8025/1	12/10/2006	Licence Re-issue
L8025/1992/1	12/10/2008	Licence Re-issue
L8025/1992/2	12/10/2009	Licence Re-issue
W4712/2010/1	26/11/2010	Works Approval
L8025/1992/3	12/10/2012	Licence amendment to add conditions to licence
L8025/1992/3	24/10/2013	Licence amendment to reflect completed works
L8025/1992/3	21/05/2015	Licence amendment to include monitoring bore conditions and update format

L8025/1992/3	-	Licence ceased to have effect as of 14 November 2017
L9115/2018/1	1/06/2018	Application for a new licence.

4.6.3 Key and recent licence amendments

A recent amendment for the inclusion of the coagulant dosing unit system was submitted to DWER in October 2017 (CEO2696/17). The application was subsequently placed on hold due to the previous Licence L8025/1992/3 ceasing to have effect. The details of this amendment have been incorporated into the new Licence L9115/2018/1, as the coagulant dosing unit is now in full operation and has been considered within the risk assessment section below.

4.6.4 Compliance inspections and compliance history

The premises has been operational since 1992 under Licences L143/92 and L8025/1992/3.

Issues at the premises with contaminant loading rates and elevated nutrients in groundwater due to the irrigation scheme were identified historically. A 'Nutrient and Irrigation Management Plan (NIMP) (GHD, 2010)' was prepared to address these issues. The NIMP was accepted by the former DEC in November 2010.

Assessment of DWER's Incident and Compliance Management System (ICMS) identified three issues, as follows:

2015:

ICMS 38580 - Incomplete completion of the AACR to reflect non-compliance issues relating to monitoring requirements and an overdue improvement condition not complied with. The AER did not adequately record and report the requirements of the Licence resulting in an incomplete submission for the 2014/ 2015 reporting period.

ICMS 41356 – Uncontrolled discharge of wastewater to the environment. An EFR (1205) was issued to the Licence Holder to prevent further discharges occurring. The EFR was closed off in June 2015.

2016:

ICMS 41826 – Quarterly reporting was not submitted for the premises. No monitoring was undertaken for the third quarter at the premises from Pond 4 or Pond 5. Multiple non-compliances to various Licence conditions identified.

Ongoing issues have been identified at the premises (since 2013) which have been raised with Department of Justice, Martin Adair, and are still being addressed. Germaine Healy (DWER, Compliance and Enforcement) was informed of these issues to address them with Martin Adair (Department of Justice).

4.6.5 Clearing

No clearing is required as part of the application for the operation of the premises. The premises has been in operation under licence since 1992, in accordance with the *Environmental Protection Act 1986*. No additional clearing or works are required as part of this application for a new licence.

5. Modelling and monitoring data

Monitoring data for emissions to land and ambient groundwater monitoring is available for the premises under previous Licence L8025/1992/3, Annual Environment Reports and Quarterly Monitoring Reports.

5.1 Monitoring of discharges to land

The Applicant has been required to monitor a suite of parameters to land and groundwater historically. These parameters have been defined against DoH requirements and applicable groundwater monitoring guidance, as defined within Appendix 1. The monitoring of emissions to land as a result of irrigation practices and overflow discharges from pond 4 will be incorporated into the Licence L9115/2018/1. These will be defined further within Schedule 3: Monitoring of the Licence for 'wastewater monitoring' and 'groundwater monitoring'.

Key finding:

The Licence will include relevant trigger values and/ or limits as determined appropriate against the specific premises operation and relevant guidance i.e.: Freshwater guidelines, Non-Potable Groundwater Use Guidelines and DoH Recycled Water Scheme approval.

6. Consultation

The Applicant has not undertaken any consultation with any stakeholders or potential interested or affected parties. This is not considered necessary as the premises is not a new facility but an ongoing operation which, due to poor administration of the annual fee payment of the Licence, has resulted in the Licence ceasing to have effect, in accordance with regulation 5DA(5) of the *Environmental Protection Regulations 1987*.

Assessment of the premises operation against DWER's ICMS identified no records of complaints against the premises (see section 4.6.4).

7. Location and siting

7.1 Siting context

Greenough Regional Prison is situated 15.6km south-east of Geraldton and 460km north of Perth in the suburb of Narngulu, along Edward Road.

The premises is located within a 'rural' zoned area surrounded predominantly by agricultural land use.

7.2 Residential and sensitive Premises

There are no residential or sensitive receptors in close proximity to the premises, as assessed against DWER's GISViewer dataset.

The distances to residential and sensitive receptors are detailed in Table 6.

Table 6: Receptors and distance from activity boundary

Sensitive Land Uses	Distance from Prescribed Activity
Residential receptors	*Approximately:* *395 m and 715 m north;* *505 m north east;* *808 m north west;* *329 m and 745 m south east;* *781 m south;*

	906 m south west.
'General industry' zoned area	*Adjoining the premises boundary to the north*
'Rural' zoned area	*Adjoining the premises boundary to the east, south and west.*

7.3 Specified ecosystems

Specified ecosystems are areas of high conservation value and special significance that may be impacted as a result of activities at or Emissions and Discharges from the Premises. The distances to specified ecosystems are shown in Table 7. Table 7 also identifies the distances to other relevant ecosystem values which do not fit the definition of a specified ecosystem.

The assessment of environmental values has been determined against DWER's GISViewer dataset. The table has also been modified to align with the *Guidance Statement: Environmental Siting.*

Table 7: Environmental values

Specified ecosystems	**Distance from the Premises**
Groundwater (Greenough River catchment, Perth – Superficial Swan aquifer)	*Within premises boundary: WIN Bore Site Id.: 23043465. SWL11.6 m.*
Surface water (Significant stream)	Approximately 915 m south-west of the premises boundary.
Threatened Ecological Communities and Priority Ecological Communities	N/A
Biological component	**Distance from the Premises**
Threatened/Priority Flora	N/A
Threatened/Priority Fauna	N/A
Other relevant ecosystem values	**Distance from the Premises**
None identified	N/A

7.4 Groundwater and water sources

The premises includes groundwater monitoring bores used for the purposes of assessing impact from irrigation to land of the treated wastewater used to irrigate the vegetated old and new ovals and the access road into the premises.

No groundwater mapping is available for the site. Logging by 'SKM Engineering' consultants (2009) indicated that the average local depth to groundwater for the area is approximately 16 m below ground level (mBGL). Department of Water (DoW) information from local registered bores, surface drainage patterns and information from previous local contaminated site investigations suggest that groundwater flow is to the south-west (SKM, 2009).

The hydrogeology of the site is dominated by permeable sandy surface soils interbedded with partially permeable and fragmented limestone, with impermeable limestone bedrock (SKM, 2009). The site is located in the Greenough River basin, with elevations between 23 and 38 m (above mean sea level [MSL]). Site topography rises from 26 m MSL on the eastern perimeter

of the WWTP, to 38 m MSL at the prison compound, which is located on a low ridge, then drops to 23 m MSL on the western perimeter of the site.

No groundwater mapping is available for the site. Logging by SKM (2009) indicated that average local depths to groundwater at approximately 16 m below ground level (mbgl) Department of Water (DoW) information from local registered bores, surface drainage patterns and information from previous local contaminated site investigations suggest that groundwater flow is to the south-west (SKM, 2009).

A DWER assessment of groundwater users within the general area identified two groundwater licences, both for domestic use, within a 2.5 km radius of Greenough Regional Prison. The Narngulu Sale Yards, located approximately 1.8 km north north-west of Greenough Regional Prison (up-gradient), have 4 bores which are used for domestic purposes and stock watering. A private property, approximately 1.5 km south of GRP (across gradient), has 2 bores, which are used for domestic use and irrigation of 4 hectares of vegetables. As domestic use is exempt there are likely to be other farms in the area using groundwater for similar purposes. There are many non licensed bores in the area, and the closest bore down gradient (south west of Greenough Regional Prison WWTP) is located approximately 1.4 km. from the Greenough Regional Prison WWTP.

The proponent holds a groundwater abstraction Licence GWL 61652 to take 33,500 kL/ annum.

DWER assessment of depth to groundwater and TDS varies across the premises, according to the 2015/ 2016 AER submission received, under the previous Licence L8025/1992/3.

The distances to groundwater and water sources are shown in Table 8.

Table 8: Groundwater and water sources

Groundwater and water sources	Distance from Premises	Environmental value
Public drinking water source areas	*N/A*	*N/A*
Surface water course	*Approximately 915 m south west of the premises boundary*	*DWER GISViewer dataset identifies a 'significant stream' associated with the Greenough River catchment area. No surface water is present within or adjacent to the Premises.*
Groundwater MW1: West of Pond 3 MW2: South-west of Pond 5 MW3: South–west of the Main Oval MW4: East of the new Oval and north of the access road verge	*Within premises boundary (mBGL):* *MW1B: 15.32* *MW2B: 20.10* *MW3B: 21.12* *MW4B: 13.36* *MW5: 25.40* *DWER GISViewer dataset identified surrounding groundwater monitoring bores with highly variable TDS approximately 706 mg/L to 12,077 mg/L, within 1 km of the premises (brackish to saline).*	*Water is used for agricultural and industrial use.* *Groundwater system linked to freshwater ecosystem associated with the Greenough River catchment area.*

7.5 Soil type

The Licence Holder irrigates treated wastewater to the old oval, new oval and access road verge via irrigation tank 4, in accordance with DoH requirements. The soil profile consists predominantly of limestone which has a high capacity to bind/ hold phosphorus however is also karstic in nature resulting in undefined, preferential groundwater pathways occurring.

Lithology logging at the WWTP indicates fine to medium grained orange sands typically to 6 m, with limestone of varying strength at depths greater than 6 m (SKM, 2009).

Table 9 details soil types and characteristics relevant to the assessment.

Table 9: Soil and sub-soil characteristics

Groundwater and water sources	Distance from Premises	Environmental Value
Soil type classification	*Within and across the premises.*	*Coastal limestone with overlaying podsolised sand-eolianite and leached quartz sand. A small eastern portion (closest to the new oval) of the premises also contains alluvium, colluvium and miscellaneous undifferentiated quartz sand, clay, loam.*
Acid sulfate soil risk	*Approximately 546 m south and 832 m south west of the premises boundary*	*High to moderate and moderate to low risk categories associated with NLWRA estuaries*

7.6 Meteorology

The premises is located within close proximity to and north of Geraldton town site, and is influenced by Geraldton weather patterns and meteorology.

7.6.1 Wind direction and strength

The prevailing wind direction at the premises is a southerly to south westerly (northwards to north west) which is interrupted by northerly winds (southwards) to a lesser extent in the winter months.

7.6.2 Rainfall and temperature

Greenough has a Mediterranean climate with winter rainfall the majority of rainfall occurring during June to September months (44-75 mm/ month). Average annual rainfall for the region is approximately 600 mm. The hottest temperatures occur between December and March annually (average 28-34 degrees Celsius).

Average annual evaporation rates for Greenough is approximately 2,400 mm (BOM, 2018).

8. Risk assessment

8.1 Determination of emission, pathway and receptor

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

To establish a Risk Event there must be an emission, a receptor which may be exposed to that emission through an identified actual or likely pathway, and a potential adverse effect to the receptor from exposure to that emission. Where there is no actual or likely pathway and/or no receptor, the emission will be screened out and will not be considered as a Risk Event. In addition, where an emission has an actual or likely pathway and a receptor which may be adversely impacted, but that emission is regulated through other mechanisms such as Part IV of the EP Act, that emission will not be risk assessed further and will be screened out through Table 10.

The identification of the sources, pathways and receptors to determine Risk Events are set out in Table 10 below.

Table 10: Identification of emissions, pathway and receptors during operation

Risk Events						Continue to detailed risk assessment	Reasoning
Sources/Activities		Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts		
Category 54 – Sewage facility	*Treatment of sewage and desludging of ponds*	*Odour*	*No residences or other sensitive receptors in close proximity.*	*Air / wind dispersion*	*None*	*No*	*Premises is isolated and surrounded by a significant amount of native vegetation at the WWTP facility, screening it from high wind and odour dispersal. The premises operation is small scale within a low population density, agricultural area.* *The predominant wind direction is from the SW and the prison buildings are approximately 250 m SE of the WWTP. The nearest residential lot, in a south westerly direction is approximately 905 m, or 325 m south easterly direction.* *Odour emissions can be adequately addressed under section 49 of the Environmental Protection Act 1986.*

Risk Events						Continue to detailed risk assessment	Reasoning
Sources/Activities		Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts		
		Waste leachate	*Land/ soil* *Groundwater*	*Direct discharge* *Infiltration*		*No*	*The four treatment ponds are clay-lined. All sludge waste is placed within purpose built, bunded, clay-lined sludge drying beds within geobags (at the facility) to allow for any leachate to evaporate, and contaminant/ pathogen loads to reach acceptable levels, prior to final disposal at a licenced facility.* *Depth to groundwater is approximately 16 mBGL. Desludging occurs every 5-10 years as part of a management requirement of the premises.* *Any controlled waste management or abnormal discharge event can be adequately addressed under the EP Act, Environmental Protection (Authorised Discharges) Regulations 2004, and Environmental Protection (Controlled Waste) Regulations 2004.*
	Chemical treatment: Coagulant dosing and Chlorine dosing systems	*Aluminium and Chlorine*	*Groundwater* *Land/ soil*	*Infiltration through the soil profile to groundwater*	*Elevated metal (Aluminium) content in soil and groundwater impacting groundwater users for agriculture, GDE's and flora.* *Disruption of ecosystem functioning* *Health impacts.*	*Yes*	*See Section 8.4.* *Geology within the area is coastal limestone (karstic) with overlain quartz sand.* *Premises is surrounded predominantly by rural zoned area (low density).* *Sodium aluminate has the potential to cause impact to groundwater and land used for agricultural purposes.* *Chlorine monitoring is required under DoH approval.* *Regulatory controls will be applied for the monitoring and recording of Aluminium and Chlorine within the final discharge water from pond 4 and to the irrigation areas, to assess contaminant loading.*

Risk Events						Continue to detailed risk assessment	Reasoning
Sources/Activities		Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts		
	Sewage pipes and holding tanks	*Rupture of pipes / overtopping of holding tanks resulting in sewage discharge to land (abnormal operation)*	*Vegetation adjacent to discharge area* *Land/ soil*	*Direct discharge*	*Soil contamination and enrichment inhibiting vegetation growth and survival.*	*No*	*The Applicant undertakes daily checks and weekly assessment on the premises operation. The premises discharges treated wastewater in accordance with DoH approvals. Any potential discharge can be adequately managed under the EP (Unauthorised Discharges) Regulations 2004 and section 72 of the EP Act.* *Accidental ruptures or overtopping events are considered abnormal operation or due to extreme weather events. The premises was purpose built and designed to operate as a wastewater treatment plant capable of containing all inflows, under normal operating conditions.*
	Discharges to land: Irrigation of treated effluent and stormwater overflow pond	*Treated effluent to land*				*Yes*	*See Section 8.5.* *Irrigation of treated wastewater is undertaken in accordance with Department of Health requirements.* *Additional requirements for the monitoring of groundwater and management of contaminant loading rates will be required within the proposed Licence.*
		Gaseous emissions (from decomposition of sewage waste)	*No residences or other sensitive receptors in proximity*	*Air / wind dispersion*	*None*	*No*	*No receptor present. Emissions will be intermittent* *All sludge is contained within a purpose built area that drains to the primary pond and is fully enclosed and stored within a geobag, pending testing and final disposal to a Licenced landfill facility. Desludging works occurs every 5-10 years.*

Risk Events						Continue to detailed risk assessment	Reasoning
Sources/Activities		Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts		
	Bulk chemical storage (chlorine liquid, sodium aluminate)	*Breach of containment causing discharge to land or air (abnormal operation)*	*Soil/ land* *Groundwater ecosystems*	*Direct discharge* *Air/ wind dispersion* *Infiltration through the soil profile*	*Sterilisation of soil / adverse impact to soil microbes or groundwater ecosystems*	*No*	*All chemicals are stored within concrete hardstand areas, enclosed sheds or bunded containment infrastructure. Volumes stored on-site are ≤200 litres.* *The chlorine and coagulant dosing units are enclosed within a locked facility, serviced annually by third party, trained technicians. Any discharge from the coagulant dosing unit will be contained within pond 1 or 2.*

8.2 Consequence and likelihood of risk events

A risk rating will be determined for risk events in accordance with the risk rating matrix set out in Table 11 below.

Table 11: Risk rating matrix

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

DWER will undertake an assessment of the consequence and likelihood of the Risk Event in accordance with Table 12 below.

Table 12: Risk criteria table

Likelihood		Consequence		
The following criteria has been used to determine the likelihood of the Risk Event occurring.		The following criteria has been used to determine the consequences of a Risk Event occurring:		
			Environment	Public health* and amenity (such as air and water quality, noise, and odour)
Almost Certain	The risk event is expected to occur in most circumstances	Severe	• **onsite impacts**: catastrophic • **offsite impacts local scale**: high level or above • **offsite impacts wider scale**: mid-level or above • Mid to long-term or permanent impact to an area of high conservation value or special significance^ • Specific Consequence Criteria (for environment) are significantly exceeded	• Loss of life • **Adverse health effects:** high level or ongoing medical treatment • Specific Consequence Criteria (for public health) are significantly exceeded • **Local scale impacts:** permanent loss of amenity
Likely	The risk event will probably occur in most circumstances	Major	• **onsite impacts**: high level • **offsite impacts local scale**: mid-level • **offsite impacts wider scale**: low level • Short-term impact to an area of high conservation value or special significance^ • Specific Consequence Criteria (for environment) are exceeded	• **Adverse health effects:** mid-level or frequent medical treatment • Specific Consequence Criteria (for public health) are exceeded • **Local scale impacts**: high level impact to amenity
Possible	The risk event could occur at some time	Moderate	• **onsite impacts**: mid-level • **offsite impacts local scale**: low level • **offsite impacts wider scale**: minimal • Specific Consequence Criteria (for environment) are at risk of not being met	• **Adverse health effects:** low level or occasional medical treatment • Specific Consequence Criteria (for public health) are at risk of not being met • **Local scale impacts:** mid-level impact to amenity
Unlikely	The risk event will probably not occur in most circumstances	Minor	• **onsite impacts**: low level • **offsite impacts local scale**: minimal • **offsite impacts wider scale**: not detectable • Specific Consequence Criteria (for environment) likely to be met	• Specific Consequence Criteria (for public health) are likely to be met • **Local scale impacts:** low level impact to amenity
Rare	The risk event may only occur in exceptional circumstances	Slight	• **onsite impact**: minimal • Specific Consequence Criteria (for environment) met	• **Local scale**: minimal to amenity • Specific Consequence Criteria (for public health) met

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

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

"onsite" means within the Prescribed Premises boundary.

8.3 Acceptability and treatment of Risk Event

DWER will determine the acceptability and treatment of Risk Events in accordance with the Risk treatment table 13 below:

Table 13: Risk treatment table

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

8.4 Risk Assessment – chemical treatment process

8.4.1 Description of chemical treatment process

The Applicant undertakes chemical treatment of the wastewater received to the premises as follows:

a) Chlorination of the wastewater is undertaken as part of DoH requirements for the irrigation of wastewater to public open spaces such as the ovals and the access road verge, at the Greenough Prison. Chlorination is undertaken by the use of chlorine liquid. Assessment of chlorine levels is required as part of the DoH approval given to the Applicant, and all emissions to land (via irrigation) are expected to be within the range of 0.2 – 2 mg/L. The primary constituent of this process is Chlorine.

b) Sodium aluminate is dosed from an enclosed 100 litre bunded, dosing tank, used as a coagulant (flocculant) to remove phosphorus out of suspension within the water column, and deposited within the pond sediment. This chemical precipitation of phosphorus is expected to reduce the Total Phosphorus levels, as sampled within the discharge waters to the irrigation areas and from waters discharged to pond 5, as a result of stormwater overflow. The primary metal constituent of Sodium aluminate is Aluminium.

8.4.2 Identification and general characterisation of emission

The Applicant uses chlorine liquid to chlorinate treated wastewater received from pond 4 which is then held in the four irrigation tanks to ensure sufficient retention/ treatment time. The treated wastewater is required to meet DoH treatment levels and for discharge levels (of residual chlorine) to meet 0.2-2 mg/L. Once the wastewater has been effectively treated, it is

discharged from irrigation tank 4 via the sand filters to the irrigation areas for disposal.

Chlorine usually 'off-gases' or is mostly used up within 12-24 hours, when appropriately dosed and with adequate retention times undertaken. Residual chlorine may impact soils if not assessed prior to discharge and if not kept within the required range, as defined by DoH requirements.

Wastewater from pond 2 inflow pipeline is also treated with aluminium sulphate as a flocculant from the coagulant dosing unit. This will result in elevated aluminium held in the sediment/ sludge layer within clay-lined ponds 3 and 4. The sludge will be removed and held within the sludge drying beds in geobags, prior to final disposal to a licenced landfill.

Elevated aluminium levels in the sludge may require additional treatment of the sludge prior to disposal if concentrations do not meet the relevant levels, as defined within the *Landfill Waste Classifications and Waste Definitions 1996 (as amended December 2009)* guidance.

The majority of the flocculant used is expected to drop out of suspension and be contained within ponds 3 and 4. However, should the ponds not be desludged frequently enough or any residual aluminium remains in the water column, this may then be carried through from pond 4 into the irrigation tanks. The irrigation tank water is discharged to land via a sand filtration and micro filtration system however it has not been determined as to whether this would have any influence on removal of further aluminium held within the water. In addition, wastewater leaving pond 4 via pond 5 does not have any additional treatment process for the removal of aluminium.

8.4.3 Description of potential adverse impact from the emission

The two chemicals used to treat the wastewater discharged at the premises, via irrigation, are Chlorine (Sodium hypochlorite liquid) and Sodium aluminate (Aluminium).

a) Liquid chlorine (Sodium Hypochlorite, NaOCl), has the potential to impact the environment when discharged in large volumes and when in soluble form, through vapour or by evaporation. The chlorine reacts with water creating chloride salts and chlorinated organic chemicals, and combines readily with other elements or chemicals to form dioxins.

   Due to its reactivity, Chlorine does not usually enter groundwater systems.

   Chlorine has the potential to impact freshwater systems, contaminate fish and transfer to humans through 'biomagnification'.

   Exposure to chlorine is known to impact respiratory tracts and cause respiratory disorders as well as burning eyes and skin, alter hormone levels, suppress immune system function and cause skin diseases. Organisms living in soil can be negatively impacted through sterilisation of the soil profile.

b) Aluminium is considered a toxic metal which is strongly acidic. Plants are highly sensitive to even small concentrations of aluminium however toxicity can often be alleviated by the alteration of soil pH.

   The Safety Data Sheet (SDS) for Sodium aluminate identifies the hazards of this product as a corrosive Category 1 substance which can cause eye damage and skin irritation from dust/ fume/ gas/ mist/ vapours or spray. Sodium aluminate will negatively impact aquatic ecosystem flora and fauna and may leach into groundwater via the soil profile.

The volumes held at the premises, for each chemical component, are relatively small (< 200 ltrs). Impact from direct discharge from an abnormal operation is considered low impact at the

localised, on-site area only. However, long term impacts through long term discharges to land (irrigation and overflow) may result in cumulating effects, and impact to localised soil/ flora and groundwater.

8.4.4 Criteria for assessment

The two chemical components identified as part of the chemical treatment process as potentially influencing the environment are considered as follows:

- Residual chlorine has already been defined and regulated under DoH approval for assessment at the premises, within the range of 0.2 – 2 mg/L, in accordance with DoH standards.
- The Long-term trigger values (LTV) for Aluminium irrigation levels are defined as 5 mg/L, in accordance with *'Wastewater irrigation management plan (WIMP) guideline, Environmental Protection Authority, South Australia'*.

  Aluminium is currently not regulated under any other approval process.

8.4.5 Applicant controls

The following applicant controls for the operation of the chemical treatment process, have been determined from submitted documentation, as shown in Appendix 1.

This assessment has reviewed the controls set out in Table 14 below.

Table 14: Applicant's proposed controls for chemical treatment process

Site infrastructure	Description	Operation details	Reference to issued licence plan (Attachment X)
Controls for chemical treatment process			
Sand filtration unit	*Wastewater filtration prior to discharge*	*Filtration is required to reduce the suspended solids in the wastewater and enable the optimal operation of the irrigators, in particular the subsurface irrigators require low Suspended Solids (SS) to operate optimally. The filtration system comprises two sand filters and inline micro filter that are housed in a shed adjacent to Pond 4.* *Filtration is undertaken automatically after Irrigation Tank 4 when the irrigation pump is switched on.*	*Appendix 1: Key documents* *Operation, Maintenance and Monitoring Plan, Section 2.6*
	Monitoring	• *Monitor waste water TSS and clean filter when TSS is close to 30 mg/L: Quarterly;* • *Undertake routine visual inspection: Quarterly;* • *Undertake automatic backwashing of sand filers and dispose to stormwater overflow pond: Half hourly when irrigation pumps are Operating;*	

Site infrastructure	Description	Operation details	Reference to issued licence plan (Attachment X)
		• *Undertake routine cleaning of micro filter: every 2-3 days;* • *Replace sand in two sand filters: every 2 years.*	
Chlorination unit	*Chlorine liquid dosing prior to discharge*	• *Chlorination is required to meet Department of Health requirements for the irrigation scheme. The Chlorinator is a MAK-NACL system, and housed in a shed adjacent to Pond 4. The chlorinator fitted with a no-flow sensor that automatically cuts off the Pond 4 pump if the chlorine pump is not working.*	*Appendix 1: Key documents* *Operation, Maintenance and Monitoring Plan, Section 2.7*
	Monitoring	• *Routine daily and monthly inspections of chlorination system and associated infrastructure.*	
Coagulant unit	*Sodium aluminate dosing*	• *Sodium aluminate held within an enclosed 100ltr dosing tank.* • *Dosing unit placed on a concrete hardstand.* • *Included within a 100 ltr dosing tank bund.*	
	Monitoring	*Control panel*	
Monitoring equipment and requirements	*Inflow (W1) and outflow meters (W2) installed.* *V-notch weir system and monitor installed (W3).* *Monitoring tap for discharges via irrigation for DoH.* *Groundwater monitoring bores (MW1B-MW4B)*	• *Collected in accordance with AS/NZS 5667.1:1998 "Water quality - Sampling - Guidance on the Design of Sampling Programs, Sampling Techniques and the Preservation and Handling of Samples".* • *DoH "Standard Recycled Water Techniques" (for wastewater sampling only).* • *Submitted to a laboratory with current NATA accreditation for the parameters to be measured.* • *Submission of irrigation monitoring results to DoH in accordance with recycled water reuse approval.* • *Groundwater monitoring bores located 'upstream and downstream' of groundwater directional flow (south westerly)*	*Operation, Maintenance and Monitoring Plan, Sections 3.2, 3.4, 3.5, 3.8 & 3.9.*

Site infrastructure	Description	Operation details	Reference to issued licence plan (Attachment X)
		direction. Bores MW1B and MW2B (down gradient) are located to identify any potential offsite impacts and MW3B and MW4B provide background levels (up-gradient). MW5 is an additional up-gradient bore from which monitoring is currently not undertaken.	
Controls for chemical treatment process			
Parameter monitoring	*Ensure that adequate groundwater monitoring for chlorine and aluminium is included within the proposed Licence.*		
DoH requirements	*DoH Approval B48/0000*		

8.4.6 Key findings

The Delegated Officer has reviewed the information regarding the chemical treatment process and has found that:

1. *As the premises has previously been Licenced (L8025/1992/3) and operated in accordance with the Environmental Protection Act 1986, various controls are already in place at the premises to manage and monitor potential emissions and discharges.*
2. *The proposed Licence (L9115/2018/1) will consider monitoring requirements that include parameters that are site specific to the operation of defined infrastructure at the premises and potential emissions related to their operation.*
3. *DoH approval parameter requirements are appropriate and will be included within the proposed Licence (L9115/2018/1).*

8.4.7 Consequence

If the *chemical treatment process* occurs, *then* the Delegated Officer has determined that the impact of *chemical or heavy metal and metalloid contamination* will be *low level onsite and minimal off-site environmental impacts in the short term, under normal operating conditions*. Therefore, the Delegated Officer considers the consequence of *the chemical treatment process* to be **minor**.

8.4.8 Likelihood of Risk Event

The likelihood of the risk event occurring is based on the potential for the worst case scenario to occur. With the applicant and regulatory controls proposed, The Delegated Officer has determined that the likelihood of *the chemical treatment process risk event* occurring will probably not occur under most circumstances. Therefore, the Delegated Officer considers the likelihood to be **unlikely**.

8.4.9 Overall rating of chemical treatment process

The Delegated Officer has compared the consequence and likelihood ratings described above with the risk rating matrix (Table 11) and determined that the overall rating for the risk of *the chemical treatment process* is **medium**.

8.5 Risk Assessment – discharges to land: irrigation and overflow

8.5.1 Description of discharges to land: irrigation and overflow

Treated wastewater is discharged from pond 4 (via irrigation tank 4 and the filtration system) for irrigation and pond 5 storm water overflow, to land.

Irrigation

Wastewater is pumped from pond 4 via sand and micro filters and a chlorination system into an impermeable plastic storage tank, where the water is held for treatment and shandying, and subsequently irrigated onto the three irrigation areas. A float on pond 4 determines when water is discharged from the pond into the irrigation tanks. Currently, 4.49 ha of turf, at the prison ovals and access road verge, is irrigated with treated wastewater. Irrigation is undertaken by the following process:

- Old Oval comprises 2.4 ha of grass that is irrigated through spray irrigators between 7 pm and 5 am. The irrigation system has 12 stations and is divided into two areas that are both irrigated. Access to the oval is restricted.
- New Oval will comprises approximately 2.02 ha of grass that is irrigated through subsurface irrigators.
- Access road verge comprises approximately 0.7 ha of grass that is irrigated through subsurface irrigators along the south side of the verge. The area is irrigated in 3 sections. Driplines are 16 mm unibiolines with1.6 litres per hour drippers, spaced 400 mm apart in planned rows 1 m apart. Drip line capacity is 1,300 l with a 133 litres per minute disposal capacity. Flushing pits (concrete soakwells with 1,000 L capacity) are located at either end of the flush lines.

Irrigation demand exceeds amount of effluent available and, coupled with the high evaporation rate, the wastewater needs to be shandied with water from a nearby bore. Towards the end of summer, irrigation is mainly from bore water. During winter irrigation will generally cease (unless required due to lack of rainfall).

Department of Health (DoH) has approved irrigation of the prison oval with wastewater. Monitoring for *E. coli* has been carried out since 1993, where the results are provided to DoH.

A Nutrient and Irrigation Management Plan (NIMP) was requested by the former Department of Environment and Conservation (DEC) to address concerns of nutrient overloading (nitrogen and phosphorus) of the prison oval and associated impacts on groundwater quality. This NIMP, titled "Building Management and Works: Report for Greenough Regional Prison Wastewater Treatment Plant: Nutrient and Irrigation Management Plan: November 2010", was accepted by DEC in November 2010.

A coagulant dosing unit was subsequently installed at the premises in 2017 (located between ponds 2 and 3) to address issues of elevated phosphorus at the facility, through the dosing of Sodium aluminate (flocculant).

Overflow

In addition, during winter rainfall months, periodic overflow events occur resulting in non-chlorinated/ non-filtered wastewater discharging to pond 5. Volumes of wastewater

discharged to an unlined Pond 5 (Storm water overflow pond) are low and irregular. Pond 5 has been designed to have a retention time of five days which allows for further aerobic degradation of the wastewater, and undergo evaporation and subsequent infiltration to ground. The design is such that direct discharge to environment (no retention) will occur after a 1:20 year average recurrence interval (ARI) rainfall event. In addition, uncontaminated storm water is also directed from the prison complex directly into the storm water overflow pond. This further dilutes any overflow received from pond 4.

There is some native vegetation in the overflow area, which is predominantly *Acacia blakelyi*. However, any uncontrolled discharge into the overflow area can encourage weed growth as well as ponding.

A flow meter has been installed to quantify the volume of wastewater received into the facility, and discharged to the irrigation tanks for discharge to the three irrigation areas. A v-notch weir system has been built between pond 4 and pond 5 to measure any discharges into pond 5. The meter reader for the v-notch weir system is housed within the shed that contains the sand filtration unit.

8.5.2 Identification and general characterisation of emission

Irrigation and overflow

Treated wastewater has the potential to discharge nutrients, heavy metals and metalloids, hydrocarbons and chemical constituents from the prison via the discharge water. An oversupply of nutrient rich water can result in percolation of nutrient through the root zone and infiltration to groundwater, thereby impact groundwater users or groundwater dependent ecosystem down gradient of the premises. The premises has a legacy of exceeding contaminant loading rates which resulted in additional irrigation areas being made operational (irrigation area L2 and L3). Groundwater monitoring at the premises identified elevated nutrient levels of a number of parameters, but particularly Total Phosphorus (TP).

An outflow meter exists at the irrigation tanks to monitor volumetric flow rates of wastewater from the irrigation tanks to the irrigation areas. A DWER review of the '2015 Annual Environmental Report' confirmed approximately 6.8 m^3/ day is being discharged to land via irrigation (2,491 m^3 annually). Monitoring of a suite of parameters has been undertaken historically and has shown that TP is regularly in exceedence of trigger value levels, with periodic exceedences in most other monitored parameters have occurred. The monitoring of parameters over 2016-2017 has shown greater stabilisation however TP is still elevated and variable. This resulted in the applicant installing the coagulant dosing system at the premises.

The applicant has assessed the emissions to land against 'Water Quality Protection Note 22' (WQPN 22) and monitors parameter emissions. This is to ensure that the discharges do not exceed the soil risk category 'B' for nutrient application criteria to control eutrophication risk for Total Nitrogen and Total Phosphorus, annually. The three irrigation areas were determined by 'GHD' consultants, and assessed by the former DEC, as being sufficient in size for the volume and type of wastewater emissions (nutrients) proposed (excluding consideration of heavy metals and metalloids, hydrocarbons, chemicals or other compounds).

DoH regulation of the emissions to land, via Approval B48/0000, regulates pathogens (*E. coli*), residual chlorine, Total Suspended Solids and Biochemical Oxygen Demand.

In addition, the application of chemical constituents to treat the wastewater, as per section 8.4 above, may result in elevated discharges to land of chemical and heavy metal compounds being present in the soil profile, impacting ecological processes, fauna, flora, land and groundwater.

The overflow stormwater pond 5 is unlined and although there is a hard limestone layer at the base of the pond which would assist in phosphorus retention, it also has the ability to be karstic in nature. This may result in preferential pathways occurring which may result in

contaminants leaching/ infiltrating to groundwater and impacting groundwater users or groundwater dependent ecosystems down gradient of the premises.

DWER review of submitted Annual Environmental Reports (from 2013-2017) for the premises identified that monitoring of discharges from pond 4 to pond 5 has not been carried out effectively or consistently. It is unclear as to the volume being discharged on an annual basis. A v-notch weir system and meter are in place to measure flow rates from pond 4 to the storm water overflow pond 5.

8.5.3 Description of potential adverse impact from the emission

Irrigation

Irrigation of treated wastewater may result in elevated chemical, heavy metal and metalloids and nutrients occurring within the soil profile within a localised area to the irrigation areas (L1-L3), impacting ecological processes, fauna, flora and land groundwater. Excessive irrigation may result in nutrients and other compounds not being adequately taken up by the turf and percolation through the root zone, and infiltrating to groundwater. Groundwater users and groundwater dependent ecosystems may then be negatively impacted.

Overflow

As discharge to pond 5 is irregular and seasonal, and includes the containment of uncontaminated stormwater which will have a diluting effect, the impacts are considered to be localised nutrient enrichment and contamination. However, should infiltration occur as a result of preferential pathways, impact to groundwater may occur. Groundwater users and groundwater dependent ecosystems may then be negatively impacted.

8.5.4 Criteria for assessment

The criteria for assessment have been based on relevant guidance, applicant controls, distance to receptor, volumes and potential for emission to occur.

8.5.5 Applicant controls

This assessment has reviewed the controls set out in Table 15 below.

Table 15: Applicant's proposed controls for discharges to land: irrigation and overflow

Site infrastructure	Description	Operation details	Reference
Controls for discharges to land: irrigation and overflow			
Irrigation	*Irrigation areas (L1-L3):* *Nutrient loading rates (nitrogen and phosphorus) and associated impacts on groundwater quality.* *Soil Risk Category B - WQPN 22, JULY 2008 Irrigation with nutrient-rich wastewater.* *The water table is approximately 16 mBGL.*	*Nutrient and Irrigation Management Plan (NIMP);* *The premises is located and operates at a distance greater than 500 m to any surface water source.*	*Appendix 1: Key documents* *Operation, Maintenance and Monitoring Plan, Section 2.4 – 2.5*
	Irrigation system (approximately 100-200 kL/ day, including bore water)	*The controller automatically or manually schedules the*	*Operation, Maintenance and Monitoring Plan,*

Site infrastructure	Description	Operation details	Reference
		irrigation program (including period of irrigation, start times, dates, irrigation zones) using solenoid valves. *Undertaken daily routine visual inspection of:* - *Mains Oval grassed area prior to access by prisoners to ensure there is no wastewater ponding.* - *Restrict access if wastewater ponding observed* *Undertake weekly routine inspection of :* - *Main's Oval irrigation sprinkler heads.* - *Above ground reticulation system.* - *New Oval and Access Road Verge grassed area to ensure no blowouts or ponding of wastewater.* *Undertake testing of irrigation system and cut off valves: Quarterly.* *Undertake end and start of season maintenance as follows:* - *Flush irrigation system with bore water.* - *Fill wastewater reticulation system with bore water to ensure the system is left full of bore water over the winter months. This is to minimise odours and reduce coliform numbers in the new season's water.* - *Prior to the start of the irrigation season the check sprinklers and undertaken necessary*	*Section 2.8.2*

Site infrastructure	Description	Operation details	Reference
		maintenance. *For planned maintenance activities, flush the irrigation system prior to maintenance with bore water the night before planned maintenance: As required.* *Based on results of routine inspection determine required corrective action and implement immediately: As required.*	
Overflow	*Stormwater overflow pond – pond 5*	*Seasonal and irregular discharges from pond 4 diluted with uncontaminated stormwater from prison grounds.* *Designed to have a retention time of five days which allows for further aerobic degradation of the wastewater, evaporation and subsequent infiltration into the ground.*	
Monitoring equipment and requirements	*Inflow (W1) and outflow meters (W2) installed.* *V-notch weir system and monitor installed (W3).* *Monitoring tap for discharges via irrigation for DoH.* *Groundwater monitoring bores (MW1B-MW4B)*	*Collected in accordance with AS/NZS 5667.1:1998 "Water quality - Sampling - Guidance on the Design of Sampling Programs, Sampling Techniques and the Preservation and Handling of Samples".* *DoH "Standard Recycled Water Techniques" (for wastewater sampling only).* *Submitted to a laboratory with current NATA accreditation for the parameters to be measured.* *Submission of irrigation*	*Operation, Maintenance and Monitoring Plan, Sections 3.2, 3.4, 3.5, 3.8 & 3.9.*

Site infrastructure	Description	Operation details	Reference
		monitoring results to DoH in accordance with recycled water reuse approval. *Groundwater monitoring bores located 'upstream and downstream' of groundwater directional flow (south westerly) direction. Bores MW1B and MW2B (down gradient) are located to identify any potential offsite impacts and MW3B and MW4B provide background levels (up-gradient). MW5 is an additional up-gradient bore from which monitoring is currently not undertaken.*	
Controls for discharges to land: irrigation and overflow			
Irrigation	*DoH Approval B48/0000.*		

8.5.6 Key findings

The Delegated Officer has reviewed the information regarding discharges to land: irrigation and overflow, and has found:

1. *As the premises has previously been Licenced (L8025/1992/3) and operated in accordance with the Environmental Protection Act 1986, various controls are already in place at the premises to manage and monitor potential emissions and discharges.*
2. *Monitoring of emissions to land wastewater parameters at the irrigation tanks (IT4) to the irrigation area, and from pond 4 to pond (P5) will be included within the proposed Licence L9115/2018/1.*
3. *The proposed Licence will set trigger values that will be based on appropriate guidance and premises design, and require management action in the event of these values being exceeded.*

8.5.7 Consequence

If *discharges to land* occurs, *then* the Delegated Officer has determined that the impact of *nutrient enrichment and chemicals, heavy metals and metalloids or hydrocarbons contamination* will be *minimal off-site impacts and low level onsite impacts*. Therefore, the Delegated Officer considers the consequence of *discharges to land* to be **minor**.

8.5.8 Likelihood of Risk Event

The likelihood of the risk event occurring is based on the potential for the worst case scenario to occur, under abnormal operation. With the applicant and regulatory controls proposed, the Delegated Officer has determined that the likelihood of impact from *discharges to land* occurring will not occur in most circumstances. Therefore, the Delegated Officer considers the likelihood of discharges to land to be **unlikely**.

8.5.9 Overall rating of discharges to land: irrigation and overflow

The Delegated Officer has compared the consequence and likelihood ratings described above with the risk rating matrix (Table 11) and determined that the overall rating for the risk of *discharges to land* is **medium**.

8.6 Summary of acceptability and treatment of Risk Events

A summary of the risk assessment and the acceptability or unacceptability of the risk events set out above, with the appropriate treatment and control, are set out in Table 16 below. Controls are described further in section 11.

Table 16: Risk assessment summary

	Description of Risk Event			Applicant controls	Risk rating	Acceptability with controls (conditions on instrument)
	Emission	**Source**	**Pathway/ Receptor (Impact)**			
1.	Chlorine and Aluminium	*Chemical treatment processes: chlorination and coagulant dosing systems*	*Soil/ land: impacting flora, fauna & groundwater ecosystems and groundwater users*	See Table 14	Minor consequence Unlikely **Medium risk**	Acceptable subject to regulatory controls
2.	Nutrients, heavy metals and metalloids, hydrocarbons and chemical compounds	*Discharges to land: irrigation and overflow*	*Soil/ land: impacting flora, fauna & groundwater ecosystems and groundwater users*	See Table 15	Minor consequence Unlikely **Medium risk**	Acceptable subject to regulatory controls

9. Regulatory controls

A summary of regulatory controls determined to be appropriate for the Risk Event is set out in Table 17. The risks are set out in the assessment in section 10 and the controls are detailed in this section. DWER will determine controls having regard to the adequacy of controls proposed by the Applicant. The conditions of the Licence will be set to give effect to the determined regulatory controls.

Table 17: Summary of regulatory controls to be applied

		Controls (references are to sections below, setting out details of controls)				
		Infrastructure and equipment	Inputs/ outputs	Specified action	Monitoring	Reports
Risk Items (see risk analysis in section 8)	9.1.1 Chemical treatment process	●	–	–	–	–
	9.1.2 Discharges to land: irrigation and overflow	●	●	●	●	●

9.1 Licence controls

9.1.1 Chemical treatment process infrastructure operation

The following environmental controls, infrastructure and equipment should be maintained and operated onsite for the chemical treatment process:

1) Chemical containment sheds and tanks;
2) Concrete hardstands and bunds.

The chemical treatment process operation must be compliant and operated to the following guidance:

- *Environmental Protection (Unauthorised Discharges) Regulations 2004; and*
- *DoH Approval B48/0000.*

9.1.2 Discharges to land: irrigation and overflow management

The following environmental controls, infrastructure and equipment should be maintained and operated onsite:

1) Suitable devices (inflow/ outflow meters and v-notch weir) to monitor cumulative monthly volumes of treated wastewater discharged.
2) Irrigation tanks, hardstands, bunds and embankments;
3) Monitoring points to sample discharge wastewater;
4) Sludge containment and management;
5) Vegetation of irrigation areas;
6) Associated pipelines and concrete overflow aprons; and

The irrigation of wastewater, wastewater overflow and pond sludge must be operated, compliant against and monitored according to the following guidance:

- *Environmental Protection (Unauthorised Discharges) Regulations 2004;*
- *Environmental Protection (Controlled Waste) Regulations 2004;*

- *Western Australian Guidelines for Biosolids Management, Department of Environment and Conservation, December 2012* (as amended from time to time);
- *Water Quality Protection Note 22 Irrigation with nutrient-rich wastewater;*
- *Water Quality Protection Note 33 Nutrient and Irrigation Management Plans;*
- *Australian Standard AS3565-2007 Meters for Water Supply;*
- *Australian Standard AS/NZS 2031 Selection of containers and preservation of water samples for microbiological analysis;*
- *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;*
- *Australian Standard AS/NZS 5667.10 Water Quality – Sampling – Guidance on sampling of waste waters;*
- *Australian Standard AS/NZS 5667.11 Water Quality – Sampling – Guidance on sampling of groundwaters;*
- Australian and New Zealand Environment and Conservation Council (ANZECC) & Agricultural and Resource Management Council of Australia and New Zealand (ARMCANZ) (2000) Australian Water Quality Guidelines for Fresh and Marine Water Quality. National Water Quality Management Strategy; and
- Department of Health standards and the recycled water classes classification system.

Monitoring and reporting of wastewater discharges (irrigation and overflow) and groundwater will be required within the proposed Licence, and assessed against relevant trigger values or background levels. Where exceedences have been determined specified actions will be defined.

10. Determination of Licence conditions

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

The *Guidance Statement: Licence Duration* has been applied and the proposed licence expires in 15 years from date of issue.

Table 18 provides a summary of the conditions to be applied to this licence.

Table 18: Summary of conditions to be applied

Condition Ref	Grounds
Emissions Condition 1	Environmental compliance is a valid, risk-based condition to ensure appropriate linkage between the licence and the EP Act.
Notification of Material Change Conditions 2 to 4	
Infrastructure and Equipment Condition 5	These conditions are valid, risk-based and contain appropriate controls.
Throughput restrictions Conditions 6 to 7	These conditions are valid, risk-based and consistent with the EP Act.
Waste type restrictions and classifications Condition 8	
Wastewater emission controls Conditions 9 to 11	

Wastewater monitoring Conditions 12 and 13	
Groundwater monitoring Conditions 14 and 15	
Reporting Conditions 16 to 18	These conditions are valid and are necessary administration and reporting requirements to ensure compliance.
Record-keeping Conditions 19 to 21	
Schedule 1: Maps	
Schedule 2: Premises activities	
Schedule 3: Monitoring	

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

11. Applicant's comments

The Applicant was provided with the draft Decision Report and draft Licence on 21 March 2018. The Applicant provided comments which are summarised, along with DWER's response, in Appendix 2.

12. Conclusion

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

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

Steve Checker
MANAGER LICENSING (WASTE INDUSTRIES)

Delegated Officer
under section 20 of the *Environmental Protection Act 1986*

Appendix 1: Key documents

	Document title	In text ref	Availability
1.	Email: RE: Reapplication – Dec 2017 received 30 January 2018 from Dennis Gilleland, Department of Justice. Includes one attachment: • Submission Jan 2018	-	DWER record (A1603522)
2.	Licence L8025/1992/3 – Greenough Regional Prison Wastewater Treatment Plant	L8025/1992/3	accessed at www.dwer.wa.gov.au
3.	*Operations and Maintenance Management, and Water Monitoring Plan, Greenough Regional Prison, 6 May 2013, AECOM.*	Department of Finance 6 May 2013	DWER record (A641393)
4.	Letter: RE: Greenough Regional Prison Recycled Water Scheme – Inspection and Department of Health Amendment Conditions of Approval, 18 September 2012.	Clemencia Rodriguez Ref. F-AA-14906	DWER record (A546407)
5.	Email: L8025/1992/3 from Dennis Gilleland, Department of Justice, 6 October 2017. (Application amendment for the installation and operation of the coagulant dosing system). With four attachments: • 201710051525.pdf • 201710051524-1.pdf • 201710051524.pdf • 201710051523.pdf	Amendment Advice/ Application	DWER record (A1536639)
6.	Email: RE: L9115/2018/1 – Greenough Regional Prison – pending information. Received from Peter Ilich, Superintendent, Greenough Regional Prison. Response received in two parts on 13 and 19 April 2018. Includes two appendices: • MAK5400S02 SHSR OIM REV	New liquid chlorine treatment plant	DWER records (A1653085/ A1661570)

	0.pdf • SHSR As Build.pdf		
7.	Email: RE: L9115/2018/1 – Greenough Regional Prison – Final signing	7/06/2018	DWER records (A1687443)
8.	Operation and Maintenance Management, and Water Monitoring Plan, 2013 – Greenough Regional Prison (AECOM)	6 May 29013	DWER records (A1687991)
9.	*Environmental Protection (Unauthorised Discharges) Regulations 2004*	-	accessed at : https://www.slp.wa.gov.au/legislation/statutes.nsf/default.html
10.	*Environmental Protection (Controlled Waste) Regulations*	-	
11.	*Contaminated Sites Act 2003*	-	accessed at: https://www.slp.wa.gov.au/legislation/statutes.nsf/actsif_c.html
12.	*Rights in Water Irrigation Act 1911*	-	
13.	Australian and New Zealand Environment and Conservation Council (ANZECC) & Agricultural and Resource Management Council of Australia and New Zealand (ARMCANZ) (2000) Australian Water Quality Guidelines for Fresh and Water Quality. National Water Quality Management Strategy	ANZECC	accessed at: http://www.agriculture.gov.au/SiteCollectionDocuments/water/nwqms-guidelines-4-vol1.pdf
14.	Guidelines for the Non-potable Uses of Recycled Water in Western Australia, Department of Health.	Water Unit Environmental Health Directorate	accessed at http://ww2.health.wa.gov.au/~/media/Files/Corporate/general%20documents/water/Recycling/Guidelines%20for%20the%20Non-potable%20Uses%20of%20Recycled%20Water%20in%20WA.pdf
15.	Environmental Impact Plan – Irrigation and Water Reuse System, SKM, 24 August 2009.	W4712/2010/1	DWER record (A427972)
16.	DER, July 2015. *Guidance Statement: Regulatory principles.* Department of	DER 2015a	accessed at www.dwer.wa.gov.au

	Environment Regulation, Perth.		
17.	DER, October 2015. *Guidance Statement: Setting conditions.* Department of Environment Regulation, Perth.	DER 2015b	
18.	DER, August 2016. *Guidance Statement: Licence duration.* Department of Environment Regulation, Perth.	DER 2016a	
19.	DER, November 2016. *Guidance Statement: Risk Assessments.* Department of Environment Regulation, Perth.	DER 2016b	
20.	DER, November 2016. *Guidance Statement: Decision Making.* Department of Environment Regulation, Perth.	DER 2016c	

Appendix 2: Summary of applicant's comments on risk assessment and draft conditions

Condition	Summary of Licence Holder comment	DWER response
Condition 5, Table 3, Row 6, Column 2.	(a) Shed does not have a door.	DWER requests confirmation regarding the absence of the door. The shed originally had a door to enclose and secure the v-notch weir meter, filtration equipment and supplies. The recommendation is that the door be replaced and made operational again to secure assets. Outstanding information was received on 19/4/2018 and 07/06/2018 from Peter Ilich, Superintendent, Greenough Regional Prison and included within draft documentation (See Appendix 1).
Condition 5, Table 3, Row 7, Column 2.	(b) Dosing is now undertaken with liquid not gas.	DWER request that the change in chlorination design/ construction details to liquid be submitted through to DWER for consideration within the final instrument, with evidence of compliance to DoH requirements. Outstanding information was received on 19/4/2018 and 07/06/2018 from Peter Ilich, Superintendent, Greenough Regional Prison and included within draft documentation (See Appendix 1)
Table 14, row 4, column 3 ; Table 14, row 6, column 6	Query: spelling	Updated as required The applicant will be required to sample for aluminium as a result of the new coagulant dosing system (Sodium aluminate), used to manage elevated Total Phosphorus levels from the ponds. Sodium aluminate will result in the deposition of aluminium within the sediment generated, as a result of the process.

Attachment 1: Licence L9115/2018/1