Decision Report

Application for Licence

Part V Division 3 of the *Environmental Protection Act 1986*

Works Approval Number	W6800/2023/1
Applicant	Square Kilometre Array Observatory
File number	DER2018/001042-8~91
Premises	SKAO Construction Camp Legal description - Part of Lot 18 on Deposited Plan 220344 As defined by the coordinates in Schedule 2 of the works approval As defined by the Schedule 1 premises maps attached to the issued works approval
Date of report	13/07/2023
Decision	Intent to grant works approval

Jarrod Abrahams Digitally signed by Jarrod Abrahams Date: 2023.07.13 11:18:02 +08'00'

MANAGER WASTE INDUSTRIES
REGULATORY SERVICES
an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

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1. Decision summary

This decision report documents the assessment of potential risks to the environment and public health from emissions and discharges during the construction and operation of the premises. As a result of this assessment, Works Approval W6800/2023/1 has been granted.

2. Scope of assessment

2.1 Regulatory framework

In completing the assessment documented in this decision report, the Department of Water and Environmental Regulation (the department; DWER) has considered and given due regard to its regulatory framework and relevant policy documents which are available at https://dwer.wa.gov.au/regulatory-documents.

2.2 Application summary and overview of premises

On 28 February 2023, Square Kilometre Array Observatory (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 a wastewater treatment plant (WWTP) at the premises. The premises is approximately 140 km south-east of Cue.

The premises relates to a Category 85: Sewage facility, with an assessed design capacity of 36 m^3 per day under Schedule 1 of the Environmental Protection Regulations 1987 (EP Regulations) which are defined in Works Approval W6800/2023/1. 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 W6800/2023/1.

2.2.1 Proposed works

The proposed works will include installation of a containerised and enclosed WWTP sequence batch reactor system capable of treating up to 36 m^3 of sewerage per day. The wastewater is disposed of via an irrigation sprayfield (approximately 180 m x 140 m or 25,200 m^2).

The applicant requested the works approval scope include construction, commissioning and time-limited operations (TLO) of the WWTP and associated infrastructure.

2.2.2 Premises operations

WWTP

The SKAO camp will accommodate a peak occupancy of 200 people and the main inputs into the WWTP will be domestic sewage from the room ensuite bathrooms, public shared toilet building, guest laundries, commercial kitchen and vehicle wash bay.

Sodium hypochlorite will be added to wastewater during the treatment process to provide disinfection.

The expected quality of influent is outlined in Table 1.

Table 1: Anticipated influent quality

Parameter	Concentrations
5-Day Biochemical Oxygen Demand (BOD_5)	300 mg/L
Total suspended solids	300 mg/L
Total nitrogen	80 mg/L
Total phosphorus	20 mg/L
pH	6.5 – 8.5

The WWTP will treat effluent to meet the specifications in Table 2. Up to 36 m^3 will be produced per day if the maximum camp capacity of 200 personnel is reached.

Sludge produced by the WWTP will be collected in sludge tanks. Sludge will be removed periodically from the tanks by a licensed carrier and taken offsite for disposal at an appropriately licensed facility.

Table 2: Anticipated treated effluent quality

Parameter	Concentration
BOD_5	<20 mg/L
Total suspended solids	<30 mg/L
Total nitrogen	<20 mg/L
Total phosphorus	<8 mg/L
Thermotolerant coliforms	<1000 colony forming units (CFU)/100 mL
Residual free chlorine	0.2 – 2 mg/L
pH	6.5 – 8.5

Reverse osmosis system

A reverse osmosis (RO) water system will be installed on site for water desalination. Part of the brine produced from the RO system will be disposed to the irrigation sprayfield.

The treated effluent from the WWTP will be directed to a temporary tank and the brine solution will be pumped to the tank. The tank will be mixed by using a pump to recirculate the water-brine mixture to have a uniform mix. A mixture of 1 brine to 5 treated effluent is considered sufficient to decrease the water TDS level to an acceptable limit, however a ratio of 1 part brine to 1.37 treated effluent is expected to be applied.

The remainder of the brine solution will be directed to an irrigation tank where raw bore water will be mixed with the brine solution. The bore water and brine solution will be mixed by recirculating the water using a pump and then used for landscape irrigation.

Irrigation Sprayfield

The irrigation sprayfield has been sized and location of the irrigation sprayers determined with respect to local wind data. The outcome of the proposed layout is the minimisation of spray drift during windy conditions and to reduce the risk of sprayed treated wastewater leaving the irrigation sprayfield. The irrigation sprayfield will operate up to 30 above-ground sprayer discharge points.

3. Risk assessment

The department assesses the risks of emissions from prescribed premises and identifies the potential source, pathway and impact to receptors in accordance with the *Guideline: Risk Assessments* (DWER 2020).

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.

3.1 Source-pathways and receptors

3.1.1 Emissions and controls

The key emissions and associated actual or likely pathway during premises construction and operation which have been considered in this decision report are detailed in Table 3 below. Table 3 also details the control measures the applicant has proposed to assist in controlling these emissions, where necessary.

Table 3: Proposed applicant controls

Emission	Sources	Potential pathways	Proposed controls
Construction			
Dust	Native vegetation clearing. Vehicle and plant movements and associated activities. Installation of third party purchased WWTP, oil waste separator (OWS), washbay and associated infrastructure.	Air/windborne pathway causing impacts to health and amenity.	Dust will be controlled using water carts. Dust generation during clearing will be minimised by avoiding windy conditions. The WWTP, OWS, vehicle washdown bay and associated infrastructure are an already constructed facility from a third-party supplier requiring minimal installation works onsite.
Noise	Construction works of the WWTP, irrigation spray field (including equipment alarms), washdown bay and OWS.	Air/windborne pathway causing impacts to health and amenity.	No noise outside of working business hours. All mechanical equipment will be regularly checked and maintained. The WWTP, oil waste separator (OWS), vehicle washdown bay and associated infrastructure are an already constructed facility from a third-party supplier requiring minimal installation works onsite.

Emission	Sources	Potential pathways	Proposed controls
Hydrocarbons and chemicals (spills and leaks)	Installation of third party purchased WWTP, oil waste separator (OWS), washbay and associated infrastructure.	Overland runoff / migration into surface water ways potentially causing ecosystem disturbance or impacting surface water quality. Localised contamination of soils causing impacts to amenity	All mechanical equipment will be regularly checked and maintained. Spills to be immediately cleaned up. Contaminated soils/material will be disposed offsite at an approved licensed facility. After completion of installation, all equipment will be checked for any damage prior to commissioning. Computerised monitoring system of the WWTP with an alarm that will raise an alert if malfunctioning.
Operation **(including time-limited-operations)**			
Noise	Commissioning and time limited operation of the WWTP, irrigation spray field (including equipment alarms), washbay and OWS. Movement of vehicles and equipment (including reversing alarms).	Air/windborne pathway causing impacts to health and amenity.	No noise outside of working business hours. Premises is a significant distance from sensitive receptors. All mechanical equipment will be regularly checked and maintained.
Odour	Incorrect wastewater chemical treatment balance. Storage of wastewater/solids.	Air/windborne pathway causing impacts to health and amenity.	Wastewater is treated prior to irrigation. Regular inspection of equipment by a certified technician. The WWTP will be commissioned in accordance with manufacturers specifications. Computerised monitoring system of the WWTP with an alarm that will raise an alert if malfunctioning. The WWTP is appropriately designed and operated to mitigate the risk of odour emissions.
Wastewaters, contaminated stormwater and treated wastewater	Spills/leaks of raw sewage, treated effluent, sludge and chemicals. Discharge of wastewater to land prior to treatment. Incorrect discharge	Overland runoff, direct discharge and migration via soil to groundwater.	The irrigation sprayfield will operate up to 30 above-ground sprayer discharge points to cover a wide footprint to prevent ponding. Computerised monitoring system with an alarm that will raise an alert if malfunctioning. 5 m spray drift buffer from the edge of

Emission	Sources	Potential pathways	Proposed controls
	rate to land. Discharge during high rainfall events.		sprinkler radius to the fence. Earthen bund around the discharge area perimeter to prevent the inflow of surface water from outside the area and the loss of discharged treated wastewater from within the area. Chemicals including sodium hypochlorite are stored in accordance with Australian Standard *AS3780-2008 Storage and Handling of Corrosive Substances*. Solid waste generated in the WWTP and OWS will be removed by a licensed contractor under the *Environmental Protection (Controlled Waste) Regulations 2004* and disposed to a suitable licensed facility.

3.1.2 Receptors

In accordance with the *Guideline: Risk Assessment* (DWER 2020), the Delegated Officer has excluded the applicant's employees, visitors, and contractors from its assessment. Protection of these parties often involves different exposure risks and prevention strategies and is provided for under other state legislation.

Table 4 and Figure 1 below provides a summary of potential human and environmental receptors that may be impacted as a result of activities upon or emission and discharges from the prescribed premises *(Guideline: Environmental Siting* (DWER 2020)).

Table 4: Sensitive human and environmental receptors and distance from prescribed activity

Human receptors	Distance from prescribed activity
Native Title Holders of the Wajarri Yamatiji Part A	The premises is located within the south-west Wajarri Yamatiji Part A Native Title Determination area
Commercial premises - Boolardy Airport	3.8 km south-west of premises boundary
Environmental receptors	**Distance from prescribed activity**
Gascoyne groundwater area	Located within the proclaimed surface water area
Roderick River	2.6 km north-west of premises boundary

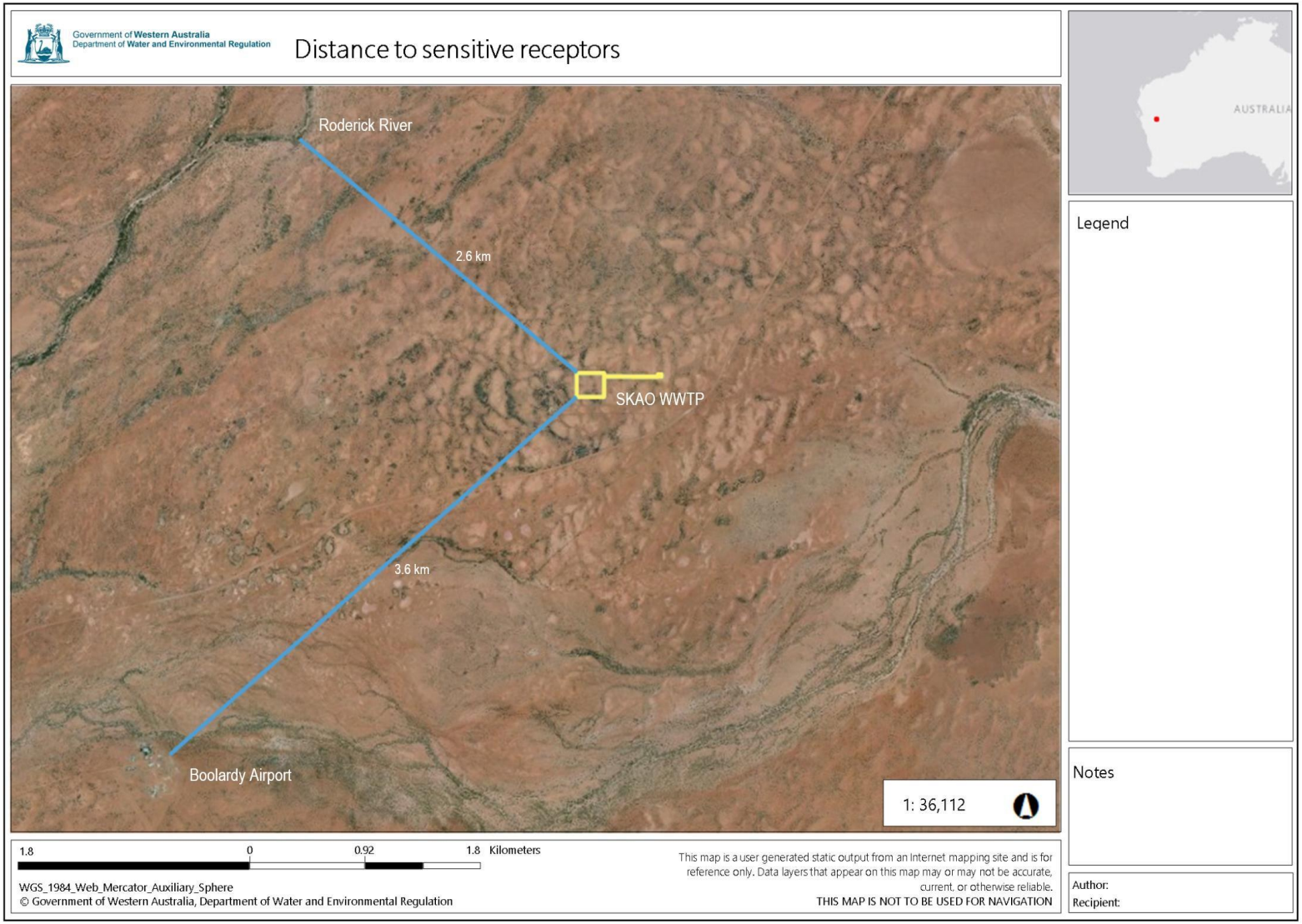

Figure 1: Distance to sensitive receptors

3.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020) for each identified emission source and takes into account potential source-pathway and receptor linkages as identified in Section 3.1. Where linkages are in-complete they have not been considered further in the risk assessment.

Where the applicant has proposed mitigation measures/controls (as detailed in Section 3.1), these have been considered when determining the final risk rating. Where the delegated officer considers the applicant's proposed controls to be critical to maintaining an acceptable level of risk, these will be incorporated into the works approval as regulatory controls.

Additional regulatory controls may be imposed where the applicant's controls are not deemed sufficient. Where this is the case the need for additional controls will be documented and justified in Table 5.

Works approval W6800/2023/1 that accompanies this decision report authorises construction and time-limited operations. The conditions in the issued works approval, as outlined in Table 5 have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

A licence is required following the time-limited operational phase authorised under the works approval to authorise emissions associated with the ongoing operation of the premises. A risk assessment for the operational phase has been included in this decision report, however licence conditions will not be finalised until the department assesses the licence application.

Table 5: Risk assessment of potential emissions and discharges from the premises during construction, commissioning and operation

Risk events					**Risk rating [1]** **C = consequence** **L = likelihood**	**Applicant controls sufficient?**	**Conditions [2] of works approval**	**Justification for additional regulatory controls**
Sources / activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Applicant controls**				
Construction								
Vehicle movements, installation of infrastructure and equipment and ground disturbing activities including clearing of vegetation.	Dust	Air / windborne pathway causing impacts to health and amenity	Commercial premise - Boolardy Airport (3.8 km south-west) Native Title Holders of Wajarri Yamatiji	Refer to Section 3.1	C = Slight L = Unlikely **Low Risk**	Y	N/A	N/A
	Noise			Refer to Section 3.1	C = Slight L = Unlikely **Low Risk**	Y	N/A	N/A

Risk events					Risk rating [1] C = consequence L = likelihood	Applicant controls sufficient?	Conditions [2] of works approval	Justification for additional regulatory controls
Sources / activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Applicant controls**				
	Spills/ unintended releases of hydrocarbons or chemicals	Overland runoff / migration into surface water ways potentially causing ecosystem disturbance or impacting surface water quality; Localised contamination of soils	Surface water ecosystems: Roderick River (2.6 km north-west) Native Title Holders of Wajarri Yamatiji	Refer to Section 3.1	C = Moderate L = Unlikely **Medium Risk**	Y	Conditions 1 and 13	N/A
Commissioning and Operation **(including time-limited-operations operations)**								
Commissioning and time limited operation of the WWTP, irrigation spray field (including equipment alarms), washbay and OWS	Noise	Air / windborne pathway causing impacts to amenity	Native Title Holders of Wajarri Yamatiji	Refer to Section 3.1	C = Slight L = Unlikely **Low Risk**	Y	Conditions 1, 5, 13 and 20	N/A
	Odour							
	Discharge of partially treated wastewater (commissioning phase)	Overland runoff / migration into surface water ways potentially causing ecosystem disturbance or impacting surface water quality; Localised contamination of soils; Infiltration to groundwater	Surface water ecosystems: Roderick River (2.6 km north-west) Native Title Holders of Wajarri Yamatiji	Refer to Section 3.1	C = Moderate L = Unlikely **Medium Risk**	Y	Conditions 1, 5 and 13-17	N/A

Risk events					Risk rating [1] C = consequence L = likelihood	Applicant controls sufficient?	Conditions [2] of works approval	Justification for additional regulatory controls
Sources / activities	**Potential emission**	**Potential pathways and impact**	**Receptors**	**Applicant controls**				
	Discharge of treated wastewater	Overland runoff / migration into surface water ways potentially causing ecosystem disturbance or impacting surface water quality; Localised contamination of soils; Infiltration to groundwater	Surface water ecosystems: Roderick River (2.6 km north-west) Native Title Holders of Wajarri Yamatiji	Refer to Section 3.1	C = Moderate L = Unlikely **Medium Risk**	Y	Conditions 1, 5 and 13-17	N/A
	Spills/ unintended releases of untreated wastewater, solid waste or treatment chemicals	Overland runoff / migration into surface water ways potentially causing ecosystem disturbance or impacting surface water quality; Localised contamination of soils; Infiltration to groundwater	Surface water ecosystems: Roderick River (2.6 km north-west) Native Title Holders of Wajarri Yamatiji	Refer to Section 3.1	C = Moderate L = Unlikely **Medium Risk**	Y	Conditions 1, 5 and 13-17	N/A

Note 1: Consequence ratings, likelihood ratings and risk descriptions are detailed in the *Guideline: Risk Assessments* (DWER 2020).

Note 2: Proposed applicant controls are depicted by standard text. **Bold and underline text** depicts additional regulatory controls imposed by department.

4. Consultation

Table 6 provides a summary of the consultation undertaken by the department.

Table 6: Consultation

Consultation method	Comments received	Department response
Application advertised on the department's website on 3 June 2023	None received	N/A
Local Government Authority advised of proposal on 1 June 2023	None received	N/A
Department of Health (DOH) advised of proposal 1 June 2023	DOH replied 21 June 2023 advising that; • Application to Construct or Install an Apparatus for the Treatment of Sewage' (Application) is required to be submitted to the Local Government for each wastewater treatment system. As this proposal is viewed as commercial, the applications are required to be forwarded to the DoH for assessment and approval. • The proposed systems must be systems approved or certified for use by the DoH. They will require an adequate ongoing maintenance program. • A separate wastewater Application is required for the vehicle wash down wastewater. • A site-specific Site and Soil Evaluation (SSE) is to be undertaken by a qualified consultant during the wettest seasonal time of the year (mid-July/August) • Detailed plans showing the proposed building envelopes, all trafficable areas, parking bays and land application area/s including setback distances, exclusion zones and measurements is to be provided with the Application	The department notes the DOH comments and this information is provided to the applicant in this decision report. It is the applicants responsibility to obtain other relevant approvals not required by the department. The department notes that an SSE was provided by the applicant and considers the document to be an adequate representation of the wettest seasonal time of the year due to the site works being completed in March which has the highest monthly average mean rainfall for the area.
Wajarri Yamaji Aboriginal Corporation	None received	N/A

Consultation method	Comments received	Department response
(WYAC) advised of proposal 1 June 2023		
Applicant was provided with draft documents on 5 July 2023	The applicant replied 7 July 2023 stating that a works approval to registration pathway was preferred and requested this be reflected in condition 12(b)	The department noted this information and amended condition 12(b) to state “until such time as a ***registration or*** licence for that item of infrastructure is granted in accordance with Part V of the Environmental Protection Act 1986 and only where this occurs prior to the time period specified in sub provision (a)”.

5. Conclusion

Based on the assessment in this decision report, the delegated officer has determined that a works approval will be granted, subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

References

1. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
2. Department of Water and Environmental Regulation (DWER) 2020, *Guideline: Environmental Siting*, Perth, Western Australia.
3. DWER 2020, *Guideline: Risk Assessments*, Perth, Western Australia.
4. Standards Australia 2008, *AS 3780 2008 The storage and handling of corrosive substances*, Standards Australia, Sydney, NSW.

Appendix 1: Application validation summary

SECTION 1: APPLICATION SUMMARY					
Application type					
Works approval	☒				
~~Licence~~	☐	~~Relevant works approval number:~~		~~None~~	☐
		~~Has the works approval been complied with?~~	~~Yes ☐ No ☐~~		
		~~Has time limited operations under the works approval demonstrated acceptable operations?~~	~~Yes ☐ No ☐ N/A ☐~~		
		~~Environmental Compliance Report / Critical Containment Infrastructure Report submitted?~~	~~Yes ☐ No ☐~~		
		~~Date Report received:~~			
~~Renewal~~	☐	~~Current licence number:~~			
~~Amendment to works approval~~	☐	~~Current works approval number:~~			
~~Amendment to licence~~	☐	~~Current licence number:~~			
		~~Relevant works approval number:~~		~~N/A~~	☐
~~Registration~~	☐	~~Current works approval number:~~		~~None~~	☐
Date application received		28th February 2023			
Applicant and Premises details					
Applicant name/s (full legal name/s)		Square Kilometre Array Observatory (SKAO)			
Premises name		SKAO Construction Camp			
Premises location		Lot 18 DP 220344 Located in the Shire of Murchison and within the ex-Boolardy station (Lease Number: N049598).			
Local Government Authority		Shire of Murchison			
Application documents					
HPCM file reference number:		DWERDT743229			
Key application documents (additional to application form):		Supporting Document - Works Approval Application by Aurecon			
Scope of application/assessment					
Summary of proposed activities or changes to existing operations.		Construction of a: • WWTP with an irrigation sprayfield for the discharge of treated wastewater. • washdown bay equipped with an Oil-Water Separator (OWS)			

Category number/s (activities that cause the premises to become prescribed premises)

Table 1: Prescribed premises categories

Prescribed premises category and description	Proposed production or design capacity	Proposed changes to the production or design capacity (amendments only)
Category 85: 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.	36 m3/day	N/A

Legislative context and other approvals

Has the applicant referred, or do they intend to refer, their proposal to the EPA under Part IV of the EP Act as a significant proposal?	Yes ☒ No ☐	Decision made to not assess the proposal under Part IV of the EP Act Managed under Part V ☒ Assessed under Part IV ☐
Does the applicant hold any existing Part IV Ministerial Statements relevant to the application?	Yes ☐ No ☒	Ministerial statement No: EPA Report No:
Has the proposal been referred and/or assessed under the EPBC Act?	Yes ☒ No ☐	Reference No: 2017/7874 The assessment (EPBC 2017/7874) was determined by the DCCEEW to be not a controlled action in March 2017
Has the applicant demonstrated occupancy (proof of occupier status)?	Yes ☒ No ☐	Certificate of title ☒ General lease ☐ Expiry: Mining lease / tenement ☐ Expiry: Other evidence ☐ Expiry:
Has the applicant obtained all relevant planning approvals?	Yes ☐ No ☐ N/A ☒	Approval: Expiry date: If N/A explain why? As per scheme, project is for scientific research and therefore DA not required.
Has the applicant applied for, or have an existing EP Act clearing permit in relation to this proposal?	Yes ☒ No ☐	CPS No: 9547
Has the applicant applied for, or have an existing CAWS Act clearing licence in relation to this proposal?	Yes ☐ No ☒	Application reference No: N/A Licence/permit No: N/A No clearing is proposed.
Has the applicant applied for, or have an existing RIWI Act licence or permit in relation to this proposal?	Yes ☐ No ☒	Under preparation

Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the EP Act)?	Yes ☒ No ☐	Name: Gascoyne Groundwater Area Type: Proclaimed Groundwater Area Has Regulatory Services (Water) been consulted? Yes ☐ No ☐ N/A ☒ Regional office:
Is the Premises situated in a Public Drinking Water Source Area (PDWSA)?	Yes ☐ No ☒	Name: N/A Priority: P1 / P2 / P3 / N/A Are the proposed activities/ landuse compatible with the PDWSA (refer to WQPN 25)? Yes ☐ No ☐ N/A ☐
Is the Premises subject to any other Acts or subsidiary regulations (e.g. *Dangerous Goods Safety Act 2004, Environmental Protection (Controlled Waste) Regulations 2004, State Agreement Act xxxx*)	Yes ☒ No ☐	Hydrocarbon production as part of Oil Water Separator. Disposed offsite using Controlled Waste Contractor.
Is the Premises within an Environmental Protection Policy (EPP) Area?	Yes ☐ No ☒	If Yes include details of which EPP(s) here.
Is the Premises subject to any EPP requirements?	Yes ☐ No ☒	If Yes, include details here, e.g. Site is subject to SO_2 requirements of Kwinana EPP.
Is the Premises a known or suspected contaminated site under the *Contaminated Sites Act 2003*?	Yes ☐ No ☒	Classification: N/A Date of classification: N/A