



aww

Application for Licence Amendment

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

Licence Number	L8721/2013/2
Licence Holder	Karara Mining Limited
ACN	070 871 831
File Number	2012/008499-1~17
Premises	Karara Minesite Beneficiation Plant Legal description – M59/644, M59/649-I, M59/645, M59/721, G59/38, L59/93, L59/99 and L59/109 PERENJORI WA 6620 As defined by the Premises maps attached to the Revised Licence
Date of Report	20 August 2024 (FINAL)
Proposed Decision	Intent to grant revised licence

Table of Contents

1. Decision summary	1
2. Scope of assessment	1
2.1 Regulatory framework	1
2.2 Application summary	1
2.2.1 Duplication of the existing wet concentrate storage facility	1
2.2.2 Overview of storage design	1
2.2.3 Seepage from the WCSF and drainage system	3
2.3 Part IV of the EP Act	3
3. Risk assessment	3
3.1 Source-pathways and receptors	4
3.1.1 Emissions and controls	4
3.1.2 Receptors	5
3.2 Risk ratings	6
4. Consultation	10
5. Conclusion	11
5.1 Summary of amendments	11
References	11
Appendix 1: Summary of Licence Holder’s comments on draft amendment report and draft revised licence	12
Table 1: Licence Holder controls	4
Table 2: Sensitive human and environmental receptors and distance from prescribed activity	5
Table 3. Risk assessment of potential emissions and discharges from the Premises during construction and operation	7
Table 4: Consultation	10
Table 5: Summary of licence amendments	11

1. Decision summary

Licence L8721/2013/2 is held by Karara Mining Limited (Licence Holder) for the Karara Minesite Beneficiation Plant (the Premises), located at M59/644, M59/645, M59/721, M59/649-I, G59/38, L59/93, L59/99 and L59/109, Perenjori WA.

This Amendment Report documents the assessment of potential risks to the environment and public health from proposed changes to the emissions and discharges during the construction and operation of the Premises. As a result of this assessment, Revised Licence L8721/2013/2 has been granted.

2. Scope of assessment

2.1 Regulatory framework

In completing the assessment documented in this Amendment Report, 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

On 16 May 2024, the Licence Holder applied to the department to amend Licence L8721 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). The amendment is for the duplication of the existing wet concentrate storage facility (WCSF). It will include an additional 4 cells to meet requirements of increased production of wet concentrate. The additional cells are to have a maximum capacity of 100,000t Magnetite concentrate, equivalent to 72,000 Dry Metric tonnes. There is no change to assessed production capacity.

Department of Energy, Mining, Industry Regulation, and Safety (DEMIRS) approved the mining proposal application for the proposed expansion on 6 August 2024 (Reg ID 124340).

2.2.1 Duplication of the existing wet concentrate storage facility

The proposed facility will be located within the Magnetite processing Plant area, adjacent to the existing WCSF, south of the Magnetite Concentrate Loading area. Figures 1 and 2 show the existing WCSF and the proposed area for the proposed facility extension. The total area for the facility is approximately 6Ha to accommodate the associated infrastructure which includes:

- Concentrate drying bays after recovery from the storage,
- Access roads and site drainage;
- Topsoil and vegetation stockpile areas; and
- General access around the facility.

2.2.2 Overview of storage design

The extension of the WCSF is designed in four cells to store a total of 100,000t of wet concentrate slurry (72,000 DMT concentrate product) at minimum solids content of 70%. This material will be recovered regularly (not more than 6 weeks after deposition) and dewatered/dried to the required moisture specification and exported.

The facility has been designed to store the concentrate at its maximum capacity, plus an allowance of 1:100 year storm event and a 0.3m freeboard. The freeboard stated will be less relevant due to the transient nature of the concentrate filling and removal process (as compared to normal TSF where material is permanently stored and subject to long term rainfall events).

The proposed storage area has been divided in to four cells for operational flexibility. The total capacity of the four cells is 47,000m³ (Cell 5&6 – 10,400m³ each and Cell 7&8 - 13,100m³

each). Concentrate discharge can occur in any of the cells but is expected that, deposition will occur in one cell at a time such that, whenever material recovery is needed, wet concentrate storage can still occur in the other cell.

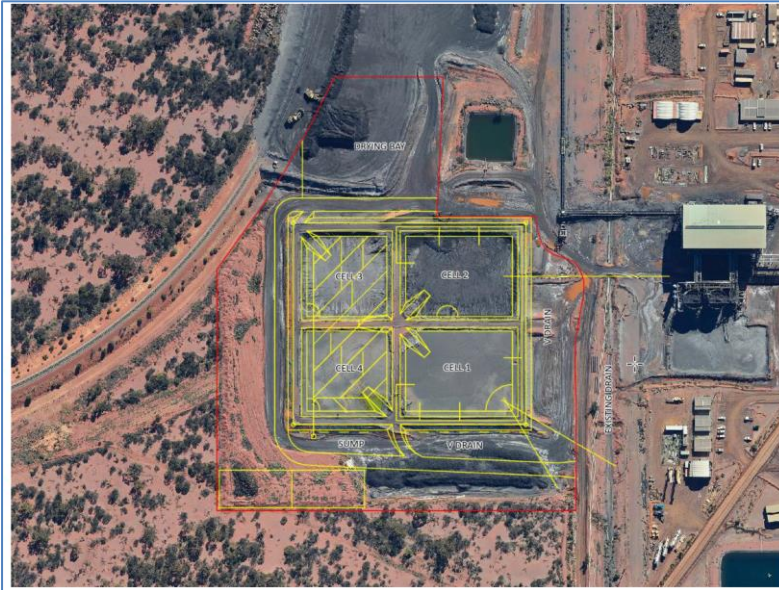


Figure 1: Location and layout of existing Wet Concentrate Facility



Figure 2: Location and layout of proposed Wet Concentrate Facility

2.2.3 Seepage from the WCSF and drainage system

Seepage modelling to determine phreatic surfaces and water balance were not undertaken due to concentrate slurry characteristics, deposition methodology and recovery, low height of the structure and water removal systems built into the design.

The wet concentrate will be deposited at very high solids content of 70-75% which will have relatively low supernatant water to be decanted. Together with the high evaporation in the area, the intermitted subaerial deposition method and periodic recovery of the product in full makes such analyses unnecessary.

Further, a floating dewatering facility named “Turret” is proposed to be used to recover the supernatant water from the WCSF cells. The applicant has advised that the “Turret” system integrates a water recovery pump, inlet HDPE pipeline and discharge pipeline, which floats on top of the water and draws water from under surface to minimise ingestion of concentrate or silt – see below indicative diagram of the “Turret” system (Figure 3). The use of the system to manage water volumes will also assist with reducing seepage from the facility.

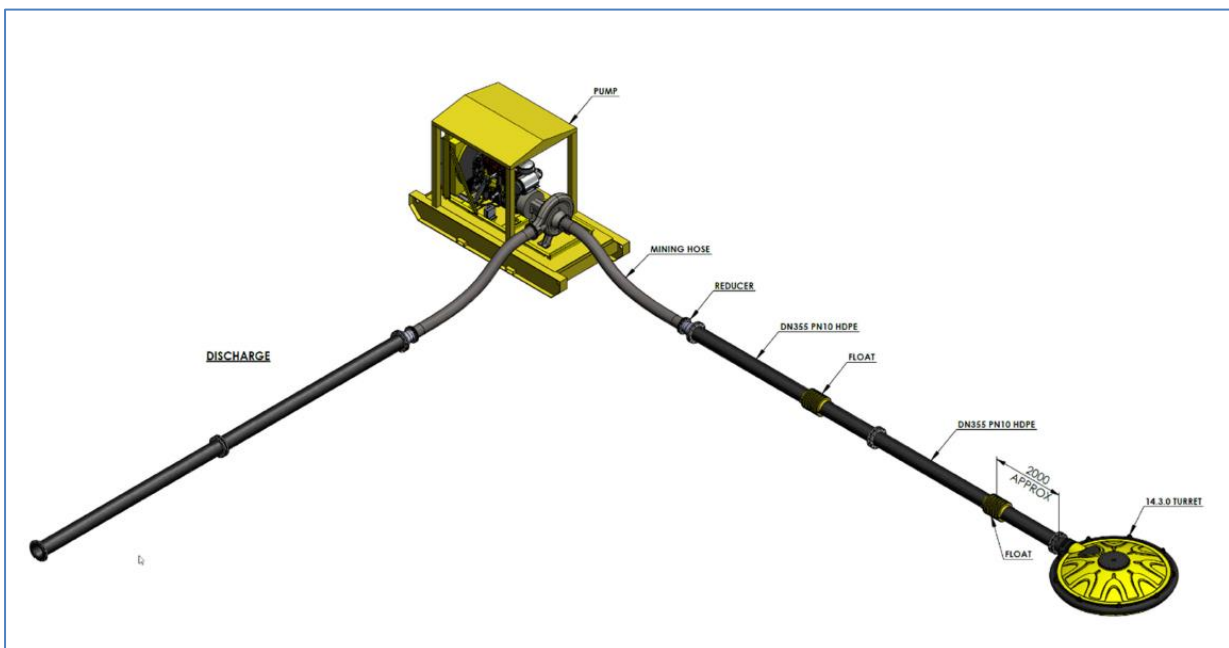


Figure 3: Floating Dewatering System “Turret”

Reference: Equipment & Accessories - The Turret™ - Turret Engineering (turrets.com.au)

2.3 Part IV of the EP Act

Ministerial Statement 805 (MS 805) was issued to Karara Mining Limited on 8 September 2009, for the construction and operation of the magnetite iron mine, processing plant and associated infrastructure. Condition 6 and 8 regulates impacts from mining and mining activities to the Blue Hills vegetation complex Priority Ecological Community. This includes dust emissions and control using saline water, fauna protection, spider monitoring, fauna mortality register, conservation of significant reptiles, and mine closure and rehabilitation. The extension of the wet concentrate storage facility is consistent with MS 805.

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 Amendment Report are detailed in Table 1 below. Table 1 also details the proposed control measures the Licence Holder has proposed to assist in controlling these emissions, where necessary.

Table 1: Licence Holder controls

Emission	Sources	Potential pathways	Proposed controls
Dust	WCSF expansion - vehicle movements/ construction activity	Air/windborne pathway causing impacts to health and amenity	Clearing activities to be conducted during favorable climatic conditions. Dust suppression via the use of a water truck.. No clearing in excessively windy conditions. Implementation of Dust Management Plan (CORP-EN-PLN-1010). Flora and vegetation health monitoring. Dust monitoring during construction (visual) and incident reporting.
Potentially contaminated Stormwater		Direct discharge to land Potential soil contamination, impact to nearby vegetation health, and possible surface water / groundwater contamination	Operational clean and dirty water diversion channels. Construction of V-drains at the toes of the perimeter embankments to divert surface water run-off from the WCSF to the sumps and existing diversion drain. Construction of two collection sumps. Recovered water to be pumped back to processing plant.
Hydrocarbon spills and leaks	Hydrocarbons used in construction of WCSF, failure of pumping equipment machinery and vehicles.	Direct discharge to land via infiltration Potential impact to soil and groundwater	All chemicals shall be stored in containment bunds, sea containers or chemical cabinets as appropriate for the volume and nature of the chemicals.
Wet concentrate discharged outside of the WCSF	WCSF	Direct discharge to land via infiltration Potential impact to soil and groundwater	Multi spigot deposition of the wet concentrate as per the operation manual to enable decanted water to be pumped back to the processing plant to minimise the ponding size. Installation of floating dewatering system ('Turret').
Excessive			

Emission	Sources	Potential pathways	Proposed controls
seepage of supernatant water to land/ underlying groundwater			<p>Operational freeboard of 0.3m is maintained at the proposed cells and 0.5m at the common embankment with existing storage cells.</p> <p>Spigot rotation and management of deposition in accordance with operation manual.</p> <p>Flushing of discharge and delivery pipelines to avoid blockages.</p> <p>Daily inspections of the embankment walls and decant system. Daily inspections of the WCSF to ensure freeboard is below 0.3m at the proposed cells embankments and 0.5m at the common southern embankment.</p> <p>Engineering inspections every three years in accordance with DMIRS Code of Practice (2013).</p> <p>Monthly field water monitoring of the supernatant water.</p>
Dust	Storage of magnetite concentrate product at the WCSF	Air/windborne pathway causing impacts to health and amenity	Dust suppression through water truck.

3.1.2 Receptors

In accordance with the *Guideline: Risk assessments* (DWER 2020), the Delegated Officer has excluded employees, visitors and contractors of the Licence Holder’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 2020)).

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

Human receptors	Distance from activity / prescribed premises
Aboriginal heritage sites	<p>Granite Pavement and Rock Hole (ID:24848) – 1km from WCSF proposed extension.</p> <p>On premises</p> <p>Impacts to Aboriginal heritage sites have been addressed according to s18 of the Aboriginal Heritage Act 1972 (AHA) - ruled out as a receptor.</p>
Karara homestead	<p>7km southwest</p> <p>Screened out due to distance</p>

Environmental receptors	Distance from activity / prescribed premises
Priority 1 PEC	Blue Hills (Mount Karara/ Mungada Ridge/ Blue Hills) vegetation complexes (BIF) - On premises Monitoring under MS 805
Threatened flora	Acacia karina (P1) - 1.5km SW from WCSF Acacia woodmaniorum (T) – in the area
Priority fauna habitat	Premises contains habitat of priority fauna including Malleefowl, Western Spiny-tailed Skink and priority flora. EPBC Management Plans in place
Groundwater	Gascoyne Groundwater DWER GIS system: salinity 3000-7000 mg/L TDS The depth to groundwater ranges from 2.7 - 24.4 mblg
Surface water	Ephemeral (Minor) creek lines to the north (900m) and south-west (2.6km) from the new WCSF location. Mongers Lake – 6km northeast
Karara Rangeland Park	The Premises is located on formal pastoral land containing native vegetation that has been incorporated into the Karara Rangeland Park – managed by DBCA

3.2 Risk ratings

Risk ratings have been assessed in accordance with the *Guideline: Risk Assessments* (DWER 2020) for those emission sources which are proposed to change 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 Licence Holder 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 Licence Holder's proposed controls to be critical to maintaining an acceptable level of risk, these will be incorporated into the licence as regulatory controls.

Additional regulatory controls may be imposed where the Licence Holder's controls are not deemed sufficient. Where this is the case the need for additional controls will be documented and justified in Table 3.

The Revised Licence L8721/2013/2 that accompanies this Amendment Report authorises emissions associated with the construction and operation of the Premises i.e. Wet Concentrate Storage

The conditions in the Revised Licence have been determined in accordance with *Guidance Statement: Setting Conditions* (DER 2015).

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	Licence Holder's controls sufficient ?	Conditions ² of licence	Justification for additional regulatory controls / DWER comments
Source/ Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls				
Construction phase								
WCSF expansion - vehicle movements/ construction activity	Dust	Air/windborne pathway causing impacts to health and amenity	Nearby vegetation including priority flora PEC - Blue Hills	Refer to Section 3.1.1	C = Minor L = Unlikely Medium Risk	Y	Condition 2: dust management requirements (outcome based)	Impacts to PEC from dust are regulated under MS 805. An outcome-based dust management provision has been included in Condition 2. This will apply to the project in general, not just specifically to this proposal General provisions of the EP Act also apply (causing of pollution, unreasonable emissions and/or environmental harm).
	Noise		No nearby human receptors	N/A – no further assessment				
	Sediment laden stormwater	Direct discharge to land Potential soil contamination, impact to nearby vegetation health, and possible surface water / groundwater contamination	Soil Nearby vegetation including priority flora Surface water Ground water	Refer to Section 3.1.1	C = Slight L = Unlikely Low Risk	Y	N/A	Minimal sediment emissions are expected on site during construction activities (stormwater runoff during rainfall events). The applicant's management controls for managing stormwater during the construction phase are appropriate Any related emissions can be adequately regulated under the <i>Environmental Protection (Unauthorised Discharges) Regulations 2004</i> .
Hydrocarbons used in construction of WCSF, failure of pumping	Discharge of contaminants to land (e.g., hydrocarbon spills)	Direct discharge to land via infiltration Potential impact to soil	Soil Nearby vegetation including priority	Refer to Section 3.1.1	C = Minor L = Unlikely Medium Risk	Y	N/A	Related emissions can be adequately regulated under the <i>Environmental Protection (Unauthorised Discharges) Regulations 2004</i> .

Licence: L8721/2013/2

Risk Event					Risk rating ¹ C = consequence L = likelihood	Licence Holder's controls sufficient ?	Conditions ² of licence	Justification for additional regulatory controls / DWER comments
Source/ Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls				
equipment machinery and vehicles.		and groundwater	flora Surface water Ground water					
Operation								
Storage of magnetite concentrate product at the WCSF	Dust	Air/windborne pathway causing impacts to health and amenity	Nearby vegetation including priority flora PEC - Blue Hills	Refer to Section 3.1.1	C = Minor L = Unlikely Medium Risk	Y	Condition 2: dust management requirements (outcome based)	Impacts to PEC from dust are regulated under MS 805. An outcome-based dust management provision has been included in Condition 2. This will apply the project in general, not just specifically to this proposal General provisions of the EP Act also apply (causing of pollution, unreasonable emissions and/or environmental harm).
	Potentially contaminated stormwater	Direct discharge to land Potential soil contamination, impact to nearby vegetation health, and possible surface water / groundwater contamination	Soil Nearby vegetation including priority flora Surface water Ground water	Refer to Section 3.1.1	C = Minor L = Unlikely Medium Risk	Y	Condition 3: containment infrastructure requirements	Condition 3 includes freeboard requirements for the WCSF (minimum of 300m maintained) and specifies that where a 'Turret' (floating dewatering) system is employed it is used to facilitate the effective removal and recovery of supernatant water and surface water from incident rain.
	Wet concentrate discharged outside of the WCSF (over-topping event)			Refer to Section 3.1.1	C = Minor L = Unlikely Medium Risk	Y	Condition 6: infrastructure inspection requirements Condition 15: infrastructure and equipment requirements for the WCSF extension.	Condition 6 includes freeboard inspection requirements for the WCSF. Condition 15 includes requirements to construct/ install a 'Turret' (floating dewatering) system to manage supernatant water and surface water from incidental rain.
	Excessive seepage of			Condition 3: containment	Condition 3 specifies that where a 'Turret' (floating dewatering) system is			

OFFICIAL

Risk Event					Risk rating ¹ C = consequence L = likelihood	Licence Holder's controls sufficient ?	Conditions ² of licence	Justification for additional regulatory controls / DWER comments
Source/ Activities	Potential emission	Potential pathways and impact	Receptors	Licence Holder's controls				
	supernatant water to land/ underlying groundwater						infrastructure requirements Condition 15: infrastructure and equipment requirements for the WCSF extension	employed it is used to facilitate the effective removal and recovery of supernatant water and surface water from incidental rain (thus reducing seepage potential). Condition 6 includes freeboard inspection requirements for the WCSF. Condition 15 includes requirements to construct/ install a 'Turret' (floating dewatering) system to manage supernatant water and surface water from incident rain.

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

Note 2: Proposed Licence Holder's 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
<p>Department of Planning, Lands and Heritage was contacted as a stakeholder on 20 June 2024</p>	<p>Comments were provided on 19 July 2024 and include;</p> <ul style="list-style-type: none"> • 6x Aboriginal registered sites and 25x Aboriginal heritage sites intersect the area and therefore approvals under the Aboriginal Heritage Act 1972 (AHA) are required. • 13x historical Aboriginal places identified in the area. These places were assessed by the Aboriginal Cultural Heritage Committee as not a site as they do not meet section 5 of the AHA and therefore, no approvals are required where the proposed work intersects with the historic places. • Advised that the granting of the licence does not impact the Aboriginal heritage of the area • Given the approval of the licence amendment will facilitate development in the areas, the proponents must be aware that any works they propose will require approval under the AHA before they can occur. Further advice should be sought from DPLH Aboriginal Heritage Conservation. 	<p>The department notes the response from DPLH and will provide the applicant with a copy of their comments.</p>
<p>Shire of Perenjori was contacted of 20 June 2024.</p>	<p>Comments were provided on 1 July 2024 with no objection to the application.</p>	<p>Noted</p>
<p>The applicant was provided the draft amendment report and licence on 15 August 2024 and responded on 16 August 2024</p>	<p>Refer to Appendix 1</p>	<p>Refer to Appendix 1</p>

5. Conclusion

Based on the assessment in this Amendment Report, the Delegated Officer has determined that a Revised Licence will be granted, subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

5.1 Summary of amendments

Table 5 provides a summary of the proposed amendments and will act as record of implemented changes. All proposed changes have been incorporated into the Revised Licence as part of the amendment process.

Table 5: Summary of licence amendments

Condition no.	Proposed amendments
Condition 2	Dust management condition included (outcome-based requirement)
Condition 3 (Table 2)	Item 6, WCSF, updated to reference Figure 19 for the extension area and to reference the use of the 'Turret' (floating dewatering) system.
Condition 15 (Table 7)	Addition of WCSF expansion design and construction requirements
Condition 18 (Table 8)	Relocated to condition 1 (Table 1): Production and/or design capacity limits
Condition 19 (Table 9)	Relocated to condition 5 (Table 3): Mobile equipment requirements
Figures	Addition of WCSF expansion – inclusion of Figure 19
-	Condition and table numbering updated throughout to reflect new condition order

References

1. Amendment application and supporting documentation – submitted to DWER on 16 May 2024, Karara Mining Ltd (2024) (DWER ref: DWERDT949364)
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.

Appendix 1: Summary of Licence Holder's comments on draft amendment report and draft revised licence

Condition	Summary of Licence Holder's comment	Department's response
-	Premises on front page and Section 1 of the report: please ensure the premises also include M59/649-I and L59/93 in consistent with premises details of the Licence.	Noted; respective sections of the report have been updated.
Condition 15 (Table 7 - Item 2(e))	<p>KML's Operations team and engineering consultants advised that the proposed network of underdrainage pipework (duplication of the underdrainage pipework in the existing WCSF cells) was ineffective in supernatant water recovery.</p> <p>It has therefore been confirmed that the proposed underdrainage pipework will not be installed at the new WCSF cells. Instead, a floating dewatering facility named "Turret" is proposed to be used to recover the supernatant water from the WCSF cells. The "Turret" system integrates a water recovery pump, inlet HDPE pipeline and discharge pipeline, which floats on top of the water and draws water from under surface thus to minimise ingestion of concentrate or silt – see attached an indicative diagram of the "Turret" system.</p> <p>This method of dewatering has been recommended by KML's engineering design consultant Red Earth Engineering. The "Turret" floating dewatering system is safer and much more efficient and effective to recover supernatant water in the liquid storage facility and has been successfully implemented at many mine sites.</p> <p>As per the above, KML wish to revise item 2(e) in Table 7 to '<i>A floating dewatering system "Turret" will be used to facilitate the effective removal and recovery of supernatant water and surface water from incident rain.</i>'</p>	<p>Condition 3 (item 6) updated to reflect changes</p> <p>Condition 15 updated to reflect changes.</p> <p>Amendment Report: Section 2.2.2 (Overview), Section 2.2.3 (Seepage from the WCSF and drainage system) and Section 3.2 (Risk ratings) updated to reflect changes.</p>
Condition 15 (Table 7 - Item 2(f))	As per the above representation to item 2(e), in the absence of the underdrainage pipework, the underdrainage sump (e.g. the collection sump) would be no longer required. Therefore, KML wish to remove item 2(f) in Table 7.	Requirement removed.
Condition 15	As per the descriptions of the "Turret" system in above representation to item	Requirement removed.

Condition	Summary of Licence Holder's comment	Department's response
(Table 7 - Item 2(g) and 2(h))	2(e), the gravity decant and pumps in the underdrainage sump would not be required as no underdrainage pipeline or collection sump will be installed and all supernatant water will be recovered through the floating dewatering system. Therefore, KML wish to remove items 2(g) and 2(h) in Table 7.	
Condition 15 (Table 7 - Item 2(j))	As the collection sump would be no longer required, KML wish to revise item 2(j) in Table 7 to 'Construction of V-drains at the toes of the perimeter embankments to divert surface water run-off from the WCSF to the existing diversion drain'.	Noted; updates to wording made.
Condition 15 (Table 7 - Item 2(k))	As per the above, the collection sumps would be no longer required. Therefore, KML wish to remove item 2(k) in Table 7.	Requirement removed.
Condition 15 (Table 7 - Item 2(l))	<p>As per the above representation to item 2(e) and shown in the attached indicative diagram, the "Turret" floating dewatering system integrates a water recovery pump, inlet pipeline and discharge pipeline. The supernatant water will be recovered and discharged through the discharge pipeline of the "Turret" floating dewatering system to the existing main surface water diversion drain along the eastern side of the WCSF or supernatant water will be reused for processing.</p> <p>Therefore, KML wish to revise item 2(l) in Table 7 to 'The floating water recovery pump to direct supernatant water to the existing main surface water diversion drain along the eastern side of the facility or reused for other means.'</p>	Noted; updates to wording made.
Condition 15 (Table 7 - Item 2(m))	<p>KML want to clarify those clean and dirty water diversion channels have been constructed as shown in Figure 6 of the Licence (L8721/2013/2) and no new clean and dirty water will be constructed for the WCSF expansion. All surface water runoff from the WCSF will be diverted to the existing clean surface water drain along the eastern side of the facility.</p> <p>Therefore, KML wish to remove this item as it has been covered by item 2(j) in Table 7.</p>	Requirement removed.
Figure 19	Replace it with the attached updated WCSF layout figure to reflect the above changes to the proposed WCSF expansion.	New figure included in the final licence