



# Works Approval

## *Environmental Protection Act 1986, Part V*

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**Works Approval Holder:** Pilbara Manganese Pty Ltd

**Works Approval Number:** W5832/2015/1

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**Registered office:** 1 HPPL House  
28 Ventor Avenue  
WEST PERTH WA 6005

**ACN:** 074 106 577

**Premises address:** Woodie Woodie Mine Site  
MARBLE BAR WA 6760  
Mining Tenements M45/637 and M45/92  
as depicted in Schedule 1

**Issue date:** Thursday, 27 August 2015

**Commencement date:** Monday, 31 August 2015

**Expiry date:** Sunday, 26 August 2018

The following category/s from the *Environmental Protection Regulations 1987* cause this Premises to be a prescribed premises for the purposes of the *Environmental Protection Act 1986*:

Category number	Category description	Category production or design capacity	Approved premises production or design capacity
89	Putrescible landfill site: premises on which waste (as determined by reference to the waste type set out in the document entitled " <i>Landfill Waste Classification and Waste Definitions 1996</i> " published by the Chief Executive Officer, as amended from time to time) is accepted for burial.	More than 20 but less than 5,000 tonnes per year	1000 tonnes per annual period

### Conditions

This Works Approval is subject to the conditions set out in the attached pages.

.....  
**Danielle Eyre**

Officer delegated under section 20  
of the *Environmental Protection Act 1986*

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# Works Approval Conditions

## 1 General

### 1.1 Interpretation

1.1.1 In the Works Approval, definitions from the *Environmental Protection Act 1986* apply unless the contrary intention appears.

1.1.2 In the Works Approval, unless the contrary intention appears:

**'Act'** means the *Environmental Protection Act 1986*;

**'annual period'** means the inclusive period from 1 October until 30 September in the following year;

**'CEO'** means Chief Executive Officer of the Department of Environment Regulation;

**'CEO'** for the purpose of correspondence means;  
Manager - Licensing (Resource Industries)

At the following address:  
Department of Environment Regulation  
Locked Bag 33  
CLOISTERS SQUARE WA 6850  
Telephone: (08) 9333 7510  
Facsimile: (08) 9333 7550  
Email: industry.regulation@der.wa.gov.au;

**'Premises'** means the area defined in the Premises Map in Schedule 1 and listed as the Premises address on page 1 of the Works Approval;

**'Schedule 1'** means Schedule 1 of this Works Approval unless otherwise stated;

**'Works Approval'** means this Works Approval numbered W5832/2015/1 and issued under the Act; and

**'Works Approval Holder'** means the person or organisation named as the Works Approval Holder on page 1 of the Works Approval.

1.1.3 Any reference to an Australian or other standard in the Works Approval means the relevant parts of the standard in force from time to time during the term of this Works Approval.

1.1.4 Any reference to a guideline or code of practice in the Works Approval means the current version of the guideline or code of practice in force from time to time, and shall include any amendments or replacements to that guidelines or code of practice made during the term of this Works Approval.



## 1.2 General conditions

1.2.1 The Works Approval Holder shall construct the works in accordance with the documentation detailed in Table 1.2.1:

Table 1.2.1: Construction Requirements <sup>1</sup>		
Document	Parts	Date of Document
Works Approval Application Form	All	10 April 2015
Greensnake Western Waste Dump Landfill, Woodie Woodie Manganese Operation, Works Approval Application.	All, including Drawings	April 2015

Note 1: Where the details and commitments of the documents listed in condition 1.2.1 are inconsistent with any other condition of this works approval, the conditions of this works approval shall prevail.

## 2 Information

### 2.1 Reporting

2.1.1 The Works Approval Holder shall submit a compliance document to the CEO, following the construction of the works and prior to commissioning of the same.

2.1.2 The compliance document shall:

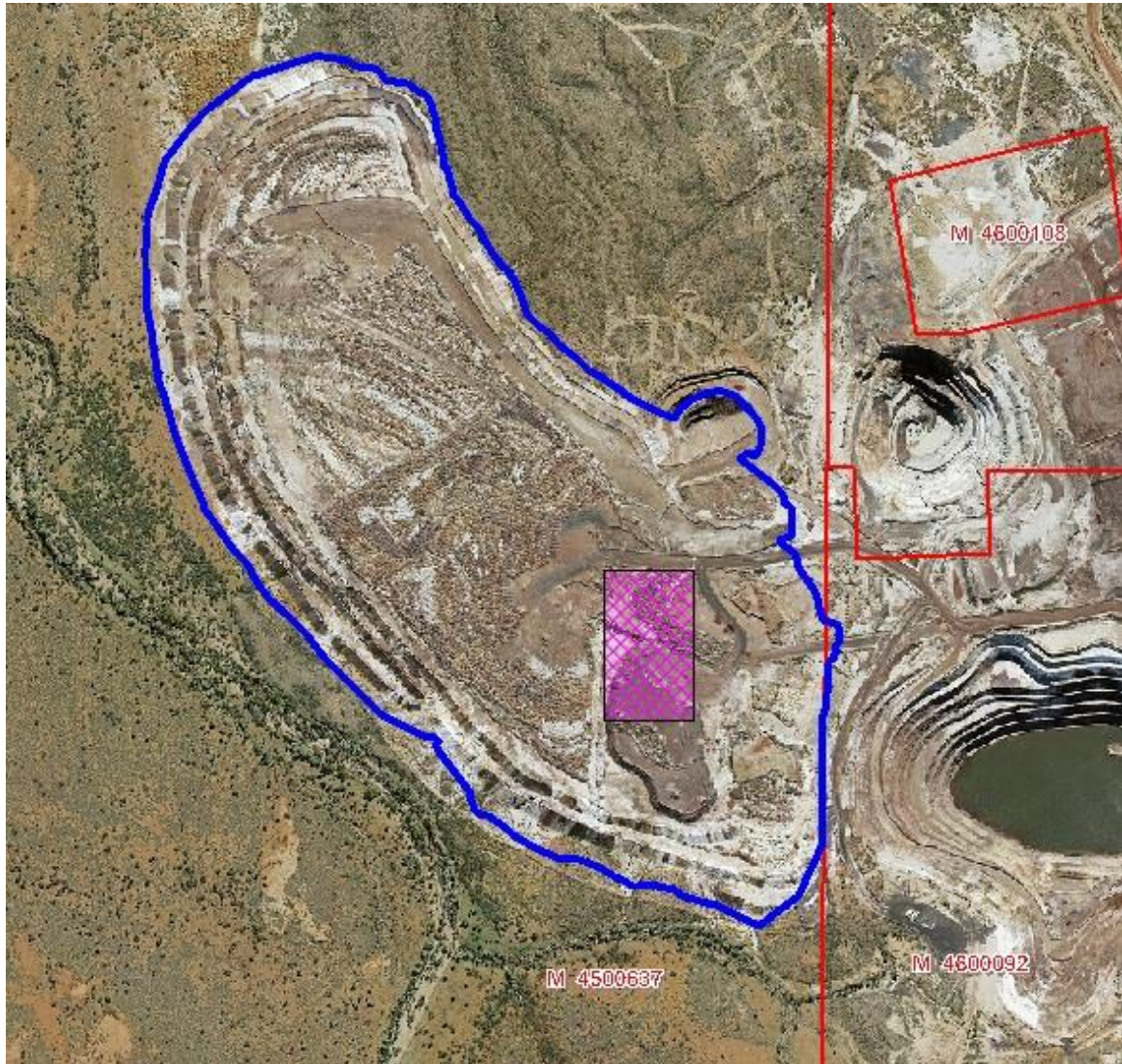
- (a) certify that the works were constructed in accordance with the conditions of the Works Approval; and
- (b) be signed by a person authorised to represent the Works Approval Holder and contain the printed name and position of that person within the company.



## Schedule 1: Maps

### Premises map

The Premises is shown in the map below. The blue line depicts the Premises boundary. The proposed landfill area is depicted by the pink cross-hatching.







# Decision Document

## *Environmental Protection Act 1986, Part V*

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**Works Approval:** **W5832/2015/1**

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WEST PERTH WA 6005

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Mining Tenements M45/637 and M46/92

**Issue date:** Thursday, 27 August 2015

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**Expiry date:** Sunday, 26 August 2018

### **Decision**

Based on the assessment detailed in this document the Department of Environment Regulation (DER) has decided to issue a works approval. DER considers that in reaching this decision, it has taken into account all relevant considerations.

Decision Document prepared by: Cathy Scheib  
Licensing Officer

Decision Document authorised by: Danielle Eyre  
Delegated Officer



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## 1 Purpose of this Document

This decision document explains how DER has assessed and determined the application and provides a record of DER's decision-making process and how relevant factors have been taken into account. Stakeholders should note that this document is limited to DER's assessment and decision making under Part V of the *Environmental Protection Act 1986*. Other approvals may be required for the proposal, and it is the proponent's responsibility to ensure they have all relevant approvals for their Premises.

## 2 Administrative summary

Administrative details		
Application type	Works Approval <input checked="" type="checkbox"/> New Licence <input type="checkbox"/> Licence amendment <input type="checkbox"/> Works Approval amendment <input type="checkbox"/>	
Activities that cause the premises to become prescribed premises	Category number(s)	Assessed design capacity
	89	1,000 tonnes per annum
Application verified	Date: 28/04/2015	
Application fee paid	Date: 02/06/2015	
Works Approval has been complied with	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>	
Compliance Certificate received	Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input checked="" type="checkbox"/>	
Commercial-in-confidence claim	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Commercial-in-confidence claim outcome	N/A	
Is the proposal a Major Resource Project?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Was the proposal referred to the Environmental Protection Authority (EPA) under Part IV of the <i>Environmental Protection Act 1986</i> ?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Referral decision No: Managed under Part V <input type="checkbox"/> Assessed under Part IV <input type="checkbox"/>
Is the proposal subject to Ministerial Conditions?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Ministerial statement No:



		EPA Report No:
Does the proposal involve a discharge of waste into a designated area (as defined in section 57 of the <i>Environmental Protection Act 1986</i> )?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Department of Water consulted Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Is the Premises within an Environmental Protection Policy (EPP) Area Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If Yes include details of which EPP(s) here.		
Is the Premises subject to any EPP requirements? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If Yes, include details here, eg Site is subject to SO <sub>2</sub> requirements of Kwinana EPP.		



### 3 Executive summary of proposal and assessment

Pilbara Manganese Pty Ltd (PMPL), a wholly owned subsidiary of Consolidated Minerals Pty Ltd, owns and operates the Woodie Woodie (Woodie) Manganese Operation. Woodie is located approximately 400 kilometres (km) south east of Port Hedland and 100 km east of Nullagine, within the Pilbara region of Western Australia.

PMPL holds Licence L6131/1990/13 for the following prescribed activities (Schedule 1, *Environmental Protection Regulations 1997*):

- Category 05 – processing or beneficiation of metallic or non- metallic ore;
- Category 06 – Mine dewatering;
- Category 54 – Sewage facility;
- Category 73 – Bulk storage of chemicals; and
- Category 89 – Putrescible landfill site.

The current landfill, the Kia landfill site, is an open cut pit located within the southern portion of the Woodie mine having been mined-out in 2003. Post-mining, pit edges have begun to crack, resulting in an unsafe work place for the disposal of waste material and Heavy Mechanical Equipment (HME) access to place cover material. This necessitates the construction of an alternative landfill site. The pit design constraints and geological instability of the current landfill location has led to difficulty in meeting cover requirement conditions of L6131/1990/13.

PMPL propose to construct an alternative trench-style facility on top of the completed Greensnake Western Waste Dump. No vegetation clearing is required for the proposal. The proposed facility is designed to have a capacity of 1,000 tonnes per annual period and the subject of this works approval.

PMPL holds tenements located on the Warrawagine Station with the dominant surrounding land-use being pastoral. There are no permanent water bodies, wetlands or groundwater dependent ecosystems near the Greensnake Western Waste Dump. The project falls within the Pilbara Groundwater Management Area and the Pilbara Surface Water Area.

Groundwater is used throughout the Woodie operations as a potable water supply, for the beneficiation of ore and dust suppression under two DoW Groundwater Licences. There are no other groundwater users within 5 km of the proposed operation. The closest PDWSA is the Nullagine Water Reserve, approximately 120 km west of Woodie.

The environmental management controls proposed to ensure emissions are minimised include:

- Landfill constructed within competent clay material to limit leachate infiltration plus a significant separation distance to groundwater;
- Landfill windrowed to minimise surface water interaction;
- Limiting waste deposited to Clean Fill, Putrescible Waste, Inert Waste Type 1 and Inert Waste Type 2;
- Staff education programs on waste acceptance types and practices, landfill user logbook, signage at landfill entrance and weekly auditing by PMPL environmental Advisor;
- Fencing will surround all active tipping faces to prevent uncontrolled tipping, fauna ingress and to capture of windblown material; and
- Weekly covering of waste to minimise odour.

Details of the proposed facility are included in Appendix A. This new facility will be operated under the existing licence which will require an amendment prior.





## 4 Decision table

All applications are assessed in line with the *Environmental Protection Act 1986*, the *Environmental Protection Regulations 1987* and DER's Operational Procedure on Assessing Emissions and Discharges from Prescribed Premises. Where other references have been used in making the decision they are detailed in the decision document.

DECISION TABLE			
Works Approval / Licence section	Condition number W = Works Approval L = Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
General conditions	W1.2.1  L1.2.5	<p><b>Construction and Operation</b></p> <p><u>Emission Description</u> <i>Emission:</i> Stormwater contaminated with leachate from landfilling operations. <i>Impact:</i> Contamination of surrounding land and surface water drainage systems. Potential impacts on ecology of surface water from the addition of nutrients and heavy metals. <i>Controls:</i> The proposed facility is to be constructed within an established waste dump. The proponent proposes to construct windrows around the trench area to minimise surface water inflow.</p> <p><u>Risk Assessment</u> <i>Consequence:</i> Minor <i>Likelihood:</i> Unlikely <i>Risk Rating:</i> Moderate</p> <p><u>Regulatory Controls</u> Condition W1.2.1 ensures that construction of the facility includes windrows to prevent stormwater influx as outlined in the Application Supporting Documentation.</p> <p>The operator is required to implement measures to prevent stormwater becoming contaminated by activities on the Premises under the Licence (current condition L1.2.5). The condition also requires stormwater that has come into contact with waste</p>	Application supporting documentation  <i>Environmental Protection (Rural Landfill) Regulations 2002</i>



DECISION TABLE			
Works Approval / Licence section	Condition number W = Works Approval L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
		<p>to be considered and managed as leachate.</p> <p><u>Residual Risk</u>  <i>Consequence</i>: Minor  <i>Likelihood</i>: Rare  <i>Risk Rating</i>: Low</p>	
Premises operation	W – no conditions L1.3.9 – L1.3.12	<p><b>Operation</b>  <u>Emission Description</u>  <i>Emission</i>: Leachate to groundwater from decomposition of putrescible wastes. Windblown wastes may be generated by landfilling operations.  <i>Impact</i>: Leachate generation and seepage can impact groundwater quality. Windblown wastes can accumulate in the environment, impacting surrounding land and surface water drainage systems.  <i>Controls</i>: The proposed facility is to be constructed within an established waste dump. The following controls are proposed by PMPL:</p> <ul style="list-style-type: none"> <li>• Landfill constructed within competent clay material;</li> <li>• Landfill windrowed to minimise surface water interaction;</li> <li>• Significant separation distance to groundwater (waste dump is approximately 38 m above natural ground surface. Groundwater at the base of the current mining pit is approximately 200 m below surface level, and expected to rise to 80 m below surface level post dewatering operations);</li> <li>• Limiting waste deposited to Clean Fill, Putrescible Waste, Inert Waste Type 1 and Inert Waste Type 2;</li> <li>• Staff education programs on waste acceptance types and practices, landfill user logbook, signage at landfill entrance and weekly auditing by PMPL environmental Advisor;</li> <li>• Temporary fencing will surround all active tipping faces;</li> <li>• Shade cloth will be attached to fencing to ensure capture of windblown</li> </ul>	<p>Application supporting documentation</p> <p><i>Environmental Protection (Rural Landfill) Regulations 2002</i></p> <p><i>Landfill Waste Classification and Waste Definitions 1996 (as amended)</i></p>



DECISION TABLE			
Works Approval / Licence section	Condition number W = Works Approval L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
		<p>material; and</p> <ul style="list-style-type: none"> <li>Weekly covering of waste.</li> </ul> <p><u>Risk Assessment</u>  <i>Consequence:</i> Minor  <i>Likelihood:</i> Unlikely  <i>Risk Rating:</i> Moderate</p> <p><u>Regulatory Controls</u>            Licence conditions of L6131/1990/13 define management of waste including:           <ul style="list-style-type: none"> <li>waste acceptance types (current condition L1.3.9);</li> <li>that waste is deposited such that rehabilitation of the waste areas is conducted (current condition L1.3.10);</li> <li>cover requirements including timescales for covering waste (current condition L1.3.11); and</li> <li>that practical measures are taken to control windblown waste (current condition L1.3.12).</li> </ul>           No additional conditions are required to be added to the Works Approval.</p> <p><u>Residual Risk</u>  <i>Consequence:</i> Minor  <i>Likelihood:</i> Unlikely  <i>Risk Rating:</i> Moderate</p>	
<b>Emissions general</b>	W – no conditions  L2.1.1	<p>No general emissions conditions are required to be added to the Works Approval.</p> <p>Current licence condition L2.1.1 ensures that the licensee record and investigate any exceedance of a limit or target specified in the Licence.</p>	N/A
<b>Point source</b>	W – no conditions	No conditions relating to point source emissions to air are included in the Works	Application



DECISION TABLE			
Works Approval / Licence section	Condition number W = Works Approval L = Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
<b>emissions to air including monitoring</b>	L – no conditions	Approval or Licence.	supporting documentation
<b>Point source emissions to surface water including monitoring</b>	W – no conditions  L2.3.1 – L2.3.3 L3.3.1	<p>No point source emissions to surface water are authorised under this Works Approval. No conditions relating to point source emissions to surface water are included in the Works Approval.</p> <p>Regionally, surface water flows in an east to west direction towards the Oakover River (the major drainage system in the district). Warri Warri Creek, a tributary to the Oakover River, is located 10 metres from the western boundary of the Greensnake Western Waste Dump.</p> <p>Discharges to surface water are authorised under current licence conditions L2.3.1 – L2.3.3 but this is not related to landfilling activities. Woodie discharges excess water (via in-pit dewatering methods) to the surrounding tributaries of the Oakover River. Warri Warri creek is dry for the majority of the year, only receiving water flow after extended rainfall events or from dewatering activities.</p> <p>Warri Warri Creek water quality is monitored on a monthly basis under condition L3.3.1 of the current Licence.</p>	Application supporting documentation
<b>Point source emissions to groundwater including monitoring</b>	W – no conditions  L – no conditions	<p>No point source emissions to groundwater are authorised under this Works Approval. No conditions relating to point source emissions to groundwater are included in the Works Approval.</p> <p>Regional groundwater flow is thought to be from east to west across the site away from the topographic high areas towards the Oakover River (located approximately 6.7 km west from Greensnake Western Waste Dump).</p> <p>Within the immediate mining area of Woodie, natural groundwater levels vary from</p>	Application supporting documentation



DECISION TABLE			
Works Approval / Licence section	Condition number W = Works Approval L= Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
		<p>approximately 254 metres Australian Height Datum (mAHD) (Chris D, eastern portion of the mining corridor) to 250 mAHD (Double 8, western portion of the mining corridor) with natural ground surface being greater than 265 mAHD over this area.</p> <p>Groundwater recharge is by rainwater infiltration through the overlying unsaturated rocks and sediments. Recharge has been estimated using a combination of methods to be approximately 15% of annual rainfall. Groundwater is considered to be fresh to brackish and indicative of the basin receiving rapid recharge from infiltrating rainwater. Groundwater quality has been monitored at Woodie since 1993 and can generally be described as fresh to slightly brackish, neutral to slightly alkaline with a naturally high nitrate/nitrite concentration. Dominant ions include sodium, chloride and bicarbonate.</p>	
<b>Emissions to land including monitoring</b>	W – no conditions  L2.5.1 – L2.5.3 L3.5.1	<p>No emissions to land are authorised under this Works Approval. No conditions relating to emissions to land are included in the Works Approval.</p> <p>Emissions to land of treated wastewater are authorised under the Licence, but this does not relate to landfilling activities. Monitoring of emissions to land is also specified under the Licence.</p>	N/A
<b>Fugitive emissions</b>	W – no conditions  L2.6.1 – 2.6.2	<p><b>Construction and Operation</b></p> <p><u>Emission Description</u> <i>Emission:</i> Construction activities including earthworks have the potential to generate dust. Ongoing operation of the landfill is unlikely to generate a source of dust. <i>Impact:</i> Dust emissions can be harmful to human health and the environment. <i>Controls:</i> During construction of the proposed landfill PMPL propose the use of site water carts and to minimise construction and earth moving during times of high wind.</p> <p><u>Risk Assessment</u> <i>Consequence:</i> Insignificant <i>Likelihood:</i> Unlikely</p>	Application supporting documentation





DECISION TABLE			
Works Approval / Licence section	Condition number W = Works Approval L = Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
		<p><i>Risk Rating: Low</i></p> <p><u>Regulatory Controls</u> The current licence requires control of dust under conditions L2.6.1 – L2.6.2.</p> <p><u>Residual Risk</u> <i>Consequence: Insignificant</i> <i>Likelihood: Unlikely</i> <i>Risk Rating: Low</i></p>	
<b>Odour</b>	W – no conditions  L – no conditions	<p><b>Construction</b> There are no odour impacts expected during the works authorised.</p> <p><b>Operation</b> Odour generation during operation of the proposed facility is considered to be minimal. Routine, weekly waste covering (L1.3.11 of current licence) will minimise odour potential. There are no odour-sensitive receptors close to the proposed landfill site. The closest occupied area is the Administration building, located 0.7 km north east of the Greensnake Western Waste Dump. No complaints of odour have been recorded at the Hana mining crib hut, located 0.85 km north east of the current Kia tip. Potential odour generation from the proposed facility is considered to be less than the Kia tip due to continual covering and better waste management practices.</p>	Application supporting documentation
<b>Noise</b>	W – no conditions  L – no conditions	<p><b>Construction and operation</b> Noise emissions during construction may be expected due to vehicle movement and earthmoving equipment. However these are not expected to be significant. PMPL are required to comply with the <i>Environmental Protection (Noise) Regulations 1997</i>.</p>	<i>Environmental Protection (Noise) Regulations 1997</i>
<b>Monitoring general</b>	W – no conditions  L3.1.1 – L3.1.4	<p>No monitoring is specified under this Works Approval.</p> <p>General monitoring conditions are applied within the Licence but do not relate to landfilling activities.</p>	N/A



DECISION TABLE			
Works Approval / Licence section	Condition number W = Works Approval L = Licence	Justification (including risk description & decision methodology where relevant)	Reference documents
Monitoring of inputs and outputs	W – no conditions  L3.6.1	<p><b>Construction</b> No monitoring of inputs or outputs is required to be added to the Works Approval.</p> <p><b>Operation</b> Waste inputs are to be recorded in tonnes or m<sup>3</sup> for each load disposed under the current Licence (L3.6.1). PMPL propose to ensure that each tipping face is accessed via a locked fence, with each landfill user required to record an estimated waste volume (m<sup>3</sup>) and waste type being disposed prior to receiving the keys.</p>	Application supporting documentation
Process monitoring	W – no conditions  L3.7.1	<p>No process monitoring is required to be added to the Works Approval or to the Licence in relation to landfilling activities.</p> <p>Process monitoring is specified for tailings disposal only.</p>	N/A
Ambient quality monitoring	W – no conditions  L3.8.1	<p>No ambient quality monitoring is required to be added to the Works Approval.</p> <p>Vegetation health at Warri Warri creek (close to the Greensnake Western Waste Dump) is monitored on a six monthly basis under current licence condition L3.8.1 in relation to emissions to surface water. Ambient surface water and groundwater quality monitoring is also specified under the Licence (current condition L3.8.1).</p>	Application supporting documentation
Meteorological monitoring	W – no conditions  L – no conditions	No meteorological monitoring is specified with the Works Approval or Licence.	N/A
Improvements	W – no conditions  L4.1.1 – L4.1.2	<p>No improvements are required to be added to the Works Approval.</p> <p>Improvements are specified within the Licence but do not relate to landfilling activities.</p>	N/A
Information	W2.1.1 - W2.1.2	Following submission of the compliance document required under condition W2.1.1 Licence L6131/1990/13 will be amended to reflect the change in landfill area.	N/A
Works Approval Duration	N/A	The duration of the Works Approval has been determined as 3 years.	N/A



## 5 Advertisement and consultation table

Date	Event	Comments received/Notes	How comments were taken into consideration
08/06/2015	Application advertised in West Australian (or other relevant newspaper)	None received.	N/A
08/06/2015	Application referred to interested parties listed:  Shire of East Pilbara	None received.	N/A
24/08/2015	Proponent sent a copy of draft instrument	PMPL was satisfied with the draft and did not request any changes.	N/A



## 6 Risk Assessment

*Note: This matrix is taken from the DER Corporate Policy Statement No. 07 - Operational Risk Management*

**Table 1: Emissions Risk Matrix**

Likelihood	Consequence				
	Insignificant	Minor	Moderate	Major	Severe
Almost Certain	Moderate	High	High	Extreme	Extreme
Likely	Moderate	Moderate	High	High	Extreme
Possible	Low	Moderate	Moderate	High	Extreme
Unlikely	Low	Moderate	Moderate	Moderate	High
Rare	Low	Low	Moderate	Moderate	High



## Appendix A

### Proposed Greensnake Western Waste Dump Landfill Facility

A total of 16 landfill trenches in four rows of four will be constructed as illustrated below. Trenches will be segregated into two separate areas; segregated to accept either Inert Waste Type 1 or Putrescible Waste, resulting in eight trenches available for the two waste streams. Only two trenches will be operational at any time (one for each waste type), with the next trench being excavated as the capacity of the active trench diminishes. The active tipping area will be from surface level, with the final dimensions of the trenches being 30 m long, 10 m wide and 5 m deep, each providing a capacity of 1,500 m<sup>3</sup> (24,000 m<sup>3</sup> capacity for the landfill). See layout below in Figure 1.

The landfill will cover approximately 2.77 ha with no additional vegetation clearing required. Waste will not be disposed of within 35 m of the facility boundary. A fauna egress ramp will be constructed at the edge of each trench to allow for the safe escape of any fauna. To ensure windblown waste is minimised, 1.8 m high, temporary fencing will be constructed, surrounding each active tipping face. When a tipping face is finalised, the fence will be transported to the next trench. All waste will be covered as the trench is completed, with a final cover thickness of 300 mm. Cover material will be sourced from material excavated to create the trench.

Post waste deposition, the proposed landfill will be rehabilitated as part of the Greensnake Western Waste Dump, as per the Woodie Mine Closure Plan, approved by the Department of Mines and Petroleum (DMP). All waste will be covered with material sourced from the trench, which will either be clay or rock material.

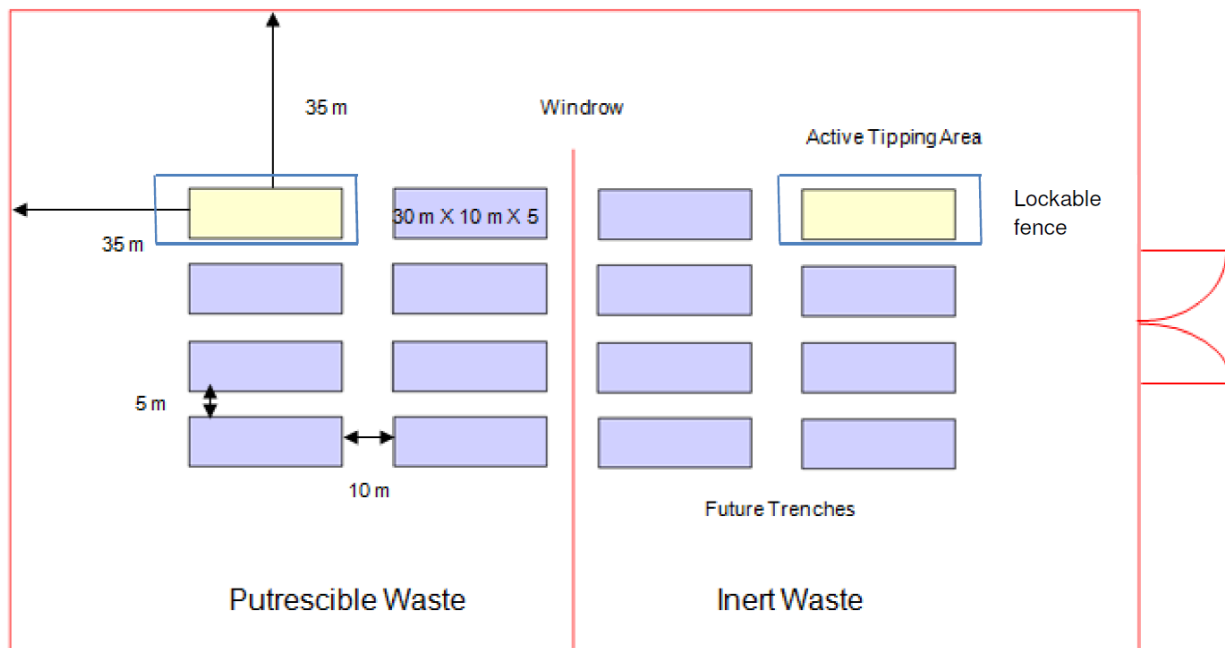


Figure 1: Proposed landfill layout.