



Application for Works Approval

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

Works Approval Number	W3081/2025/1
Applicant	Northern Star Resources Limited
ACN	092 832 892
Application Number	APP-0030310
Premises	Hercules Gold Mine Shire of Coolgardie Legal description Mining tenements M15/469, M15/663, M15/726, M15/740, M15/937, M15/938 and Lot 105 on Deposited Plan 40396. As defined by the Premises map attached to the issued works approval.
Date of Report	13/02/2026
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 time limited operation of the premises. As a result of this assessment, works approval W3081/2025/1 has been granted.

2. Scope of assessment

2.1 Regulatory framework

In completing the assessment documented in this decision report, Department of Water and Environmental Regulation (the department) 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 30 July 2025, Northern Star Resources Limited (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 mine dewatering and landfill activities at the premises. The premises is approximately 22.7 km west south west of the Town of Coolgardie.

The premises relates to the categories and assessed production/design capacity under Schedule 1 of the *Environmental Protection Regulations 1987* (EP Regulations) which are defined in Works Approval W3081/2025/1. 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 2017) are outlined in Works Approval W3081/2025/1.

The Hercules Gold Mine project is a new gold mine pit being developed adjacent to existing open pits and waste rock landforms that were mined in the 1990's. Hercules will consist of an open pit transitioning to an underground mining operation as well as a cutback of the existing Penfolds open pit.

An estimated 11.3 million tonnes of gold-bearing ore will be excavated over a planned 57-month period of operations. Ore will be temporarily stockpiled on site before being transported via road to the nearby Kanowna Belle or Fimiston processing facilities.

This works approval is for the construction and time limited operations of:

- four lined Turkey's Nest dams;
- a putrescible landfills within the waste rock landforms;
- discharge of dewatering effluent into the Erebus north and south, Fuji, Greenback and Penfolds pits; and
- various dewater pipelines.

Each Turkey's Nest dam will be HDPE lined and have a storage capacity of around 8690 m³.

Dewatering will be required to safely mine below the water table with mine dewater to be first discharged into the existing open pits for clarifying / settling and from there pumped into one of four Turkey's Nest dams to be used for mining operations and dust suppression. Water excess to these requirements will be sent to the existing KCGM bore field network.

Once construction of the mine dewatering infrastructure and landfills has been completed, existing licence L5107/1988/13 will need to be amended to incorporate the changes, including the premises boundary (Figure 1).

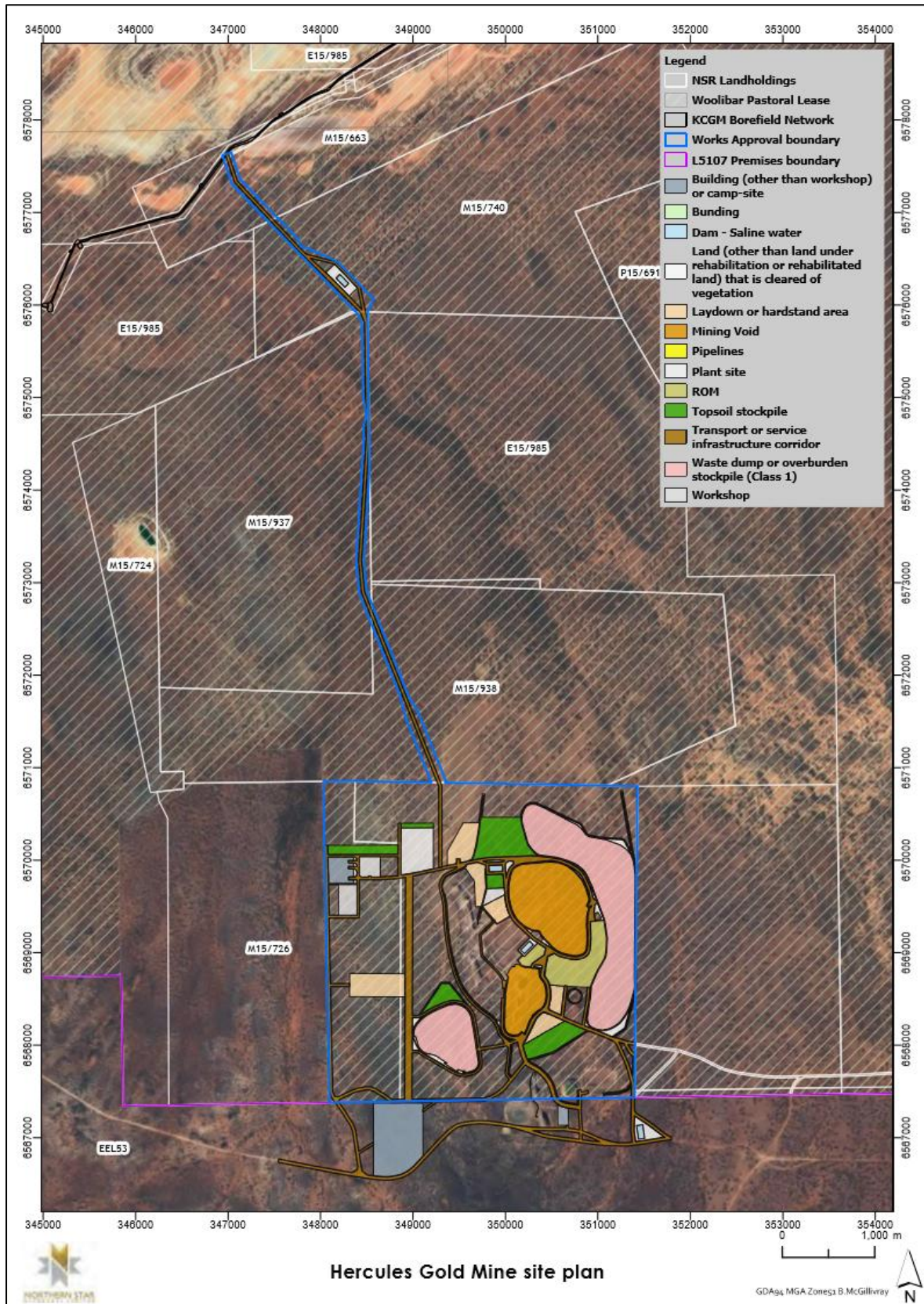


Figure 1: Hercules operations location

2.2.1 Site overview

The proposed Hercules pit is located adjacent to a series of decommissioned mining pits, which will be used to discharge abstracted groundwater pumped from the Hercules mining operation.

Groundwater

Groundwater quality at the Hercules project is near-neutral and hypersaline, with Total Dissolved Solids (TDS) concentrations of around 100,000 mg/L (Northern Star, 2025).

The premises is located within the Woolibar Pastoral Lease, and the nearest registered groundwater bore is over 8 km north of the proposed Hercules pit. A desktop survey shows the nearest groundwater dependant ecosystem to be over 5 km from the proposed Hercules pit (AGE, 2025).

Surface water

Surface drainage at the Hercules site flows north towards a series of salt lakes, approximately 12 km north of the premises boundary. No prescribed water courses are located within the catchment, with the majority of the surface water flowing through three unnamed ephemeral creeks into the northern salt lakes.

Flora and Fauna

Karamindie State Forest is located directly west of the Hercules premises footprint. Vegetation communities found within the Hercules project area are well represented throughout the Goldfields region. No Environmentally Sensitive Areas, Threatened Ecological Communities or Priority Ecological Communities occur within the Hercules project area (Northern Star, 2025).

2.2.2 Details of proposed activities

Mining pits

The construction of the Hercules Pit will involve the removal of around 87 million tonnes of ore and waste rock and will transition to an underground operation after approximately 5 years. The existing Penfolds open pit will also be developed, producing about 16 million tonnes of waste rock and ore product. The ore for both operations will be transported off-site to the nearby Kanowna Belle or Fimiston processing facilities.

Dewater infrastructure

Groundwater will be intersected within the Hercules pit at about 18 metres below ground level and beyond this, will require abstraction for further mining activities. Dewatering of the Hercules and Penfolds pits will require up to 2 Gigalitres (GL) of groundwater per annum to be abstracted. Abstracted dewater will be initially pumped to the existing open pits for settling, then pumped to the proposed turkey's nest dams where it will be used for mining operations and dust suppression activities. Excess water will be pumped to the existing KCGM bore field network pipeline to the north of the project. The location of the proposed infrastructure is shown in Figures 2 and 3 below.

All dewater pipelines will be constructed with the following control measures:

- Bunding/ secondary containment sufficient to contain any spill for a period equal to the time between routine inspections; or
- Equipped with telemetry systems, flow meters or pressure sensors along pipelines to allow the detection of leaks and failures; and
- Equipped with automated cut-outs in the event of a pipe failure.

The exception to this will be a section of the Northern dewatering pipeline that will be buried to reduce the risk of flooding as the pipeline crosses a drainage line (Figure 3). Leak detection will be installed for this section of the pipeline.

The four Turkey's nest dams will be constructed according to the following specifications:

- All dams will be lined with HDPE plastic; and
- Maximum level of all dams will be controlled by level sensors and auto shutoff inflow control logic i.e.; the water is shutoff when it reaches the freeboard setpoint of 300mm;

Landfill

Landfilling of waste materials generated on site will be situated in the three proposed waste rock landforms (WRL's) planned for the Hercules site (Figure 4). Waste is expected to consist of inert type I and II waste, putrescible waste and used tyres. The volume of waste is not expected to exceed 5,000 tonnes per annual period. The in-situ material from the Hercules and Penfolds pits are primarily of clayey-oxide material and have a low permeability. As the cells are being constructed onto the working WRL's, the separation distance from the bottom of each cell and groundwater will be at least 20 metres.

Individual cells will be constructed within the deposited waste rock prior to disposal of waste. Cells will be approximately 2-5 metres deep with 5-10 metre sides and a maximum tipping face of 30 metres. Each cell will have a built-up bund around three sides to divert stormwater from the cell. Once the cell has reached capacity it will be covered level with the surrounding waste landform and a new cell constructed.

Waste to be disposed of in the landfill will be below 5,000 tonnes per annual period. Waste will be limited to the following:

- Clean fill;
- Putrescible waste;
- Inert waste type 1; and
- Inert waste type 2 (used tyres).

The number of tyres expected to be disposed of within the landfill is around 30 heavy machinery tyres and 80 light vehicle tyres per annual period. The storage of tyres on site will not exceed 100 tyres at any one time.

Vegetation clearing

The applicant has applied for a purpose permit with the department to clear up to 560 hectares within the Hercules project area. This application (CPS 11105/1) is currently under assessment. Clearing will be required for the establishment of the Hercules pit, the waste rock landforms, the turkey's nest dams and the dewatering pipeline routes.

Machinery workshop

Vehicles and machinery will be serviced and refuelled at a dedicated workshop constructed on site at the Hercules mine. The workshop will be located to the west of the Greenback open pit and consist of two buildings.

The applicant has developed a *Hydrocarbon and Chemical Management Standard* document that will be implemented at the Hercules site. All workshop and refuelling areas will be constructed to the following standards:

- low permeability compounds of 10^{-9} meters per second or less;
- all hardstand areas will drain to a sump or low point to allow for the recovery of spilt liquids;
- workshop areas will be designed to be weather -proof to prevent stormwater intrusion;
- all storage vessels will be designed or stored within at least 110% of the volume of the largest storage vessel or interconnected system, or at least 25% of the total volume of the substances stored in the compound;
- a washdown facility will be installed containing a sediment pit to allow settling and

recovery;

- storage vessels (tanks, IBCs/pods or drums) will be positioned at least half the height of the vessel away from the edge of the bund wall to prevent escape in the case of a pierced vessel; and
- all storage areas are to be resistant to the substance stored.

During operation of the workshop, the following measures will be implemented to reduce the risk of hydrocarbon discharges:

- All equipment servicing, refuelling and chemical unloading activities will be conducted on an impermeable hardstand surface;
- Drainage valves to be closed unless disposing of waste;
- All storage compounds to be inspected following significant rainfall;
- Regular inspections of bunding and storage vessel integrity will be undertaken;
- All storage vessels will be clearly labelled and with the product name and volume;
- Spill kits will be stored in all bulk storage areas;
- All spills and leaks, inside or outside of bunded areas will immediately be cleaned; and
- All used hydrocarbons, filters, oily rags, chemicals and recovered spills will be stored in designated holding tanks and disposed of off site by a licensed carrier.

The workshop will service the vehicle fleet working on the construction and operation of the Hercules pit and future underground. A number of oils, fuels and coolants will be stored at the workshop. These include:

- 2 x 100kL fuel tanks;
- 6 x 1000L ICB units; and
- Various small drums of oils and lubricants.

Hydrocarbons used at the workshop will be stored in a manner consistent with Australian Standard 1940-2004 *The storage and handling of flammable and combustible liquids*.

Commissioning period

Commissioning of the constructed and installed infrastructure is minimal and expected to take less than a few days. Risk management of potential emissions will be assessed and managed under time limited operations.

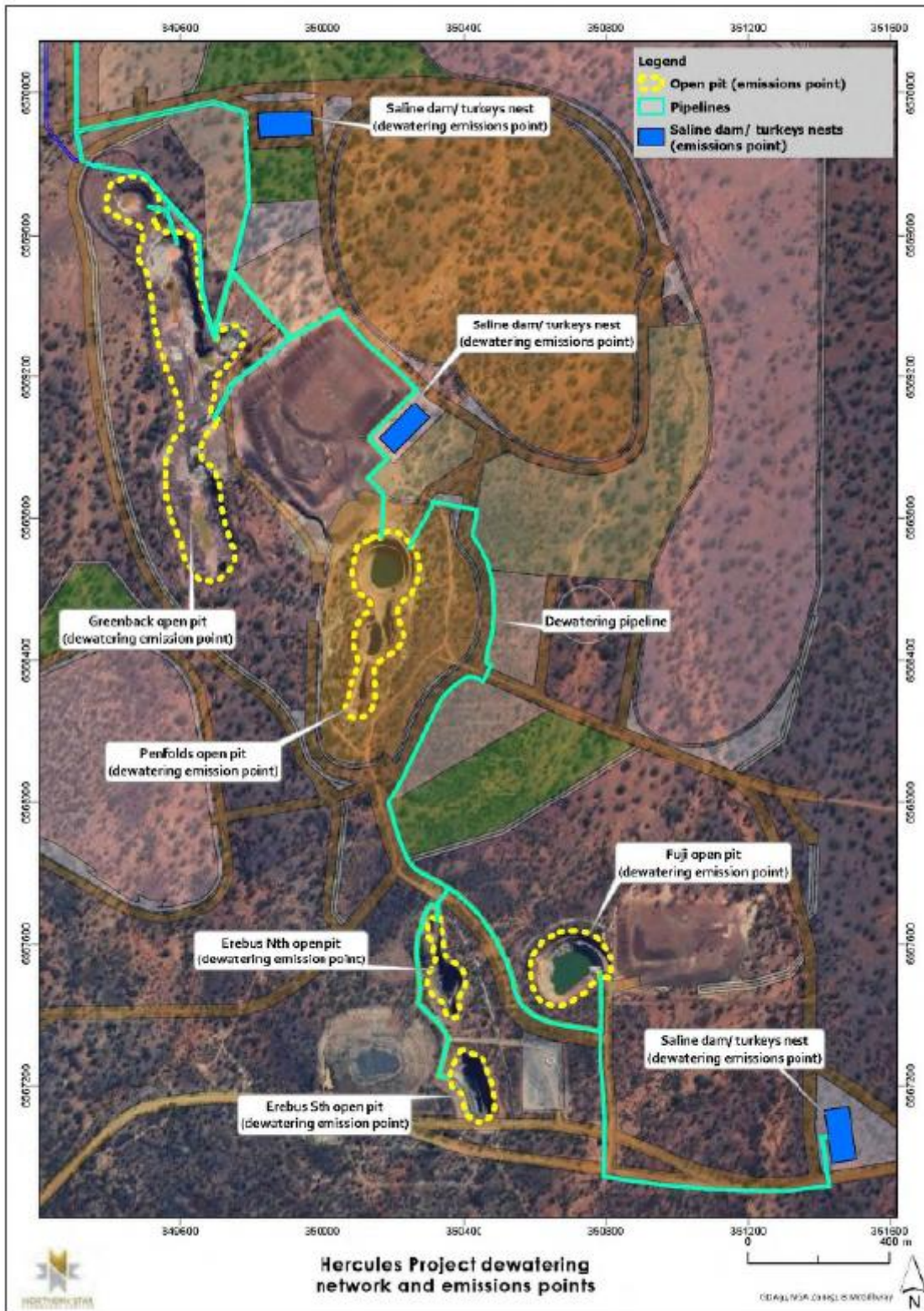


Figure 2: Hercules project infrastructure

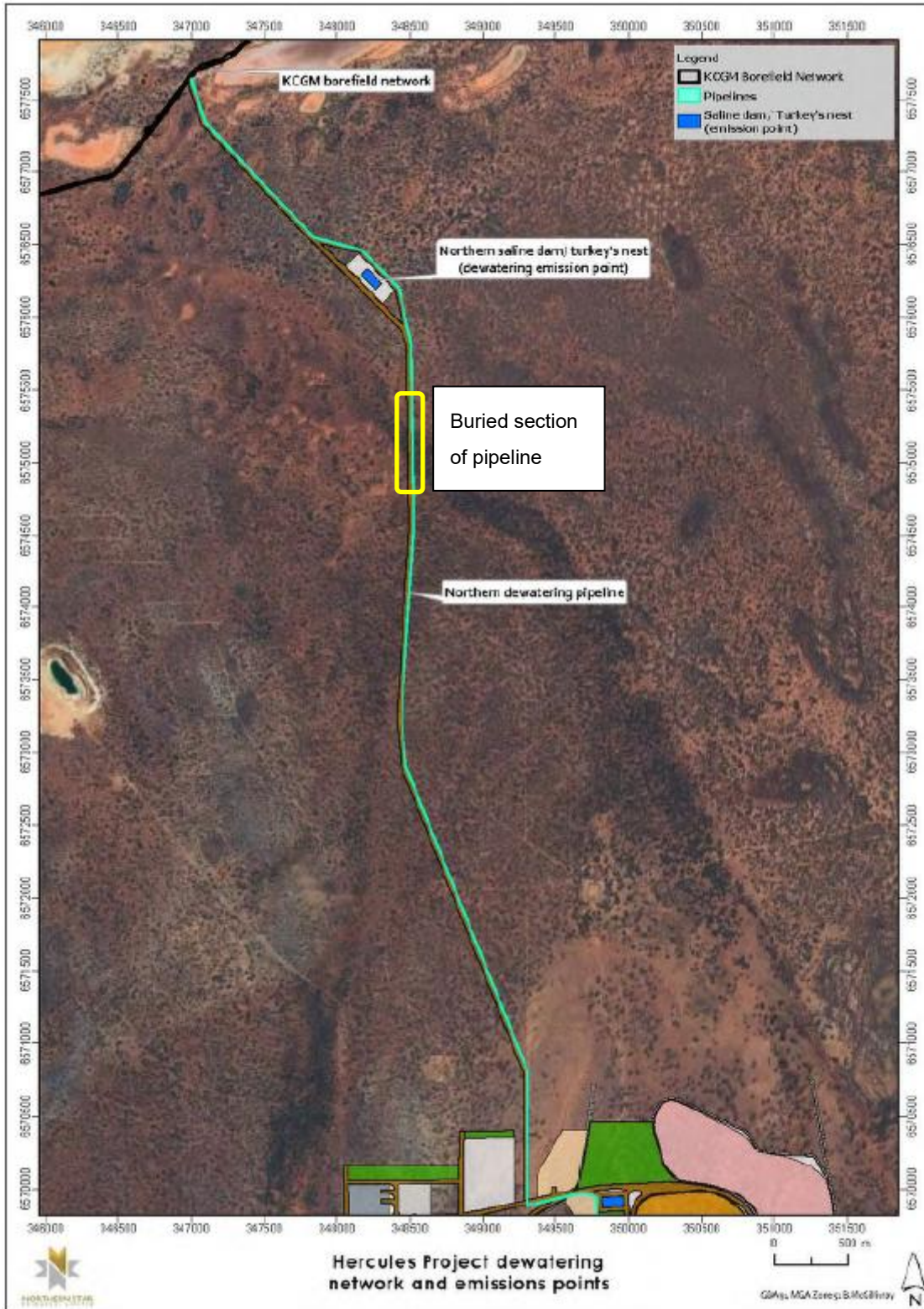


Figure 3: Hercules Northern dewater pipeline

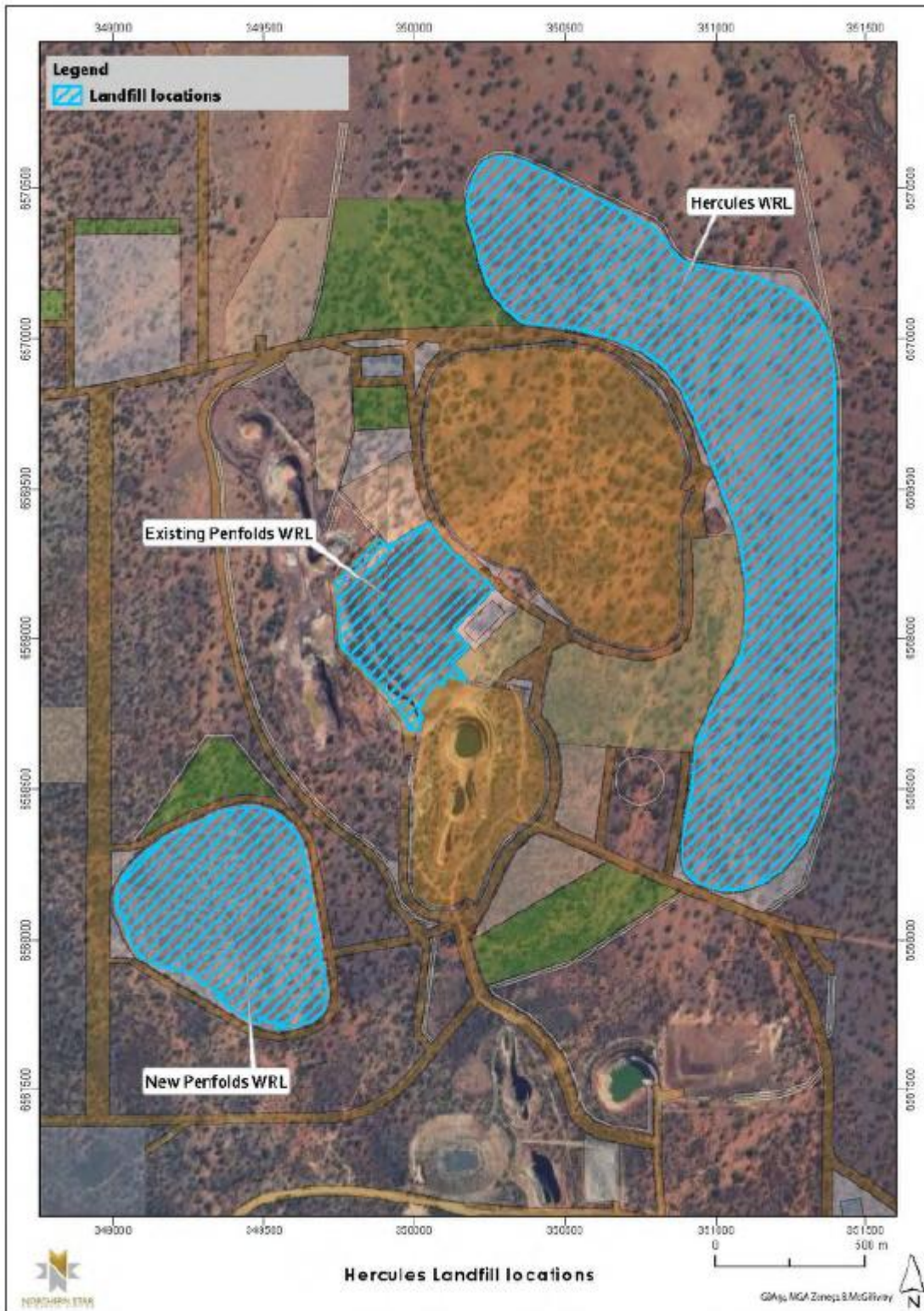


Figure 4: Proposed waste rock landforms (Landfill locations)

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 2017).

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 proposed control measures the applicant has proposed to assist in controlling these emissions, where necessary.

Table 1: Proposed applicant controls

Emission	Sources	Potential pathways	Proposed controls
Construction			
Dust	Vehicle movement, construction of pipeline containment infrastructure, construction of 4 x turkey's nest dams, landfill cell and bund construction.	Air/windborne pathway	<ul style="list-style-type: none"> Water trucks are to be used on exposed areas such as ROM pad and haul roads; and Daily monitoring of visible dust emissions.
Noise			Additional controls not required due to the separation distance to the nearest receptor being over 20 km.
Commissioning and time limited operations			
Saline water	Transport of dewater via pipelines from Hercules Pit to discharge pit and discharge pit to Turkey's nest dams	Overland runoff from ruptured pipelines	<ul style="list-style-type: none"> Bunding/secondary containment OR leak detection to be installed on pipeline routes; and Pipeline installed with auto cut-out in the event of pipeline failure.
	Storage of dewater in Turkey's nest dams	Seepage/overtopping to soil and groundwater	<ul style="list-style-type: none"> HDPE lines Turkey's nest dams; and Minimal freeboard of 300 mm maintained.
Saline water (groundwater mounding)	Discharge of mine dewater into open pits	Seepage to soil and groundwater	<ul style="list-style-type: none"> Freeboard of at least 3 metres in each discharge pit; and Periodic assessment of vegetation

Emission	Sources	Potential pathways	Proposed controls
			surrounding discharge pits; and <ul style="list-style-type: none"> • Periodic sampling of discharged water and stored lake water.
Dust	Covering of waste in landfill within WRL	Air/windborne pathway	Dust emissions will be monitored and managed in accordance with the <i>Work Health and Safety Act 2020</i> and the <i>Work Health and Safety (Mines) Regulations 2022</i> .
Leachate / contaminated stormwater	Landfilling activities	Seepage to soil and groundwater Overland run off	<ul style="list-style-type: none"> • The mine waste from the open pit consists primarily of clayey-oxide material of naturally low permeability; • Compaction of landfill base is expected during construction via heavy earthmoving equipment use and ongoing vehicle traffic; and • Cells will be constructed with soil bunds around three sides to divert stormwater away from the open pit.
Windblown waste		Air/windborne pathway	<ul style="list-style-type: none"> • Waste will be covered monthly; and • Maximum tipping face width of 30 m.
Hydrocarbons, chemicals	Workshop – servicing and refueling fleet	Discharge to soil and groundwater	Construction and operation of the workshop will be managed according to the Northern Star document <i>Hydrocarbon and Chemical Management Standard</i> . Details of proposed controls are described in section 2.2.2 of this report.

3.1.2 Receptors

In accordance with the *Guideline: Risk assessment* (DWER 2017), the delegated officer has excluded employees, visitors and contractors of the applicant’s 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 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 2016)).

Table 2: Sensitive human and environmental receptors and distance from prescribed activity

Human receptors	Distance from prescribed activity
Nearest Human receptor (Woolibar homestead)	24 km south-east of the Hercules Pit
City of Kalgoorlie Boulder	30 km north of the Hercules Pit
Environmental receptors	Distance from prescribed activity
Groundwater (predominately saline – hypersaline)	Groundwater in the vicinity of the proposed Hercules Pit is on average 18 metres below ground level. The nearest pastoralist bore is located over 8 km north of the proposed Hercules Pit.
Surface water 3 x ephemeral creeks draining to a series of salt lakes 10 km north of the Hercules Pit.	Three ephemeral creeks intersect the project disturbance area
Native vegetation	Localised vegetation is found in and around the Hercules Pit disturbance area
Protected fauna	Several locations of Threatened/Priority birds and invertebrates are found within 5km west and south of the premises boundary. No protected fauna is located within the disturbance footprint.

3.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guideline: Risk assessments* (DWER 2017) 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 3.

Works approval W3081/2025/1 that accompanies this decision report authorises construction and time-limited operations. The conditions in the issued works approval, as outlined in Table 3 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 i.e. dewatering and landfill activities. 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 3: Risk assessment of potential emissions and discharges from the premises during construction and operation

Risk Event					Risk rating ¹ C = consequence L = likelihood	Applicant controls sufficient?	Conditions ² of works approval	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Applicant controls				
Construction								
Construction of 4 x Turkey's nest dams Construction and installation of dewater pipelines Construction of landfill cells and stormwater bunds	Dust	Air/windborne pathway causing impacts to health and amenity	Localised native vegetation Woolibar homestead 24 km SE of Hercules pit	Refer to Section 3.1	C = Minor L = Unlikely Medium Risk	Y	Conditions 1, 2 and 3	N/A
	Noise		Woolibar homestead 24 km SE of Hercules pit	Refer to Section 3.1	C = Minor L = Rare Low Risk	Y		
Operation (including time-limited operations)								
Discharge of mine dewater from Hercules pit to various discharge pits Transfer of pit water to Turkey's nest dams	Saline water	Direct discharge to land from pipeline rupture potentially causing ecosystem disturbance and impacting on localised vegetation	3 x ephemeral creeks within the premises Localised native vegetation	Refer to Section 3.1	C = Moderate L = Unlikely Medium Risk	Y	Conditions 5, 6, 7, 8, 10, 11, 12 and 13	N/A
		Direct discharge to land from overtopping of pit potentially causing ecosystem disturbance and impacting on localised	Localised native vegetation		C = Moderate L = Rare Medium Risk	Y		

Risk Event					Risk rating ¹	Applicant controls sufficient?	Conditions ² of works approval	Justification for additional regulatory controls
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Applicant controls	C = consequence L = likelihood			
		vegetation						
		Seepage of mine dewater through discharge pit base and walls resulting in groundwater mounding / water quality changes	Localised native vegetation Groundwater		C = Minor L = Likely Medium Risk	Y		
Disposing of waste in landfill cells	Windblown waste	Air / windborne pathway causing ecosystem disturbance	Localised native vegetation	Refer to Section 3.1	C = Slight L = Possible Low Risk	Y	Conditions 5, 6, 9, 12 and 13	N/A
	Leachate / contaminated stormwater	Seepage to soil and groundwater resulting in groundwater quality changes	Groundwater	Refer to Section 3.1	C = Slight L = Unlikely Low Risk	Y		
		Overland runoff causing ecosystem disturbance and impacting on localised vegetation	Localised soils and vegetation	Refer to Section 3.1	C = Slight L = Unlikely Low Risk	Y		
Workshop - Servicing/refueling vehicles	Hydrocarbons, chemicals	Direct discharge to land impacting on localised vegetation	Localised soils and vegetation	Refer to Section 3.1	C = Moderate L = Unlikely Medium Risk	Y	Conditions 1, 2 and 3	N/A

Note 1: Consequence ratings, likelihood ratings and risk descriptions are detailed in the *Guideline: Risk assessments* (DWER 2017).

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

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 (14/10/2025)	Comments received from public submission on 4/11/2025.	Refer to Appendix 1
Shire of Coolgardie advised of proposal (1/10/2025)	No Comments received	N/A
Applicant was provided with draft documents on 7/01/2026	Comments were received on 15/01/2026. Minor request to change wording in condition 11 table 5 to 'pit lake water level' instead of 'standing water level'	Request accepted.

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) 2016, *Guideline: Environmental siting*, Joondalup, Western Australia.
3. DWER 2017, *Guideline: Risk assessments*, Joondalup, Western Australia.
4. Northern Star Resources Ltd 2025, *Works Approval Supporting Document Hercules Gold Mine*, Subiaco, WA, 6904.
5. Australasian Groundwater & Environmental Consultants (AGE) June 2025, *Report on Hercules Groundwater Assessment*, North Perth, WA, 6006.
6. AQ2 Pty Ltd (AQ2), June 2025, *Surface Water Assessment Hercules Project*, Perth, WA, 6000.
7. Northern Star Resources Limited 2019, *Hydrocarbon and Chemical Management Standard*, Subiaco, WA, 6904.

Appendix 1: Summary of public submission on application

Summary of public submission received 4 November 2025	Department's response
Suggest increasing the monitoring network to capture the "special variability" of the drawdown for dewatering activities.	Drawdown impacts from dewatering activities are outside the scope of this assessment. Groundwater abstraction is regulated under the <i>Rights in Water and Irrigation Act 1914</i> .
Modelling for impacts on surface waters from high rainfall events should represent the 100-year return period. A clear maintenance plan should be developed to ensure integrity of the stormwater bunds over the life-of-mine period.	Stormwater modelling in the supporting documents was based on a 1% Annual Exceedance Probability (AEP), which translates to a 1 in 100 year event. The works approval holder is expected to keep all pollution control infrastructure in good working order.
Measures proposed for the management of leachate from putrescibles in the landfill are inadequate. Suggest geomembrane liners and a monitoring regime for groundwater leachate using monitoring wells.	The amount of landfilled materials will be relatively low (under 5,000 tonnes/year). Separation distances to localised groundwater will be at least 18 metres at all times. The risk of impacts from the proposed landfill activities does not justify the additional control measures. See Section 3.2 for further information.
Groundwater dependant ecosystems are not adequately identified and the potential impacts from proposed mining activities are not highlighted.	<p>Desktop assessment of the site indicates no Environmentally Sensitive Areas or Threatened Ecological Communities near the Hercules project.</p> <p>Groundwater within the area of the mine location is at least 18 metres below ground level, suggesting that groundwater-dependent ecosystems are not present.</p>
Long-term impacts are not considered, taking into account the possibility of climate change and differing rainfall and evaporation amounts.	<p>Australasian Groundwater and Environmental Consultants Pty Ltd (AGE) conducted a groundwater modelling assessment of the potential impacts that the Hercules Mine will have on surrounding groundwater resources, taking into consideration a 70-year history of rainfall at the site. This included a 16-year prediction on groundwater levels and the predicted water table drawdown levels post-mining operation.</p> <p>Groundwater abstraction is regulated under the <i>Rights in Water and Irrigation Act 1914</i>.</p>