



## Application for Works Approval Amendment

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

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<b>Works Approval Number</b>	W6468/2020/1
<b>Works Approval Holder</b>	Newcrest Operations Limited
<b>ACN</b>	009 221 505
<b>File Number</b>	DER2020/000499
<b>Premises</b>	Havieron Project East Pilbara, WA  Legal description – Mining lease M45/1287  As defined by the coordinates in Schedule 2 of the Works Approval
<b>Date of Report</b>	15 November 2021
<b>Decision</b>	Amendment Granted

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**A/MANAGER – RESOURCE INDUSTRIES**  
an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

## Table of Contents

<b>1. Decision summary</b>	<b>1</b>
<b>2. Scope of assessment</b>	<b>1</b>
2.1 Regulatory framework	1
2.2 Application summary	1
<b>3. Risk assessment</b>	<b>2</b>
3.1 Source-pathways and receptors	2
3.1.1 Emissions and controls	2
3.1.2 Receptors	3
3.2 Risk ratings	5
<b>4. Consultation</b>	<b>8</b>
<b>5. Conclusion</b>	<b>9</b>
5.1 Summary of amendments	9
<b>References</b>	<b>10</b>
<b>Appendix 1 – Applicant Freeboard Calculation</b>	<b>11</b>
<b>Appendix 2: Application validation summary</b>	<b>12</b>
Table 1 Modifications proposed to critical containment infrastructure design	1
Table 2: Works Approval Holder controls	3
Table 3: Sensitive human and environmental receptors and distance from prescribed activity	3
Table 4. Risk assessment of potential emissions and discharges from the Premises during construction and operation	6
Table 5: Consultation	8
Table 6 Summary of amendments	9
Figure 1: Distance to sensitive receptors (250k hydrography indicates potential surface water bodies)	4

## 1. Decision summary

Works Approval W6468/2020/1 is held by Newcrest Operations Limited (Works Approval Holder) for the Havieron Project (the Premises), located at on mining tenement M45/1287

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 Works Approval W6468/2020/1 has been granted.

The revised Works Approval issued as a result of this amendment consolidates and supersedes the existing Works Approval previously granted in relation to the Premises. The revised Works Approval has been granted in a new format with existing conditions being transferred, but not reassessed, to the new format.

## 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 2 July 2021, the Works Approval Holder submitted an application to the department to amend Works Approval W6468/2020/1 under section 59 and 59B of the *Environmental Protection Act 1986* (EP Act). The following amendments are being sought:

- Condition 1 for critical containment infrastructure modified as per Table 1 below;
- Condition 19 time limited operations: evaporation pond freeboard amended from 1m to 0.8m; and
- Revised Figure 3 proposed to replace both Figures 2 and 3 of the existing works approval.

**Table 1 Modifications proposed to critical containment infrastructure design**

	Site infrastructure and equipment	Modifications Proposed
2	Raw Water Cell 1	<ul style="list-style-type: none"><li>• External crest RL from 250.65 to 249.66</li><li>• Base RL from 247.75 to 246.99</li><li>• TWL RL from 249.65 to 248.86</li><li>• Freeboard from 1m to 0.8m</li><li>• Total height from 2900mm to 2700mm</li></ul>
3	Raw Water Cell 2	Remove - no longer proposed for construction
4	Hypersaline Water Cell 1	<ul style="list-style-type: none"><li>• Maximum volume altered from 20,197m<sup>3</sup> to 24,120m<sup>3</sup></li><li>• External crest RL from 248.85 to 248.6</li><li>• Base RL from 247.20 to 247.40</li><li>• TWL RL from 247.70 to 247.80</li></ul>

		<ul style="list-style-type: none"> <li>• Freeboard from 1m to 0.8m</li> <li>• Total height from 1650mm to 1200mm</li> </ul>
5	Hypersaline Water Cell 2	<ul style="list-style-type: none"> <li>• Maximum volume altered from 24,000m<sup>3</sup> to 20,030m<sup>3</sup></li> <li>• External crest RL from 248.60 to 248.10</li> <li>• Base RL from 247.20 to 246.80</li> <li>• TWL RL 247.60 to 247.30</li> <li>• Freeboard from 1m to 0.8m</li> <li>• Total height from 1400mm to 1300mm</li> </ul>
6	Hypersaline Water Cell 3	<ul style="list-style-type: none"> <li>• Maximum volume altered from 55,600m<sup>3</sup> to 53,030m<sup>3</sup></li> <li>• External crest RL from 247.43 to 247.03</li> <li>• Base RL from 245.98 to 245.78</li> <li>• TWL RL from 246.43 to 246.23</li> <li>• Freeboard from 1m to 0.8m</li> <li>• Total height from 1450mm to 1250mm</li> </ul>

### 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 time limited operations which have been considered in this Amendment Report are detailed in Table 2 below.

Table 2 also details the proposed control measures the Works Approval Holder has proposed to assist in controlling these emissions, where necessary.

**Table 2: Works Approval Holder controls**

Emission	Sources	Potential pathways	Proposed controls
Saline to hypersaline mine dewater	Storage of mine dewater in evaporation ponds (modifications to freeboard, cell specifications and capacity)	Seepage through base of evaporation ponds	<p><u>Existing works approval conditions:</u></p> <ul style="list-style-type: none"> <li>• Conditions 1 and 4: construction and infrastructure requirements</li> <li>• Conditions 4, 5, 6 baseline groundwater monitoring</li> <li>• Conditions 21 and 22 monitoring during TLO</li> <li>• Condition 23: monthly water balance</li> </ul> <p><u>Proposed additional controls:</u></p> <p>No additional controls proposed.</p>
		Overtopping of evaporation ponds	<p><u>Existing works approval conditions:</u></p> <ul style="list-style-type: none"> <li>• Condition 19 Freeboard requirements (1m)</li> <li>• Condition 23: Monthly water balance</li> </ul> <p><u>Proposed additional controls:</u></p> <p>The applicant has provided a calculation to support amendment from 1m to 0.8m freeboard (Appendix 1 – Applicant Freeboard Calculation).</p>

### 3.1.2 Receptors

In accordance with the *Guideline: Risk assessments* (DWER 2020), the Delegated Officer has excluded employees, visitors and contractors of the Works Approval 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 3 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 3: Sensitive human and environmental receptors and distance from prescribed activity**

Environmental receptors	Distance from prescribed activity
4 x Surface Water Bodies – Hydrography WA 250K	Within the premises boundary
<i>Rights in Water and Irrigation Act 1914</i> (RIWI Act) Groundwater areas	Within the Canning-Kimberly Groundwater area Generally, >10m bgl and 5m bgl to the west at the project area
Native vegetation	Within the premises boundary

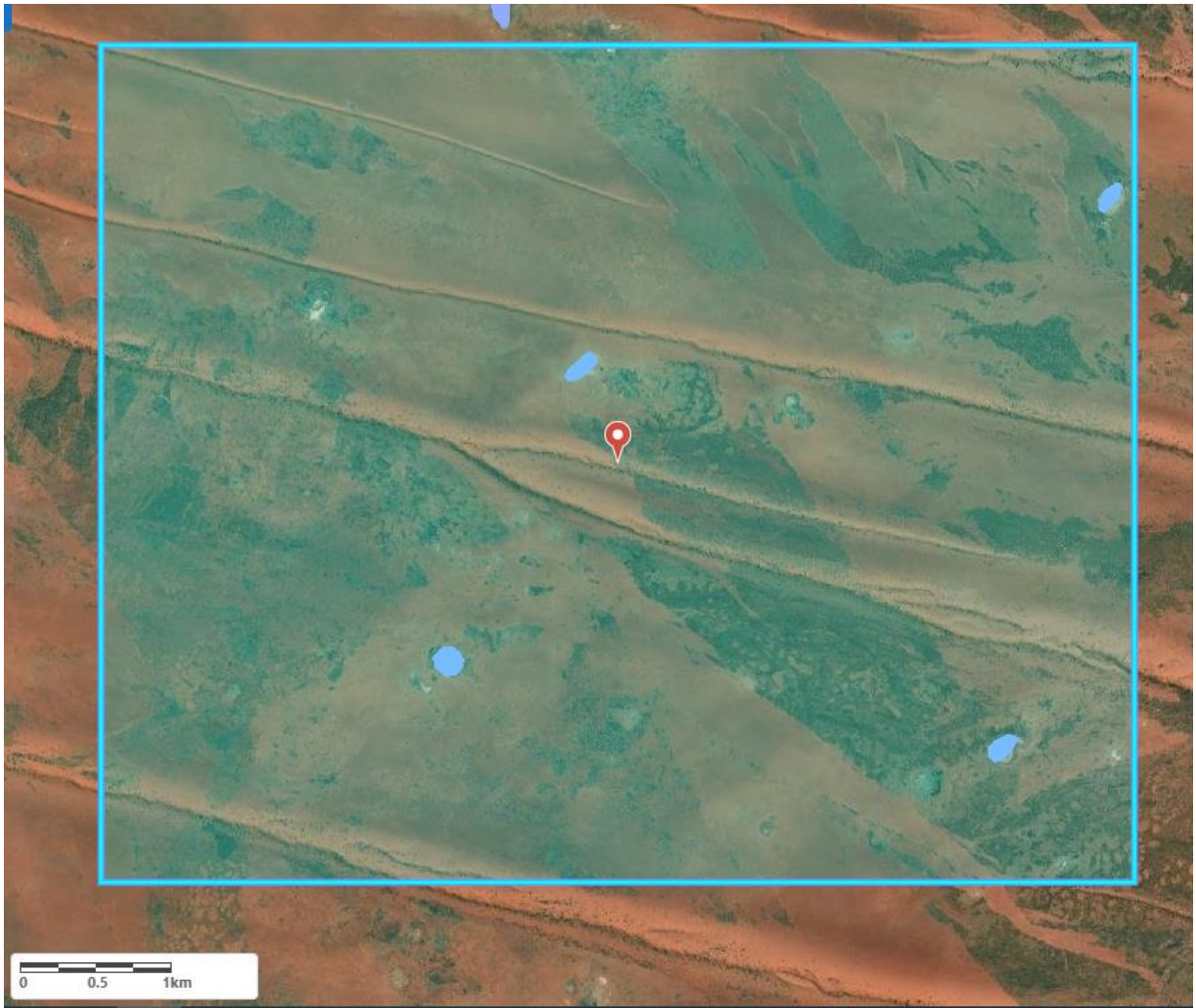


Figure 1: Distance to sensitive receptors (250k hydrography indicates potential surface water bodies)

## 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 incomplete they have not been considered further in the risk assessment.

Where the Works Approval 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 Works Approval Holder'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 Works Approval Holder's controls are not deemed sufficient. Where this is the case the need for additional controls will be documented and justified in Table 4.

The Revised Works Approval W6468/2020/1 that accompanies this Amendment Report authorises construction and time-limited operations. The conditions in the Revised Works Approval 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. category 6 activities. A risk assessment for the operational phase has been included in this Amendment Report, however licence conditions will not be finalised until the department assesses the licence application.

**Table 4. Risk assessment of potential emissions and discharges from the Premises during construction and operation**

Risk Event					Risk rating <sup>1</sup> C = consequence L = likelihood	Works Approval Holder's controls sufficient?	Conditions <sup>2</sup> of works approval	Summary
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Works Approval Holder's controls				
<b>Operation</b> (including time-limited-operations operations)								
Storage of mine dewater in evaporation ponds (modifications to freeboard, cell specifications and capacity)	Saline to hypersaline mine dewater	Seepage through base of evaporation ponds; potential for poor health or death of adjacent native vegetation and contamination of nearby surface water bodies and shallow groundwater.	Adjacent native vegetation  Surface water bodies (seasonal)  Groundwater (5m bgl)	Refer to Section 3.1	C = Moderate L = Unlikely <b>Medium Risk</b>	Y	<u>Existing works approval conditions:</u> <ul style="list-style-type: none"> <li>Conditions 1 and 4: construction and infrastructure requirements</li> <li>Conditions 4, 5, 6 baseline groundwater monitoring</li> <li>Conditions 21 and 22 monitoring during TLO</li> <li>Condition 23: monthly water balance</li> </ul> <u>Modifications to conditions:</u> Condition 1: construction and infrastructure requirements	Existing controls require 1.5mm HDPE lining, baseline groundwater monitoring and on-going monitoring during time limited operations.  Modifications to cell specifications and capacity are minor and do not alter the risk profile of the evaporation ponds. The works approval will be updated to reflect the modified specifications.
		Overtopping of evaporation ponds; potential for poor health or death of adjacent native vegetation and contamination of nearby surface water bodies.	Adjacent native vegetation  Surface water bodies (seasonal)	Refer to Section 3.1	C = Moderate L = Unlikely <b>Medium Risk</b>	Y	<u>Existing works approval conditions:</u> Condition 23: Monthly water balance  <u>Modifications to conditions:</u> Condition 1 and 19 Freeboard	Existing works approval controls require monthly water balance to be recorded and reported as part of compliance with time limited operations.  Freeboard modification from



Risk Event					Risk rating <sup>1</sup> C = consequence L = likelihood	Works Approval Holder's controls sufficient?	Conditions <sup>2</sup> of works approval	Summary
Source/Activities	Potential emission	Potential pathways and impact	Receptors	Works Approval Holder's controls				
								1m to 0.8m is supported by calculations given in Appendix 1 and combined with water balance monitoring is considered sufficient to mitigate risk of overtopping.

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

Note 2: Proposed Works Approval Holder's controls are depicted by standard text. **Bold and underline text** depicts additional regulatory controls imposed by department.

## 4. Consultation

Table 5 provides a summary of the consultation undertaken by the department.

**Table 5: Consultation**

Consultation method	Comments received	Department response
Shire of East Pilbara advised of proposal on 21 September 2021	No comments received.	N/A
Department of Mines, Industry Regulation and Safety (DMIRS) advised of proposal on 21 September 2021	<p>DMIRS replied on 5/10/21 advising that the tenement conditions imposed as part of environmental registration ID 89453 only constrain Newcrest from altering or expanding beyond the approved <i>disturbance envelope</i> and the activities summarised in the <i>Key Mining Activity tables</i> of the Mining Proposal, reproduced below:</p> <p><b><u>Evaporation ponds</u></b></p> <ul style="list-style-type: none"> <li>• Total area (ha): 27.13</li> <li>• Height: Maximum height of approximately 2 m above ground level – to be confirmed in final design</li> <li>• Construction method: Excavated below ground</li> <li>• Liner: 1.5 mm HDPE liner</li> </ul> <p><b><u>Dam – saline water or process liquor (raw water pond)</u></b></p> <ul style="list-style-type: none"> <li>• Total area (ha):</li> <li>• Raw Water Dam – 16.48 ha</li> <li>• Turkeys Nest – 1.43 ha</li> <li>• Height: Maximum height of approximately 2 m above ground level – to be confirmed in final design</li> <li>• Construction method: Excavated below ground</li> <li>• Liner: 1.5 mm HDPE liner</li> </ul> <p>DMIRS has indicated that proceeding with the proposal <u>may</u> not constitute a non-compliance (providing all tenement conditions are adhered to). It is recommended that Newcrest be advised to conduct a detailed review of their approved Mining Proposal(s) and Mine Closure Plan, if they haven't already, to ensure that they are comfortable the modification is compliant with all tenement conditions and legally covered by their approvals under the <i>Mining Act 1978</i>.</p>	Newcrest should review their approved Mining Proposal(s) and Mine Closure Plan to ensure that the modifications are compliant with all tenement conditions and legally covered by their approvals under the <i>Mining Act 1978</i> .
Works Approval Holder was provided with draft amendment on 12 October 2021	Request Table 1 correction of reference from 2 raw water cells to once raw water cell to align with amendments.	DWER has modified the works approval to reflect the modifications.

## 5. Conclusion

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

Newcrest is advised to review their approved Mining Proposal(s) and Mine Closure Plan to ensure that the modifications are compliant with all tenement conditions and legally covered by their approvals under the *Mining Act 1978*.

### 5.1 Summary of amendments

Table 6 provides a summary of the proposed amendments and will act as record of implemented changes. All proposed changes have been incorporated into the Revised Works Approval as part of the amendment process.

**Table 6 Summary of amendments**

Condition no.	Proposed amendments
1	Modifications to cell specifications, capacity, and freeboard requirements (as per Table 1 of this decision report) Removal of cell 2 Administrative error corrected ("1.5m" HDPE lining corrected to 1.5mm)
19	Freeboard requirement modified from 1m to 0.8m
Schedules 1, 2 and 3	Schedules 1 and 3 merged. Figures 2 and 3 replaced with one new figure for evaporation pond layout.

## 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. Newcrest 2021, Application form and supporting documentation. DWER reference: DWERDT473522

## Appendix 1 – Applicant Freeboard Calculation

The Works Approval Holder has provided the following justification for amendment of evaporation pond freeboard from 1m to 0.8m.

### Equation 1

“Wave action can result in overtopping of a dam. It is important that dams are designed with sufficient freeboard to accommodate the expected wave height and run-up. The US Department of the Interior Bureau of Reclamation Design Standards No. 13 Embankment Dams Chapter 6: Freeboard (references calculation methodology proposed by US Corps of Engineers) was used to calculate wave height and run-up.

Maximum wave run-up (Ru2%) is defined as the vertical distance between the still water level and the run-up elevation exceeded by two percent of waves in a statistical distribution. The methods used account for the following factors:

- Fetch length (maximum 300m)
- Wind data of 34m/s (V10) was adopted (based on AS1170.2 Region A4)
- Side slope of 1(V):3(H)

The calculated height of the significant wave  $H_s$  is 0.37m, with vertical runup distance (Ru2%) of 0.5m. Therefore, this calculation supports a recommended freeboard of 0.8m.”

## Appendix 2: Application validation summary

SECTION 1: APPLICATION SUMMARY						
<b>Application type</b>						
<del>Works approval</del>	<input type="checkbox"/>					
Licence	<input type="checkbox"/>	Relevant works approval number:		None	<input type="checkbox"/>	
		Has the works approval been complied with?			Yes <input type="checkbox"/> No <input type="checkbox"/>	
		Has time limited operations under the works approval demonstrated acceptable operations?			Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>	
		Environmental Compliance Report / <del>Critical Containment Infrastructure Report</del> submitted?			Yes <input type="checkbox"/> No <input type="checkbox"/>	
		Date Report received:				
Renewal	<input type="checkbox"/>	Current licence number:				
Amendment to works approval	<input checked="" type="checkbox"/>	Current works approval number:	W6468/2020/1			
Amendment to licence	<input type="checkbox"/>	Current licence number:				
		Relevant works approval number:		N/A	<input type="checkbox"/>	
Registration	<input type="checkbox"/>	Current works approval number:		None	<input checked="" type="checkbox"/>	
Date application received		2 July 2021				
<b>Applicant and Premises details</b>						
Applicant name/s (full legal name/s)		Newcrest Operations Limited				
Premises name		Havieron Project				
Premises location		Mining tenement M45/1287				
Local Government Authority		Shire of East Pilbara				
<b>Application documents</b>						
HPCM file reference number:		DER2020/000499				
Key application documents (additional to application form):		N/A (no additional documents provided)				
<b>Scope of application/assessment</b>						

Summary of proposed activities or changes to existing operations.	<u>Works approval amendment</u> Requested amended to evaporation cell freeboard requirement, number of cells and cell specifications.	
<b>Category number/s (activities that cause the premises to become prescribed premises)</b>		
<b>Table 1: Prescribed premises categories</b>		
Prescribed premises category and description	Assessed production or design capacity	Proposed changes to the production or design capacity (amendments only)
Category 6: Mine dewatering	1,550,000 tonnes	No changes to category throughput proposes
<b>Legislative context and other approvals</b>		
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 <input checked="" type="checkbox"/> No <input type="checkbox"/>	Referral decision No: Managed under Part V <input checked="" type="checkbox"/> Assessed under Part IV <input type="checkbox"/> <u>From works approval decision report:</u> "The applicant has referred this project to the Environmental Protection Authority... however based on survey results, EPA has determined that the potential impacts from the project on key environmental factors are not so significant to warrant a formal assessment".
Does the applicant hold any existing Part IV Ministerial Statements relevant to the application?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Ministerial statement No: EPA Report No:
Has the proposal been referred and/or assessed under the EPBC Act?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Reference No:
Has the applicant demonstrated occupancy (proof of occupier status)?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Certificate of title <input type="checkbox"/> General lease <input type="checkbox"/> Expiry: Mining lease / tenement <input type="checkbox"/> Expiry: Other evidence <input type="checkbox"/> Expiry:
Has the applicant obtained all relevant planning approvals?	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>	Approval: Expiry date: If N/A explain why? Exempt under the <i>Mining Act 1976</i>

Has the applicant applied for, or have an existing EP Act clearing permit in relation to this proposal?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	CPS No: CPS9035/1
Has the applicant applied for, or have an existing CAWS Act clearing licence in relation to this proposal?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Application reference No: N/A Licence/permit No: N/A
Has the applicant applied for, or have an existing RIWI Act licence or permit in relation to this proposal?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Application reference No: Licence/permit No: GWL202749 (2)
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the EP Act)?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Name: Canning – Kimberley Groundwater Area Type: Proclaimed Groundwater Area Has Regulatory Services (Water) been consulted? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A <input type="checkbox"/> Regional office: North West
Is the Premises situated in a Public Drinking Water Source Area (PDWSA)?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Name: N/A Priority: N/A Are the proposed activities/landuse compatible with the PDWSA (refer to <a href="#">WQPN 25</a> )? Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/>
Is the Premises subject to any other Acts or subsidiary regulations (e.g. <i>Dangerous Goods Safety Act 2004</i> , <i>Environmental Protection (Controlled Waste) Regulations 2004</i> , <i>State Agreement Act xxxx</i> )	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<i>Mining Act 1976</i>
Is the Premises within an Environmental Protection Policy (EPP) Area?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	N/A
Is the Premises subject to any EPP requirements?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	N/A
Is the Premises a known or suspected contaminated site under the <i>Contaminated Sites Act 2003</i> ?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Classification: N/A Date of classification: N/A