



Application for Works Approval

Division 3, Part V *Environmental Protection Act 1986*

Works Approval Number W6761/2022/1

Applicant Department of Communities

File Number DER2022/000642

Premises Jigalong Wastewater Treatment Plant
Jigalong Aboriginal Community

Part of Lot 500 on Deposited Plan 406087
Crown Reserve 41265

Date of Report 17 March 2023

Status of Report Final

Steve Checker
Manager Waste Industries
Delegated Officer
under section 20 of the *Environmental Protection Act 1986*

Table of Contents

1. Definitions of terms and acronyms	1
2. Purpose and scope of assessment	3
2.1 Application details	3
3. Background	4
4. Overview of Premises	4
4.1 Operational aspects	4
4.2 Infrastructure	6
5. Legislative context	1
5.1 Contaminated sites	1
5.2 Other relevant approvals	1
5.2.1 Planning approvals	1
5.2.2 Department of Health	1
5.3 Part V of the EP Act	1
5.3.1 Applicable regulations, standards and guideline	1
5.3.2 Works approval and licence history	1
5.3.3 Key and recent works approvals	2
5.3.4 Clearing	2
6. Modelling and monitoring data	2
6.1 Monitoring of discharges to land	2
7. Consultation	3
8. Location and siting	3
8.1 Siting context	3
8.2 Residential and sensitive receptors	3
8.3 Specified ecosystems	3
8.4 Groundwater and water sources	4
8.5 Soil type	4
9. Risk assessment	6
9.1 Determination of emission, pathway and receptor	6
9.2 Consequence and likelihood of risk events	10
9.3 Acceptability and treatment of Risk Event	11
9.4 Risk Assessment – Seepage from unlined Evaporation / Infiltration ponds	11
9.4.1 Description of Seepage	11
9.4.2 Identification and general characterisation of emission	11
9.4.3 Description of potential adverse impact from the emission	11

9.4.4	Criteria for assessment.....	12
9.4.5	Applicant controls.....	12
9.4.6	Key findings.....	12
9.4.7	Consequence.....	12
9.4.8	Likelihood of Risk Event.....	12
9.4.9	Overall rating of Seepage.....	12
9.5	Risk Assessment – Overtopping.....	12
9.5.1	Description of Operation- Overtopping of ponds.....	13
9.5.2	Identification and general characterisation of emission.....	13
9.5.3	Description of potential adverse impact from the emission.....	13
9.5.4	Criteria for assessment.....	13
9.5.5	Applicant controls.....	13
9.5.6	Key findings.....	13
9.5.7	Consequence.....	14
9.5.8	Likelihood of Risk Event.....	14
9.5.9	Overall rating of overtopping.....	14
9.6	Summary of acceptability and treatment of Risk Events.....	14
10.	Regulatory controls.....	14
10.1	Works Approval controls.....	15
10.1.1	Infrastructure and equipment.....	16
11.	Determination of Works Approval conditions.....	16
12.	Applicant’s comments.....	16
13.	Conclusion.....	16
	Appendix 1: Key documents.....	18
	Attachment 1: Site Plan.....	19
	Attachment 2: Clearing permit assessment report.....	20
	Attachment 3: Clearing permit plan.....	23

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
ADWF	Average Dry Weather Flow
AER	Annual Environment Report
ANZECC	Australian and New Zealand Environment and Conservation Council (ANZECC) 1997 <i>Australian Guidelines for Sewerage systems, Effluent Management</i> , National Water Quality Management Strategy.
AWWF	Average Wet Weather Flow
BOD	Biochemical Oxygen Demand
Category/ Categories/ Cat.	Categories of Prescribed Premises as set out in Schedule 1 of the EP Regulations
CS Act	<i>Contaminated Sites Act 2003 (WA)</i>
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 <i>Public Sector Management Act 1994</i> and designated as responsible for the administration of Part V, Division 3 of the EP Act.
DWER	Department of Water and Environmental Regulation 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 <i>Public Sector Management Act 1994</i> and is responsible for the administration of the <i>Environmental Protection Act 1986</i> along with other legislation.
EPA	Environmental Protection Authority
EP Act	<i>Environmental Protection Act 1986 (WA)</i>

EP Regulations	<i>Environmental Protection Regulations 1987 (WA)</i>
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999 (Cth)</i>
GCL	Geosynthetic clay liner
HDPE	High-density polyethylene
JAC	Jigalong Aboriginal Community
JWWTP	Jigalong Wastewater Treatment Plant
m ³	cubic metres
Minister	the Minister responsible for the EP Act and associated regulations
NEPM	National Environmental Protection Measure
Noise Regulations	<i>Environmental Protection (Noise) Regulations 1997 (WA)</i>
Occupier	has the same meaning given to that term under the EP Act.
Prescribed Premises	has the same meaning given to that term under the EP Act.
Premises	refers to the premises to which this Decision Report applies, as specified at the front of this Decision Report
Primary Activities	as defined in Schedule 2 of the Revised Licence
Risk Event	As described in <i>Guidance Statement: Risk Assessment</i>
RIWI Act	Rights in Water and Irrigation Act 1914
SoEP	Shire of East Pilbara
TN	Total Nitrogen
TP	Total Phosphorus
TSS	Total Suspended Solids
UDR	<i>Environmental Protection (Unauthorised Discharges) Regulations 2004 (WA)</i>
WWTP	Wastewater Treatment Plant
mg/L	milligrams per litre

2. Purpose and scope of assessment

The Applicant has applied for a works approval to construct the JWWTP on Part of Lot 500 on Deposited Plan 406087, Crown Reserve 41265, JAC.

JAC has an existing WWTP located 750m to the north of the Community which has never been licensed under Part V of the EP Act. The Applicant intends to construct the new JWWTP 1.5km south of the Community.

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 113m³/day to treat a balance capacity throughput of 91.4m³/day to service 404 persons which is the expected population in 2028.

The Applicant was granted Works Approval W6234/2019/1 (W6234) on 14 August 2019 to construct the WWTP. The Works Approval Holder (Applicant) did not undertake any construction works under W6234 and W6234 expired on 14 August 2022. Construction works are now scheduled for March 2023 but because W6234 had expired prior to the Applicant submitting a works approval amendment to amend (extend) the expiry date under W6234 to allow these construction works; a new Works Approval Application is required.

The Applicant has also applied for a Clearing Permit to clear 9.6 hectares; the Clearing Permit is provided in Attachment 2 with relevant clearing conditions and map in the Works Approval. The Clearing Permit was assessed and granted under the original works approval W6234.

2.1 Application details

On 22 October 2022, the applicant submitted an application for a works approval to the department under section 54 of the Environmental Protection Act 1986 (EP Act).

The application is to undertake construction works relating to the JWWTP at the premises.

The premises relates to the category 54 Sewage facility and assessed production and design capacity (P&DC) under Schedule 1 of the Environmental Protection Regulations 1987 (EP Regulations) which are defined in works approval W6761/2022/1. The infrastructure and equipment relating to the premises category and any associated activities which the department has considered in line with Guideline: Risk Assessments (DWER 2020) are outlined in works approval W6761/2022/1.

The construction is to allow a WWTP production and design capacity of 113m³/day to treat a balance capacity throughput of 91.4m³/day to service 404 persons which is the expected population in 2028. The Applicant intends to construct the new JWWTP as follows:

- HDPE lined earth embankment Primary Pond – depth 1.8m;
- Two HDPE lined earth embankment Secondary Ponds in series – depth 1.5m;
- Two earth embankment Evaporation / Infiltration ponds – depth 1.0m;
- All ponds to provide 400mm freeboard provision;
- Concrete overflow weir at end of Evaporation / Infiltration Pond for greater than 1:10 ARI rainfall event; and
- GCL lined septage drying bed which drains to Primary Pond inlet.

It should be noted that this new Application does not propose to make any changes to the WWTP – it is simply a new Application because W6234 expired. As there are no changes proposed for the WWTP under this Application, the risk assessment undertaken under W6234 is sufficient for the purposes of this Application and therefore the risk assessment from W6234 has been completed (transferred) in the current format. The Works Approval has no new conditions but has been updated to the current template.

The Applicant has also applied for a Clearing Permit to clear 9.6 hectares; the Clearing Permit is provided in Appendix 2 with relevant clearing conditions and map in the Works Approval.

3. Background

The Applicant has applied for a Category 54 Sewage facility works approval to construct the JWWTP at Part of Lot 500 JAC.

Table 2 lists the prescribed premises categories that have been applied for.

Table 2: 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	113m ³ /day

4. Overview of Premises

4.1 Operational aspects

The new JWWTP design is based on an evaluated current population of 300 people with a compounding growth for the next 10 years to 404 people – 2028 population. JAC is located 100km east of Newman on the western edge of the Great Sandy Desert (refer to Figure 1). The new JWWTP is located 1.5km south of the community. The existing WWTP is located 750m to the north of JAC but also receives desalination brine from the JAC water treatment plant. Once the new JWWTP is constructed the existing WWTP will be decommissioning and converted into Evaporation ponds for the evaporation of desalination brine only from the JAC drinking water treatment plant. The Applicant intends to construct the new JWWTP as follows:

- HDPE lined earth embankment Primary pond – depth 1.8m;
- Two HDPE lined earth embankment Secondary Ponds in series – depth 1.5m;
- Two earth embankment Evaporation / Infiltration ponds – depth 1.0m;
- All ponds to provide 400mm freeboard provision;
- Concrete overflow weir at end of Evaporation / Infiltration pond for greater than 1:10 ARI rainfall event; and
- GCL lined sludge drying bed which drains to Primary pond inlet.

The construction is to allow a WWTP production and design capacity of 113m³/day (AWWF) to treat a balance capacity throughput of 91.4m³/day (ADWF) to service 404 persons which is the expected population in 2028. The full scale of the JWWTP was designed for 827 persons at a P&DC for AWWF at 232.8 m³/day and ADWF at 187.7m³/day and a future Evaporation /

Infiltration Pond area allocated (Evaporation Pond 3) but this pond is not included in the works approval application. Figure 2 provides an overview of the new JWWTP (excluding Evaporation / Infiltration Pond 3 as above).

All the ponds, except for the two Evaporation / Infiltration ponds, at the new JWWTP will be fully HDPE lined and will meet a permeability of 1×10^{-9} m/s or less. HDPE liner shall be either 1.5mm or 2mm textured liner. The Evaporation / Infiltration ponds will be HDPE lined only on the internal sides of the embankments to prevent weed growth. The sludge drying bed will be GCL lined, and any liquid fraction will be directed to the Primary Pond for treatment. There will also be associated construction of pipelines, inlet mains and access track and fence to surround the WWTP. Table 3 provides the JWWTP dimensions.

Table 3: JWWTP upgrade pond dimensions

	Lining	Width (m)	Length (m)	Depth (m)	Evaporation area (m ²)	Volume (m ³)
Primary pond	HDPE	40	85	1.8	3106	4557
Secondary pond 1		20	40	1.5	662	650
Secondary pond 2		20	40	1.5	662	650
Evaporation / Infiltration pond 1	Unlined floor	65.8	110	1.0	6822	6318
Evaporation / Infiltration pond 2		70.5	110	1.0	7005	6496
Total					18,256	18,671
Sludge drying bed	GCL	15	20	0.25	-	74

A water balance has been completed for the proposed new JWWTP using meteorological data for annual average rainfall of 358mm year and an annual evaporation rate used for design of 2161.6mm. Using the ADWF of 91.4m³/day an evaporation area of 16,448m² would be required to dispose of the full wastewater volume. The evaporation area provided by all ponds is 18,256m² (Table 3). Figure 3 provides average annual water balance.

Effluent targets for the JWWTP have been submitted by the Applicant based on ANZECC 1997 guidelines. Table 4 provides the JWWTP effluent quality targets.

Table 4: JWWTP 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	
<i>Escheria coli</i>	1005 cfu/100ml	WHO (2004) guideline
Helminth eggs	<1 egg/L	

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

The Applicant has conducted a sensitivity analysis for the JWWTP design and determined that adequate treatment can be achieved for wastewater at the proposed wastewater load. Table 5 provides the JWWTP design treatment capacity against effluent quality reported for each pond – it is noted in Table 5 that the parameter influent design is based on AWWF of 232.8 m³/day

but the results in Table 5 indicate treatment is acceptable for the Application AWWF of 113m³/day given all WWTP parameter treatment values are less than Effluent targets.

Table 5: JWWTP design treatment capacity against effluent quality reported for each pond.

Pond	Parameter				
	BOD(mg/L)	TN(mg/L)	TP(mg/L)	<i>E.coli</i> cfu/100mL	Helminths ova/L
Influent	116	52	6.0	1.5E+06	10
Primary pond	5.25	37.8		1.97E+05	<1
Secondary pond 1	2.55	29.9		8.44E+04	<1
Secondary pond 2	1.23	23.6		3.62E+04	<1
Evaporation pond 1 & 2	0.0	14.1		1.22E+03	<1
Effluent targets	30	50	12	1.0E+05	<1

4.2 Infrastructure

The sewage facility infrastructure, as it relates to Category 54 activities, is detailed in Table 6 and with reference to the Site Plan.

Table 6 lists infrastructure associated with each prescribed premises category.

Table 6: Sewage facility Category 54 infrastructure

	Infrastructure	Site Plan Reference
	Prescribed Activity Category 54	
Wastewater Treatment Plant		
1	Primary pond 1	Attachment 1 Site Plan
2	Secondary pond 1	
3	Secondary pond 2	
4	Evaporation pond 1	
5	Evaporation pond 2	
6	Sludge Drying bed	
	Other activities	
1	Fence to enclose WWTP, access track	Attachment 1 Site Plan
2	Clearing of Native Vegetation	Attachment 2 and 3

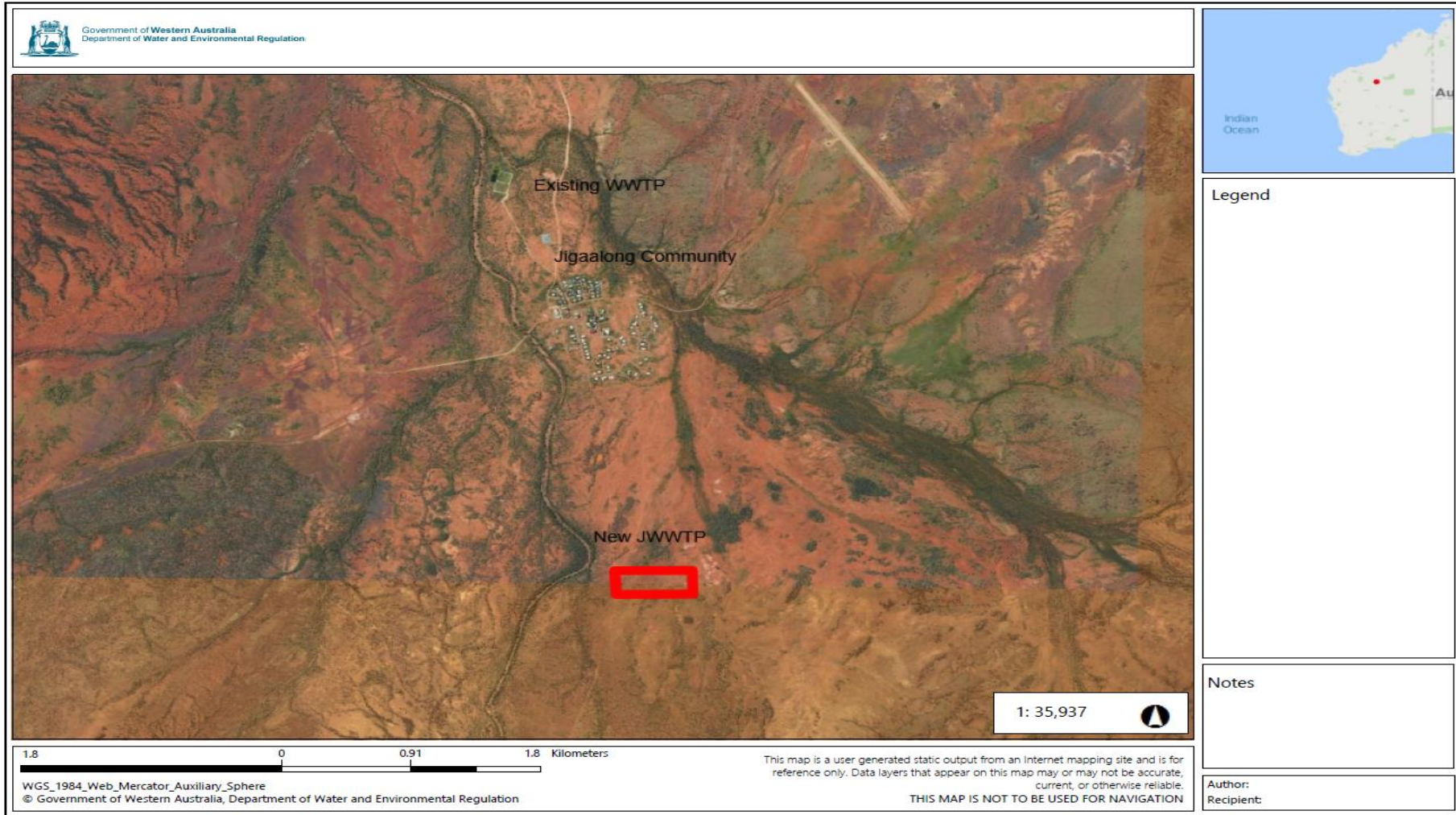


Figure 1 Jigalong Aboriginal Community

Works Approval: W6761/2022/1

IR-T04 Decision Report Template v3.0 (May 2021)

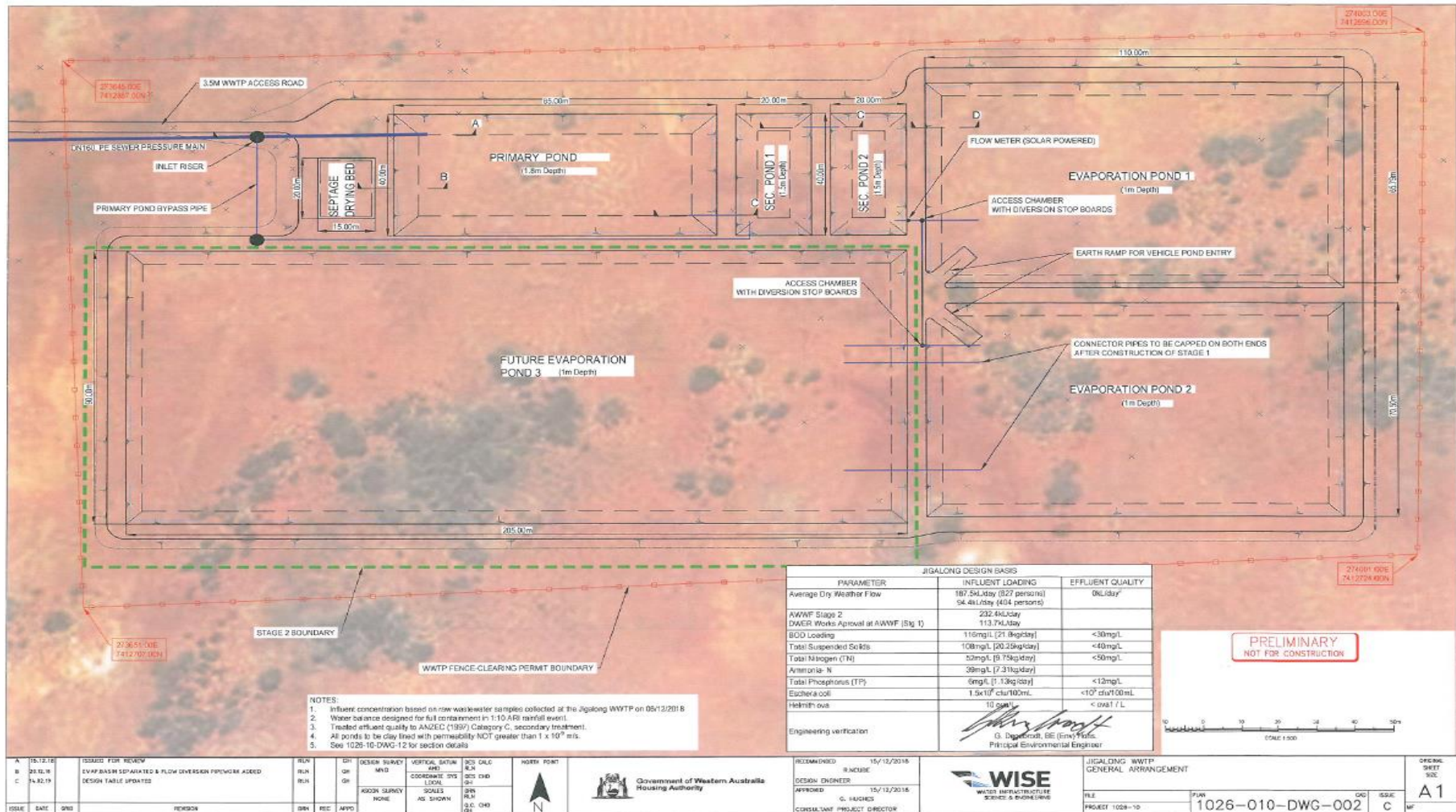


Figure 2 New JWWTP

Works Approval: W6761/2022/1

IR-T04 Decision Report Template v3.0 (May 2021)

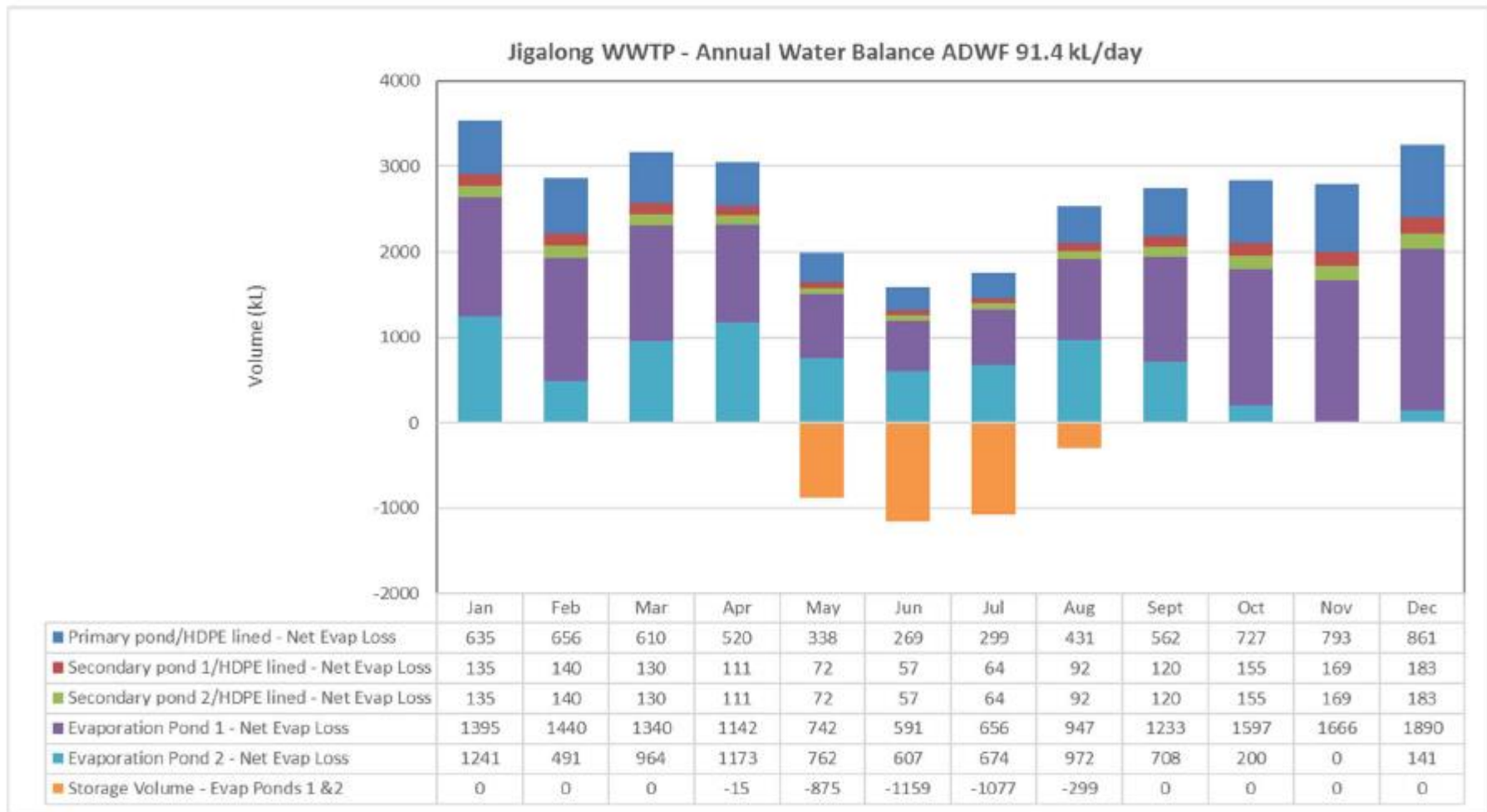


Figure 3 JWWTP average annual water balance

Works Approval: W6761/2022/1

IR-T04 Decision Report Template v3.0 (May 2021)

5. Legislative context

5.1 Contaminated sites

A search of DWER records indicates that the Premises has 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 in progress with the draft Jigalong Layout Plan No 2 Amendment 13 (Department of Planning, Lands and Heritage confirmation of support for the proposed Layout Plan amendment) and does not require further approvals.

5.2.2 Department of Health

The Applicant identifies in the Application that the Applicant has submitted, in parallel to this application, 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 guideline

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

The guidance documents which inform this assessment are:

- *Guidance Statement: Setting conditions (October 2015)*
- *Guidance Statement: Licence duration (August 2016)*
- *Guidance Statement: Publication of Annual Audit Compliance Reports (May 2016)*
- *Guideline: Decision making (December 2020)*
- *Guideline: Environmental siting (December 2020)*
- *Guideline: Regulatory principles (December 2020)*
- *Guideline: Risk assessments (December 2020)*

5.3.2 Works approval and licence history

Table 7 summarises the works approval and licence history for the premises.

Table 7: Works approval and licence history

Instrument	Issued	Nature and extent of works approval, licence or amendment
W6234/2019/1	14/08/2019	Works Approval Granted
W6761/2022/1	17/03/2023	Works Approval Granted

Works Approval: W6761/2022/1

IR-T04 Decision Report Template v3.0 (May 2021)

5.3.3 Key and recent works approvals

The Applicant was granted Works Approval W6234/2019/1 on 14 August 2019 to construct the WWTP. The Works Approval Holder (Applicant) did not undertake any construction works under W6234 and W6234 expired on 14 August 2022. Construction works are now scheduled for March 2023 but because W6234 has expired a new Work Approval is required.

5.3.4 Clearing

The Applicant applied for the assessment of clearing within the original Works Approval Application (W60342019/1).

On 30 May 2019 DWER Clearing Permit branch provided their Clearing assessment; refer to Attachment 2 and 3 for the assessment. Clearing conditions are provided in the Works Approval.

The Applicant has advised that no Clearing has occurred at the Premises.

6. Modelling and monitoring data

6.1 Monitoring of discharges to land

The Application reports raw wastewater samples were collected from the existing WWTP inlet chamber or sewer pump station during 2016 – 2018 as shown in Table 8. The sewage quality was variable and often dilute as the brine from the JAC water treatment plant was diluting other contaminants. Separation of the brine will result in a more consistent sewage quality as shown in Table 8 – design influent loading column.

Table 8: JWWTP Monitoring results.

Parameter	6/12/2018 (brine pumps off)	4/10/2018	11/09/2018	13/03/2018	31/05/2016	Design influent loading – AWWF 232.8 m ³ /day
BOD	83	<5	27	69	30	116 mg/L
TSS	33	14	55	63	N/A	108 mg/L
TN	52	66	9.2	13	18	52 mg/L
TP	3.8	3.1	1.7	2.3	4	6 mg/L
E.coli	1,340,000	>24,000	-	-	-	1,500,000
Hookworm ova (egg/L)	-	0	-	-	-	10
Nematode Larvae (egg/L)	-	1	-	-	-	

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. The Applicant is proposing to construct a new WWTP with lined Primary and Secondary ponds and two unlined Evaporation / Infiltration ponds.
2. The construction is to allow a WWTP production and design capacity of 113m³/day to treat a balance capacity throughput of 91.4m³/day to service 404 persons which is the expected population in 2028.
3. The design treatment standards of the new JWWTP will surpass ANZECC-based treatment targets (Table 5).
4. All treated wastewater is to be fully contained within the WWTP including allowance for a 1:10 ARI rainfall event.

7. Consultation

The Application was advertised on the DWER webpage 16/02/2023 and on 20/02/2023 in the West Australian newspaper seeking any public comment within 14 days. Comments were due 6/03/2023. No Comments were submitted.

8. Location and siting

8.1 Siting context

The Premises is located on Part of Lot 500 JAC, 1500m south of the JAC. The land surrounding the JWWTP is relatively flat and gently slopes in a westerly direction towards the Jigalong River and the JWWTP is surrounded by native vegetation on all sides.

8.2 Residential and sensitive receptors

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	1500m north

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 *Guideline: Environmental Siting*.

Table 10: Environmental values

Specified ecosystems	Distance from the Premises
REWI Act Groundwater Areas	Premises overlies Pilbara Groundwater Area
Biological component	Distance from the Premises
Threatened/Priority Fauna	1100m north <i>Macrotis lagotis</i> (Bilby)

8.4 Groundwater and water sources

The distances to groundwater and water sources are shown in Table 11. JAC is situated at the upper boundary of the Upper Fortescue River catchment. The Jigalong Layout Plan 2 recommends all future land use planning above a flood level of 512mAHD based on historic flood levels. The JWWTP is to be built above flood levels and is one of the primary reasons the new WWTP is located south of JAC at the proposed location.

Table 11: Groundwater and water sources

Groundwater and water sources	Distance from Premises	Environmental value
Major watercourses non perennial	300m west – Jigalong Creek 2100 east – ephemeral creek	Recreational
Groundwater	<p>Depth to groundwater not provided in Application.</p> <p>Groundwater bore (Jigalong No. 1/2) located on south west corner of the Premises based on available GIS dataset –WIN Groundwater Sites – but no information known. Bore drilled 1976 so information not available.</p> <p>Applicant has confirmed main operational potable drinking water Borefield is located 15km to the west of JAC and no bores are utilised south of JAC so the Jigalong bore 1-2 is not a potable water production bore. Closest borefield to WWTP is Mission Borefield which is 3.5km north west of the WWTP but this is non-operational.</p>	Water is used for potable use; Reverse Osmosis is used to treat water first.

8.5 Soil type

DWER's GIS identifies the soil class as MM16 - Alluvial plains dominated by deep cracking clays (Ug5.38) along with some areas of (Uf6.71) soils, and minor areas of (Dr2.33) soils. Occurs on sheet(s): 6, 10.

As part of the original W6034 Application a geotechnical investigation was conducted by STATSWA on 23 October 2018 for the purpose of the JWWTP Application. The investigation included four (4) test pits (TP1-TP4) in the planned JWWTP area; refer to figure 4 for an overview of the pit locations. No water was encountered in any of the test pits. The soil profile encountered in all four pits consisted of clayey sand, fine grained, red/orange/ brown, dry, of high plasticity and exhibiting some cementitious binding properties, overlaying clayey fine sand / clayey sand or inorganic silt; fine to medium grained of low to high plasticity red/black/brown/white, dry to moist contain occasional cobbles and boulders exhibiting some cementitious binding properties.

The investigation report provided the following information:

- The site soil profile encountered in all four test pits consist of clayey SAND: fine grained, red/orange/brown, dry and high plasticity and exhibiting some cementitious binding properties, overlaying clayey fine SAND / clayey SAND or inorganic SILT; fine to medium grained, of low to high plasticity, red/black/brown/white, dry to moist, dense and contain occasional cobbles and boulders, exhibiting some cementitious bind properties.
- The site is currently assigned a Site Classification of 'MD and H1' in accordance with the definitions provided in the Australian Standard AS2870-2011. For the soil profile characteristic surface movement (Y_s Value) for the site would be $30 < Y_s \leq 40\text{mm}$ of surface movement (Class MD) and $40 < Y_s \leq 60\text{mm}$ of surface movement due to seasonal moisture changes would occur for Class MD and H1 respectively.



Figure 4 Test pit locations

The geotechnical investigation found that the site is poor for infiltration of treated wastewater and therefore the premises will require evaporation ponds to manage discharge. Table 12 provides the permeability of the proposed WWTP site area.

Table 12: Permeability testing – Falling Head Permeability Test Method

Falling Head Permeability	TP1	TP2	TP3	TP4
Permeability (K_{ϕ}) (m/s)	4.96×10^{-9}	2.36×10^{-7}	-	4.00×10^{-8}
Permeability (K_{ϕ}) (mm/day)	0.43	20.4	-	0.35

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 new ponds	Noise from movement of heavy and light vehicles	Residential premises: 1500m north	Air / wind dispersion	Amenity impacts causing nuisance	No No receptor. 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.
		Dust from movement of heavy and light vehicles	Residential premises: 1500 north	Air / wind dispersion	Health and amenity impacts - Potential suppression of photosynthetic and respiratory functions	No No receptor. 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

Works Approval: W6761/2022/1

IR-T04 Decision Report Template v3.0 (May 2021)

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 and sludge drying beds	Noise from operation of ponds and movement of light vehicles	Residential premises: 1500m north	Air / wind dispersion	Amenity impacts causing nuisance	No No receptor. There will only be very limited access to the JWWTP 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: 1500m north	Air / wind dispersion	Health and amenity impacts - Potential suppression of photosynthetic and respiratory functions	No No Receptor. 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	Leachate from Primary/Secondary ponds and sludge drying bed to groundwater	Groundwater dependent ecosystems, subterranean fauna Depth to potable groundwater unknown in that remote location.	Direct discharge	Groundwater contamination	No The new JWWTP will be lined with a HDPE liner which will meet a permeability of at least 1×10^{-9} m/s. The sludge drying bed is GCL lined which will meet a permeability of at least 1×10^{-9} m/s. Permeability values are provided in Table 14 which indicate minimal seepage will occur into the environment. The Delegated Officer considers the

Works Approval: W6761/2022/1

IR-T04 Decision Report Template v3.0 (May 2021)

Risk Events						Continue to detailed risk assessment	Reasoning
Sources/Activities	Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts			
							separation distance between the source and receptors as adequate to inform the risk of seepage emissions as not foreseeable.
	Seepage	Leachate from unlined Evaporation Pond to groundwater	Groundwater dependent ecosystems, subterranean fauna Depth to potable groundwater unknown in that remote location.	Direct discharge	Groundwater contamination	Yes	See section 9.4
	Treatment of sewage	Odour	Residential premises: 1500m north	Air / wind dispersion	Amenity impacts causing nuisance	No	No receptor. 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.
	Sewage pond	Overtopping of ponds resulting in treated effluent and/or 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 16: 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	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> onsite impacts: low level offsite impacts local scale: minimal offsite impacts wider scale: not detectable Specific Consequence Criteria (for environment) likely to be met 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> onsite impact: minimal Specific Consequence Criteria (for environment) met 	<ul style="list-style-type: none"> 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 *Guideline: 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 from unlined Evaporation / Infiltration ponds

9.4.1 Description of Seepage

The Evaporation / Infiltration ponds will receive treated sewage from the JWWTP. Seepage from the ponds will occur during normal operating procedures. Any seepage has the potential to discharge treated sewage into the underlying soil and groundwater directly beneath the ponds themselves. Any seepage of treated sewage has the potential to increase nutrients into the environment which can cause degradation of the environment – nitrification and eutrophication.

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 P&DC (AWWF) of 113m³/day and throughput (ADWF) of 91.4m³/day with this volume seeping into the environment which would constitute treated sewage with excess nutrient concentration(s) to normal background concentrations.

9.4.3 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 groundwater if treated sewage was to enter the groundwater environment.

9.4.4 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.

9.4.5 Applicant controls

The JWWTP has an AWWF capacity of 113m³/day and an ADWF capacity of 91.4m³/day and a water balance has been completed for the new JWWTP. At AWWF a total pond area of 16,448m² is required. The total design evaporation area for the JWWTP is 18,256m² (Table 3).

The capacity of the new JWWTP has been designed to cater for expected 2028 population number inflow and a 1:10 ARI rainfall event including a freeboard of 400mm.

9.4.6 Key findings

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

1. *The WWTP design indicates treated wastewater parameters will be greatly reduced and less than respective effluent targets (Table 5).*
2. *Depth to groundwater is unknown and the WWTP is in a very remote location.*
3. *The closest operational Borefield is 15km west of the WWTP.*
4. *Jigalong bore 1-2 is not an operational production potable water bore.*
5. *Groundwater is treated at the Reverse Osmosis plant at JAC to remove high naturally occurring nitrate concentrations.*
6. *Given the distance to operational water bores there is not considered a foreseeable risk to potable groundwater use.*

9.4.7 Consequence

If impacts from 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 overtopping 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

9.5.1 Description of Operation- Overtopping of ponds

The ponds will receive untreated sewage from the JAC sewer infrastructure for treatment at the WWTP. Overtopping of the ponds could occur during normal operating procedures and in extreme rainfall events (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) and if cyclonic conditions prevail the wastewater may discharge into the Jigalong River floodwaters. 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 WWTP has a Production and design capacity of 113m³/day and depending on the type of incident 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 very short duration, 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 JWWTP has an AWWF capacity of 113m³/day and an ADWF capacity of 91.4m³/day and a water balance has been completed for the new JWWTP. At AWWF a total pond area of 16,448m² is required. The total design evaporation area for the JWWTP is 18,256m² (Table 3).

The capacity of the new JWWTP has been designed to cater for expected 2028 population number inflow and a 1:10 ARI rainfall event including a freeboard of 400mm.

9.5.6 Key findings

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

1. *Bulk storage capacity for the 2028 inflow was calculated at 16,448m² so the total evaporation area of the WWTP of 18256m² is sufficient to contain all seasonal flows.*
7. *WWTP design includes inflow for a 1:10 ARI rainfall event including a freeboard of 400mm.*
8. *The WWTP design indicates treated wastewater parameters will be greatly reduced and less than respective effluent targets (Table 6).*

Works Approval: W6761/2022/1

IR-T04 Decision Report Template v3.0 (May 2021)

9. *In extreme rainfall events (1 in 10 year 72 hour rainfall event) the area to the west of the JWWTP may become inundated with flood water from the Jigalong River.*

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 may occur in exceptional circumstances. Therefore, the Delegated Officer considers the likelihood of Risk Event to be **Rare**.

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 **Low**.

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 18: Risk assessment summary

	Description of Risk Event			Applicant controls	Risk rating	Acceptability with controls (conditions on instrument)
	Emission	Source	Pathway/ Receptor (Impact)			
1.	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 Rare Low risk	Acceptable subject to proponent controls
2.	Seepage	Unlined Evaporation / Infiltration Pond	Impacts to soil and groundwater	Infrastructure and management controls.	Minor consequence Possible Medium risk	Acceptable subject to proponent controls

10. Regulatory controls

A summary of regulatory controls determined to be appropriate for the Risk Event is set out in

Works Approval: W6761/2022/1

IR-T04 Decision Report Template v3.0 (May 2021)

Table 19. 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 works Approval will be set to give effect to the determined regulatory controls.

Table 19: 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. Overtopping	•
	2. Seepage	•
	3. Clearing	•

10.1 Works Approval controls

- Works Approval condition 1 is to allow the Works Approval Holder to construct the new ponds, sludge drying bed and related pipework etc according to the specification outlined in condition 1.
- Works Approval condition 2 requires and audit of compliance for condition 1 and submission of an Environmental Compliance Report post construction of the WWTP.
- Works Approval condition 3 outlines the requirements of the Environmental Compliance Report.
- Works Approval condition 4, 5, 6 and 7 permit and regulate the clearing of native vegetation.
- Works Approval condition 8 refers to Complaints.
- Works Approval condition 9 and 10 refers to the requirements of books and information.

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 conditions on Licence that ensures infrastructure and equipment specified is maintained in good working order.
- Licence condition on the Licence that only allows sewage to be authorised to be accepted onto the premises with specific acceptance limits for the waste.

11. Determination of Works Approval 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 20: Summary of conditions to be applied

Condition Ref	Grounds
Infrastructure and Equipment 1	These conditions are valid, risk-based and contain appropriate controls.
Compliance Reporting 2 and 3	These conditions are valid and are necessary administration and reporting requirements to ensure compliance.
Native Vegetation Clearing 4, 5, 6 and 7	This condition is valid, risk-based and consistent with the EP Act
Record-keeping 8, 9 and 10	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 approval under the EP Act.

12. Applicant's comments

The Applicant was provided with the draft Decision Report and draft issued Works Approval on 13 March 2023. The Applicant advised on 16 March it had no comments on the draft documents and requested it be granted.

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).

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

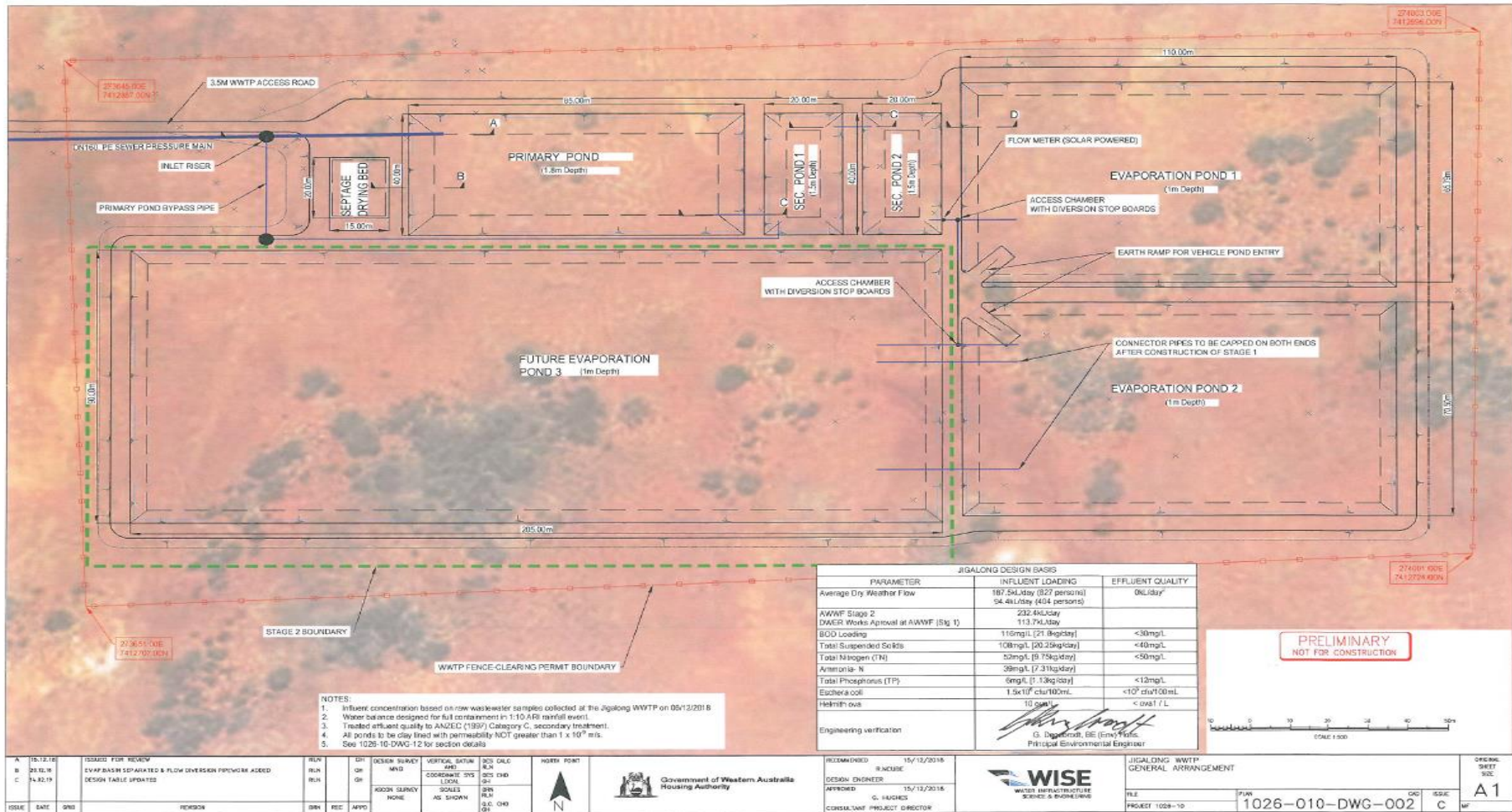
Works Approval: W6761/2022/1

IR-T04 Decision Report Template v3.0 (May 2021)

Appendix 1: Key documents

	Document title	In text ref	Availability
1.	W6034/2019/1	W6034	DWER records A1814844
2.	DER, October 2015. <i>Guidance Statement: Setting conditions</i> , Perth.	DER 2015b	accessed via https://www.dwer.wa.gov.au/regulatory-documents
3.	DER, August 2016. <i>Guidance Statement: Licence duration</i> , Perth.	DER 2016a	
4.	DWER, October 2019, <i>Procedure: Prescribed premises works approval and licence</i> , Perth, Western Australia	DWER 2019	
5.	DWER, December 2020, <i>Guideline: Decision Making</i> , Perth, Western Australia.	DWER 2020a	
6.	DWER, December 2020, <i>Guideline: Environmental siting</i> , Perth, Western Australia.	DWER 2020b	
7.	DWER, December 2020. <i>Guideline: Regulatory principles</i> , Perth, Western Australia.	DWER 2020c	
8.	DWER, December 2020, <i>Guideline: Risk Assessments</i> , Perth, Western Australia.	DWER 2020d	

Attachment 1: Site Plan



Works Approval: W6761/2022/1

IR-T04 Decision Report Template v3.0 (May 2021)

Attachment 2: Clearing permit assessment report.



1. Application details

1.1. Permit application details

Permit application No.: 8497/1
Permit type: Works Approval / Licence Assessment

1.2. Applicant details

Applicant's name: Department of Communities

1.3. Property details

Property: Lot 512 on Deposited Plan 408087, Newman
Lot 500 on Deposited Plan 408087, Newman
Local Government Authority: East Pilbara, Shire of
Localities: Newman

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
9.64	-	Mechanical Removal	Waste water treatment plant

1.5. Site Information

Clearing Description The application is to clear 9.64 hectares of native vegetation within Lots 512 and 500 on Deposited Plan 408087, Newman, for the purpose of constructing a waste water treatment plant (Figure 1).

Vegetation Description The application area is mapped as Beard vegetation association 18, which is described as Low woodland; mulga (*Acacia aneura*) (Shepherd et al., 2001).

A flora and vegetation reconnaissance survey and level 1 fauna survey determined three vegetation units occurred within the application area (Astron, 2018):

- **FsLS:** *Frankenia setosa* low open shrubland to low shrubland over *Cenchrus setiger* scattered tussock grasses;
- **ApTOS:** *Acacia paraneura* scattered tall shrubs to tall open scrub over *Eremophila cuneifolia* open shrubland over *Eremophila jucunda*, *Gyrostemon ramulosus* and *Frankenia setosa* low open shrubland over *Cenchrus setiger* tussock grassland; and
- **EcS:** *Eremophila cuneifolia* shrubland over *Sclerolaena cornishiana* scattered low shrubs.

Vegetation Condition Vegetation condition within this assessment has been assessed using the vegetation condition scale developed by Keighery (1994). All references to vegetation condition throughout this assessment therefore, reference this scale.

Astron (2019) determined the condition of the vegetation within the application area to be;

- Completely Degraded; Structure severely disturbed; regeneration to good condition requires intensive management (Keighery, 1994); to
- Very Good: Vegetation structure altered, obvious signs of disturbance (Keighery, 1994).

Soil and Landform Type:

The application area is mapped within the following land subsystems:

- **Jigalong** - Alluvial plains and flood plains supporting grassy shrublands and woodlands and halophytic shrublands (Schoknecht et al., 2004).

Comment

The local area is defined as a 20 kilometre radius measured from the perimeter of the application area.



Figure 1: Area applied to clear.

2. Avoidance and minimisation

No avoidance and minimisation measures have been proposed by the applicant however it was noted that the position of proposed pipeline falls within an existing track.

3. Assessment of application against clearing principles

The vegetation within the application area is defined within section 2, with the vegetation being described predominately as shrublands and grasslands in a completely degraded to very good condition.

According to available databases, there have been no priority flora or threatened flora recorded within the local area. The vegetation and flora survey identified a single plant of priority 4 flora *Eremophila youngii* subsp. *Lepidota* at the northern end of the application area (Astron, 2018). No other significant flora was identified during the survey. *Eremophila youngii* subsp. *Lepidota* is a spreading shrub, with purple-red-pink flowers between January through to September. The species occurs within stony red sandy loam soils, on flats plains, floodplains and sometimes semi-saline, clay flats (WA Herbarium, 1998). A total of 46 records of the species are known to occur across four bioregions. Noting the proposed clearing will impact only one individual and the wide distribution of the species, it is unlikely the proposed clearing will impact on the conservation status of the species.

According to available databases, one fauna species (*Macrotis lagotis* (Bilby)) specially protected under the *Biodiversity Conservation Act 2016*, and one priority fauna species (*Polytelis alexandrae* (Princess Parrot)) have been recorded within the local area (DBCA, 2007-). No conservation significant fauna species were recorded in the survey area with the fauna assemblage and the fauna habitat types recorded within the survey area considered to be common and widespread beyond the application area in the region (Astron, 2018). Noting this, and that the local area is highly vegetated with similar vegetation to the application area, the proposed clearing is unlikely to comprise of significant habitat for conservation significant fauna in the local area.

The application area is surrounded by intact native vegetation. The proposed clearing may increase the risk of weeds spreading into adjacent vegetation. Weed management measures will mitigate this risk.

According to available databases, no priority ecological communities (PEC) or threatened ecological communities (TEC) are known to occur within the local area. The flora and vegetation survey determined that the three vegetation units that occur within the application area are not a representation of a PEC or TEC (Astron, 2019).

The national objectives and targets for biodiversity conservation in Australia has a target to prevent clearance of ecological communities with an extent below 30 per cent of that present pre-1750, below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia, 2001). The local area surrounding the application area retains 99 per cent native vegetation and the mapped beard vegetation association retains 100 per cent native vegetation (Government of Western Australia, 2018). Noting that the local area and vegetation association retain above the 30 per cent threshold, the vegetation within the application area is not likely to be classified as a significant remnant within an extensively cleared landscape.

According to available databases, a minor watercourse (drainage channel) has been mapped as intersecting with the application area. The watercourse is dry most of the year however during the wet season it may become inundated with water from heavy rains and may act as a drainage channel to the nearby (approximately 150 metres away) Jigalong Creek. A number of minor

watercourses (drainage channels) are known to occur within the local area. Noting that the application intersects with a seasonally inundated drainage channel, the proposed clearing is at variance to principle (f). Whilst the drainage channel intersects the application area, as the proposed pipeline occurs along an existing track, impacts on the drainage channel is likely to be minor and short term.

Noting the relatively flat landscape with an annual rainfall of 300 millimetres in a highly vegetated area, the proposed clearing is not likely to deteriorate ground water or surface water quality, cause or exacerbate land degradation or exacerbate the intensity of flooding.

Given the above, the proposed clearing is at variance to principle (f) and is not likely to be at variance to any of the remaining clearing Principles.

4. Recommendation

Recommendation

An assessment of the environmental impacts of the proposed clearing has been undertaken in accordance with the Department of Water and Environmental Regulation's Regulatory Principles, taking into consideration the clearing principles contained in Schedule 5 of the *Environmental protection Act 1986* (EP Act). Section 62(1) of the EP Act provides for conditions to be placed on a works approval to prevent, control, abate or mitigate pollution or environmental harm. Recommended conditions are as follows:

1. Clearing authorised

The works approval holder shall not clear more than 9.6 hectares of native vegetation within the area cross-hatched yellow on attached Plan B279/1.

2. Avoid, minimise and reduce the impacts and extent of clearing

In determining the amount of native vegetation to be cleared authorised under this works approval, the works approval holder must have regard to the following principles, set out in order of preference:

- (a) avoid the clearing of native vegetation;
- (b) minimise the amount of native vegetation to be cleared; and
- (c) reduce the impact of clearing on any environmental value.

3. Weed control

When undertaking any clearing or other activity authorised under this works approval, the works approval holder must take the following steps to minimise the risk of the introduction and spread of weeds:

- (a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
- (b) ensure that no weed-affected soil, mulch, fill or other material is brought into the area to be cleared; and
- (c) restrict the movement of machines and other vehicles to the limits of the area to be cleared.

4. Records

The works approval holder must maintain the following records for activities done pursuant to this works approval:

- (a) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Easting and Northings or decimal degrees;
- (b) that date that the area was cleared;
- (c) the size of the area cleared (in hectares); and
- (d) actions taken to minimise the risk of the introduction and spread of weeds in accordance with condition 3 of this works approval.

Definitions

fill means material used to increase the ground level, or fill a hollow;

mulch means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation; and

weed/s mean any plant -

- (a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*; or
- (b) published in a Department of Biodiversity, Conservation and Attractions Regional Weed Rankings Summary, regardless of ranking; or
- (c) not indigenous to the area concerned.



Mathew Gannaway
MANAGER
NATIVE VEGETATION REGULATION

30 May 2019

CPS 8497/1, 30 May 2019.

Page 3 of 4

5. References

- Astron (2018) A Flora and Vegetation Reconnaissance Survey and Level 1 Fauna Survey, December 2018. Prepared for the Jigalong proposed Waste Water Treatment Plant.
- Commonwealth of Australia (2001) National Objectives and Targets for Biodiversity Conservation 2001-2005, Canberra.
- Department of Biodiversity Conservation and Attractions (DBCA) (2007-) NatureMap: Mapping Western Australia's Biodiversity. Department of Parks and Wildlife. URL: <http://naturemap.dpaw.wa.gov.au/>. Accessed May 2019
- Government of Western Australia (2018) 2017 South West Vegetation Complex Statistics. Current as of October 2017. WA Department of Parks and Wildlife, Perth.
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Schoknecht, N., Tille, P. and Purdie, B. (2004) Soil-landscape mapping in South-Western Australia – Overview of Methodology and outputs' Resource Management Technical Report No. 280. Department of Agriculture.
- Shepherd, D.P., Beeston, G.R. and Hopkins, A.J.M. (2001) Native Vegetation in Western Australia, Extent, Type and Status. Resource Management Technical Report 249. Department of Agriculture, Western Australia.
- Western Australian Herbarium (1998-) FloraBase - The Western Australian Flora. Department of Biodiversity, Conservation and Attractions. <https://florabase.dpaw.wa.gov.au/> (accessed 25 July 2018).

GIS datasets

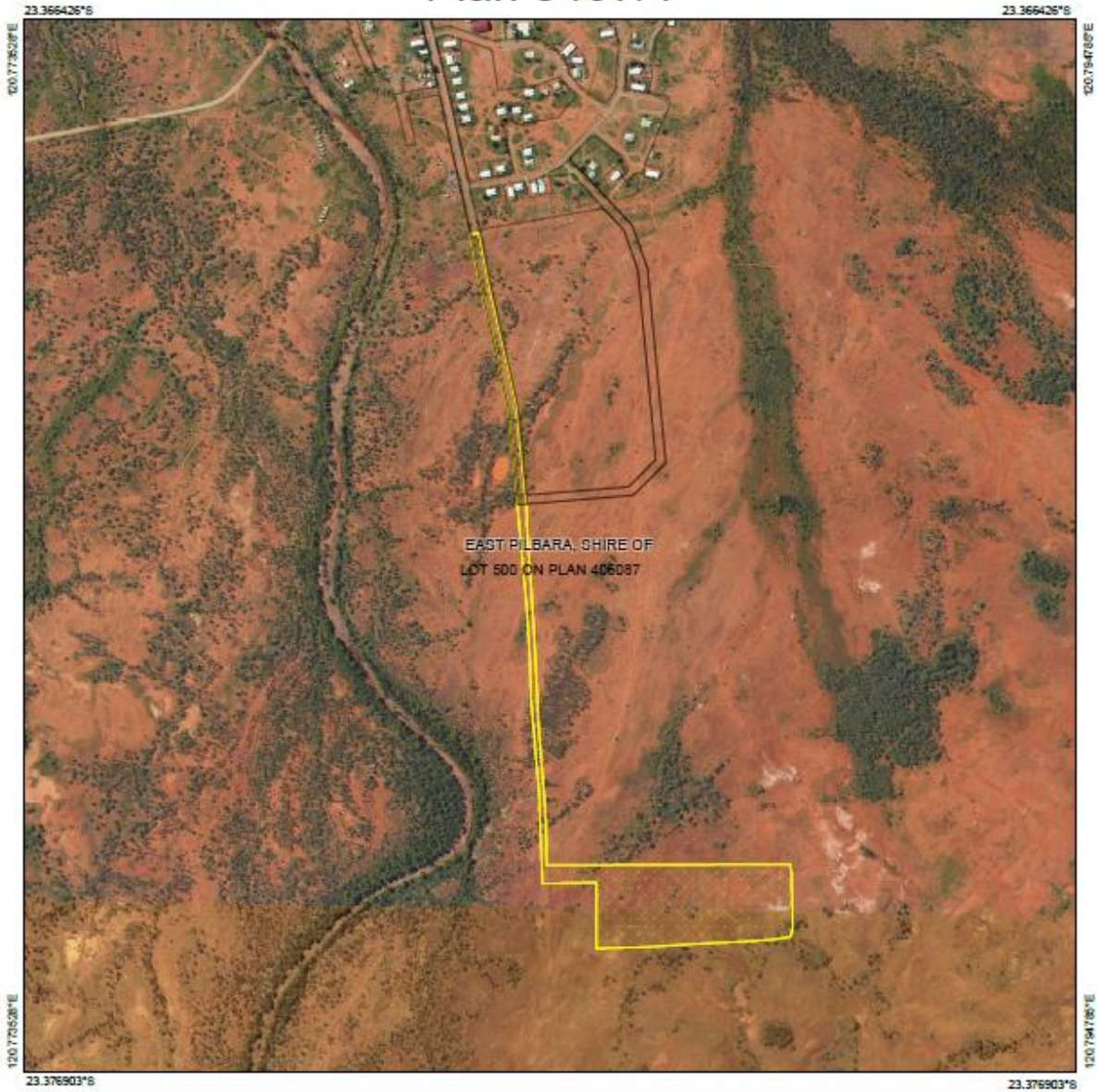
- Conservation estate
- DPIRD Land degradation risk categories
- Pre-European vegetation
- Threatened and Priority ecological communities
- Threatened and Priority flora
- Vegetation extent
- WA Herbarium

Attachment 3: Clearing permit plan.

Works Approval: W6761/2022/1

IR-T04 Decision Report Template v3.0 (May 2021)

Plan 8497/1



<p>Legend</p> <ul style="list-style-type: none">  Imagery  Clearing Instruments Activities  Roads  Local Government Authority 	  <p>1:11,518 (Approximate when reproduced at A4) GDA 94 (Lat/Long) Geocentric Datum of Australia 1994</p> <p><i>Mathew Gannaway</i> Date 30/05/2019 Mathew Gannaway Officer with delegated authority under Section 20 of the Environmental Protection Act 1986</p>
 <p>GOVERNMENT OF WESTERN AUSTRALIA WA Crown Copyright 2019</p>	

Works Approval: W6761/2022/1

IR-T04 Decision Report Template v3.0 (May 2021)