Government of **Western Australia**
Department of **Environment Regulation**

Licence

Environmental Protection Act 1986, Part V

Licensee: Central Norseman Gold Pty Ltd

Licence: L8612/2011/1

Registered office: 1 Phoenix Road
NORSEMAN WA 6443

ACN: 005 482 860

Premises address: Central Norseman Gold
Being part mining tenements M63/11, M63/13, M63/14, M63/15, M63/29, M63/48, M63/68, M63/133, M63/140, M63/142, M63/155, M63/156, M63/173 and M63/257 as depicted in Attachment 1.

Issue date: Thursday, 17 November 2011

Commencement date: Thursday, 17 November 2011

Expiry date: Saturday, 18 November 2017

Prescribed premises category
Schedule 1 of the *Environmental Protection Regulations 1987*

Category number	Category description	Category production or design capacity	Approved premises production or design capacity
5	Processing or beneficiation of metallic or non-metallic ore	50 000 tonnes or more per year	700 000 tonnes per annual period
6	Mine dewatering	50 000 tonnes or more per year	2 000 000 tonnes per annual period
52	Electric power generation	10 MWe or more in aggregate (using a fuel other than natural gas)	10 MWe
64	Class II or III putrescible landfill site	20 tonnes or more per year	500 tonnes per annual period

Conditions
This Licence is subject to the conditions set out in the attached pages.

[redacted]
Danielle Eyre
Officer delegated under section 20
of the *Environmental Protection Act 1986*

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Introduction

This Introduction is not part of the Licence conditions.

DER's industry licensing role
The Department of Environment Regulation (DER) is a government department for the state of Western Australia in the portfolio of the Minister for Environment. DER's purpose is to advise on and implement strategies for a healthy environment for the benefit of all current and future Western Australians.

DER has responsibilities under Part V of the *Environmental Protection Act 1986* (the Act) for the licensing of prescribed premises. Through this process DER regulates to prevent, control and abate pollution and environmental harm to conserve and protect the environment. DER also monitors and audits compliance with works approvals and licence conditions, takes enforcement action as appropriate and develops and implements licensing and industry regulation policy.

Licence requirements
This Licence is issued under Part V of the Act. Conditions contained within the Licence relate to the prevention, reduction or control of emissions and discharges to the environment and to the monitoring and reporting of them.

Where other statutory instruments impose obligations on the Premises/Licensee the intention is not to replicate them in the licence conditions. You should therefore ensure that you are aware of all your statutory obligations under the Act and any other statutory instrument. Legislation can be accessed through the State Law Publisher website using the following link:
http://www.slp.wa.gov.au/legislation/statutes.nsf/default.html

For your Premises relevant statutory instruments include but are not limited to obligations under the:

- *Environmental Protection (Unauthorised Discharges) Regulations 2004* – these Regulations make it an offence to discharge certain materials such as contaminated stormwater into the environment other than in the circumstances set out in the Regulations.

- *Environmental Protection (Controlled Waste) Regulations 2004* - these Regulations place obligations on you if you produce, accept, transport or dispose of controlled waste.

- *Environmental Protection (Noise) Regulations 1997* – these Regulations require noise emissions from the Premises to comply with the assigned noise levels set out in the Regulations.

You must comply with your licence. Non-compliance with your licence is an offence and strict penalties exist for those who do not comply.

Licence holders are also reminded of the requirements of section 53 of the Act which places restrictions on making certain changes to prescribed premises unless the changes are in accordance with a works approval, licence, closure notice or environmental protection notice.

Licence fees
If you have a licence that is issued for more than one year, you are required to pay an annual licence fee prior to the anniversary date of issue of your licence. Non payment of annual licence fees will result in your licence ceasing to have effect meaning that it will no longer be valid and you will need to apply for a new licence for your Premises.

Ministerial conditions
If your Premises has been assessed under Part IV of the Act you may have had conditions imposed by the Minister for Environment. You are required to comply with any conditions imposed by the Minister.

Premises description and Licence summary
Central Norsemen Gold Corporation Limited (CNGC) is a gold mining and exploration company that own and operate the Central Norseman Gold Mine (the premises), located adjacent to the town of Norseman approximately 725 km east of Perth. Although not in care and maintenance, the premises has reduced operation throughputs from the previous reporting period. Operational areas of the Project include the North Royal open pit, Harlequin underground mine, Bullen underground mine and the Phoenix Processing Plant and associated tailings infrastructure, TSF4.

Dewatering ceased at the North Royal open pit in August 2014, despite continued mining at the pit. Similarly dewatering of the Harlequin underground mine and HV1 open pit ceased in mid-June 2014 with mining at Harlequin continuing until 16 July 2014. However, dewatering at the Bullen underground mine has continued through periods of low operations. Due to low volumes of ore mined at the Project, the Phoenix Processing Plant (Phoenix Mill) was only operational on average two days a week in the 2014 annual period. The majority of dewatering effluent is discharged to a salt lake, Lake Cowan, via an HDPE lined rock riffle channel used to prevent erosion and gullying, with the remainder being used in the processing plant.

CNGC also operate two landfills including the Harlequin Landfill and the Bullen Landfill. Harlequin Landfill only accepts tyres from mining operations while the Bullen Landfill accepts clean fill, inert waste and putrescible wastes such as pallets and small volumes of kitchen waste. CNG have applied for an increase in throughput volumes of waste from 150 to 500 tonnes of putrescible and inert wastes per annual period. The types of waste disposed in the landfilling areas will not change.

This Licence is the result of an amendment sought by DER to convert the existing licence to a new format licence. The licences and works approvals issued for the Premises prior to issue of this Licence are:

Instrument log

Instrument	Issued	Description
W4954/2011/1	22/09/2011	Works approval for a category 85 sewage facility.
R2238/2011/1	05/02/2011	Registration for abrasive blasting. Category has since been removed from the *Environmental Protection Regulations 1987.*
W4406/2007/1	11/04/2011	Amendment to TSF4 works approval to extend expiry.
R1867/2006/1	01/06/2006	Registration for landfill, later placed on Licence L6043/1967/8.
L8612/2011/1	22/10/2015	Conversion of licence to new template and increase in landfill throughput

Severance
It is the intent of these Licence conditions that they shall operate so that, if a condition or a part of a condition is beyond the power of this Licence to impose, or is otherwise *ultra vires* or invalid, that

condition or part of a condition shall be severed and the remainder of these conditions shall nevertheless be valid to the extent that they are within the power of this Licence to impose and are not otherwise *ultra vires* or invalid.

END OF INTRODUCTION

Licence conditions

1 General

1.1 Interpretation

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

1.1.2 For the purposes of this Licence, 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;

'AS/NZS 5667.1' means the Australian Standard AS/NZS 5667.1 *Water Quality – Sampling – Guidance of the Design of sampling programs, sampling techniques and the preservation and handling of samples;*

'AS/NZS 5667.4' means the Australian Standard AS/NZS 5667.4 *Water Quality – Sampling – Guidance on sampling from lakes, natural and man-made;*

'AS/NZS 5667.11' means the Australian Standard AS/NZS 5667.11 *Water Quality – Sampling – Guidance on sampling of groundwaters;*

'AS/NZS 5667.12' means the Australian Standard AS/NZS 5667.12 *Guidance on sampling of bottom sediments;*

'averaging period' means the time over which a limit is measured or a monitoring result is obtained;

'Clean Fill' has the meaning defined in Landfill Definitions;

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

'CEO' for the purpose of correspondence means;
Chief Executive Officer
Department administering the Environmental Protection Act 1986
Locked Bag 33
CLOISTERS SQUARE WA 6850
Email: info@der.wa.gov.au;

'controlled waste' has the definition in *Environmental Protection (Controlled Waste) Regulations 2004*;

'HDPE' means high density polyethylene;

'Inert Waste Type 1' has the meaning defined in Landfill Definitions;

'Inert Waste Type 2' has the meaning defined in Landfill Definitions;

'Licence' means this Licence numbered L8612/2011/1 and issued under the Act;

'Licensee' means the person or organisation named as Licensee on page 1 of the Licence;

'MFLM' means maximum flood level markers;

'NATA' means the National Association of Testing Authorities, Australia;

'NATA accredited' means in relation to the analysis of a sample that the laboratory is NATA accredited for the specified analysis at the time of the analysis;

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

'quarantined storage area or container' means a hardstand storage area or sealed-bottom container that is separate and isolated from authorised waste disposal areas and is capable of containing all non-conforming waste and its constituents, these areas must be clearly marked and their access restricted to authorised personnel;

'quarterly' means the 4 inclusive periods from 1 October to 31 December and in the following year 1 January to 31 March, 1 April to 30 June and 1 July to 30 September;

'Schedule 1' means Schedule 1 of this Licence unless otherwise stated;

'Schedule 2' means Schedule 2 of this Licence unless otherwise stated;

'six monthly' means the 2 inclusive periods from 1 April to 30 September and 1 October to 31 March in the following year;

'TSF' means an engineered containment pond or dam used to store tailings; and

'usual working day' means 0800 – 1700 hours, Monday to Friday excluding public holidays in Western Australia.

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

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

1.1.5 Nothing in the Licence shall be taken to authorise any emission that is not mentioned in the Licence, where the emission amounts to:
(a) pollution;
(b) unreasonable emission;
(c) discharge of waste in circumstances likely to cause pollution; or
(d) being contrary to any written law.

1.2 General conditions

1.2.1 The Licensee shall operate and maintain all pollution control and monitoring equipment to the manufacturer's specification or any relevant and effective internal management system.

1.2.2 The Licensee shall immediately recover, or remove and dispose of spills of environmentally hazardous materials outside an engineered containment system.

1.2.3 The Licensee shall:
(a) implement all practical measures to prevent stormwater run-off becoming contaminated by the activities on the Premises; and
(b) treat contaminated or potentially contaminated stormwater as necessary prior to being discharged from the Premises.[1]

Note1: *The Environmental Protection (Unauthorised Discharges) Regulations 2004* make it an offence to discharge certain materials into the environment.

1.3 Premises operation

1.3.1 The Licensee shall ensure all above ground pipelines containing tailings and tailings return water are provided with secondary containment sufficient to contain any spill for a period equal to the time between routine inspections.

1.3.2 The Licensee shall ensure that any saline dewatering effluent shall only be managed in the following manner:
(a) used for dust suppression in a manner that minimises damage to surrounding vegetation;
(b) discharged to Lake Cowan at discharge points defined in Schedule 1; or
(c) used in the Phoenix Mill.

1.3.3 The Licensee shall ensure that tailings, decant water and/or industrial wash waters are only discharged into containment infrastructure with the relevant infrastructure requirements and at the locations specified in Table 1.3.1 and identified in Schedule 1.

Table 1.3.1: Containment infrastructure

Containment point reference	Material	Infrastructure requirements
Venture TSF	Tailings	None specified
Phoenix TSF	Tailings	
Butterfly TSF	Tailings	
TSF Cells 1-3	Tailings	
TSF4	Tailings	Clay lined
OK Pond 1 and 2	Oils and industrial wash water	HDPE lined
Harlequin Ponds 1 and 2	Oily water from vehicle wash area	
TSF1-3 Return Water Dam (pond)	Saline groundwater	HDPE lined
Bullen oily water separator pond	Treated oily water from the vehicle wash area	HDPE lined
Lake Bower	Process water and contaminated stormwater	Periodically cleaned of silt to maintain capacity
Bioremediation treatment cells	Hydrocarbon contaminated soil	Clay lined (or equivalent) with a permeability of 10-9 m/s or less; All leachate runoff is directed to, and

		contained within, an impermeable leachate collection sump with capacity to contain an 1 in 100 year, 72 hour duration rainfall event; The leachate collection sump is lined in accordance with Water Quality Protection Note 27, Liners for containing pollutants, using engineered soils, June 2010 or Water Quality Protection Note 26, Liners for containing pollutants, using synthetic membranes, February 2009

1.3.4 The Licensee shall manage containment infrastructure in Table 1.3.1 such that:
- (a) a minimum top of embankment freeboard of 300 mm or a 1 in 100 year/72 hour storm event (whichever is greater) is maintained;
- (b) methods of operation minimise the likelihood of erosion of the embankments by wave action;
- (c) no vegetation is growing on the inner embankments of any ponds.

1.3.5 The Licensee shall:
- (a) undertake inspections as detailed in Table 1.3.2;
- (b) where any inspection identifies that an appropriate level of environmental protection is not being maintained, take corrective action to mitigate adverse environmental consequences as soon as practicable; and
- (c) maintain a record of all inspections undertaken.

Table 1.3.2: Inspection of infrastructure[1]

Scope of inspection	Type of inspection	Frequency of inspection
Tailings pipelines	Visual integrity	Daily
Return water lines	Visual integrity	
Dewatering pipelines	Visual integrity	
Embankment freeboard of actively used containment infrastructure defined in Table 1.3.1	Visual to confirm required freeboard capacity is available	Weekly and as soon as practicable after a 1 in 100 year, 72 hour duration rainfall event

Note 1: Infrastructure only to be inspected when in use.

1.3.6 The Licensee shall undertake the assessment of vegetation health as detailed in Table 1.3.3. The assessments shall:
- (a) photograph and record the presence and condition of vegetation at the locations defined in Table 1.3.3;
- (b) measure plants species richness, cover and health;
- (c) compare the results of the assessment against previous years assessments and identify whether any deterioration in the presence and/or quality of vegetation has taken place;
- (d) be undertaken by a person suitably qualified in vegetation identification and sampling.

Table 1.3.3: Vegetation health monitoring	
Monitoring point reference and location	**Frequency**
Lake Cowan dune vegetation: Photographic Monitoring Points: CT1, CT2, CT3, CT4, CT5, CT8 **Lake Cowan woodland vegetation:** Photographic Monitoring Points: CT6, CT7, CT9, CT10, CT11, CT12	Annually between the months October to December

1.3.7 The Licensee shall undertake the assessment of vegetation health as detailed in Table 1.3.4. The assessments shall:

(a) photograph and record the presence and condition of vegetation at the locations defined in Table 1.3.4;

(b) record the qualitative tree condition and quantitative foliage cover of selected trees at locations defined in Table 1.3.4;

(c) compare the results of the assessment against previous years assessments and identify whether any deterioration in the presence and/or quality of vegetation has taken place;

(d) be undertaken by a person suitably qualified in vegetation identification and sampling.

Table 1.3.4: TSF tree health monitoring	
Monitoring point reference and location	**Frequency**
TSF Cells 1-3: Photographic Monitoring Points: PH1, PH2, PH3, PH4, PH5, PH6, PH7 **Venture TSF:** Photographic Monitoring Points: VVH1, VVH2, VVH3, VVH4, VVH5 **TSF4:** Sample trees that are flagged and numbered **Control Site:** Sample trees that are flagged and numbered. Photographic Monitoring Points: CPP1, CPP 2, CPP 3	Six-monthly between the months of April to June and October to December
TSF4: Photographic Monitoring Points: 1A, 1B, 2A, 2B, 3A, 3B, 4A, 4B, 5A, 5B	Quarterly

1.3.8 The Licensee shall undertake an annual water balance for TSF4. The water balance shall as a minimum consider the following:

(a) site rainfall;

(b) evaporation;

(c) decant water recovery volumes;

(d) seepage recovery volumes; and

(e) volumes of tailings deposited.

1.3.9 The Licensee shall ensure that where wastes produced on the Premises are not taken off-site for lawful use or disposal, they are managed in accordance with the requirements in Table 1.3.5.

Table 1.3.5: Waste processing

Waste type	Process(es)	Process limits[1, 2]
Inert Waste Type 1 Clean Fill Putrescible Waste Inert Waste Type 2	Receipt, handling, associated storage and disposal of waste by landfilling	<u>All waste types</u> Cumulative waste disposal shall not exceed 500 tonnes per annual period. Disposal of waste (other than tyres) by landfilling shall only take place within the Bullen landfill area shown on the Bullen Landfill Area Map in Schedule 1. The separation distance between the base of the landfill and the highest groundwater level shall not be less than 2 m. <u>Inert Waste Type 2</u> Disposal of tyres by landfilling shall only take place within the Harlequin landfill area shown on the Harlequin Landfill Area Map in Schedule 1. The Licensee shall ensure that: (a) no burnt tyres (or tyres that appear burnt) are disposed at the Premises; and (b) no tyres are burnt on the Premises.
Hydrocarbon contaminated waste	Bioremediation	All bioremediation areas are located: (a) at least 50 m from surface water bodies; (b) at least 50 m from any odour sensitive receptors; and (c) in an area where groundwater is at a depth of greater than 3 m below ground surface. Ensure soil is bioremediated by: (a) maintaining an appropriate moisture content and nutrient level within the soil which sustains biological activity; and (b) at least monthly soil aeration when facility is in use.

Note 1: Requirements for landfilling tyres are set out in Part 6 of the *Environmental Protection Regulations 1987*.
Note 2: Additional requirements for the acceptance and landfilling of controlled waste (including asbestos and tyres) are set out in the *Environmental Protection (Controlled Waste) Regulations 2004*.

1.3.10 The Licensee shall ensure that cover is applied and maintained on landfilled wastes in accordance with Table 1.3.6 and that sufficient stockpiles of cover are maintained on site at all times.

Table 1.3.6: Cover requirements[1]

Waste Type	Material	Depth	Timescales
Inert Waste Type 2	Type 1 Inert waste or soil	100mm	Monthly or as soon as practicable after deposit and prior to compaction
Putrescible Waste	Type 1 Inert waste or soil	100mm	Weekly
Inert Waste Type 1	No cover required		

Note 1: Additional requirements for the covering of tyres are set out in Part 6 of the *Environmental Protection Regulations 1987.*

1.3.11 The Licensee shall:
(a) implement security measures at the landfill area to prevent as far as is practical, unauthorised access to the site;
(b) undertake regular inspections of all security measures at the landfill area and repair damage as soon as practicable; and
(c) ensure that any entrance gates to the landfill area are securely locked when the landfill area is unattended.

1.3.12 The Licensee shall take measures to ensure that no wind-blown waste escapes from the Premises and that wind-blown waste is collected on at least a weekly basis and returned to the tipping area.

2 Emissions

2.1 General

2.1.1 The Licensee shall record and investigate the exceedance of any descriptive or numerical limit specified in any part of section 2 of this Licence.

2.2 Point source emissions to air

2.1.2 The Licensee shall ensure that where waste is emitted to air from the emission points in Table 2.2.1 and identified on the map of emission points in Schedule 1 it is done so in accordance with the conditions of this Licence.

Table 2.2.1: Emission points to air

Emission point reference and location on Map of emission points	Emission Point	Emission point height (m)	Source, including any abatement
A1 – A10	Stack	5.5	Diesel power generators

2.3 Point source emissions to surface water

2.3.1 The Licensee is permitted, subject to conditions in the Licence, to emit wastes to water from the emissions point listed in Table 2.3.1 and identified in the Map of emission points in Schedule 1.

Table 2.3.1: Emission points to surface water

Emission point reference and location on Map of emission points	Description	Source including abatement
W1	Discharge to Lake Cowan	Mine dewater from North Royal Pit, HV1 Pits and North Royal and Harlequin underground operations. Discharged via an HDPE lined rock riffle channel.

2.3.2 The Licensee shall not cause or allow point source emissions to surface water greater than the limits listed in Table 2.3.2.

Table 2.3.2: Point source emission limits to surface water

Emission point reference	Parameter	Limit (including units)	Averaging Period
W1	Volumetric flow rate	2,000,000 kL	Annual
W1	pH[1]	Between 5.0 and 8.0	N/A

Note 1: In-field non-NATA accredited analysis permitted.

2.4 Fugitive emissions

2.4.1 The Licensee shall ensure that no tailings are processed or beneficiated at the Premises.

3 Monitoring

3.1 General monitoring

3.1.1 The licensee shall ensure that:
(a) all water samples are collected and preserved in accordance with AS/NZS 5667.1;
(b) all groundwater sampling is conducted in accordance with AS/NZS 5667.11;
(c) all sediment sampling is conducted in accordance with AS/NZS 5667.12;
(d) all laboratory samples are submitted to and tested by a laboratory with current NATA accreditation for the parameters being measured unless indicated otherwise in the relevant table.

3.1.2 The Licensee shall ensure that :
(a) monthly monitoring is undertaken at least 15 days apart;
(b) quarterly monitoring is undertaken at least 45 days apart;
(c) six monthly monitoring is undertaken at least 5 months apart; and
(d) annual monitoring is undertaken at least 9 months apart between the months October to December.

3.2 Monitoring of point source emissions to surface water

3.2.1 The Licensee shall undertake the monitoring in Table 3.2.1 according to the specifications in that table and record and investigate results that do not meet any limit specified.

Table 3.2.1: Monitoring of point source emissions to surface water

Emission point reference	Parameter	Limit	Units	Averaging Period	Frequency
W1	Volumetric flow	N/A	kL	Monthly	Continuous
	pH[1]	5 to 8	N/A	Spot sample	Six-monthly
	Electrical Conductivity	N/A	µS/cm		
	Total Dissolved Solids		mg/L		
	Nitrite + Nitrate				
	Total Nitrogen				
	Total Phosphorous				
	Sulphate				
	Cadmium				
	Chromium				
	Copper				
	Nickel				
	Zinc				

Note 1: In-field non-NATA accredited analysis permitted.

3.3 Monitoring of inputs and outputs

3.3.1 The Licensee shall undertake the monitoring in Table 3.3.1 according to the specifications in that table.

Table 3.3.1: Monitoring of inputs and outputs

Input/Output	Parameter	Units	Averaging period	Frequency
Waste Inputs	Inert Waste Type 1, Inert Waste Type 2, Putrescible Waste	m^3 (where no weighbridge is present)	N/A	Each load arriving at the landfill
Waste Outputs	Waste type as defined in the Landfill Definitions	m^3 (where no weighbridge is present) or kL		Each load leaving or rejected from the Premises

3.4 Ambient environmental quality monitoring

3.4.1 The Licensee shall undertake the monitoring in Tables 3.4.1 and 3.4.2 according to the specifications in those tables and record and investigate results that do not meet any limit specified.

Table 3.4.1: Monitoring of ambient groundwater quality

Monitoring point reference and location	Parameter[1]	Limit	Units	Averaging period	Frequency
Venture TSF: V1, V2, V3, V7, V8, V9 and V10 **TSF Cells 1-3:** P1, P2, P3, P4, P5, P7, P8 and P9 **TSF4:** MB1, MB2, MB3, MB4, MB5, MB6, MB7, MB8, MB10, MB12 and MB13[3]	Standing water level	4	mbgl	Spot sample	Monthly
	pH[2]	N/A	N/A		Quarterly
	Electrical Conductivity		µS/cm		
	Total Dissolved Solids		mg/L		
	Weak Acid Dissociable Cyanide	0.8			
	Total Cyanide	N/A			
	Free Cyanide				
	Copper				
	Manganese				
TSF4: MB1, MB2, MB3, MB4, MB5, MB6, MB7, MB8, MB10, MB12 and MB13[3]	Aluminium	N/A	mg/L	Spot sample	Quarterly
	Arsenic				
	Antimony				
	Iron				
	Selenium				

Note 1: Metals shall be analysed as dissolved metals.
Note 2: In-field non-NATA accredited analysis permitted.
Note 3: MB13 is only to be sampled from once monitoring bore is reinstated.

3.4.2 The Licensee shall ensure the Groundwater, Seepage and Dewatering Management Plan is implemented when the standing water level in the monitoring bores are shallower than six (6) m below ground level.

Table 3.4.2: Monitoring of ambient surface water quality

Monitoring point reference and location	Parameter	Units	Averaging period	Frequency
CM1, CM2, CM3, CM4, CM5, CM6, CM7	pH[1]	N/A	Spot sample	Annually
	Electrical Conductivity	µS/cm		
	Total Dissolved Solids	mg/L		
	Nitrite and Nitrate			
	Total Nitrogen			
	Total Phosphorous			
	Sulphate			
	Cadmium			
	Chromium			
	Copper			
	Nickel			
	Zinc			

Note 1: In-field non-NATA accredited analysis permitted.

Table 3.4.3: Monitoring of ambient sediment quality

Monitoring point reference and location	Parameter	Units	Averaging Period	Frequency
CM1, CM2, CM3, CM4, CM5, CM6 and CM7	pH[1]	N/A	Spot sample	Annually in between October and December in the same year
	Salt crust thickness	cm		
	Moisture Content	%		
	Electrical Conductivity	µS/cm		
	Total Dissolved Solids	mg/kg		
	Nitrite and Nitrate			
	Total Nitrogen			
	Total Phosphorus			
	Sulphate			
	Chloride			
	Arsenic			
	Cadmium			
	Chromium			
	Copper			
	Nickel			
	Lead			
	Zinc			

Note 1: In-field non-NATA accredited analysis permitted.

4 Improvements

4.1 Improvement program

4.1.1 The Licensee shall complete the improvements in Table 4.1.1 by the date of completion in Table 4.1.1.

4.1.2 The Licensee, for improvements not specifically requiring a written submission, shall write to the CEO stating whether and how the Licensee is compliant with the improvement within one week of the completion date specified in Table 4.1.1.

Table 4.1.1: Improvement program

Improvement reference	Improvement	Date of completion
IR1	The Licensee shall ensure that all pipelines containing environmentally hazardous materials, including saline dewater, are either: (a) equipped with telemetry systems and pressure sensors along pipelines to allow for the detection of leaks and failures; or (b) equipped with automatic cut-outs in the event of a pipe failure; or (c) provided with secondary containment sufficient to contain any spill for a period equal to the time between routine inspections.	No later than 1 year from signing.
IR2	The Licensee shall replace monitoring bore MB9 with MB13.	15 March 2016
IR3	The Licensee shall manage TSF4 such that: (a) a seepage collection and recovery system is installed and operated to capture seepage from the TSF; (b) seepage is returned to the TSF or re-used in process; (c) the location of tailings deposition spigots and return water pumps are managed to minimise seepage at the southeast corner of the TSF; (d) the supernatant pond on the TSF is minimised as far as practicable.	15 March 2016
IR4	The Licensee shall submit a report that defines the capacity of the Lake Bower Stormwater Management System. This report shall take into consideration: (a) the size catchment area based on survey information; (b) annual recurrence interval data to determine the frequency of significant rainfall events; and (c) the volume of stormwater captured during a significant rainfall event.	28 February 2016
IR5	The Licensee shall submit a Dust Management Plan for the premises that includes, but is not limited to: (a) potential sources of dust from the premises; (b) dust management and mitigation measures to be used onsite; (c) discussion of what triggers are to be used to initiate dust management and mitigation measures; and (d) discussion of the provision to cease operations to prevent excessive dust.	3 months from signing

5 Information

5.1 Records

5.1.1 All information and records required by the Licence shall:
- (a) be legible;
- (b) if amended, be amended in such a way that the original and subsequent amendments remain legible or are capable of retrieval;
- (c) except for records listed in 5.1.1(d) be retained for at least 6 years from the date the records were made or until the expiry of the Licence or any subsequent licence; and
- (d) for the following records, be retained until the expiry of the Licence and any subsequent licence:
  - (i) off-site environmental effects; or
  - (ii) matters which affect the condition of the land or waters.

5.1.2 The Licensee shall ensure that:
- (a) any person left in charge of the Premises is aware of the conditions of the Licence and has access at all times to the Licence or copies thereof; and
- (b) any person who performs tasks on the Premises is informed of all of the conditions of the Licence that relate to the tasks which that person is performing.

5.1.3 The Licensee shall complete an Annual Audit Compliance Report indicating the extent to which the Licensee has complied with the conditions of the Licence, and any previous licence issued under Part V of the Act for the Premises for the previous annual period.

5.1.4 The Licensee shall implement a complaints management system that as a minimum records the number and details of complaints received concerning the environmental impact of the activities undertaken at the Premises and any action taken in response to the complaint.

5.2 Reporting

5.2.1 The Licensee shall submit to the CEO an Annual Environmental Report by 30 November after the end of the annual period. The report shall contain the information listed in Table 5.2.1 in the format or form specified in that table.

Table 5.2.1: Annual Environmental Report

Condition or table (if relevant)	Parameter	Format or form[1]
-	Summary of any failure or malfunction of any pollution control equipment and any environmental incidents that have occurred during the annual period and any action taken	None specified
5.1.3	Compliance	Annual Audit Compliance Report (AACR)
5.1.4	Complaints summary	None specified
-	Volumes of ore processed	
1.3.6	Annual vegetation monitoring around TSF4	
1.3.7	Annual water balance for TSF4	
2.6.1	Measures taken to suppress dust	
Table 3.2.1	Monitoring of point source discharges to surface water	
Table 3.3.1	Monitoring of inputs and outputs	
Table 3.4.1	Monitoring of ambient groundwater quality	
Table 3.4.2	Monitoring of ambient surface water quality	

3.8.2	Implementation of the Groundwater, Seepage and Dewatering Management Plan	
Table 4.1.1	Performance against improvement conditions	

Note 1: Forms are in Schedule 2

5.2.2 The Licensee shall ensure that the Annual Environmental Report also contains:
- (a) an assessment of the information contained within the report against previous monitoring results and Licence limits;
- (b) a summary of issues raised from inspections or incident responses during the reporting period and details of how these have been, or are scheduled to be, addressed and/ or rectified; and
- (c) a Dewatering Discharge Report.

5.2.3 The Dewatering Discharge Report required by condition 5.2.2(c) shall address the environmental effects of mine dewater discharge to the Lake Cowan environment and include but not be limited to:
- a) the monthly cumulative volumes and average discharge rates of mine dewater discharged to Lake Cowan, as identified by the mine water discharges from the North Royal and HV1 mines:
  - i) monthly total volumes shall be reported in cubic metres; and
  - ii) average discharge rate shall be reported in litres per second for each quarter.
- b) contaminant loading to the area of impact measured in kilograms per hectare per year for all parameters listed in Table 3.3.1;
- c) salt crust monitoring (depth, percentage cover and rates of spread) along the lake bank in the impact and control zones;
- d) ambient sediment monitoring data required by Table 3.4.3;
- e) flood level monitoring data of the MFLM regularly logged and reported where exceeded;
- f) discussion of the impact of any alteration of the receiving environment, especially with respect to how these will be managed, including requirements of the monitoring program;
- g) ongoing dewatering plans including an estimate of future dewatering volumes and timeframes.

5.3 Notification

5.3.1 The Licensee shall ensure that the parameters listed in Table 5.3.1 are notified to the CEO in accordance with the notification requirements of the table.

Table 5.3.1: Notification requirements

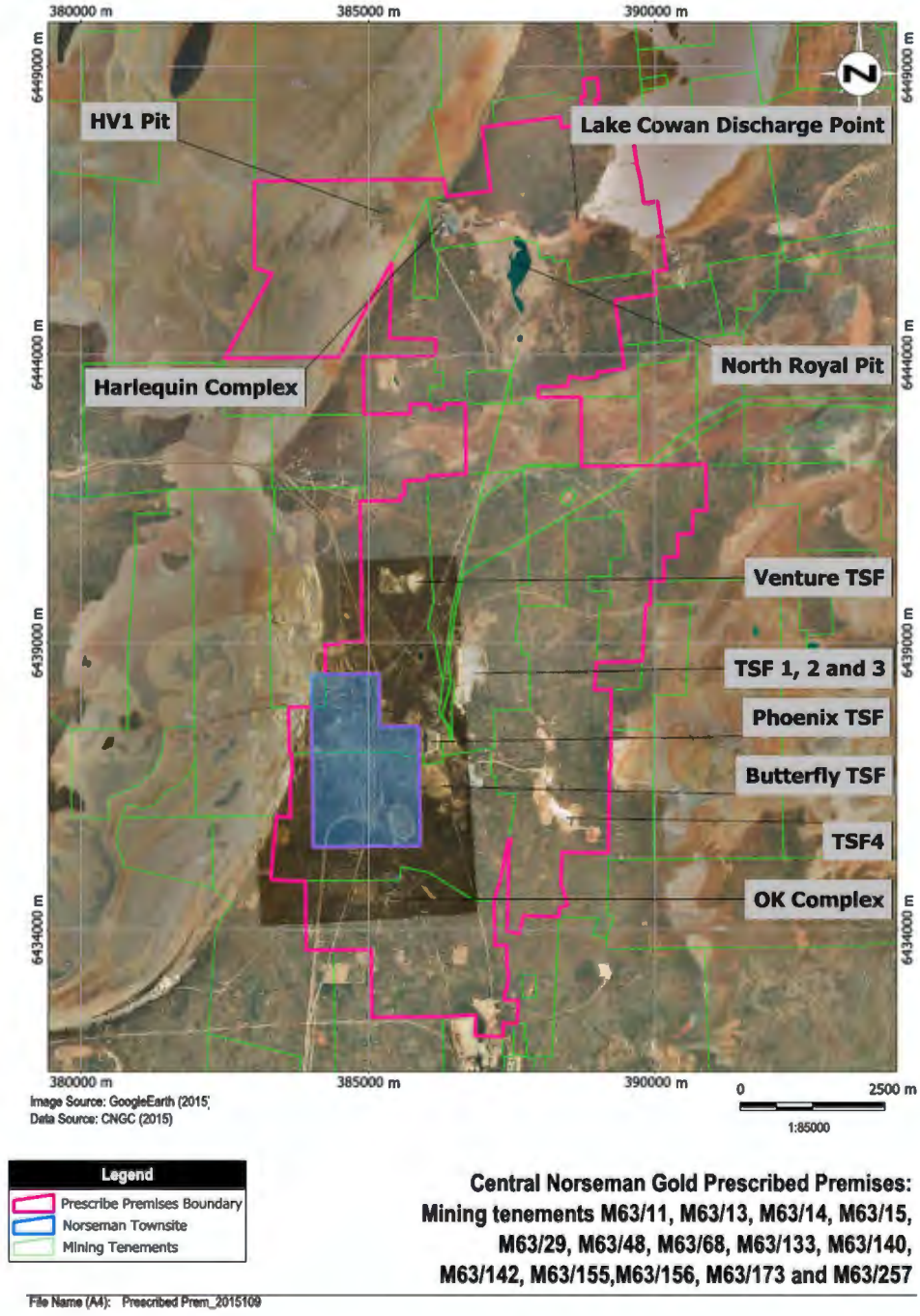
Condition or table (if relevant)	Parameter	Notification requirement[1]	Format or form[2]
2.1.1	Breach of any limit specified in the Licence	Part A: As soon as practicable but no later than 5pm of the next usual working day. Part B: As soon as practicable	N1

Note 1: Notification requirements in the Licence shall not negate the requirement to comply with s72 of the Act
Note 2: Forms are in Schedule 2

Schedule 1: Maps

Premises map

The Premises is shown in the map below. The pink line depicts the Premises boundary. Norseman townsite is excluded from the Premises.



Map of emission points

The locations of the emission points and containment infrastructure defined in Tables 1.3.1 and 2.2.1 are shown below.

Maps of monitoring locations

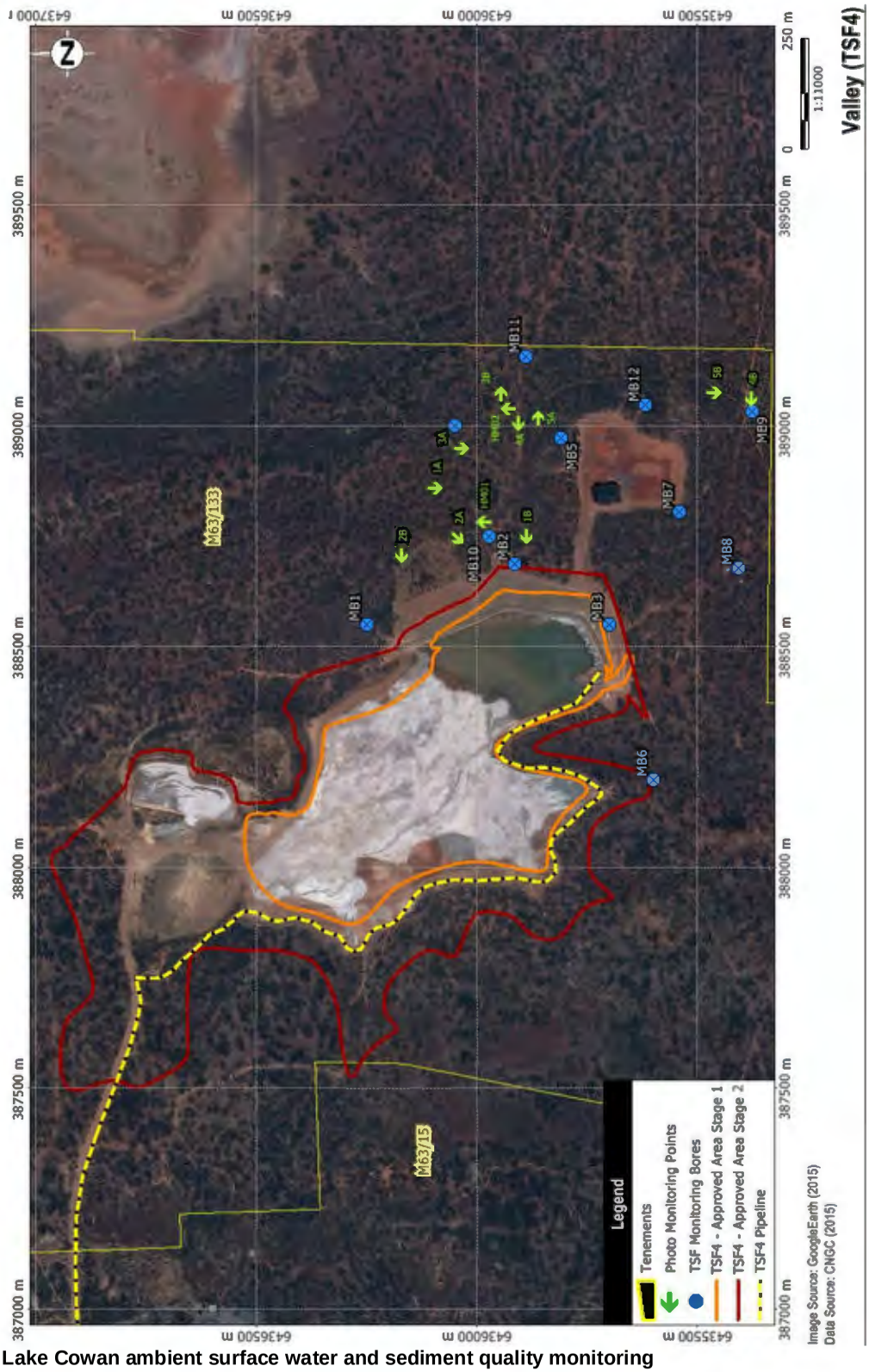
The locations of the control monitoring points defined in Table 1.3.3 are shown below.

The locations of the monitoring points for Venture TSF defined in Tables 1.3.3 and 3.4.1 are shown below.


Venture TSF
644000 m
386000 m
385500 m
M63/134
M63/13
VE1
VE2
VE3
VE4
VE5
VE6
VE7
VE8
V1
V2
V3
V4
V8
V9
V10
0
>50 m
1:4000
Image Source: GoogleEarth (2015)
Data Source: CNGC (2015)
Legend
Tenements
Photo Monitoring Points
TSF Monitoring Bores

The locations of the monitoring points for TSF 1-3 defined in Tables 1.3.3 and 3.4.1 are shown below.

The locations of the monitoring points for TSF 4 defined in Tables 1.3.3 and 3.4.1 are shown below.



Lake Cowan ambient surface water and sediment quality monitoring

The locations of the monitoring points on Lake Cowan defined in Tables 3.4.2 and 3.4.3 are shown below

Lake Cowan dune vegetation monitoring

The locations of the monitoring points on Lake Cowan defined in Table 1.3.3 are shown below

Bullen Landfill Area Map

The location of Bullen Landfill Area is shown below.

Harlequin Landfill Area Map

The location of containment infrastructure defined in Table 1.3.1 and the Harlequin Landfill Area is shown below.

The locations of containment infrastructure defined in Table 1.3.1 are shown below:

Schedule 2: Reporting & notification forms

These forms are provided for the proponent to report monitoring and other data required by the Licence. They can be requested in an electronic format.

ANNUAL AUDIT COMPLIANCE REPORT PROFORMA

SECTION A

LICENCE DETAILS

Licence Number:	Licence File Number:
Company Name: Trading as:	ABN:
Reporting period: _____ to _____	

STATEMENT OF COMPLIANCE WITH LICENCE CONDITIONS

1. Were all conditions of the Licence complied with within the reporting period? (please tick the appropriate box)

Yes ☐ Please proceed to Section C

No ☐ Please proceed to Section B

Each page must be initialled by the person(s) who signs Section C of this Annual Audit Compliance Report (AACR).

Initial:

SECTION B

DETAILS OF NON-COMPLIANCE WITH LICENCE CONDITION.

Please use a separate page for each licence condition that was not complied with.

a) Licence condition not complied with:	
b) Date(s) when the non compliance occurred, if applicable:	
c) Was this non compliance reported to DER?:	
☐ Yes ☐ Reported to DER verbally Date _____ ☐ Reported to DER in writing Date _____	☐ No
d) Has DER taken, or finalised any action in relation to the non compliance?:	
e) Summary of particulars of the non compliance, and what was the environmental impact:	
f) If relevant, the precise location where the non compliance occurred (attach map or diagram):	
g) Cause of non compliance:	
h) Action taken, or that will be taken to mitigate any adverse effects of the non compliance:	
i) Action taken or that will be taken to prevent recurrence of the non compliance:	

Each page must be initialled by the person(s) who signs Section C of this AACR

Initial:

SECTION C

SIGNATURE AND CERTIFICATION

This Annual Audit Compliance Report (AACR) may only be signed by a person(s) with legal authority to sign it. The ways in which the AACR must be signed and certified, and the people who may sign the statement, are set out below.

Please tick the box next to the category that describes how this AACR is being signed. If you are uncertain about who is entitled to sign or which category to tick, please contact the licensing officer for your premises.

If the licence holder is		**The Annual Audit Compliance Report must be signed and certified:**
An individual	□	by the individual licence holder, or
	□	by a person approved in writing by the Chief Executive Officer of the Department of Environment Regulation to sign on the licensee's behalf.
A firm or other unincorporated company	□	by the principal executive officer of the licensee; or
	□	by a person with authority to sign on the licensee's behalf who is approved in writing by the Chief Executive Officer of the Department of Environment Regulation.
A corporation	□	by affixing the common seal of the licensee in accordance with the *Corporations Act 2001*; or
	□	by two directors of the licensee; or
	□	by a director and a company secretary of the licensee, or
	□	if the licensee is a proprietary company that has a sole director who is also the sole company secretary – by that director, or
	□	by the principal executive officer of the licensee; or
	□	by a person with authority to sign on the licensee's behalf who is approved in writing by the Chief Executive Officer of the Department of Environment Regulation.
A public authority (other than a local government)	□	by the principal executive officer of the licensee; or
	□	by a person with authority to sign on the licensee's behalf who is approved in writing by the Chief Executive Officer of the Department of Environment Regulation.
a local government	□	by the chief executive officer of the licensee; or
	□	by affixing the seal of the local government.

It is an offence under section 112 of the *Environmental Protection Act 1986* for a person to give information on this form that to their knowledge is false or misleading in a material particular. There is a maximum penalty of $50,000 for an individual or body corporate.

I/We declare that the information in this annual audit compliance report is correct and not false or misleading in a material particular.

SIGNATURE: _____

NAME:
(printed) _____

POSITION: _____

DATE: _____/_____/_____

SIGNATURE: _____

NAME:
(printed) _____

POSITION: _____

DATE: _____/_____/_____

SEAL (if signing under seal)

Licence: L8612/2011/1 Licensee: Central Norseman Gold Company Pty Ltd
Form: N1 Date of breach:

Notification of detection of the breach of a limit.

These pages outline the information that the operator must provide.
Units of measurement used in information supplied under Part A and B requirements shall be appropriate to the circumstances of the emission. Where appropriate, a comparison should be made of actual emissions and authorised emission limits.

Part A

Licence Number	
Name of operator	
Location of Premises	
Time and date of the detection	

Notification requirements for the breach of a limit	
Emission point reference/ source	
Parameter(s)	
Limit	
Measured value	
Date and time of monitoring	
Measures taken, or intended to be taken, to stop the emission	

Part B

Any more accurate information on the matters for notification under Part A.	
Measures taken, or intended to be taken, to prevent a recurrence of the incident.	
Measures taken, or intended to be taken, to rectify, limit or prevent any pollution of the environment which has been or may be caused by the emission.	
The dates of any previous N1 notifications for the Premises in the preceding 24 months.	

Name	
Post	
Signature on behalf of Central Norseman Gold Company Pty Ltd	
Date	

Government of Western Australia
Department of Environment Regulation

Decision Document

Environmental Protection Act 1986, Part V

Proponent: Central Norseman Gold Pty Ltd

Licence: L8612/2011/1

Registered office: 1 Phoenix Road
NORSEMAN WA 6443

ACN: 005 482 860

Premises address: Central Norseman Gold
Being part mining tenements M63/11, M63/13, M63/14, M63/15, M63/29, M63/48, M63/68, M63/133, M63/140, M63/142, M63/155, M63/156, M63/173 and M63/257 as depicted in Attachment 1.

Issue date: Thursday, 17 November 2011

Commencement date: Thursday, 17 November 2011

Expiry date: Saturday, 18 November 2017

Decision

Based on the assessment detailed in this document the Department of Environment Regulation (DER), has decided to issue an amended licence. DER considers that in reaching this decision, it has taken into account all relevant considerations and legal requirements and that the Licence and its conditions will ensure that an appropriate level of environmental protection is provided.

Decision Document prepared by: Clarrie Green
Licensing Officer

Decision Document authorised by: Danielle Eyre
Delegated Officer

Contents

1 Purpose of this Document 2
2 Administrative summary 2
3 Executive summary of proposal and assessment 3
4 Decision table 4
5 Advertisement and consultation table 7
6 Risk Assessment 8
Appendix A 9
Appendix B 10
Appendix C 11
Appendix D 12
Appendix E 14

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 ☐ New Licence ☐ Licence amendment ☒ Works Approval amendment ☐	
Activities that cause the premises to become prescribed premises	**Category number(s)**	**Assessed design capacity**
	05	700,000 tonnes per year
	06	2,000,000 tonnes per year
	52	10 MWe
	64	500 tonnes per year
Application verified Application fee paid	Date: N/A Date: N/A	
Works Approval has been complied with Compliance Certificate received	Yes☐ No☐ N/A☒ Yes☐ No☐ N/A☒	
Commercial-in-confidence claim	Yes☐ No☒	
Commercial-in-confidence claim outcome		
Is the proposal a Major Resource Project?	Yes☒ No☐	
Was the proposal referred to the Environmental Protection Authority (EPA) under Part IV of the *Environmental Protection Act 1986*?	Yes☐ No☒	Referral decision No: Managed under Part V ☐

		Assessed under Part IV ☐
Is the proposal subject to Ministerial Conditions?	Yes☐ No☒	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 *Environmental Protection Act 1986*)?	Yes☒ No☐ Department of Water consulted Yes ☐ No ☒	
Is the Premises within an Environmental Protection Policy (EPP) Area Yes☐ No☒		
Is the Premises subject to any EPP requirements? Yes☐ No☒		

3 Executive summary of proposal and assessment

Central Norsemen Gold Corporation Limited (CNGC) is a gold mining and exploration company that own and operate the Central Norseman Gold Mine (the premises), located adjacent to the town of Norseman approximately 725 km east of Perth. Although not in care and maintenance, the premises has reduced operation throughputs from the previous reporting period. Operational areas of the Project include the North Royal open pit, Harlequin underground mine, Bullen underground mine and the Phoenix Processing Plant and associated tailings infrastructure, TSF4.

Dewatering ceased at the North Royal open pit in August 2014, despite continued mining at the pit. Similarly dewatering of the Harlequin underground mine and HV1 open pit ceased in mid-June 2014 with mining at Harlequin continuing until 16 July 2014. However, dewatering at the Bullen underground mine has continued through periods of low operations. Due to low volumes of ore mined at the Project, the Phoenix Processing Plant (Phoenix Mill) was only operational on average two days a week in the 2014 annual period. The majority of dewatering effluent is discharged to a salt lake, Lake Cowan, via an HDPE lined rock riffle channel used to prevent erosion and gullying, with the remainder being used in the processing plant.

CNGC also operate two landfills including the Harlequin Landfill and the Bullen Landfill. Harlequin Landfill only accepts tyres from mining operations while the Bullen Landfill accepts clean fill, inert waste and putrescible wastes such as pallets and small volumes of kitchen waste. Through the draft amendment comment period CNG have requested an increase in throughput volumes of waste from 150 to 500 tonnes of putrescible and inert wastes per annual period. The types of waste disposed in the landfilling areas will not change.

This Licence is the result of an amendment sought by DER to convert the existing licence to a new format licence.

4 Decision table

All applications are assessed in line with the *Environmental Protection Act 1986*, the *Environmental Protection Regulations 1987*, DEC's Policy Statement - Limits and targets for prescribed premises (2006), 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 L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
General conditions	N/A L1.2.1 – 1.2.3 L1.2.3	Landfill throughputs have been increased from 150 to 500 tonnes per annual period. As landfilling is currently taking place in waste rock landforms there is not expected to be a significant environmental impact as a result of this increase. General conditions have been applied to Licence (1.2.1 – 1.2.3). Condition 1.2.3 replaces condition 13 of the previous Licence.	General provisions of the *Environmental Protection Act 1986* Environmental Protection (Unauthorised Discharges Regulations, 2004)
Premises operation	L1.3.1 – 1.3.5, L1.3.6 – 1.3.7 L1.3.8 L1.3.9 – 1.3.12	DER's assessment and decision making are detailed in Appendix A. Condition 1.3.8 has been applied to CNG's Licence as the site's activities have caused contamination and remediation activities are being undertaken. Condition 1.3.9 also requires the appropriate management of hydrocarbon contaminated material, ensuring that it is treated rather than stored. The amended Licence includes the addition of conditions 1.3.9 – 1.3.12 to ensure that CNG appropriately manages Premises landfills in a way that minimises contamination of land, odours, fly-away litter and public access is prevented.	Landfill Waste Classification and Waste Definitions 1996 (as amended) *Environmental Protection (Rural Landfill) Regulations 2002*
Emissions general	L2.1.1	Numerical limits have been set in section 2.3 of the Licence. Therefore the condition regarding recording and investigation of exceedances of limits has been included.	N/A
Point source emissions to air including	L2.2.1	CNG have been operating a 10 MW equivalent diesel power station to supply the site's energy needs. This facility has previously not been included in the Licence despite triggering category 52 of the *Environmental Protection*	Guidance Statement: Licence and works approvals process

DECISION TABLE			
Works Approval / Licence section	**Condition number L= Licence**	**Justification (including risk description & decision methodology where relevant)**	**Reference documents**
monitoring		*Regulations 1987*. Category 52 has been added to the Licence and condition 2.2.1 permits the discharge of air emissions from the 10 stacks at the facility. Emission Description *Emission:* Point source emissions to air from ten 1 MW diesel-fuelled generators at the premises' power station. Nitrous oxides, carbon monoxide and particulate matter are expected to be the most significant emissions from each stack. *Impact:* Air emissions impacting the health of nearby residents located over 500 m from the power station. *Controls:* Contractors service the generators regularly to ensure optimal efficiency and minimise diesel usage. Regular servicing also reduces the volume of partially burnt hydrocarbons and improves the quality of emissions to air. Risk Assessment *Consequence*: Minor *Likelihood:* Unlikely *Risk Rating:* Moderate Regulatory Controls The small size of the plant, distance to human receptors and CNGC controls satisfactorily reduce the risk to a low/moderate rating. No further regulatory controls will be applied and the residual risk rating will not change.	Ambient Air Assessment Criteria, National Environmental Protection Measure (Ambient Air Quality)
Point source emissions to surface water including monitoring	L2.3.1 – 2.3.2 L3.4.1 (Tables 3.4.2 and 3.4.3)	DER's assessment and decision making are detailed in Appendix B.	

Point source emissions to groundwater including monitoring	L2.4	There are no anticipated point source emissions to groundwater through CNG's operations.	
Emissions to land including monitoring	L2.5	There are no anticipated emissions to land as part of CNG's normal operations.	*Environmental Protection (Unauthorised Discharges) Regulations, 2004* Contaminated Sites Management Series - Bioremediation of hydrocarbon-contaminated soils in Western Australia, 2004
Fugitive emissions	L2.6	DER's assessment and decision making are detailed in Appendix C.	
Odour	L2.7	Odour generation is unlikely to be significant during normal operations at the Premises.	
Noise	L2.8	Noise is not anticipated to significantly interfere with the amenity of the nearest human receptor.	
Monitoring general	L3.1.1	Condition 3.1.1 has been applied to ensure that all samples are collected in accordance to the relevant Australian Standards and are submitted to a laboratory with NATA accreditation.	
Monitoring of inputs and outputs	L3.3.1	Condition 3.3.1 has been applied to the Licence to require the recording of annual waste inputs and outputs.	*Environmental Protection (Rural Landfill) Regulations 2002*
Process monitoring	L3.7	There are no specified conditions relating to process monitoring.	N/A
Ambient quality monitoring	L3.4.1 – 3.4.2	DER has reviewed the monitoring program on the previous Licence to ensure impacts from CNG's activities are accurately identified in a timely manner. To accurately measure the impacts of dewatering annual sediment sampling has been added to the licence (see Appendix B).	Australian Standard AS/NZS 5667.1 – Water Quality – Sampling – Guidance on the Design of sampling programs, sampling techniques and the preservation and handling of samples

Meteorological monitoring	N/A	There are no meteorological monitoring requirements under this Licence.	N/A
Improvements	L4.1.1 (IR1 – IR5)	DER's assessment and decision making are detailed in Appendix D.	
Information	L5.2.1 – L5.2.3	Information conditions have been applied to the Licence to require the submission of monitoring and throughput data, measures taken to prevent environmental impacts as well as report on CNG's performance against improvement conditions. CNG will also continue to be required to provide a dewatering discharge report. Changes to the information contained within this report include the mapping of areas of dewater ponding and the provision of contaminant loading data.	
Licence Duration	N/A	The Licence expiry has been extended to prevent a further amendment in November to reissue the Licence. A reassessment of emissions and discharges has been carried out as part of this amendment. In doing so, DER has decided to offer only a two year licence extension given the recent premises' history of poor performance.	Guidance Statement: Licence duration

5 Advertisement and consultation table

Date	Event	Comments received/Notes	How comments were taken into consideration
N/A	Application advertised in West Australian (or other relevant newspaper)	N/A – DER initiated amendment	N/A
06/08/2015	Proponent sent a copy of draft instrument	Numerous comments received	DER's assessment and decision making in relation to CNG's comments are detailed in Appendix E.

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

Premises operation – Dewatering pipeline failure

Emission Description

Emission: Pipeline leak or spill of hypersaline dewatering effluent. Pipeline failures usually occur where pipelines have been in place for many years, generally due to fatigue of pipe joints (caused by expansion and contraction over time) or failure of breather vents due to long exposure to the sun.

Impact: Mine dewater discharged to Lake Cowan is hypersaline with TDS in the order of 262,000 mg/L. A discharge in the event of a pipeline leak or spill could result in salt scarring and/or vegetation death. Without bunding or equipment designed to rapidly detect a discharge the potential scale of impacts increases dramatically. Due to the terrain, long term impact could occur over a large area.

Controls: There are no effective controls in place to limit the impact of dewatering pipeline failure. CNG has not constructed pipelines to dewater mining voids within shallow v-drains and/or bunding on either side of the pipeline to contain any unintentional leakage as this was not previously a licence condition. Proposals to install telemetry systems on sections of CNG's pipeline network were raised at the compliance inspection on 17 April 2015.

Risk Assessment

Consequence: Major
Likelihood: Possible
Risk Rating: High

Regulatory Controls

Condition 1.3.1 replaces condition 8 requiring the continuous bunding of above ground pipelines containing tailings and tailings return water. The condition typically used for dewatering activities requires all pipelines containing 'environmentally hazardous materials' to be bunded or be provided with telemetry systems or automatic cut-outs. This condition was not placed on the Licence as CNG would immediately be non-compliant with the condition. Improvement condition IR1, when completed, will reduce the risk of environmental impact from transporting hypersaline dewater. Once achieved, IR1 will replace condition 1.3.1.

Condition 1.3.2 has been placed on the Licence to ensure that hypersaline dewater is only discharged in a manner that will not impact on surrounding vegetation. Conditions 1.3.3 to 1.3.5 require CNG to ensure all other environmentally hazardous material stored or transported onsite is appropriately contained.

Residual Risk

Consequence: Moderate
Likelihood: Unlikely
Risk Rating: Moderate

Premises operation – TSF seepage

Emission Description

Emission: Seepage from CNG's active tailings storage facility (TSF), TSF4.

Impact: Water within tailings slurry seeping through to groundwater causing mounding and contamination with heavy metals. There is evidence of rising standing water levels (SWL) at TSF4 monitoring bores to the southeast of the cell at MB2 and MB10. At these bores SWLs are rising to nearly 6 metres below ground level indicating seepage and presenting a risk to native vegetation. Should SWLs intercept the root zone of vegetation, the hypersaline groundwater has the potential to result in stunted growth or death. Furthermore the intrusion of saline water into the root zone may also contaminate soil preventing future vegetative regrowth. As there are no declared rare flora or threatened species in the vicinity of TSF4, the consequence of groundwater mounding is deemed as moderate.

Controls: In early 2014 CNG changed the method of tailings deposition at TSF4 from single spigot to multi-spigot to promote evaporation and prevent seepage through the dam wall after seepage was observed in the toe drain. CNG acknowledges that further changes to tailings discharge and water recycling methods are required to address the rising groundwater level around TSF4. CNG noted in the 2013/14 Annual Environmental Report that at the current rate of discharge, SWL targets will be exceeded in the 2014/15 annual period. Although this has not occurred there is no evidence to suggest the risk has reduced.

Risk Assessment
Consequence: Moderate
Likelihood: Likely
Risk Rating: High

Regulatory Controls
Condition 1.3.6 replaces vegetation monitoring requirements found in Table 2 of the previous Licence. Results of this monitoring will assist in the identification of seepage impacts. To measure the volume of seepage DER has placed an additional condition on the Licence (condition 1.3.7) for CNG to conduct an annual water balance for TSF4. Results of the water balance will need to form part of the information contained in CNG's Annual Environmental Report.

Improvement condition IR3 has been added to the Licence to require CNG to install and operate recovery bores at TSF4 to reduce rising SWLs and protect nearby native vegetation. In addition, CNG's proposal to relocate tailings discharge spigots to another area of TSF4 to reduce seepage at the southeast of the facility will also be required by IR3.

In May 2014, CNG requested to remove monitoring bore MB9 from the monitoring program at TSF4 as it collapsed. Standing water level trends of monitoring bores around TSF4 have indicated that targets will be exceeded by the end of the current reporting period. Monitoring bore MB9 is the furthest bore from TSF4 located down hydraulic gradient of the supernatant pond. Monitoring from a location near to MB9 can be used to indicate the movement of a seepage plume. Monitoring of SWL at TSF4 has demonstrated that groundwater levels are rising fastest at MB10 and MB4, to the east of the supernatant pond. Therefore improvement condition IR2 has been included within the Licence to require CNG to replace MB9 with a monitoring bore MB13 as a third tier monitoring bore capable of tracking the plume along the apparent groundwater flow's path.

Further requests have been made to remove the requirements to sample for aluminium, antimony, iron and selenium. It is noted that elevated concentrations of aluminium at MB3 and MB12 along with elevated Weak Acid Dissociable Cyanide (WAD-CN) at these bores and declining pH at both MB3 are potentially the result of seepage. All of these metals would be expected to leach under acidic conditions and therefore DER has decided to retain metal monitoring requirements in condition 3.4.1 for the active TSF only.

Residual Risk
Consequence: Moderate
Likelihood: Unlikely
Risk Rating: Moderate

Appendix B

Point source discharges to surface water including monitoring
Emission Description
Emission: CNG abstract groundwater from the North Royal, Harlequin and HV1 Pits for the purposes of mining, discharging dewater effluent to Lake Cowan via an high density polyethylene (HDPE) lined

rock riffle channel. Groundwater in the region is typically expressed as being high in metal content particularly for nickel, copper and zinc with traces of arsenic, cadmium and chromium.

Impact: In December 2013, the widespread brine shrimp *Parartemia* was the only species recorded in Lake Cowan sediments as being in resting stage. Aquatic invertebrates and algaes that grow on the lake have the potential to be impacted by dewatering through bioaccumulation of metals and increased salt loading. Within the discharge embayment the high salt content of dewater is likely to restrict growth and development. It is expected that following a major flood event stygofauna and diatom productivity will increase, attracting migratory birds. Bird life that utilise Lake Cowan as a feeding ground during flood events are likely to absorb significant concentrations of metals as a result of bioaccumulation.

Controls: The use of the HDPE-lined rock riffle channel prevents erosion at the discharge point however, no controls are proposed to reduce the discharge of metals to Lake Cowan.

Risk Assessment
Consequence: Minor
Likelihood: Likely
Risk Rating: Moderate

Regulatory Controls
Condition 2.3.2 limits the volume of dewater permitted for discharge to Lake Cowan to prevent significant salt, nutrient and metal loading of sediments. However, as CNG have not been operating near to this limit of discharge, residual risk is not expected to reduce as a result.

CNG will be required to conduct annual ambient sediment monitoring at locations around Lake Cowan for the parameters listed in Table 3.4.3. Monitoring is not expected to reduce the risk of contaminant loading on Lake Cowan although it will provide information on the impacts of dewatering to the surface water body.

Limits for the pH of surface water discharges at Lake Cowan have been placed in Table 3.2.1 to ensure the protection of salt lake biota within the discharge embayment.

Residual Risk
Consequence: Minor
Likelihood: Likely
Risk Rating: Moderate

Appendix C

Fugitive emissions – Normal operation

Emission Description
Emission: Dust generated on the premises during blasting, excavation, crushing of ore and general vehicle movements.
Impact: Dust generated during normal operations may deposit on nearby native vegetation, restricting the plant's ability to photosynthesise. Dust may also impact on the health and amenity of nearby residents. The presence of a number of threatened species and declared rare flora, and the proximity of nearby residents elevates the consequence of dust emissions to moderate.
Controls: CNG operate water trucks on haul roads using water abstracted to allow mining.

Risk Assessment
Consequence: Moderate

Likelihood: Possible
Risk Rating: Moderate

Regulatory Controls
Generic dust management conditions 15 and 16 of the previous licence have not been transferred to this Licence. In the absence of these conditions CNG will be required to submit a Dust Management Plan as part of Improvement condition IR5. Once submitted, DER will amend the Licence to require CNG to undertake the actions described in the Dust Management Plan. As this proposed re-amendment has not yet taken effect the residual risk assessment will remain unchanged.

Risk Assessment
Consequence: Moderate
Likelihood: Possible
Risk Rating: Moderate

Fugitive emissions – Fugitive emissions as a result of tailings disturbance
Emission Description
Emission: CNG have communicated to DER an intention to reprocess tailings from the Phoenix TSF. The small particle size of tailings increases the likelihood of a dust off event if disturbed.
Impact: Long term health impacts for Norseman residents adjacent to the Premises boundary. As well as the small particle size of tailings that is likely to create respiratory problems for residents impacted, tailings contain heavy metals that may bioaccumulate and are harmful to human health should they transfer across the cell walls of the respiratory system. Contaminants may enter the water supply of nearby households that collect rainwater for domestic use. The nearest sensitive receptors include residential properties located approximately 100 m away from the Phoenix TSF although a dust off event may impact the entire town under certain weather conditions.
Controls: CNG have not presented a formal proposal to reprocess tailings and therefore no controls have been proposed.

Risk Assessment
Consequence: Major
Likelihood: Likely
Risk Rating: High

Regulatory controls
DER has directly transferred condition 5 to the converted Licence requiring that no tailings be processed or beneficiated at the Premises (condition 2.6.1). Conditions 6 and 7 of the previous Licence have not been transferred to prevent the unintended authorisation of tailings beneficiation.

Residual Risk
Consequence: Major
Likelihood: Rare
Risk Rating: Moderate

Appendix D

Improvement conditions

A review of the existing licence improvement conditions has found that many conditions are either no longer applicable or are being managed through requested information from the 2015 licence inspection. However, the premises still requires better management to reduce environmental risks and therefore further improvement conditions have been applied to the new Licence.

Improvement condition IR1

A site inspection conducted on April 17 2015 identified that pipelines used to transport saline water were not bunded. The bunding of dewatering pipelines travelling across the lake bed of Lake Cowan would cause avoidable environmental disturbance. Therefore CNG will need to install automatic shutoff valves or telemetry systems on pipelines that run across the bed of Lake Cowan under improvement condition IR1 (see Appendix A).

Improvement condition IR2 and IR3

CNG will be required to replace monitoring bore MB9 with a new bore (MB13) to track the seepage plume at TSF4 and develop a seepage and recovery system at TSF4. Justification for the addition of improvement condition IR2 requiring the installation of MB13; and IR3 relating to TSF management, is provided in Appendix A.

Improvement condition IR4

Stormwater management at the Phoenix Mill has been an ongoing concern at the premises due to its elevation and close proximity local residents and native vegetation. The Lake Bower Stormwater Management System is a concrete bunded containment facility that collects stormwater from the Phoenix Mill including water that has leaked from the processing tanks. Water is then returned into the processing tanks for reuse and disposal. Stormwater contained within Lake Bower is likely to become contaminated from hydrocarbons, chemicals used in the process and metals found in dewater. The 2015 site inspection noted that sediment buildup within Lake Bower has the potential to limit the capacity of the system to hold stormwater.

As it the capacity for Lake Bower to store water is unknown, the level of risk of overflow and subsequent contamination is also unknown. Therefore IR4 has been placed on the converted licence to require further investigation. Should the results of the investigation find that Lake Bower is not capable of handling a 1 in 100 year, 72 hour stormwater event, further improvement conditions will be added to the Licence to require the improvement of stormwater management at the premises.

Improvement condition IR5

Conditions 15 and 16 of the previous licence have not been applied to the amended Licence. In the absence of these conditions CNG will be required to submit a Dust Management Plan as part of Improvement condition IR5. This plan will need to detail proposed management and mitigation measures to minimise dust. Once submitted, DER will re-amend the Licence to require CNG to operate in accordance with the Dust Management Plan.

Removed Improvement Condition

Elevated WAD-CN concentrations above the Licence limit of 0.5 mg/L were noted in monitoring bores at TSF1-3 and Venture TSF as recently as 24 February 2015. This indicates that seepage at disused TSFs is still occurring. During the annual site inspection CNG noted that TSF capping will provide the greatest environmental outcome for local groundwater.

The draft Licence amendment included an improvement condition requiring the Licensee to submit a report to the CEO detailing timeframes for capping disused TSFs. Following discussions with the Department of Mines and Petroleum it was concluded that timeframes and expected dates for closure implementation (including capping) will be required in the next update of CNG's Mine Closure Plan. This will be regulated by the Department of Mines and Petroleum.

Appendix E

Response to CNGC comments on draft amendment

On 25 September 2015, CNGC provided comment on the draft amended Licence. DER's response can be found in the table below. Minor administrative requests have been made with no comment in the table below.

Item/ Condition	CNGC Comments	DER response
1.2.2	The "immediate" recovery of spills of environmentally hazardous materials is not possible to comply with as many spills are not discovered immediately.	The intent of the condition is for spills to be recovered without delay once identified. No change to condition.
1.2.3	Requiring a definition for contaminated.	Contaminated has the same meaning as it has in the *Contaminated Sites Act 2003*
1.3.2	Saline dewatering effluent is also used in processing.	Option added to use saline dewater in the Phoenix Mill.
1.3.5	Inspection requirements for pipelines containing environmentally hazardous materials are arduous and should be returned to daily.	Note placed on Table 1.3.2 to require the inspection of infrastructure only when in use. Following discussions with the Department of Mines and Petroleum the requirements for monitoring pipelines is once per shift, which amounts to once per day. The condition has been reverted to once per day.
1.3.5	Inspection of freeboard capacity of containment infrastructure to be conducted daily is arduous and not considered necessary. Suggested change for monitoring to be conducted before and after significant rain events.	As there are other inputs to containment infrastructure, freeboard monitoring only around times of rainfall exposes the environment to the risk of overflow. An overflow from containment infrastructure is likely to result in contamination and impacts to vegetation. The monitoring frequency has been reduced to weekly, or as soon as practicable after a 1 in 100 year, 72 hour duration rainfall event.
Table 1.3.3	Alteration to proposed vegetation monitoring references and locations.	Changes made to reflect current monitoring locations.
1.3.8(b)	Need to state what to do with water that is directed to a collection sump eg. treat, retain, dispose, test etc	See condition 1.2.3(b). Condition 1.3.8 moved to within containment infrastructure condition 1.3.3.
1.3.8(c)	Reference document not attached	Reference document clarified further.
1.3.8(d)	Define "extreme rainfall event"	Now defined in Table 1.3.1
Table 1.3.5	Define "suitable soil thickness" for bioremediation soil and review if monthly aeration is necessary.	Optimum soil thickness can vary and is generally ill-defined; this condition has been removed. CNG should avoid creating anaerobic conditions by maintaining a soil thickness that promotes bacteria survival. Monthly aeration is required as a minimum to ensure suitable conditions for microorganisms that break down

		hydrocarbons are maintained.
Table 1.3.6	Remove cover requirement for inert waste type 2 (tyres) or amend the timescale.	This was carried across in error. The cover requirements have been changed to "Monthly or as soon as practicable after deposit and prior to compaction", in line with *Environmental Protection (Rural Landfills) Regulations 2002*.
Table 3.2.1	Remove the requirement to analyse Cr III and Cr IV as total chromium is usually below the limit of reporting. Further request to specify limits for metals or remove monitoring requirement.	Cr III and Cr IV removed. All metals are to be sampled as dissolved metals. Monitoring is required to allow CNGC and DER to identify trends in discharge quality and to determine if limits are required.
Table 3.3.1	Include kL as a unit of measurement for recording waste leaving the Premises.	kL added to measure volumes of liquid wastes leaving the premises.
Table 3.4.1	Remove the requirement to monitor antimony, arsenic, copper, manganese, selinium and iron at TSF4.	Groundwater monitoring requirements have been reviewed and justification has been provided in Appendix A.
Table 3.4.1	Remove monitoring point MB9 until it has been reinstated and specify if metals to be analysed are total or dissolved metals or both.	Notes have been added to Table 3.4.1 to address these comments.
Table 3.4.1	Change limit for WAD-CN from 0.5 to 0.8 mg/L.	A limit of 0.8 mg/L of WAD CN was deemed appropriate given the environmental risks of seepage.
Table 3.4.2	Request to change frequency to annually but between October and December each year.	Frequency column changed to "Annually in between October and December in the same year".
5.2.3(b)	Condition requiring the annual mapping of where dewater ponding is most common on Lake Cowan and the duration of inundation. CNG argue that access to Lake Cowan following heavy rainfall is difficult. The current reporting of the extent of salt crust reflects the area where dewater ponding is most common.	Condition has been removed.
IR2 – TSF capping	Remove improvement condition requiring the submission of a plan to cap inactive TSFs	Removed. DER's decision making is provided in Appendix C.
Improvement condition timeframes	Requested timeframes for completion submitted.	Timeframes accepted.