Government of Western Australia
Department of Water and Environmental Regulation

Works Approval

Works Approval Number	W6105/2017/1
Works Approval Holder	Department of Communities
Registered business address	Department of Communities, Housing Level 2, 99 Plain Street Locked Bag 22 EAST PERTH WA 6004
File Number	DER2017/001923
Duration	4 June 2018 to 3 June 2021
Date of issue	1 June 2018
Prescribed Premises	Category 54
Premises	Bidyadanga Waste Water Treatment Plant Bidyadanga Aboriginal Community Lot 499 on Deposited Plan 404943 Crown Reserve 38399

This Works Approval is granted to the Works Approval Holder, subject to the following conditions, on 1 June 2018, by:

Date signed: 1 June 2018
Stephen Checker
MANAGER 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 Works Approval.

Defined terms

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

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 and works approvals, takes enforcement action and develops and implements licensing and industry regulation policy.

Works Approval

Section 52 of the EP Act provides that an occupier of any premises commits an offence if any work is undertaken on, or in relation to, the premises which causes the premises to become, or to become capable of being, Prescribed Premises, except in accordance with a works approval.

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 Works Approval 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 Works Approval Holder to ensure that any action or activity referred to in this Works Approval is permitted by, and is carried out in compliance with, statutory requirements.

The Works Approval Holder must comply with the Works Approval. Contravening a Works Approval Condition is an offence under s.55 of the EP Act.

Responsibilities of Works Approval Holder

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

- the duties of an occupier under s.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 Works Approval Holder has a duty to report to the Department 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 Works Approval 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 Works Approval Holder and these are set out in the EP Act. Section 74A(b)(iii) 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 Works Approval Holder can prove that an Emission or Discharge occurred in accordance with a Works Approval.

This Works Approval 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 the Works authorised through this Works Approval are authorised to be conducted in accordance with the Conditions of this Works Approval.

Amendment of Works Approval

The Works Approval Holder can apply to amend the Conditions of this Works Approval

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 Works Approval at any time on the initiative of the CEO without an application being made.

Duration of Works Approval

The Works Approval will remain in force for the duration set out on the first page of this Works Approval 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 Works Approval in accordance with s.59A of the EP Act.

Definitions and interpretation

Definitions

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

Table 1: Definitions

Term	Definition
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
Condition	means a condition to which this Works Approval is subject under s.62 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.
Department Request	means a request for Books or other sources of information to be produced, made by an Inspector or the CEO to the Works Approval Holder in writing and sent to the Works Approval's address for notifications, as described at the front of this Works Approval, in relation to: (a) compliance with the EP Act or this Works Approval; (b) the Books or other sources of information maintained in accordance with this Works Approval; 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).
GCL	Geosynthetic liner

Implementation Agreement or Decision	has the same meaning given to that term under the EP Act.
Inspector	means an inspector appointed by the CEO in accordance with s.88 of the EP Act.
Pollution	has the same meaning given to that term under the EP Act.
Premises	refers to the premises to which this Works Approval applies, as specified at the front of this Works Approval and as shown on the map in Schedule 1 to this Works Approval.
Prescribed Premises	has the same meaning given to that term under the EP Act.
Serious Environmental Harm	has the same meaning given to that term under the EP Act.
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.
Works	refers to the Works described in Schedule 2, at the locations shown in Schedule 1 of this Works Approval to be carried out at the Premises, subject to the Conditions.
Works Approval	refers to this document, which evidences the grant of the works approval by the CEO under s.54 of the EP Act, subject to the Conditions.
Works Approval Holder	refers to the occupier of the Premises being the person to whom this Works Approval has been granted, as specified at the front of this Works Approval.

Interpretation

In this Works Approval:

(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 Works Approval means the version of the standard, guideline or code of practice in force at the time of granting of this Works Approval and includes any amendments to the standard, guideline or code of practice which may occur from time to time during the course of the Works Approval; and

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

Conditions

Infrastructure and equipment

1. The Works Approval Holder must install and undertake the Works for the infrastructure and equipment:

(a) specified in Column 1;

(b) to the requirements specified in Column 2; and

(c) at the location specified in Column 3

of Table 2 below.

2. The Works Approval Holder must not depart from the requirements specified in Column 2 of Table 2 except:

(a) where such departure does not increase risks to public health, public amenity or the environment; and

(b) all other Conditions in this Works Approval are still satisfied.

3. Subject to Condition 1, within 30 days of the completion of the Works specified in Column 1 of Table 2, the Works Approval Holder must provide to the CEO an engineering certification from a suitably qualified professional confirming each item of infrastructure or component of infrastructure specified in Column 1 of Table 2 below has been constructed with no material defects and to the requirements specified in Column 2.

4. Where a departure from the requirements specified in Column 2 of Table 2 occurs and is of a type allowed by Condition 2, the Works Approval Holder must provide to the CEO a description of, and explanation for, the departure along with the certification required by Condition 3.

Table 2: Infrastructure and equipment requirements table

Column 1	**Column 2**	**Column 3**
Infrastructure/ Equipment	**Requirements (design and construction)**	**Site plan reference**
Sewage treatment system	The sewage treatment system must be designed and constructed to meet the following specifications: (a) be able to receive and treat a sewage inflow of up to 432 m^3/ day; (b) allow sufficient capacity with a 500mm top of bank freeboard to capture a 1 in 10 year 72 hour rainfall event; and (c) direct all treated wastewater to Tertiary pond 1, 2 and 3 and Evaporation/Infiltration pond 1, 2 or 3.	As shown in Schedule 3 Site Plan
Primary pond 1	• must be GCL lined with a permeability of less than $1x10^{-9}$ m/s; • comprise the following dimensions: i. depth of 1.6m;	As shown in Schedule 3 Site Plan

Column 1	Column 2	Column 3
Infrastructure/ Equipment	**Requirements (design and construction)**	**Site plan reference**
	ii. width of 58m; and iii. length of 40m.	
Secondary pond 1	• must be GCL lined with a permeability of less than $1x10^{-9}$ m/s; • comprise the following dimensions: i. depth of 1.2m; ii. width of 58m; and iii. length of 30m.	As shown in Schedule 3 Site Plan
Secondary pond 2	• must be clay lined with a permeability of less than $1x10^{-9}$ m/s; • comprise the following dimensions: i. depth of 1.2m; ii. width of 60.9m; and iii. length of 38.1m.	As shown in Schedule 3 Site Plan
Tertiary pond 1	comprise the following dimensions: i. depth of 1.1m; ii. width of 47.5m; and iii. length of 35.0m.	As shown in Schedule 3 Site Plan
Tertiary pond 2	comprise the following dimensions: i. depth of 1.1m; ii. width of 47.5m; and iii. length of 23.0m.	As shown in Schedule 3 Site Plan
Tertiary pond 3	comprise the following dimensions: i. depth of 1.1m; ii. width of 47.5m; and iii. length of 23.0m.	As shown in Schedule 3 Site Plan
Evaporation / Infiltration pond 1	comprise the following dimensions: i. depth of 1.0m; and ii. area of 10,000m^2	As shown in Schedule 3 Site Plan
Evaporation / Infiltration pond 2	comprise the following dimensions: i. depth of 0.93m; and ii. area of 5,964m^2	As shown in Schedule 3 Site Plan

Column 1	Column 2	Column 3
Infrastructure/ Equipment	**Requirements (design and construction)**	**Site plan reference**
Evaporation / Infiltration pond 3	comprise the following dimensions: i. depth of 0.78m; and ii. area of 4,540m^2	As shown in Schedule 3 Site Plan

Emissions

5. The Works Approval Holder must not cause any Emissions from the Works authorised through this Works Approval except for general Emissions described in Column 1 of Table 3, subject to the exclusions, limitations or requirements specified in Column 2, of Table 3.

Table 3: Authorised Emissions table

Column 1	Column 2
Emission type	**Exclusions/Limitations/Requirements**
General Emissions (excluding Specified Emissions)	
Emissions which arise from undertaking the Works set out in Schedule 2.	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 prescribed standard; or • Emissions or Discharges which do not comply with the conditions in an

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

Record-keeping

6. The Works Approval Holder must maintain accurate Books including information, reports and data in relation to the Works and the Books must:

(a) be legible;

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

(c) be retained for at least 3 years from the date the Books were made;

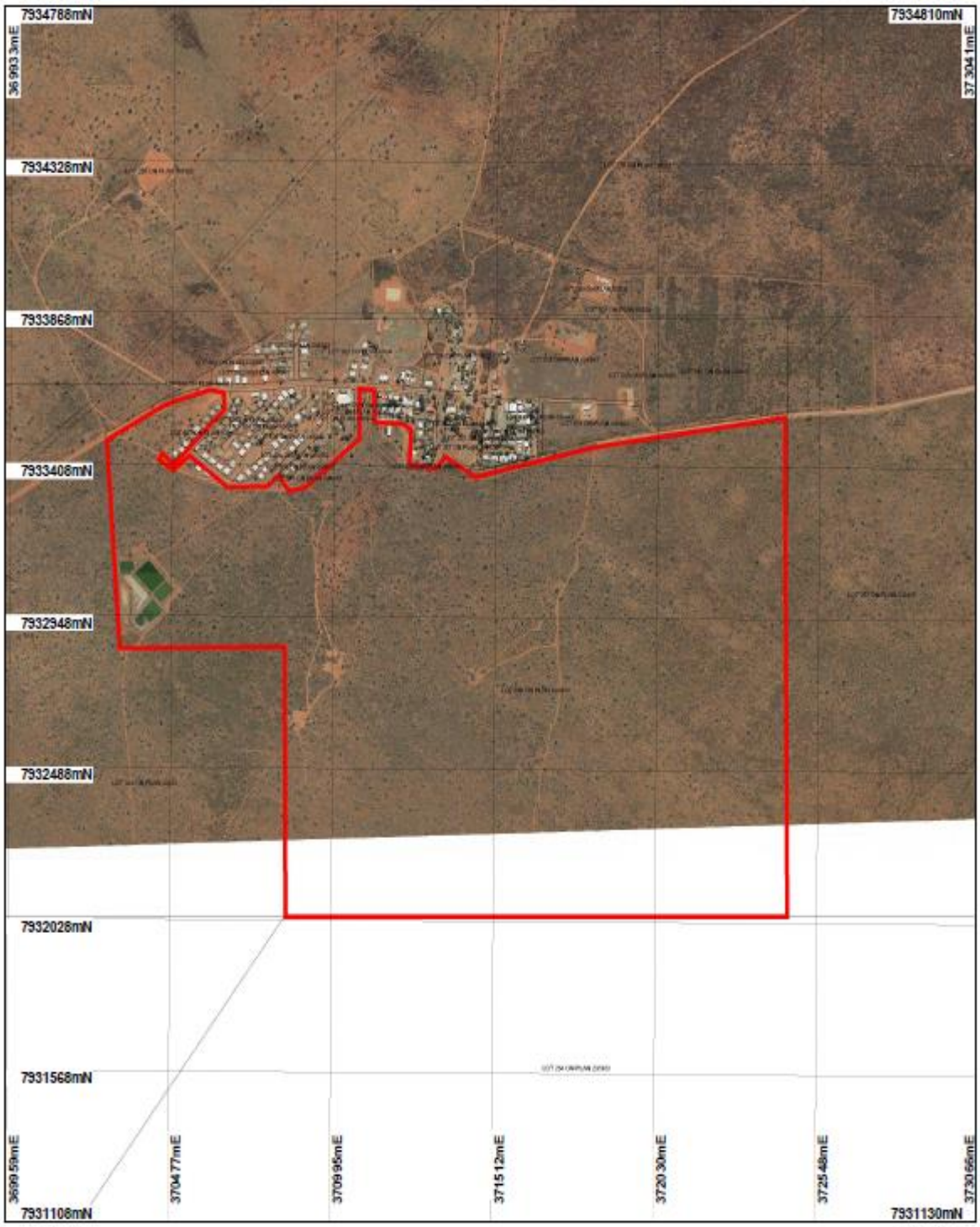
(d) be available to be produced to an Inspector or the CEO.

7. The Works Approval 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.



Schedule 2: Works

At the time of assessment, Emissions and Discharges from the Works listed in Table 4 were considered in the determination of the risk and related Conditions for the Works Approval.

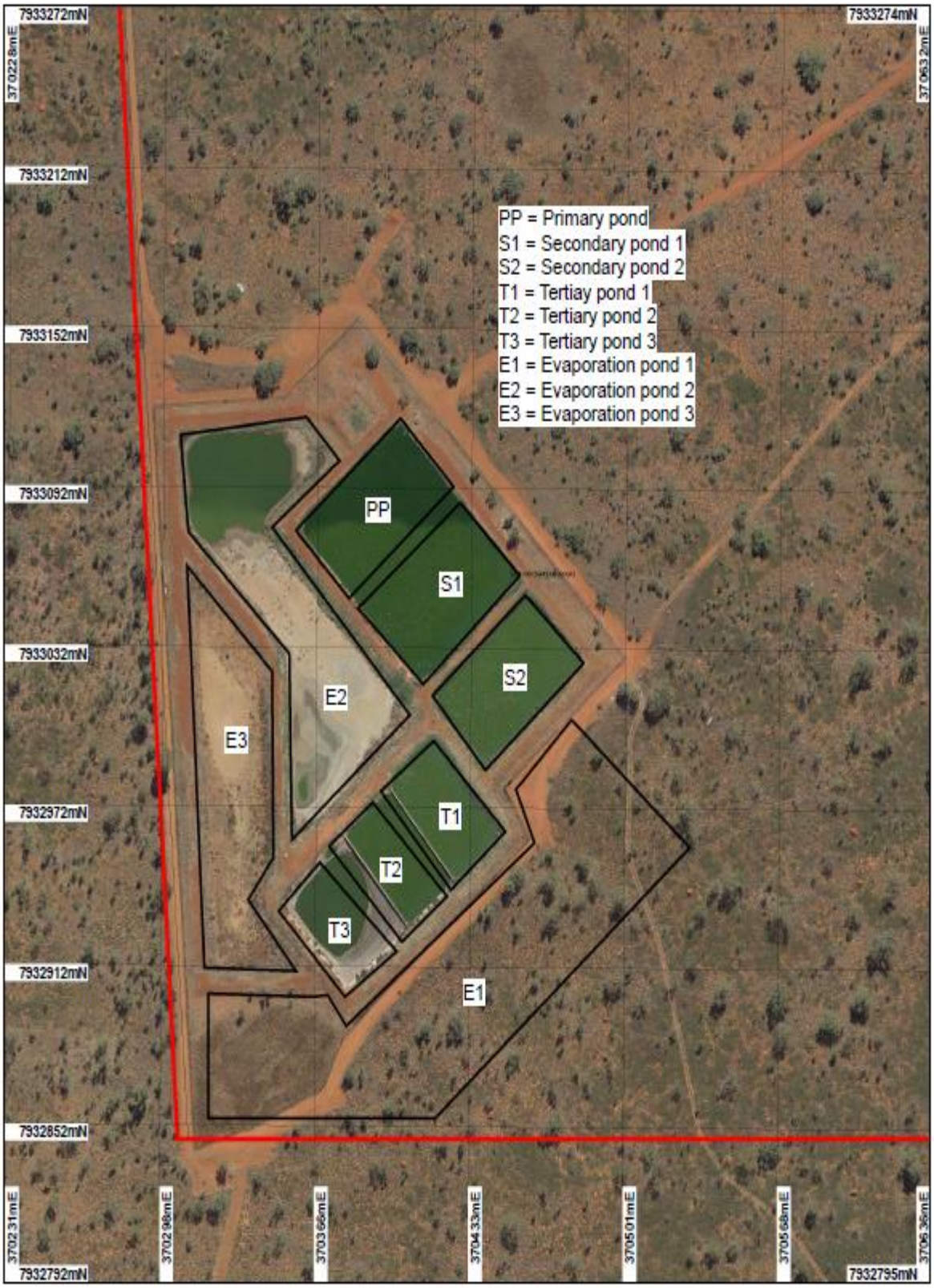
Table 4: Authorised Works

Works	Specifications/Drawings
GCL Lined Primary pond 1	Schedule 3 Site Plan
GCL Lined Secondary pond 1	
GCL Lined Secondary pond 2	
Tertiary pond 1	
Tertiary pond 2	
Tertiary pond 3	
Evaporation / Infiltration pond 1	
Evaporation / Infiltration pond 2	
Evaporation / Infiltration pond 3	

Site layout

The infrastructure and equipment are set out on the Premises in accordance with the site layout specified on the Site Plan in Schedule 3

Schedule 3: Site Plan



Government of Western Australia
Department of Water and Environmental Regulation

Decision Report

Application for Works Approval

Division 3, Part V *Environmental Protection Act 1986*

Works Approval Number	W6105/2017/1
Applicant	Department of Communities
File Number	DER2017/001924
Premises	Bidyadanga Waste Water Treatment Plant Bidyadanga Aboriginal Community Lot 499 on Deposited Plan 404943 Crown Reserve 38399
Date of Report	1 June 2018
Status of Report	Final

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1. Definitions of terms and acronyms

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

Table 1: Definitions

Term	Definition
Applicant	Department of Communities
AACR	Annual Audit Compliance Report
AER	Annual Environment Report
ANZECC	Australian and New Zealand Environment and Conservation Council (ANZECC) 1997 *Australian Guidelines for Sewerage systems, Effluent Management*, National Water Quality Management Strategy.
BAC	Bidyadanga Aboriginal Community
BOD	Biochemical Oxygen Demand
BWWTP	Bidyadanga Wastewater Treatment Plant
Category/ Categories/ Cat.	Categories of Prescribed Premises as set out in Schedule 1 of the EP Regulations
CS Act	*Contaminated Sites Act 2003* (WA)
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.
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.
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)
GCL	Geosynthetic Liner
m^3	cubic metres
Minister	the Minister responsible for the EP Act and associated regulations
NEPM	National Environmental Protection Measure
Noise Regulations	*Environmental Protection (Noise) Regulations 1997* (WA)
Occupier	has the same meaning given to that term under the EP Act.
Prescribed Premises	has the same meaning given to that term under the EP Act.
Premises	refers to the premises to which this Decision Report applies, as specified at the front of this Decision Report
Primary Activities	as defined in Schedule 2 of the Revised Licence
Risk Event	As described in *Guidance Statement: Risk Assessment*
RIWI Act	Rights in Water and Irrigation Act 1914
TN	Total Nitrogen
TP	Total Phosphorus
TSS	Total Suspended Solids
UDR	*Environmental Protection (Unauthorised Discharges) Regulations 2004* (WA)
WWTP	Wastewater Treatment Plant
mg/L	milligrams per litre

2. Purpose and scope of assessment

The Applicant has applied for a works approval to refurbish and construct the BWWTP on Lot 499 Crown Reserve 38399 BAC. The Premises is an existing WWTP that was originally licenced but has not held a license under Part V of the EP Act since 2003. The Applicant intends to refurbish the existing BWWTP and construct an additional Evaporation / Infiltration pond:

- Install one compacted earth embankment in the existing Primary pond to reduce excessive length for BOD removal and create an additional Secondary pond for nutrient removal;
- Maintain GCL lining in the new Primary and Secondary pond throughout construction of the compacted earth embankment;
- Raise the existing top of bank of all ponds and evaporation beds to provide a 500mm freeboard provision above legislative flood levels;
- Remove the existing deteriorated concrete walls in the existing Tertiary ponds to install two compacted earth embankments at one-third and two-thirds of the total of the Tertiary ponds length;
- Construction of an additional new Evaporation / Infiltration pond of an area of 10,000m^3; and
- Refurbishment of existing weirs and construction of a new emergency overflow weir for the new 10,000m^3 Evaporation / Infiltration pond with discharge to the existing evaporation pond.

All treated wastewater is to be fully contained within the WWTP including allowance for a 1:10 ARI rainfall event.

The construction is to allow a WWTP production and design capacity of 432m^3/day to treat a balance capacity throughput of 355m^3/day to service 1250 persons which is the expected population in 2028.

2.1 Application details

Table 2 lists the documents submitted during the assessment process.

Table 2: Documents and information submitted during the assessment process

Document/information description	Date received
Application form	30 October 2017
Additional Information in Regards to Application Ref: CEO 2863/17 for a Works Approval for BWWWTP	23 November 2017

3. Background

The Applicant has applied for a Category 54 Sewage facility works approval to construct the BWWTP at Lot 499 Crown Reserve 38399 BAC.

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*
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	432m^3/day

4. Overview of Premises

4.1 Operational aspects

The BWWTP treats wastewater for parts of the BAC which currently services a population of 850 people. BAC is the largest remote Aboriginal Community in Western Australia and is located 95 km south west of Broome (refer to Figure 1). The BWWTP is located 350m South West of the community. The current BWWTP only services the western side of the Community while the eastern part of the Community relies upon septic tank treatment of sewage which may present a contamination risk for Bidyadanga's drinking water source. The Applicant plans to connect an additional 20 houses in the BAC to the BWWTP. The current BWWTP treats wastewater to a secondary standard and has a production and design capacity to treat up to 166m^3/day. The existing WWTP consists of a GCL lined Primary and Secondary pond, unlined Tertiary pond and two unlined Evaporation / Infiltration ponds for discharging to the environment. The existing BWWTP is under capacity and discharges into the environment and is in need of refurbishment.

Due to the poor condition of the existing BWWTP the Applicant intends to refurbish the existing BWWTP and construct an additional Evaporation pond:

- Install one compacted earth embankment in the existing Primary pond to reduce excessive length for BOD removal and create an additional Secondary pond for nutrient removal;
- Maintain GCL lining in the Primary and Secondary pond throughout construction of the compacted earth embankment;
- Raise the existing top of bank of all ponds and evaporation ponds to provide a 500mm freeboard provision above legislative flood levels;
- Remove the existing deteriorated concrete walls in the existing Tertiary ponds to install two compacted earth embankments at one-third and two-thirds of the total of the Tertiary ponds length;
- Construct an additional new Evaporation / Infiltration pond comprising an area of 10,000m^2; and
- Refurbishment of existing weirs and construction of a new emergency overflow weir for the new 10,000m^2 Evaporation / Infiltration pond with discharge to the existing Evaporation / Infiltration pond.

Figure 2 provides an overview of the existing WWTP and proposed new BWWTP. There will also be associated construction of pipelines and inlet mains etc. Construction of the new WWTP is to allow for the BWWTP production and design capacity to increase from 166m^3/day

to 432m^3/day to treat a balance capacity throughput of 355m^3/day to service 1250 persons; expected population in 2028. The new Evaporation / Infiltration pond will be constructed to the southeast of the existing ponds. The proposed BWWTP is designed not to discharge untreated wastewater into the environment. Discharge of wastewater which has undergone primary and secondary treatment will occur through infiltration in the Tertiary and Evaporation / Infiltration ponds. Table 4 provides the upgraded BWWTP dimensions.

Table 4 BWTTP upgrade pond dimensions

	Lining	Width (m)	Length (m)	Area (m^2)	Depth (m)
Primary pond	GCL	58.0	40.0	2320	1.6 (raised)
Secondary pond 1		58.0	30.0	1740	1.5
Secondary pond 2		60.9	38.1	2320	1.2
Tertiary pond 1	Unlined	47.5	35.0	1662.5	1.1
Tertiary pond 2		47.5	23.0	1092.5	1.1
Tertiary pond 3		47.5	23.0	1092.5	1.1
Evaporation / Infiltration pond 1		Irregular		10000	1.0
Evaporation / Infiltration pond 2				5965	0.93
Evaporation / Infiltration pond 3				4540	0.78

Effluent targets for the BWWTP have been based on ANZECC 1997 guidelines. Table 5 provides the BWWTP effluent quality targets.

Table 5 BWWTP effluent quality targets

Effluent Targets		
BOD_5	30 mg/L	ANZECC (1997) Category C – secondary treatment for infiltration Appendix 6
TSS	40 mg/L	
TN	50 mg/L	
TP	12 mg/L	
Eschera coli	1000 cfu/100ml	WHO (2004) guideline
Helminth eggs	<1 egg/L	

Note: *E. coli* upper limit in ANZECC (1997) is 100,000 cfu/100mL

At minimum average July weather the treatment capacity will be 287.5kg BOD/ha/day. BOD reduction occurs largely in the Primary pond. The BWWTP loading rate for BOD of 150mg/L at 355m^3/day (53kg BOD/day) requires a primary pond area of 1852m^2. The existing pond area is approximately 4555m^2. The proposed divided primary pond area is 2320m^2 which can achieve a reduction in BOD concentration of 82.6%. The proposed new divided secondary pond 1 and 2 and the tertiary pond provide an additional area of 1745m^2, 2032m^2 and 4430m^2 respectively. These ponds provide further treatment of BOD with a removal efficiency of 99.8% total BOD. The BWWTP TN loading rate is 50mg/L and 355m^3/day which is 17.8kg TN/day; this is approximately equivalent to the effluent target. The removal of TN is a function of water temperate, pH and detention time. At 2028 average dry weather flows (355m^3/day) the detention time for the existing ponds is 37.8 days. This should achieve a reduction of 85% of TN loading. Current BWWTP TN inflow loading rate is less that the effluent target. Pathogen reduction is a function of water temperature and pond dimensions; both as a dispersion co-efficient and detention time. For the proposed BWWTP all ponds achieve over a 99.9% removal efficiency which is compliant with required discharge standards.

Table 6 provides the BWWTP design treatment capacity against effluent quality reported for each pond.

Table 6 BWWTP design treatment capacity against effluent quality reported for each pond

Pond	Parameter				
	BOD(mg/L)	TN(mg/L)	TP(mg/L)	*E.coli* cfu/100mL	Helminths ova/L
Influent	150	50.0	5.5	3.2E+06	100
Primary pond 1 (lined)	30.67	31.23		5.15E+05	0.34
Secondary pond 1(lined)	8.75	19.90		1.15E+05	<1
Secondary pond 2(lined)	2.25	12.59		1.75E+04	<1
Tertiary pond 1	1.30	8.11		3607	
Tertiary pond 2	0.90	5.29		1082	
Tertiary pond 3	0.63	3.45	4.1	350	<1
Effluent target	30	50	12	1000	<1

The Applicant proposes the following construction sequence to enable the continued use of the BWWTP while construction activities occur:

- Direct the incoming wastewater flow to the existing evaporation ponds;
- Pump out the Primary pond into the Evaporation / Infiltration pond and desludge, clean and check the integrity of the liner;
- Install compacted earth embankment wall in the existing Primary pond to create a reduced Primary pond and an additional Secondary pond;
- Raise top of embankments to achieve the minimum 500mm freeboard;
- Divert the inflow into the new lined Primary pond;
- Empty the Tertiary pond into the Evaporation / Infiltration pond;
- Desludge the Tertiary pond including vegetation removal;
- Remove the existing concrete baffle walls from the Tertiary ponds and construct the embankment to equally divide the Tertiary ponds into three ponds;
- Raise the top of embankments to 500mm freeboard;
- Install new Evaporation / Infiltration pond, including weir, with a minimum area of 10,000m^2.

Figure 1 Bidyadanga Aboriginal Community.

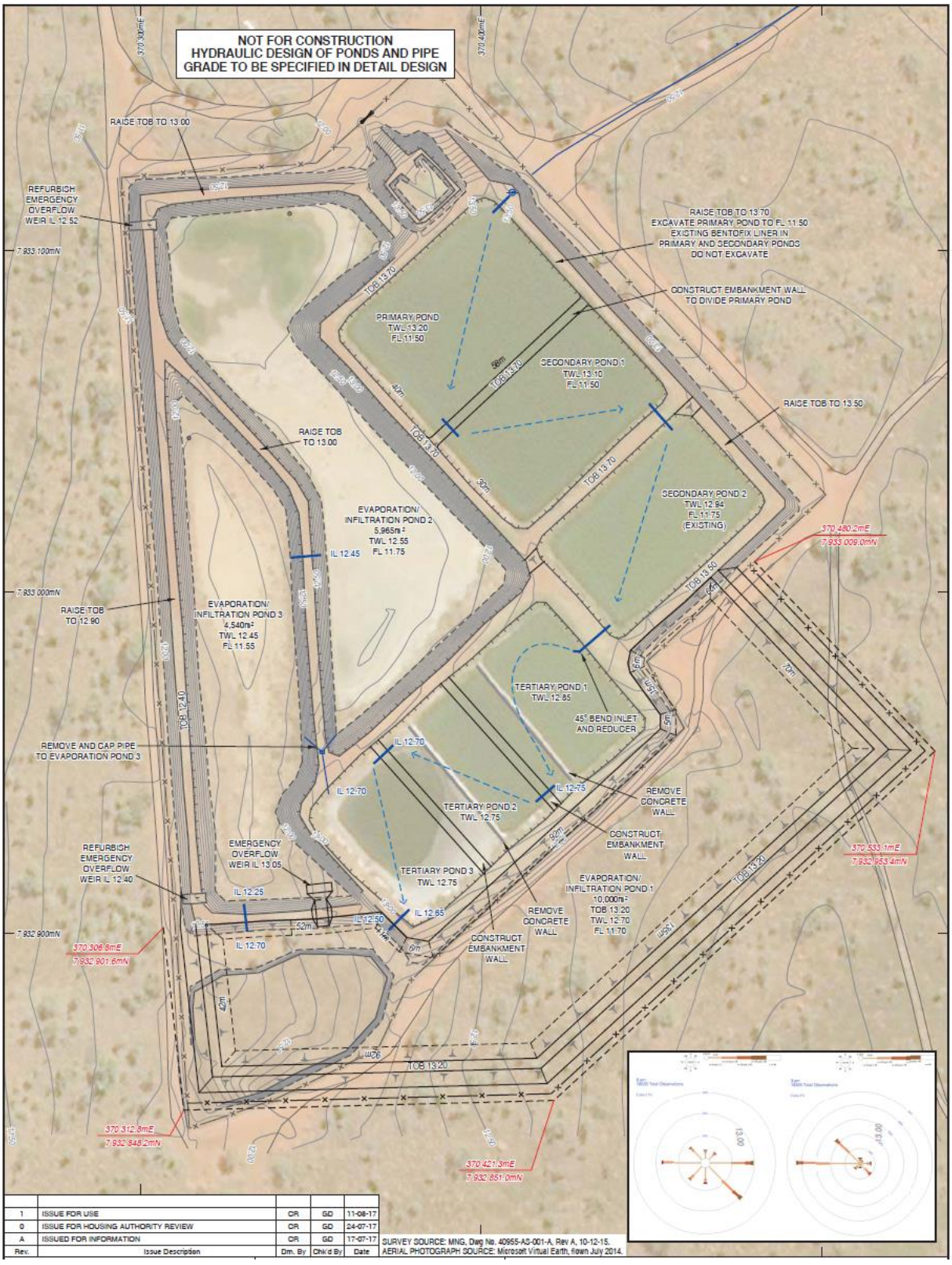

Figure 2 Existing and proposed new BWWTP

4.2 Infrastructure

The sewage facility infrastructure, as it relates to Category 54 activities, is detailed in Table 7 and with reference to the Site Plan.

Table 7 lists infrastructure associated with the prescribed premises category.

Table 7: Sewage facility Category 54 infrastructure

	Infrastructure	**Site Plan Reference**
	Prescribed Activity Category 54	
Wastewater Treatment Plant		
1	Primary pond	Attachment 1 Site Plan
2	Secondary pond 1	
3	Secondary pond 2	
4	Tertiary pond 1	
5	Tertiary pond 2	
6	Tertiary pond 3	
7	Evaporation / Infiltration pond 1	
8	Evaporation / Infiltration pond 2	
9	Evaporation / Infiltration pond 3	

5. Legislative context

5.1 Contaminated sites

The Premises appears to have no current classification status under the CS Act.

5.2 Other relevant approvals

5.2.1 Planning approvals

The Applicant identifies in the Application that the plan is compliant with Department of Planning / WAPC “Bidyadanga Layout Plan 3” and does not require further approvals.

The Shire of Broome submitted comments in a letter dated 19 April 2018 advising that as the works are to be undertaken by or on behalf of a public utility Development Approval is not required from the Shire and the works are consistent with the ‘Public Utility’ purpose designation applicable to SL-Lot 203 under the endorsed Bidyadanga Layout Plan

5.2.2 Department of Health

The Application identifies that the Applicant has submitted an Application to Construct and Install Apparatus for the Treatment of Sewage to the Department of Health. Approval is

pending.

5.3 Part V of the EP Act

5.3.1 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)*

5.3.2 Clearing

The Applicant applied for a concurrent Clearing Permit with the Works Approval Application.

On 30 November 2017 DWER wrote to the Applicant with the following advice regarding a Clearing Permit exemption:

DWER's Clearing Regulation functional area has provided advice that both upgrades above are likely to qualify for an exemption from requiring a clearing permit. Claiming the exemption means that there would be no further clearing assessment required under the works approvals which will expedite the assessment process significantly. If you wish to claim an exemption, can you please confirm compliance with the points below:

Under Regulation 5 item 1 of the Environmental Protection (Clearing of Native Vegetation) Regulations 2004 the clearing of up to 5 hectares of native vegetation for the lawful construction of a building or other structure is exempt. The criteria below are required to fit this exemption;

- *The proposed clearing is limited to 1.2 ha at each site;*
- *All relevant building approvals must be obtained prior to commencing the clearing;*
- *The clearing is to be limited to the extent necessary for the construction;*
- *This exemption does not extend to riparian vegetation which includes vegetation growing on the edges of a stream, river or wetland; and*
- *This exemption does not does not apply within an environmentally sensitive area (ESA).*

On 7 December 2017 the Applicant confirmed that they would withdraw the Clearing Application and use the exemption to clear and that the following items will be complied with:

- *All relevant building approvals must be obtained prior to commencing the clearing;*
- *The clearing is to be limited to the extent necessary for the construction;*
- *This exemption does not extend to riparian vegetation which includes vegetation growing on the edges of a stream, river or wetland; and*
- *This exemption does not does not apply within an environmentally sensitive area (ESA).*

6. Modelling and monitoring data

6.1 Monitoring of discharges to land

The Application reports one sample frequency undertaken on 27 March 2017. Two wastewater samples were collected and analysed; raw water at the BAC Secondary Pump Station and treated effluent at the Tertiary pond. Table 8 provides an overview of the monitoring results.

Table 8 BWWTP 27/3/2017 Monitoring results

Parameter	Influent sample	Effluent sample	Effluent target
BOD_5	130mg/L	14mg/L	30mg/L
TSS	72 mg/L	120mg/L	40mg/L
Ammonia – N	36 mg/	0.02mg/L	-
TN	46mg/L	24mg/L	50mg/L
TP	5.3mg/L	5.1mg/L	12mg/L
E. coli	3,200,000cfu/100mL	460cfu/100mL	1000cfu/100mL
Hookworm Ova Nematode Larva	4 57	0 <1	<1 egg / L

Note: Helminth egg positive results as nematode larva; no Hookworm detected.

Key finding:

The Delegated Officer has reviewed the information regarding Monitoring and has found:

1. *Applicant is proposing to refurbish the existing WWTP and construct a new Evaporation / Infiltration pond.*
2. *The Primary and Secondary ponds are GCL lined ponds and discharges to the environment will only occur from the three Tertiary and Evaporation / Infiltration ponds.*
3. *Effluent samples indicate treated effluent will be less than proposed WWTP design effluent targets (Table 6).*
4. *The construction is to allow a WWTP production and design capacity of 432m^3/day to treat a balance capacity throughput of 355m^3/day to service 1250 persons which is the expected population in 2028.*
5. *All treated wastewater is to be fully contained within the proposed BWWTP including allowance for a 1:10 ARI rainfall event.*

7. Consultation

The Application was advertised on 29 January 2018 seeking any public comment. No comments were received.

The Shire of Broome was notified of the Application on 7 March 2018. The Shire of Broome submitted comments in a letter dated 19 April 2018 advising that as the works are to be undertaken by or on behalf of a public utility Development Approval is not required from the Shire and the works are consistent with the 'Public Utility' purpose designation applicable to SL-Lot 203 under the endorsed Bidyadanga Layout Plan and on this basis the Shire does not wish to register any objections to the works approval application.

8. Location and siting

8.1 Siting context

The Premises is located on Lot 499 Crown Reserve 38399 BAC; 350m south west of BAC. The land surrounding the BWWTP is relatively flat and gently slopes in a westerly direction towards the Indian Ocean located 2.5km to the west and the BWWTP is surrounded by native vegetation on all sides. And surface flow is directed west towards the Ocean.

8.2 Residential and sensitive Premises

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

Table 9: Receptors and distance from activity boundary

Sensitive Land Uses	Distance from Prescribed Activity
Residential Premises	320m north east

8.3 Specified ecosystems

Specified ecosystems are areas of high conservation value and special significance that may be impacted as a result of activities at or Emissions and Discharges from the Premises. The distances to specified ecosystems are shown in Table 10. Table 10 also identifies the distances to other relevant ecosystem values which do not fit the definition of a specified ecosystem.

The table has also been modified to align with the *Guidance Statement: Environmental Siting.*

Table 10: Environmental values

Specified ecosystems	Distance from the Premises
REWI Act Groundwater Areas	Premises lies within Canning Kimberley Proclaimed area – La Grange Groundwater Sub-area Management Plan (Draft)
Biological component	**Distance from the Premises**
Threatened/Priority Fauna	900 north east – Schedule 3 Mammal – rare or likely to become extinct.

8.4 Groundwater and water sources

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

Table 11: Groundwater and water sources

Groundwater and water sources	Distance from Premises	Environmental value
Coastal waterline	1720 west Indian Ocean	Recreational
Area subject to Inundation	1430 west Indian Ocean tidal zone	Recreational
Groundwater	Depth to groundwater encountered at approximately 20 - 25mbgl in Bidyadanga (based on information – WIN Groundwater Sites) Two bores located 675m and 790m north east of the Premises based on available GIS dataset –WIN Groundwater Sites).	Water is used for potable use.

The land surrounding the BWWTP is relatively flat and gently slopes in a westerly direction towards the Indian Ocean located 2.5km to the west and surface flow is directed west towards the Ocean; away from the Community. Bidyadanga resides within a Cyclone prone region but has no recorded issues of flooding; however the area is likely prone to inundation from extreme rainfall events.

8.5 Soil type

DWER's GIS identifies the soil class Pindan country--gently undulating sand plain with a few small rocky sandstone residuals; no external drainage: chief soils are red earthy sands (Uc5.21), with associated (Uc5.11) and hummocks of siliceous sands (Uc1.23). Occurs on sheet(s): 6,9,10

As part of the Application a geotechnical investigation was conducted by Local Geotechnics (February 2016) for the purpose of the BWWTP upgrade. The investigation included 12 test pits (TP27-TP38) in the planned WWTP expansion area; refer to figure 4 for an overview of the pit locations. All test pits where drilled to the target depth of 1.5m. All test pits except two (TP29-TP34) were slightly moist at 1.5m depth. No water was encountered in any of the test pits.

The investigation report provided the following information:

- Desk top review of Lagrange geological maps indicates Qz; Red sand, fine to medium, minor silt, Aeolian soil profiles.
- The test pits TP27-TP38 soil profile around the WWTP consist of Silty SAND fine to medium grained and low plasticity. Minor changes to Silty GRAVEL are present at approximately 0.5m depth (TP26 and TP340.
- Characteristic Surface Movement was classified "Class S" in accordance with AS 2870-2011, "*slightly reactive clayey or silty sand, which will cause slight ground*

movement due to moisture content variation" and includes a characteristic surface movement, Ys of 0<Ys<20mm.

- Permeability testing results indicate higher infiltration rates in a westerly direction; refer to Table 12.

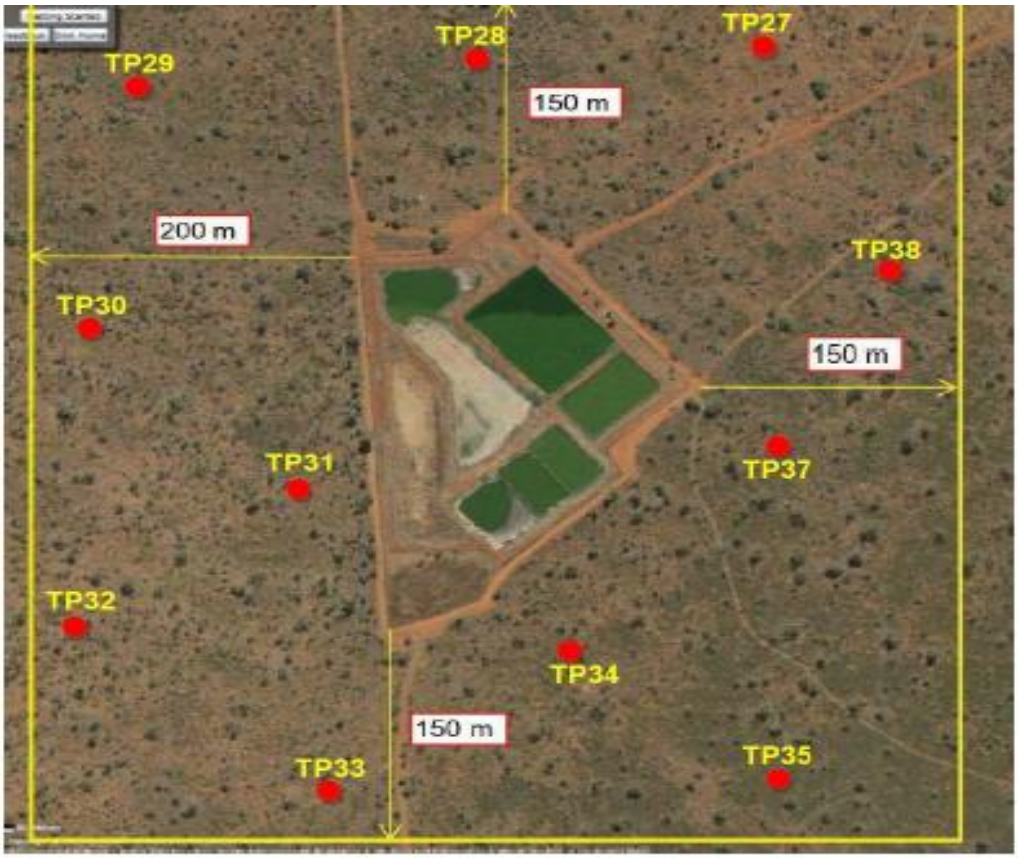

Figure 4 Test pit locations

Table 12: Permeability testing – Constant Head Permeability Test Method

Falling Head Permeability	TP30 (0-1.5m)	TP33 (0-1.5m)	TP38 (0-1.5m)
Permeability (K_{20}) (m/s)	2.049×10^{-7}	1.147×10^{-7}	2.405×10^{-7}
Permeability (K_{20}) (mm/day)	17.7	9.9	20.8

Pindan soils are predominately deep, red, sandy earths and are rapidly drained to well drained. The uniform deep red soil profile that extends to the Broome Sandstone indicate that there is good aeration and drainage and any overflow or infiltration that seep into the soil will be filtered through physical, chemical and biological process to remove constituents in the effluent.

9. Risk assessment

9.1 Determination of emission, pathway and receptor

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

To establish a Risk Event there must be an emission, a receptor which may be exposed to that emission through an identified actual or likely pathway, and a potential adverse effect to the receptor from exposure to that emission. Where there is no actual or likely pathway and/or no receptor, the emission will be screened out and will not be considered as a Risk Event. In addition, where an emission has an actual or likely pathway and a receptor which may be adversely impacted, but that emission is regulated through other mechanisms such as Part IV of the EP Act, that emission will not be risk assessed further and will be screened out through Table 13.

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

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

Risk Events						Continue to detailed Risk Assessment	Reasoning
Sources/Activities		Potential Emissions	Potential Receptors	Potential Pathway	Potential Adverse Impacts		
Construction, mobilisation and positioning of infrastructure	Vehicle movements when constructing and refurbishing new ponds	Noise from movement of heavy and light vehicles	Residential premises: 320m north east	Air / wind dispersion	Amenity impacts causing nuisance	No	The construction works are scheduled for 8 weeks only. Hours of work are 7am to 5pm excluding Sunday and Public holidays. Community will be advised prior to works commencing. Noise Management Plan submitted which states as part of Tender the Contractor must comply with the EP Noise Regs. The Delegated Officer has considered the separation distance between the source and receptors as a guide to inform the risk of noise emissions as not foreseeable. Noise can be adequately regulated by the EP Noise Regs.

Risk Events						Continue to detailed Risk Assessment	Reasoning
Sources/Activities		Potential Emissions	Potential Receptors	Potential Pathway	Potential Adverse Impacts		
		Dust from movement of heavy and light vehicles	Residential premises: 320m north east	Air / wind dispersion	Health and amenity impacts - Potential suppression of photosynthetic and respiratory functions	No	The Applicant will employ a water cart to manage dust lift off and all areas will be watered down prior to excavation activities; so dust emissions will be limited. Dust management is stipulated as part of Tender for the Contractor The Delegated Officer has considered the separation distance between the source and receptors as a guide to inform the risk of dust emissions as not foreseeable. Dust can be adequately regulated by section 49 of the EP Act.

Table 14: 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**		
Wastewater Treatment Plant	Operation of treatment ponds	Noise from operation of ponds and movement of light vehicles	Residential premises: 320m north east	Air / wind dispersion	Amenity impacts causing nuisance	No	There will only be very limited access to the BWWTP so vehicle movement will be restricted and infrequent. The Delegated Officer considers the separation distance between the source and receptors as adequate to inform the risk of noise emissions as not foreseeable. Noise can be adequately regulated by the EP Noise Regs.
		Dust from movement of vehicles	Residential premises: 320m north east	Air / wind dispersion	Health and amenity impacts - Potential suppression of photosynthetic and respiratory functions	No	There will only be very limited access to the BWWTP so vehicle movement will be restricted and infrequent. The Delegated Officer considers the separation distance between the source and receptors as adequate to inform the risk of dust emissions as not foreseeable. Dust can be adequately regulated by section 49 of the EP Act.
	Seepage	Treated wastewater Nutrients from ponds to groundwater	Groundwater dependent ecosystems, subterranean fauna Depth to groundwater encountered at approximately 20-25mbgl	Direct discharge	Land and groundwater – direct infiltration into soil and groundwater.	Yes	See section 9.4
	Treatment of sewage	Odour	Residential premises: 320m north east	Air / wind dispersion	Amenity impacts causing nuisance	No	The Delegated Officer considers the separation distance between the source and receptors as adequate to inform the risk of odour emissions as not foreseeable. Odour can be adequately regulated by section 49 of the EP Act.

Risk Events						Continue to detailed risk assessment	Reasoning
Sources/Activities		Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts		
	Sewage pond	Overtopping of ponds resulting in sewage discharge to land	Vegetation adjacent to discharge area	Direct discharge land and surface waters	Soil contamination inhibiting vegetation growth and survival Surface water contamination	Yes	See section 9.5

9.2 Consequence and likelihood of risk events

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

Table 15: Risk rating matrix

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

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

Table 4: 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.

9.3 Acceptability and treatment of Risk Event

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

Table 17: Risk treatment table

Rating of Risk Event	Acceptability	Treatment
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.

9.4 Risk Assessment – Seepage of treated effluent

9.4.1 Description of Operation- Seepage of treated effluent

The BWWTP will receive untreated sewage from the BAC sewerage infrastructure for treatment at the WWTP. Seepage of treated effluent will occur within the Tertiary and Evaporation / Infiltration ponds. Seepage of treated effluent has the potential to infiltrate into groundwater beneath the WWTP. Any seepage of treated effluent has the potential to increase nutrients into the environment which can cause degradation of the environment or nitrification.

9.4.2 Identification and general characterisation of emission

The type of emission is direct discharge of treated wastewater from the ponds. The WWTP has a new design and production capacity of 432m^3/day to service a throughput of 355m^3/day with a large percentage of this volume infiltrating into the environment which would constitute treated sewage with low nutrient concentration(s). The frequency of seepage will be continuously daily.

9.4.3 Description of potential adverse impact from the emission

Alteration to groundwater that has the potential to disrupt ecological processes of groundwater with excess nutrients. Soil contamination may inhibit vegetation growth and cause health impacts to fauna.

9.4.4 Criteria for assessment

Relevant land and groundwater quality criteria include:

- National Environment Protection (Assessment of Site Contamination) Measure 1999;
- ANZECC & ARMCANZ (2000) – freshwater and marine waters criteria; and
- DoH 2011 – non-potable groundwater use.

9.4.5 Applicant controls

The BWWTP has a new design and production capacity of 432m^3/day to service a throughput of 355m^3/day. The capacity of the new BWWTP has been designed to cater for expected 2028 population number inflow and a 1:10 ARI rainfall event including a freeboard of 500mm.

9.4.6 Key findings

The Delegated Officer has reviewed the information regarding seepage and has found:

1. The WWTP has a new design and production capacity of 432m^3/day to service a throughput of 355m^3/day.
2. WWTP design includes inflow for a 1:10 ARI rainfall event including a freeboard of 500mm.
3. Treated effluent will only be discharged from the Tertiary and Evaporation / Infiltration ponds which will be refurbished to create an open flow treatment system to increase treatment capacity and efficiency.
4. The WWTP design indicates treated wastewater parameters will be greatly improved over existing treatment and markedly less than the respective effluent targets (Table 6).
5. Permeability testing results indicate higher infiltration rates in a westerly direction. No test pits encountered groundwater.
6. Depth to groundwater is indicated to be between 20-25mbgl.

9.4.7 Consequence

When seepage occurs, then the Delegated Officer has determined that the impact of seepage will be low level on-site impacts, minimal off-site impacts, not detectable off-site wider scale impacts with Specific Consequence Criteria likely to be met. Therefore, the Delegated Officer considers the consequence of seepage to be **Minor**.

9.4.8 Likelihood of Risk Event

The Delegated Officer has determined that the likelihood of seepage could occur at some time. Therefore, the Delegated Officer considers the likelihood of Risk Event to be **Possible.**

9.4.9 Overall rating of seepage

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

9.5 Risk Assessment – Overtopping of ponds

9.5.1 Description of Operation- Overtopping of ponds

The ponds will receive untreated sewage from the BAC sewerage infrastructure for treatment at the WWTP. Overtopping of the ponds could occur during normal operating procedures and in extreme rainfall events (cyclones and large storms) which occur in the region. Any overtopping has the potential to directly discharge untreated sewage into the vegetation adjacent to the treatment pond(s). Any overflow of untreated sewage has the potential to increase nutrients into the environment which can cause degradation of the environment or nitrification.

9.5.2 Identification and general characterisation of emission

The type of emission is direct discharge of untreated/treated wastewater from the ponds. The BWWTP has a new design and production capacity of 432m^3/day to service a throughput of 355m^3/day and depending on the type of incident (cyclone for example) a large percentage of this volume could overtop into the environment which would constitute untreated sewage high in nutrient concentration(s). It is however anticipated that the frequency of overtopping will be very low to rare and generally only for a short duration, maximum of weeks in a cyclone for example if it occurred, and that the wastewater would be heavily diluted.

9.5.3 Description of potential adverse impact from the emission

Soil contamination may inhibit vegetation growth and cause health impacts to fauna. Potential impacts include eutrophication of fresh waters if untreated sewage was to enter the freshwater environment.

9.5.4 Criteria for assessment

Relevant land and surface water quality criteria include:

- National Environment Protection (Assessment of Site Contamination) Measure 1999;
- ANZECC & ARMCANZ (2000) – freshwater and marine waters criteria; and
- DoH 2011 – non-potable groundwater use.

9.5.5 Applicant controls

The BWWTP has a new design and production capacity of 432m^3/day to service a throughput of 355m^3/day. The capacity of the new BWWTP has been designed to cater for expected 2028 population number inflow and a 1:10 ARI rainfall event including a freeboard of 500mm.

9.5.6 Key findings

The Delegated Officer has reviewed the information regarding overtopping and has found:

1. Bulk storage capacity for 2028 population includes upgrading the WWTP to a new production and design capacity of 455m^3/day to service a 355m^3/day throughput.
2. WWTP design includes inflow for a 1:10 ARI rainfall event including a freeboard of 500mm.
3. The WWTP design indicates treated wastewater parameters will be improved over existing treatment and markedly less than the respective effluent targets

(Table 6).

4. In extreme rainfall events (1 in 10 year 72 hour rainfall event) it is unlikely that overflow from the ponds will reach the Ocean 1720m west.

5. Bidyadanga resides within a Cyclone prone region but has no recorded issues of flooding; however the area is likely prone to inundation from extreme rainfall events.

9.5.7 Consequence

If overtopping occurs, then the Delegated Officer has determined that the impact of overtopping will be low level on-site impacts, minimal off-site impacts, not detectable off-site wider scale impacts with Specific Consequence Criteria likely to be met. Therefore, the Delegated Officer considers the consequence of overtopping to be **Minor**.

9.5.8 Likelihood of Risk Event

The Delegated Officer has determined that the likelihood of overtopping could occur at some time. Therefore, the Delegated Officer considers the likelihood of Risk Event to be **Possible.**

9.5.9 Overall rating of overtopping

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

9.6 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 18 below. Controls are described further in section 11.

Table 5: Risk assessment summary

	Description of Risk Event			**Applicant controls**	**Risk rating**	**Acceptability with controls (conditions on instrument)**
	Emission	**Source**	**Pathway/ Receptor (Impact)**			
1.	Seepage of wastewater	Sewage ponds	Infiltration to land and groundwater environment causing impacts on soil /vegetation and water quality.	Infrastructure and management controls.	Minor consequence Possible **Medium risk**	Acceptable subject to proponent controls conditioned / outcomes based controls

	Description of Risk Event			Applicant controls	Risk rating	Acceptability with controls (conditions on instrument)
	Emission	**Source**	**Pathway/ Receptor** **(Impact)**			
2.	Overtopping of wastewater	Sewage ponds	Overtopping to land and aquatic environment causing impacts on soil /vegetation and water quality.	Infrastructure and management controls.	Minor consequence Possible **Medium risk**	Acceptable subject to proponent controls conditioned / outcomes based controls

10. Regulatory controls

A summary of regulatory controls determined to be appropriate for the Risk Event is set out in Table 19. The risks are set out in the assessment in section 9 and the controls are detailed in this section. DWER will determine controls having regard to the adequacy of controls proposed by the Applicant. The conditions of the Licence will be set to give effect to the determined regulatory controls.

Table 6: Summary of regulatory controls to be applied

		Controls (references are to sections below, setting out details of controls)
		10.1.1 Infrastructure and equipment
Risk Items (see risk analysis in section 9)	1. Seepage	●
	1. Overtopping	●

10.1 Works Approval and Licence conditions

Condition 1 of the Works Approval is to allow the Works Approval Holder to refurbish the existing WWTP and construct the new Evaporation/Infiltration pond and related pipework and weirs etc according to the specification outlined in condition 1. Works Approval Condition 2 allows for minor departures if required. Works Approval Condition 3 requires a construction compliance document be submitted by the Works Approval Holder to the CEO to ensure construction occurred with no material defects. Works Approval condition 4 requires the construction compliance document to identify and departures for works consistent with condition 2.

The Applicant has not applied for a Licence, however this assessment indicates the following conditions may be applicable in the event an application is submitted:

10.1.1 Infrastructure and equipment

Licence condition to ensure infrastructure and equipment specified is maintained in good working order.

Licence condition that authorises sewage only to be accepted onto the premises with specific waste acceptance limits.

11. Determination of Works Approval and Licence conditions

The conditions in the issued Works Approval have been determined in accordance with the *Guidance Statement: Setting Conditions*.

The *Guidance Statement: Licence Duration* has been applied and the issued licence expires in 3 years from date of issue.

Table 20 provides a summary of the conditions to be applied to this works approval.

Table 7: Summary of conditions to be applied

Condition Ref	Grounds
Infrastructure and Equipment 1, 2, 3 and 4	These conditions are valid, risk-based and contain appropriate controls.
Emissions 5	This condition is valid, risk-based and consistent with the EP Act.
Record-keeping 6 and 7	These conditions are valid and are necessary administration and reporting requirements to ensure compliance.

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

12. Applicant's comments

The Applicant was provided with the draft Decision Report and draft issued Works Approval on 16 May 2018. The Applicant responded with one comment regarding a typographical error on 29 May 2018. DWER has made the change as requested.

13. Conclusion

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

Stephen 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.	Desktop Environmental Risk Assessment, Bidyadanga Wastewater Treatment Pond Upgrade, Prepared for Housing Authority, August 2017, Anders Environmental Consulting	Application	DWER records (A1561931)
2.	DER, July 2015. *Guidance Statement: Regulatory principles.* Department of Environment Regulation, Perth.	DER 2015a	accessed at www.dwer.wa.gov.au
3.	DER, October 2015. *Guidance Statement: Setting conditions.* Department of Environment Regulation, Perth.	DER 2015b	
4.	DER, August 2016. *Guidance Statement: Licence duration.* Department of Environment Regulation, Perth.	DER 2016a	
5.	DER, November 2016. *Guidance Statement: Risk Assessments*. Department of Environment Regulation, Perth.	DER 2016b	
6.	DER, November 2016. *Guidance Statement: Decision Making*. Department of Environment Regulation, Perth.	DER 2016c	

Attachment 1: Site Plan