

Decision Report

Application for Works Approval

Part V Division 3 of the Environmental Protection Act 1986

Works Approval Number	W2906/2025/1
Applicant	Square Kilometre Array Observatory
Registered business address	26 Dick Perry Avenue KENSINGTON, WA, 6151
File Reference	APP-0026492
Premises	SKAO Central Power Station
	Legal description - Part of Lot 18 on Deposited Plan 220344
	As defined by the coordinates in Schedule 2: Premises boundary
Date of report	22 May 2025
Decision	Works approval granted

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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 Square Kilometer Array Central Power Station (the premises). Compliance with the Environmental Protection (Unauthorised Discharges) Regulations 2004 which apply to the operational aspects of the premises were assessed. As a result of this assessment, Works Approval W2906/2025/1 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 <u>https://www.wa.gov.au/service/building-utilities-and-essential-services/integrated-essentialservices/dwer-regulatory-documents</u>.

2.2 Application summary

On 21 November 2024, the Square Kilometre Array Observatory (SKAO, 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 establishment of power generation infrastructure to supply the Central Processing Facility for the Square Kilometre Array (SKA) radio telescope at Boolardy Station, approximately 315 km northeast of Geraldton.

The premises, located on part of Lot 18 on Deposited Plan 220344, South Murchison relates to category 87: Fuel burning with a maximum fuel burning capacity of 246 kg/hr in aggregate, under Schedule 1 Part 2 of the *Environmental Protection Regulations 1987* (EP Regulations) which are defined in works approval W2906/2025/1. 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 W2906/2025/1.

2.3 Overview of the premises

The applicant is constructing the Square Kilometre Array (SKA) radio telescope at Boolardy Station in the Western Murchison region of Western Australia. This international initiative, managed by the Commonwealth of Australia, aims to build the world's largest and most sensitive radio telescope. Western Australia is hosting the SKA1-Low Frequency Aperture Array (SKA1-Low), the low-frequency component of the project. The new infrastructure, including the SKA1-Low Array, will be situated at the Murchison Radio-astronomy Observatory (MRO), approximately 315 km northeast of Geraldton, and 130 km northwest of Cue.

To power the Central Processing Facility (CPF), the applicant proposes to establish power generation infrastructure and a fuel storage of approximately 300,000 L on Pastoral Lease No. 3114/406 (Crown lease 3146/1966). The key components of the facility to be established under the works approval include:

- Five 1.250 kVA containerised self-bunded generators
- Three 110,000-litre diesel storage tanks each with a usable volume of 100,000 litres
- A self bunded storage unit for new and waste oil storage; and

• Additional equipment such as load banks, shunt reactors, transformers, switch room and storage units.

Construction activities will encompass vegetation clearing, earthworks, infrastructure installation, and equipment commissioning.

2.4 Other relevant approvals

2.4.1 Part V of the EP Act (Clearing of Native Vegetation)

The application will require the clearing of approximately 0.56 hectares of native vegetation. Native vegetation clearing is authorised within two Native Vegetation Clearing Permits (NVCP) granted under Part V Division 2 of the EP Act (CPS 9547-1 and CPS 10114-1).

2.4.2 Part IV of the EP Act

The proposal to construct and operate the SKA1-Low project was referred to the Environmental Protection Authority (EPA) under Part IV of the EP Act in 2017. The EPA determined that the project would not require assessment under Part IV of the EP Act, based on the following justifications:

- The proposed infrastructure, including the central core and spiral arms, Control and Processor Facility (CPF), temporary construction camp, permanent accommodation facility, power plant, and airstrip modifications being situated within common vegetation communities.
- The linear design of the infrastructure minimises impacts on riparian vegetation communities and priority flora species.
- Fauna species likely to occur within the project boundary are common to the region and have been considered in the design features of the array.
- The clearing of native vegetation would be appropriately assessed under Part V of the EP Act Division 2, in accordance with the Environmental Protection (Clearing of Native Vegetation) Regulations 2004 (the Clearing Regulations).

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 1 below. Table 1 also details the control measures the applicant has proposed to assist in controlling these emissions, where necessary.

Emission	Sources	Potential pathways	Proposed controls			
Construction						
Dust	Excavational and bulk earthworks Native vegetation clearing	Air / wind dispersion	Dust suppression measures (water tanks/carts). Avoid clearing during extreme windy conditions.			
Noise			Day time construction.			
			Fitting non-tonal reversing beepers or an equivalent to use on mobile plant.			
Commissioning/C	peration					
Hydrocarbons (oil and diesel) and potentially contaminated	Hydrocarbon and waste storage	Direct discharge to land, overland flow and infiltration to groundwater	All tanks and generators to be equipped with bunds (self-bunded) that can hold more than 110% of the tank/generator volume.			
stormwater			Tank loading area will have a spill grate.			
			Generator bunds are fitted with leakage sensors that alarm when activated initiating shut-down of the generator.			
			Above ground oil and fuel delivery lines to enable detection of leaks.			
			Shunt reactors and transformers will be located within concrete bunding on footings 0.5 m above the highest flood level.			
			Report and record spills as they occur and immediately clean up.			
			Spill kits must be made available for spill mitigation.			
			Use pads and drip trays when refueling. Contaminated soils and materials to be stored in bunded areas and disposal offsite at a licensed facility.			
			Ongoing monitoring of evidence of groundwater pollution caused by operations and maintenance activities.			
			Shunt reactor/transformer bunded area will have stormwater collection sumps fitted with a prefilter and a Filtrelec 15M2 unit (can achieve a hydrocarbon concentration of ≤5 ppm) for hydrocarbon removal from stormwater prior to discharge.			

Table 1: Emissions, Sources, Pathways and proposed applicant controls

Emission	Sources	Potential pathways	Proposed controls
Air emissions: CO, SOx and NOx.	Operation of diesel fired generators	Air / wind dispersion	After installation is complete, inspect all equipment for any damage before commissioning. Use low sulfur diesel in engines when possible.

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

 Table 2: 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 southern Wajarri Yamatiji Part A Native Title Determination area		
SKAO Construction camp for power plant construction workers	4.8km north east of premise boundaries. (NOTE: Not considered a receptors as per above)		
Commercial premises - Boolardy Airport	23 km south-west of premises boundaries.		
Environmental receptors	Distance from prescribed activity		
 Threatened and/or priority fauna were recorded during the field survey (AECOM, 2014). Egernia stokesii badia (Western Spiny-tailed Skink), Endangered EPBC Act and Vulnerable WC Act. Idiosoma nigrum (Shield-backed Trapdoor Spider) a potential burrow was recorded. Pomatostomus temporalis ashbyi (White-browed Babbler) a potential Priority 4 (P4) subspecies. 	17 km south east		
The closest population of Priority 3 flora <i>Gunniopsis divisa.</i>	19 km south west		
The nearest waterway to the project area is the Roderick River (non-perennial).	3.2 km south		
The Gascoyne Groundwater Area	Located within the proclaimed Gascoyne groundwater area. No information is available on the depth to groundwater.		



Figure 1: Environmental context

3.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020) for each identified emission source and considers 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 3.

Works approval W2906/2025/1 that accompanies this decision report authorises construction. The conditions in the issued works approval, as outlined in Table 3 have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

Upon completion of the power station infrastructure, the works approval holder may apply for a registration. A risk assessment for the operational phase has been included in this decision report.

Table 3: Risk assessment of potential emissions and discharges from the premises during construction and operation

Risk events					Risk rating ¹	Annligent		
Sources / activities	Potential emission	Potential pathways and impact	Receptors	Applicant controls	C = consequence L = likelihood	controls sufficient?	Conditions ^{2, 3} of works approval	Reasoning
Construction	Construction							
Native vegetation clearing	Dust	Air / windborne pathway causing	No relevant sensitive	Refer to				Given the large separation distance to the nearest sensitive receptor the delegated officer considered there is
Excavational and bulk earthworks Installation of infrastructure	ational and arthworks ation of ucture Noise Noise impacts to health or amenity of sensitive receptors	receptors within Section 3.1	NA	Y	NA	no expected risk of amenity or health impacts to sensitive receptors associated with construction emissions.		
Commissioning/Ope	eration							
Operation of power plant	Air emissions	Air / windborne pathway	No relevant sensitive receptors within 10 km	Refer to Section 3.1	NA	Y	NA	Given the large separation distance to the nearest sensitive receptor the delegated officer considered there is no expected risk of air or noise
	Noise emissions							emissions impacting receptors. Noise emissions are required to comply with the assigned levels in the Environmental Protection (Noise) Regulations 1997.
	Hydrocarbon spills from storage, use and delivery Potentially contaminated stormwater	Direct discharge to land and infiltration to groundwater causing contamination	Soils within the premises Groundwater within the Gascoyne Groundwater area (depth unknown)	Refer to Section 3.1	C = Minor L = Unlikely Medium Risk	Y	Condition 1	The delegated officer considered the applicant's controls (primarily secondary containment) sufficient to mitigate the risk of contamination impacts and applied these as construction controls in the works approval. The Environmental Protection (Unauthorised Discharges) Regulations 2004 and Environmental Protection (Controlled Waste) Regulations 2004 will apply during the operation of premises.

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.

Note 3: Conditions 2-6 are all department imposed conditions required for compliance reporting and general complaint and record keeping requirements

4. Consultation

Table 4 provides a summary of the consultation undertaken by the department.

Table 4: Consultation

Consultation method	Comments received	Department response
Application advertised on the department's website on 23 January 2025.	None received	N/A
Shire of Murchison advised of proposal on 29 January 2025.	None received.	N/A
Wajarri Yamaji Aboriginal Corporation RNTBC advised of proposal on 29 January 2025.	None received	N/A
Applicant was provided with draft documents on 14 April 2025.	The applicant responded on 5 May with some clarifications and a minor change to the premises design. The applicant clarified that load banks do not contain fuel, oil or water therefore are not expected to have emissions or discharges. The applicant advised that due to non- conformity for Radio Frequency Interference (RFI) shielding, the proposed oil water separator has been removed from the premises design and bunds would instead be installed with sumps with prefilter and automatic hydrocarbon filter systems for hydrocarbon removal prior to discharge.	The delegated officer removed construction requirements for the load banks as they are not expected to have any emissions. The delegated officer reviewed the design changed and deemed it appropriate to amend the works approval requirements and decision report to reflect the change as the proposed treatment system is expected to meet treated effluent discharge criteria in Water Quality Protection Note 68 and is not expected to increase the risk of impact from potentially contaminated stormwater

5. Decision

Based on the assessment in this decision report, the delegated officer has determined that the proposal to construct and operate the SKAO Central Power Station does not pose an unacceptable risk to human health or the environment.

In coming to this decision, the delegated officer has considered the location of the site, the applicant's proposed controls relating to hydrocarbon containment and distance to sensitive environmental receptors. The applicant's infrastructure controls considered critical to maintaining an acceptable level of risk of environmental impacts have been imposed on the works approval as infrastructure controls for construction.

The conditions of the works approval require the applicant to demonstrate compliance with the specified design and construction requirements, when construction works are complete, through submission of an Environmental Compliance Report. Upon submission of the report the

applicant may apply for Registration of the premises under Regulation 5A of the Environmental Protection Regulations 1987.

The applicant will be required to operate the premises in a manner which complies with the Environmental Protection (Unauthorised Discharges) Regulations 2004.

6. Conclusion

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

References

- 1. AECOM (2014). Square Kilometre Array Ecological Assessment. Prepared for the Department of Industry. Perth, Western Australia.
- 2. Department of Environment Regulation (DER) 2015, *Guidance Statement: Setting Conditions*, Perth, Western Australia.
- 3. Department of Water and Environmental Regulation (DWER) 2020, *Guideline: Environmental Siting*, Perth, Western Australia.
- 4. DWER 2020, Guideline: Risk Assessments, Perth, Western Australia.
- 5. Square Kilometre Array Observatory 2024, SKAO Works Approval Application and supporting documentation, Perth, Western Australia.