



Works Approval Number	W6078/2017/1
Works Approval Holder	MacPhersons Reward Pty Ltd
ACN	130 249 320
Registered business address	Suite 23 513 Hay St SUBIACO WA 6008
File Number	DER2017/001041
Duration	03/10/2017 to 02/10/2018
Date of issue	3 October 2017
Prescribed Premises	Category 6: Mine dewatering
Premises	Coolgardie Gold Project Mining tenements M15/40, M15/128, M15/133, M15/147, M15/148 and M15/1808 COOLGARDIE WA 6429

This Works Approval is granted to the Works Approval Holder, subject to the following conditions, on 3 October 2017, by:

03 October 2017

Tim Gentle
Manager Licensing (Resource Industries)

an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

Explanatory notes

These explanatory notes do not form part of this Works Approval.

Defined terms

Definition of terms used in this Works Approval can be found at the start of this Works Approval. Terms which are defined have the first letter of each word capitalised throughout this Works Approval.

Department of Water and Environmental Regulation

The Department of Water and Environmental Regulation (DWER) is established under section 35 of the *Public Sector Management Act 1994* and designated as responsible for the administration of Part V, Division 3 of the *Environmental Protection Act 1986* (WA) (EP Act). The Department also monitors and audits compliance with licences and works approvals, takes enforcement action and develops and implements licensing and industry regulation policy.

Works Approval

Section 52 of the EP Act provides that an occupier of any premises commits an offence if any work is undertaken on, or in relation to, the premises which causes the premises to become, or to become capable of being, Prescribed Premises, except in accordance with a works approval.

Section 56 of the EP Act provides that an occupier of Prescribed Premises commits an offence if Emissions are caused or increased or permitted to be caused or increased, or Waste, noise, odour or electromagnetic radiation is altered or permitted to be altered from Prescribed Premises, except in accordance with a works approval or licence.

Categories of Prescribed Premises are defined in Schedule 1 of the *Environment Protection Regulations 1987* (WA) (EP Regulations).

This Works Approval does not authorise any activity which may be a breach of the requirements of another statutory authority including, but not limited to, the following:

- conditions imposed by the Minister for Environment under Part IV of the EP Act;
- conditions imposed by DWER for the clearing of native vegetation under Part V, Division 2 of the EP Act;
- any requirements under the *Waste Avoidance and Resource Recovery Act 2007*;
- any requirements under the *Environmental Protection (Controlled Waste) Regulations 2004*; and
- any other requirements specified through State legislation.

It is the responsibility of the Works Approval Holder to ensure that any action or activity referred to in this Works Approval is permitted by, and is carried out in compliance with, statutory requirements.

The Works Approval Holder must comply with the Works Approval. Contravening a Works Approval Condition is an offence under s.55 of the EP Act.
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Responsibilities of Works Approval Holder

Separate to the requirements of this Works Approval, general obligations of Works Approval Holders are set out in the EP Act and the regulations made under the EP Act. For example, the Works Approval Holder must comply with the following provisions of the EP Act:

- the duties of an occupier under s.61; and

- 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 (s.53).

Strict penalties apply for offences under the EP Act.

Reporting of incidents

The Works Approval Holder has a duty to report to the Department all Discharges of Waste that have caused or are likely to cause Pollution, Material Environmental Harm or Serious Environmental Harm, in accordance with s.72 of the EP Act.

Offences and defences

The EP Act and its regulations set out a number of offences including:

- Offence of emitting an Unreasonable Emission from any Premises under s.49.
- Offence of causing Pollution under s.49.
- Offence of dumping Waste under s.49A.
- Offence of discharging Waste in circumstances likely to cause Pollution under s.50.
- Offence of causing Serious Environmental Harm (s.50A) or Material Environmental Harm (s.50B).
- Offence of causing Emissions which do not comply with prescribed standards (s.51).
- Offences relating to Emissions or Discharges under regulations prescribed under the EP Act, including materials discharged under the *Environmental Protection (Unauthorised Discharges) Regulations 2004 (WA)*.
- Offences relating to noise under the *Environmental Protection (Noise) Regulations 1997 (WA)*.

Section 53 of the EP Act provides that a Works Approval Holder commits an offence if Emissions are caused, or altered, from a Prescribed Premises unless done in accordance with a Works Approval, Licence or the requirements of a closure notice or an environmental protection notice.

Defences to certain offences may be available to a Works Approval Holder and these are set out in the EP Act. Section 74A(b)(iii) provides that it is a defence to an offence for causing Pollution, in respect of an Emission, or for causing Serious Environmental Harm or Material Environmental Harm, or for discharging or abandoning Waste in water to which the public has access, if the Works Approval Holder can prove that an Emission or Discharge occurred in accordance with a Works Approval.

This Works Approval specifies the Emissions and Discharges, and the limits and Conditions which must be satisfied in respect of specified Emissions and Discharges, in order for the defence to offence provision to be available.

Authorised Emissions and Discharges

The specified and general Emissions and Discharges from the Works authorised through this Works Approval are authorised to be conducted in accordance with the Conditions of this Works Approval.

Amendment of Works Approval

The Works Approval Holder can apply to amend the Conditions of this Works Approval under s.59 of the EP Act. An application form for this purpose is available from DWER.

The CEO may also amend the Conditions of this Works Approval at any time on the initiative

of the CEO without an application being made.

[Duration of Works Approval](#)

The Works Approval will remain in force for the duration set out on the first page of this Works Approval or until it is surrendered, suspended or revoked in accordance with s.59A of the EP Act.

[Suspension or revocation](#)

The CEO may suspend or revoke this Works Approval in accordance with s.59A of the EP Act.

Definitions and interpretation

Definitions

In this Works Approval, the terms in Table 1 have the meanings defined.

Table 1: Definitions

Term	Definition
Books	has the same meaning given to that term under the EP Act.
CEO	means Chief Executive Officer. CEO for the purposes of notification means: Director General Department Administering the <i>Environmental Protection Act 1986</i> Locked Bag 33 Cloisters Square PERTH WA 6850 info-der@dwer.wa.gov.au
Condition	means a condition to which this Works Approval is subject under s.62 of the EP Act.
Department	means the department established under section 35 of the <i>Public Sector Management Act 1994</i> and designated as responsible for the administration of Part V, Division 3 of the EP Act.
Department Request	means a request for Books or other sources of information to be produced, made by an Inspector or the CEO to the Works Approval Holder in writing and sent to the Works Approval's address for notifications, as described at the front of this Works Approval, in relation to: (a) compliance with the EP Act or this Licence; (b) the Books or other sources of information maintained in accordance with this Licence; or (c) the Books or other sources of information relating to Emissions from the Premises.
Discharge	has the same meaning given to that term under the EP Act.
DWER	The Department of Water and Environmental Regulation
Emission	has the same meaning given to that term under the EP Act.
Environmental Harm	has the same meaning given to that term under the EP Act.
EP Act	means the <i>Environmental Protection Act 1986</i> (WA).
EP Regulations	means the <i>Environmental Protection Regulations 1987</i> (WA).
HDPE	High Density Polyethylene
Implementation	has the same meaning given to that term under the EP Act.

Agreement or Decision	
Inspector	means an inspector appointed by the CEO in accordance with s.88 of the EP Act.
Material Environmental Harm	has the same meaning given to that term under the EP Act.
Pollution	has the same meaning given to that term under the EP Act.
Premises	refers to the premises to which this Licence applies, as specified at the front of this Licence and as shown on the map in Schedule 1 to this Licence.
Prescribed Premises	has the same meaning given to that term under the EP Act.
Reportable Event	means an exceedance above the target limit specified in Column 4 of Table 6, in Schedule 3.
Serious Environmental Harm	has the same meaning given to that term under the EP Act.
Unreasonable Emission	has the same meaning given to that term under the EP Act.
Waste	has the same meaning given to that term under the EP Act.
Works	refers to the Works described in Schedule 2, at the locations shown in Schedule 1 of this Works Approval to be carried out at the Premises, subject to the Conditions.
Works Approval	refers to this document, which evidences the grant of the works approval by the CEO under s.54 of the EP Act, subject to the Conditions.
Works Approval Holder	refers to the occupier of the Premises being the person to whom this Works Approval has been granted, as specified at the front of this Works Approval.

Interpretation

In this Licence:

- (a) the words 'including', 'includes' and 'include' will be read as if followed by the words 'without limitation';
- (b) where any word or phrase is given a defined meaning, any other part of speech or other grammatical form of that word or phrase has a corresponding meaning;
- (c) where tables are used in a Condition, each row in a table constitutes a separate Condition;

- (d) any reference to an Australian or other standard, guideline or code of practice in this Works Approval means the version of the standard, guideline or code of practice in force at the time of granting of this Works Approval and includes any amendments to the standard, guideline or code of practice which may occur from time to time during the course of the Works Approval; and
- (e) unless specified otherwise, any reference to a section of an Act refers to that section of the EP Act.

Conditions

Infrastructure and equipment

1. The Works Approval Holder must install and undertake the Works for the infrastructure and equipment:
 - (a) specified in Column 1;
 - (b) to the requirements specified in Column 2; and
 - (c) at the location specified in Column 3of Table 2 below.
2. The Works Approval Holder must not depart from the requirements specified in Column 2 of Table 2 except:
 - (a) where such departure does not increase risks to public health, public amenity or the environment; and
 - (b) all other Conditions in this Works Approval are still satisfied.
3. Within 60 days of the completion of the Works specified in Column 1 of Table 2, the Works Approval Holder must provide to the CEO a report from a qualified professional engineer confirming each item of infrastructure specified in Column 1 of Table 2 below has been constructed to the requirements specified in Column 2.
4. Where a departure from the requirements specified in Column 2 of Table 2 occurs and is of a type allowed by Condition 2, the Works Approval Holder must provide to the CEO a description of, and explanation for, the departure along with the certification required by Condition 2(b).
5. During completion of the Works, the Works Approval Holder must contain surface water runoff from disturbed areas and place stockpiles or disturbed soils outside of the drainage line.

Table 2: Infrastructure and equipment requirements table

Column 1	Column 2	Column 3
Infrastructure/ Equipment	Requirements (design and construction)	Site plan reference
Dewatering pipeline	<ol style="list-style-type: none">1. The pipeline shall be bunded where it is located outside of the drainage line. The bunding capacity shall be sufficient to contain a spill volume for the period of flow between inspections;2. Where the pipeline crosses the drainage line it shall be contained within a larger diameter pipe and buried; and3. Where the pipeline crosses the drainage line it is sited so as to not impede downstream surface water flow.	Pipeline route as shown in blue in Premises Map in Schedule 1
Turkeys Nests	<ol style="list-style-type: none">1. Lined with HDPE; and2. Positioned so that any overflow from the ponds will drain back to the adjacent open pit.	Turkeys Nests as shown in Premises Map in Schedule 1

Emissions

6. The Works Approval Holder must not cause any Emissions from the Works authorised through this Works Approval except for general Emissions described in Column 1 of Table 3, subject to the exclusions, limitations or requirements specified in Column 2, of Table 3.

Table 3: Authorised Emissions table

Column 1	Column 2
Emission type	Exclusions/Limitations/Requirements
General Emissions (excluding Specified Emissions)	
Emissions which arise from undertaking the Works set out in Schedule 2.	<p>Emissions excluded from General Emissions are:</p> <ul style="list-style-type: none"> • Unreasonable Emissions; or • Emissions that result in, or are likely to result in, Pollution, Material Environmental Harm or Serious Environmental Harm; or • Discharges of Waste in circumstances likely to cause Pollution; or • Emissions that result, or are likely to result in, the Discharge or abandonment of Waste in water to which the public has access; or • Emissions or Discharges which do not comply with an Approved Policy; or • Emissions or Discharges which do not comply with prescribed standard; or • Emissions or Discharges which do not comply with the conditions in an Implementation Agreement or Decision; or • Emissions or Discharges the subject of offences under regulations prescribed under the EP Act, including materials discharged under the <i>Environmental Protection (Unauthorised Discharges) Regulations 2004</i>.

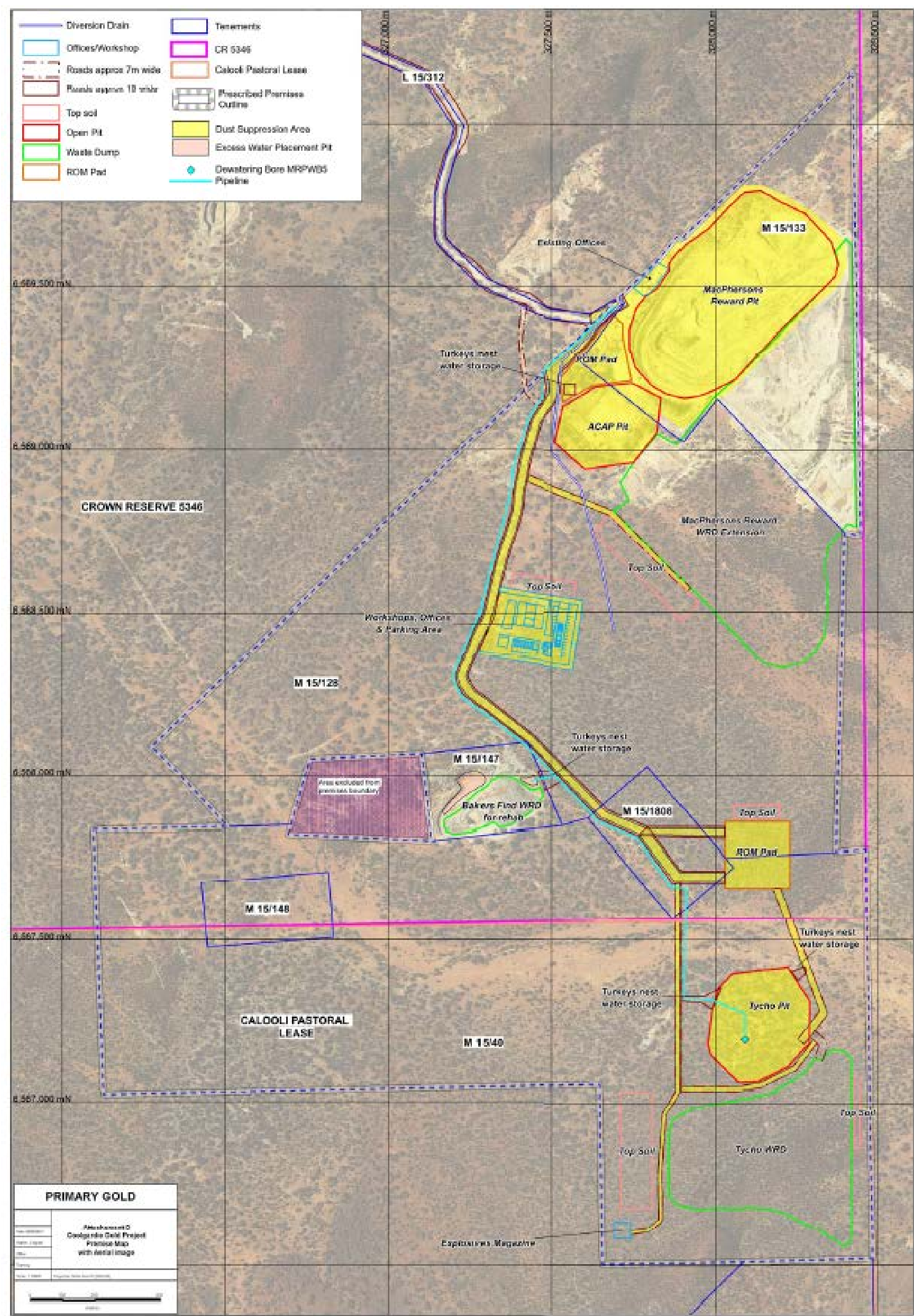
Record-keeping

7. The Works Approval Holder must maintain accurate Books including information, reports and data in relation to the Works and the Books must:
 - (a) be legible;
 - (b) if amended, be amended in such a ways that the original and subsequent amendments remain legible or are capable of retrieval;
 - (c) be retained for at least 3 years from the date the Books were made;
 - (d) be available to be produced to an Inspector or the CEO.
8. The Works Approval Holder must comply with a Department Request within 14 days from the date of the Department Request or such other period as agreed to by the Inspector or the CEO.

Schedule 1: Maps

Premises map

The Premises are shown in the map below.



Schedule 2: Works

At the time of assessment, Emissions and Discharges from the Works listed in Table 4 were considered in the determination of the risk and related Conditions for the Works Approval.

Table 4: Authorised Works

Works
HDPE dewatering pipeline. Pipeline to be placed within an additional larger diameter pipe for the length of the drainage line crossing.
Three 30m x 30m HPDE lined Turkeys Nests adjacent to open pits (A-Cap Pit, Bakers Find Pit and Tycho Pit)
V drain pipeline bunding, including two 5m x 5m x 3m sumps either side of the drainage line to capture spillage either from the southern section from Tycho Pit to the drainage line and from the section from Bakers Pit to the drainage line.
Works so as to not impede downstream surface water flow at the pipeline drainage line crossing (burial of the pipe, pipeline installation not to occur during rainfall or forecast rainfall events)



Concurrent application for Works Approval and Licence

Division 3, Part V *Environmental Protection Act 1986*

Works Approval Number W6078/2017/1

Licence Number: L9081/2017/1

Applicant MacPhersons Reward Pty Ltd

ACN 130 249 320

File Number DER2017/001041 (W6078) & DER2017/001042 (L9081)

Premises Coolgardie Gold Project
Mining tenements M15/40, M15/128, M15/133, M15/147,
M15/148 and M15/1808
COOLGARDIE WA 6429

Date of Report 3 October 2017

Status of Report Final

Table of Contents

1. Definitions of terms and acronyms	1
2. Purpose and scope of assessment	3
2.1 Application details	3
3. Overview of Premises	3
3.1 Operational aspects	3
3.2 Infrastructure	4
3.3 Exclusions to the Premises	4
4. Legislative context.....	6
4.1 Contaminated sites.....	6
4.2 Other relevant approvals	6
4.3 Part V of the EP Act	6
4.3.1 Applicable regulations, standards and guidelines	6
5. Location and siting.....	7
5.1 Siting context.....	7
5.2 Residential and sensitive Premises	9
5.3 Specified ecosystems.....	9
5.4 Groundwater and water sources.....	9
5.5 Meteorology	10
5.5.1 Rainfall	10
6. Consultation	10
7. Risk assessment.....	11
7.1 Determination of emission, pathway and receptor	11
7.2 Consequence and likelihood of risk events.....	15
7.3 Acceptability and treatment of Risk Event.....	16
7.4 Risk Assessment – Construction of pipeline across drainage	16
7.4.1 Description of construction of pipeline across drainage line.....	16
7.4.2 Identification and general characterisation of emission.....	16
7.4.3 Description of potential adverse impact from the emission	16
7.4.4 Applicant controls	16
7.4.5 Key findings.....	16
7.4.6 Consequence	17
7.4.7 Likelihood of Risk Event	17
7.4.8 Overall rating of poor construction of the pipeline crossing the drainage line.....	17
7.5 Risk Assessment – Poor siting of pipeline across drainage line.....	17
7.5.1 Description of poor siting of pipeline across drainage line	17
7.5.2 Identification and general characterisation of emission.....	17

7.5.3	Description of potential adverse impact from the emission	17
7.5.4	Applicant controls	17
7.5.5	Key findings.....	17
7.5.6	Consequence	17
7.5.7	Likelihood of Risk Event	18
7.5.8	Overall rating of poor siting of pipeline crossing the drainage line	18
7.6	Risk Assessment – Groundwater mounding (including lateral seepage) causing vegetation rootzone inundation	18
7.6.1	Description of groundwater mounding causing vegetation rootzone inundation 18	
7.6.2	Identification and general characterisation of emission.....	18
7.6.3	Description of potential adverse impact from the emission	18
7.6.4	Applicant controls	18
7.6.5	Consequence	18
7.6.6	Likelihood of Risk Event	18
7.6.7	Overall rating of groundwater mounding inundating vegetation	18
7.7	Risk Assessment – Dewatering pipeline failure (outside of the drainage line crossing)	19
7.7.1	Description of dewatering pipeline failure (outside of the drainage line crossing)	19
7.7.2	Identification and general characterisation of emission.....	19
7.7.3	Description of potential adverse impact from the emission	19
7.7.4	Applicant controls	19
7.7.5	Consequence	19
7.7.6	Likelihood of Risk Event	19
7.7.7	Overall rating of dewatering pipeline failure (outside of the drainage line crossing)	19
7.8	Risk Assessment – Dewatering pipeline failure (within the drainage line crossing) 19	
7.8.1	Description of dewatering pipeline failure (within the drainage line crossing) .	19
7.8.2	Identification and general characterisation of emission.....	20
7.8.3	Description of potential adverse impact from the emission	20
7.8.4	Applicant controls	20
7.8.5	Consequence	20
7.8.6	Likelihood of Risk Event	20
7.8.7	Overall rating of dewatering pipeline failure (within the drainage line).....	20
7.9	Risk Assessment – Overflowing turkeys nests (ponds) impacting vegetation	20
7.9.1	Description of overflowing turkeys nests impacting vegetation	20
7.9.2	Identification and general characterisation of emission.....	20

7.9.3	Description of potential adverse impact from the emission	20
7.9.4	Applicant controls	20
7.9.5	Consequence	21
7.9.6	Likelihood of Risk Event	21
7.9.7	Overall rating of overflow of the turkeys nests impacting on vegetation description.....	21
7.10	Risk Assessment – Seepage from turkeys nests (ponds) inundating vegetation 21	
7.10.1	Description of seepage from turkeys nests	21
7.10.2	Identification and general characterisation of emission	21
7.10.3	Description of potential adverse impact from the emission.....	21
7.10.4	Applicant controls	21
7.10.5	Consequence	21
7.10.6	Likelihood of Risk Event.....	21
7.10.7	Overall rating of seepage from the turkeys nests impacting on vegetation .	21
7.11	Summary of acceptability and treatment of Risk Events, with Regulatory Controls 22	
8.	Regulatory controls	25
8.1	Works Approval controls.....	25
8.1.1	Dewatering pipeline.....	25
8.1.2	Turkeys Nests	25
8.1.3	Specified actions	25
8.2	Licence controls	25
8.2.1	Authorised Discharge Point	25
8.2.2	Dewatering pipeline operation	25
8.2.3	Turkeys Nests operation.....	25
8.2.5	Monitoring requirements.....	26
8.2.6	Monitoring report	26
9.	Applicant's comments.....	27
10.	Conclusion	27
	Appendix 2: Summary of applicant's comments on risk assessment and draft conditions	30
	Attachment 1: Works Approval W6078/2017/1	31
	Table 1: Definitions	1
	Table 2: Documents and information submitted during the assessment process.....	3
	Table 3: Prescribed Premises Categories	3
	Table 4: Coolgardie Gold Project Category 6 Infrastructure.....	4

Table 5: Relevant approvals and tenure.....	6
Table 6: Receptors and distance from activity boundary	9
Table 7: Environmental values.....	9
Table 8: Groundwater and water sources	9
Table 9. Identification of emissions, pathway and receptors during construction	11
Table 10: Identification of emissions, pathway and receptors during operation	13
Table 11: Risk rating matrix	15
Table 12: Risk criteria table.....	15
Table 13: Risk treatment table	16
Table 14: Risk assessment summary	22

1. Definitions of terms and acronyms

In this Decision Report, the terms in Table 1 have the meanings defined.

Table 1: Definitions

Term	Definition
AACR	Annual Audit Compliance Report
ACN	Australian Company Number
AER	Annual Environment Report
Applicant	MacPhersons Reward Pty Ltd
Category/ Categories/ Cat.	Categories of Prescribed Premises as set out in Schedule 1 of the EP Regulations
CS Act	<i>Contaminated Sites Act 2003 (WA)</i>
Decision Report	refers to this document
Delegated Officer	an officer under section 20 of the EP Act
Department	means the department established under section 35 of the <i>Public Sector Management Act 1994</i> and designated as responsible for the administration of Part V, Division 3 of the EP Act
DER	The former Department of Environment Regulation
DMIRS	The Department of Mines, Industry Regulation and Safety
DWER	The Department of Water and Environmental Regulation As of 1 July 2017, the Department of Environment Regulation (DER), the Office of the Environmental Protection Authority (OEPA) and the Department of Water (DoW) amalgamated to form the Department of Water and Environmental Regulation (DWER). DWER was established under section 35 of the <i>Public Sector Management Act 1994</i> and is responsible for the administration of the <i>Environmental Protection Act 1986</i> along with other legislation.
EPA	Environmental Protection Authority
EP Act	<i>Environmental Protection Act 1986 (WA)</i>
EP Regulations	<i>Environmental Protection Regulations 1987 (WA)</i>
HDPE	High density polyethylene
m ³	cubic metres

mbgl	metres below ground level
mtpa	million tonnes per annum
Occupier	has the same meaning given to that term under the EP Act
Prescribed Premises	has the same meaning given to that term under the EP Act
Premises	refers to the premises to which this Decision Report applies, as specified at the front of this Decision Report
Revised Licence	the amended Licence issued under Part V, Division 3 of the EP Act following the finalisation of this Review
Risk Event	As described in <i>Guidance Statement: Risk Assessment</i>
TDS	Total dissolved solids
UDR	<i>Environmental Protection (Unauthorised Discharges) Regulations 2004 (WA)</i>

2. Purpose and scope of assessment

MacPhersons Reward Pty Ltd (the Applicant) submitted an Application for a Works Approval and Licence under prescribed premises category 6, to discharge groundwater (mine dewater) abstracted from the MacPhersons and Tycho Pits of the Coolgardie Gold Project

MacPhersons Reward Pty Ltd is a wholly owned subsidiary of Primary Gold Limited.

2.1 Application details

Table 2 lists the documents submitted during the assessment process.

Table 2: Documents and information submitted during the assessment process

Document/information description	Date received
ALS Environmental (2017) <i>Certificate of Analysis, Work Order EP17-5243, Client Primary Gold</i> , 26 May 2017	19 June 2017
National Pump & Energy (2017) <i>Primary Gold Coolgardie Gold Groundwater Pumping Equipment for MacPhersons Reward, A-Cap and Tycho Pits. Budget Estimate Dewatering</i> , 19 June 2017	19 June 2017
Rockwater (2017) <i>Hydrogeological & Dewatering Assessment for the Coolgardie Gold Project</i> , unpublished report for Primary Gold Limited, May 2017	19 June 2017
Rockwater (2017) <i>Primary Gold Ltd: Hydrogeology of Baker's Find Pit, Coolgardie</i> , July 2017	31 July 2017

Table 3 lists the prescribed premises categories that have been applied for.

Table 3: Prescribed Premises Categories

Classification of Premises	Description	Approved Premises production or design capacity or throughput
Category 6	Mine dewatering: premises on which water is extracted and discharged into the environment to allow mining of ore	200 000 tpa

3. Overview of Premises

3.1 Operational aspects

The Coolgardie Gold Project is a series of open pits from which gold ore will be mined for processing elsewhere. The Premises has been mined in the past and comprises 3 zones of existing open pits called MacPhersons, Bakers Find and Tycho (refer to Figure 1 following). In order to access ore at the MacPhersons and Tycho open pits, the Applicant wishes to abstract and discharge up to 200 000 tpa of mine dewater (abstracted groundwater) into the Bakers Find open pits. The groundwater is also planned to be used for dust suppression at the Premises.

Bakers Find comprises two existing open pits and associated overburden dumps located on mining tenement M15/147. The westerly pit is 30m deep whilst the smaller easterly pit is 6m deep. The combined capacity of these pits is approximately 150 000 tonnes, representing 75% of the annual dewatering volume.

3.2 Infrastructure

The Coolgardie Gold Project infrastructure, as it relates to Category 6 activities, is detailed in Table 4 and with reference to the Site Plan (shown following and attached in the Works Approval).

Table 4 lists infrastructure associated with prescribed premises category 6.

Table 4: Coolgardie Gold Project Category 6 Infrastructure

	Infrastructure	Site Plan Reference
	Prescribed Activity Category 6	
Transfer groundwater from groundwater abstraction bore(s) and open pit sumps via pipelines and turkey nests (lined ponds) to discharge at Bakers Find Pits		
1	HDPE dewatering pipeline. Pipeline to be placed within an additional larger diameter pipe for the length of the drainage line crossing.	As shown in Figure 1
2	Three 30m x 30m HPDE lined Turkey Nests adjacent to open pits (A-Cap Pit, Bakers Find Pit and Tycho Pit)	As shown in Figure 1
3	V drain pipeline bunding, including two 5m x 5m x 3m sumps either side of the drainage line to capture spillage either from the southern section from Tycho Pit to the drainage line and from the section from Bakers Pit to the drainage line.	Along the pipeline corridor shown in light blue in Figure 1
	Directly related activities	
Authorisation of abstraction of groundwater for mining is under the <i>Rights in Water and Irrigation Act 1914</i> (also administered by DWER but a separate licence)		
1	Install and operate dewatering pump(s) and bore(s)	Bore in Tycho Pit, as shown in Figure 1.
Use of groundwater for dust suppression		
2	Standpipes at Turkeys Nests for water cart access	Not shown; turkey nest locations as per Figure 1

3.3 Exclusions to the Premises

The construction of the groundwater abstraction bore, any mining activities or construction of ancillary infrastructure such as workshops, offices and ablutions are excluded from the activities licensed as Prescribed Premises.

The activity of groundwater abstraction is excluded also, as this is also regulated under the *Rights in Water and Irrigation Act 1914*.

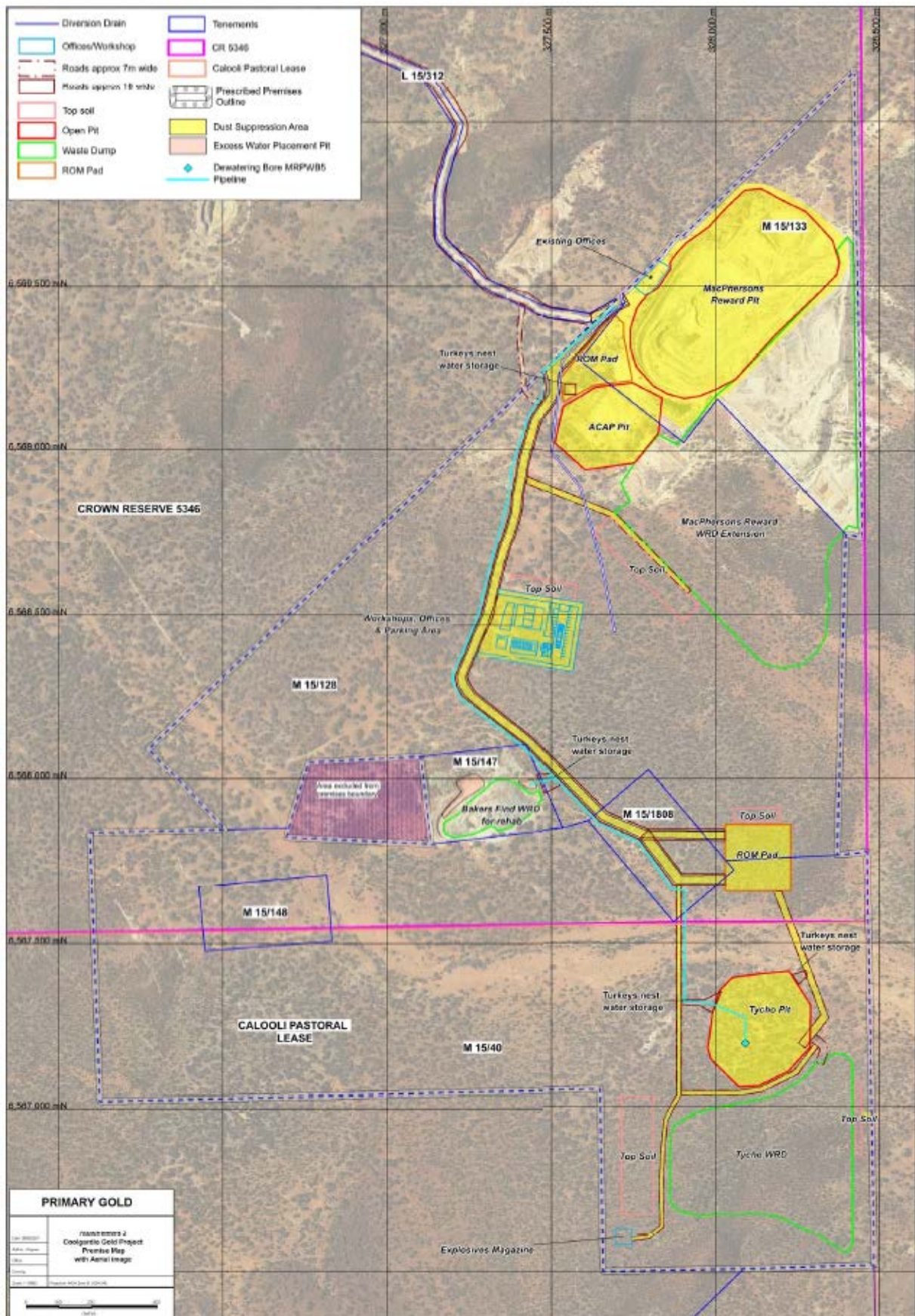


Figure 1: Coolgardie Gold Project Site Plan (Premises boundary shown by dashed line)

4. Legislative context

Table 5 summarises granted approvals relevant to the assessment.

Table 5: Relevant approvals and tenure

Legislation	Number	Subsidiary	Approval
<i>Rights in Water and Irrigation Act 1914</i>	CAW183601(1)	Primary Gold Limited (owner of MacPhersons Reward Pty Ltd)	Section 26D approval to construct a groundwater well
<i>Environmental Protection Act 1986, Part V, Division 2</i>	CPS 7635/1	MacPhersons Reward Pty Ltd	Approval to clear 105.1 ha on M15/128 and M15/40.

It is noted that condition 6 of the Clearing Permit CPS 7635/1 states that the Permit Holder shall avoid clearing riparian vegetation where practicable; and where a watercourse or drainage line is to be impacted by clearing, the Permit Holder shall ensure that surface flows are maintained or are reinstated downstream into existing natural drainage lines.

4.1 Contaminated sites

The premises' tenements have not been classified under the *Contaminated Sites Act 2003*.

4.2 Other relevant approvals

Applications have been made for the following approvals:

- Mining Proposal under the *Mining Act 1978*
- A 5C licence to take water under the *Rights in Water and Irrigation Act 1914*

4.3 Part V of the EP Act

4.3.1 Applicable regulations, standards and guidelines

The overarching legislative framework of this assessment is the EP Act and EP Regulations.

The guidance statements which inform this assessment are:

- *Guidance Statement: Regulatory Principles (July 2015)*
- *Guidance Statement: Setting Conditions (October 2015)*
- *Guidance Statement: Licence Duration (August 2016)*
- *Guidance Statement: Decision Making (November 2016)*
- *Guidance Statement: Risk Assessments (November 2016)*
- *Guidance Statement: Environmental Siting (November 2016)*

5. Location and siting

5.1 Siting context

The Premises is located approximately 6km south south east of the Town of Coolgardie. It is surrounded by other operating and non-operating mining operations (refer to Figure 2 following for the regional location). The Premises is part located on Crown Reserve 5346 (Class C allocated for grazing) and part located on the Calooli Pastoral lease.

An ephemeral drainage line, located within the southern part of the Premises, connects through to the drainage system flowing to Brown Lake (to the east of the Premises). The drainage line intersects the Tycho and Bakers Find Pits (refer to Figure 1 for more detail).



Figure 2: Premises Local Area

5.2 Residential and sensitive Premises

The distances to residential and sensitive receptors are detailed in Table 6.

Table 6: Receptors and distance from activity boundary

Sensitive Land Uses	Distance from Prescribed Activity
Town of Coolgardie	6km to north north-west, as shown in Figure 2
Kangaroo Hills Reserve, Class C timber reserve	8km to the west, as shown in Figure 2
Scahill Timber Reserve, Class C timber reserve	8km to the south, as shown in Figure 2.

5.3 Specified ecosystems

Specified ecosystems are areas of high conservation value and special significance that may be impacted as a result of activities at or Emissions and Discharges from the Premises. The distances to specified ecosystems are shown in Table 7. Table 7 also identifies the distances to other relevant ecosystem values which do not fit the definition of a specified ecosystem.

The table has also been modified to align with the *Guidance Statement: Environmental Siting*.

Table 7: Environmental values

Specified ecosystems	Distance from the Premises
Brown Lake (salt lake)	11.5 km to the north east
Threatened Ecological Communities and Priority Ecological Communities	Not present (JBBC 2016 as quoted in CPS 7635/1)
Biological component	Distance from the Premises
Threatened/Priority Flora	Not present (JBBC 2016 as quoted in CPS 7635/1)
Threatened/Priority Fauna – Malleefowl (<i>Leipoa ocellata</i>)	Three extinct Malleefowl mounds were found within the Premises. These have not been used for more than 20 years. A recent fauna survey of the Premises did not record any evidence of recent tracks, feathers, individuals or breeding areas (JBBC 2016 as quoted in CPS 7635/1)

5.4 Groundwater and water sources

The distances to groundwater and water sources are shown in Table 8.

Table 8: Groundwater and water sources

Groundwater and water sources	Distance from Premises	Environmental value
Groundwater The groundwater is saline (TDS between 6 800 and 18 400 mg/L).	Depth to groundwater at ranges from approximately 30 mbgl at MacPhersons Pit to 36 mbgl at Tycho Pit.	No environmental value. Not used for groundwater dependent ecosystems. Industrial use for mining (three authorised users of groundwater within 1.5 km of

		the Premises).
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5.5 Meteorology

5.5.1 Rainfall

The average evaporation rate for Coolgardie is 2 600mm, far exceeding the average rainfall amount of 270.7 mm (Rockwater 2017a). The rain is comparatively evenly spread throughout the year, with slightly more in winter months (associated with cold fronts) and also in the period January – March (associated with ex-tropical cyclones and thunderstorms).

6. Consultation

The Application was referred to the Shire of Coolgardie and the Department of Mines, Industry Regulation and Safety (DMIRS) for comment. Comment received from DMIRS on 14 September 2017 noted the Application received by DWER was consistent with the Mining Proposal application submitted for approval under the *Mining Act 1978*. DMIRS had no concerns or comments in relation to the works approval and licence Application.

The Shire of Coolgardie responded on 13 September 2017 that it had no objections providing there was no impact on the Shire's water resource. The Shire was referred to the Regulatory Services (Water) part of DWER for further advice with respect to groundwater abstraction concerns. It was noted to the Shire that an application had been made by the Applicant in accord with section 5C of the *Rights in Water and Irrigation Act 1914* for a licence to take water.

It is also noted that the hydrogeology assessment completed for the Coolgardie Gold Project determined that the other groundwater users within a 20km radius were all mining operations. Further, due to the type of aquifer present at the Premises (low permeability fractured rock aquifer), it is likely that any cone of depression resulting from groundwater abstraction would be steep-sided and limited to a few hundred metres from the dewatering operations (Rockwater 2017a).

DWER also noted to the Shire that groundwater abstraction is not subject to this Application made under Part V of the EP Act.

7. Risk assessment

7.1 Determination of emission, pathway and receptor

In undertaking its risk assessment, DWER identifies all potential emissions pathways and potential receptors to establish whether there is a Risk Event which requires detailed risk assessment.

To establish a Risk Event there must be an emission, a receptor which may be exposed to that emission through an identified actual or likely pathway, and a potential adverse effect to the receptor from exposure to that emission. Where there is no actual or likely pathway and/or no receptor, the emission will be screened out and will not be considered as a Risk Event. In addition, where an emission has an actual or likely pathway and a receptor which may be adversely impacted, but that emission is regulated through other mechanisms such as Part IV of the EP Act, that emission will not be risk assessed further and will be screened out through Table 9 and Table 10.

The identification of the sources, pathways and receptors to determine Risk Events are set out in Table 9 and Table 10 below.

Table 9. Identification of emissions, pathway and receptors during construction

Risk Events						Continue to detailed risk assessment	Reasoning
Sources/Activities	Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts			
Construction, mobilisation and positioning of infrastructure	Construction of dewatering pipeline	Noise	Residential premises at Coolgardie located 6km north of the Premises.	Air / wind dispersion	Amenity impacts	No	Noise contribution to overall emissions considered negligible. Town of Coolgardie 6 km away, but also surrounded by mining operations in closer proximity.
		Dust			Amenity impacts	No	Dust contribution from pipeline laying activity to overall emissions is considered negligible.
	Construction of dewatering pipeline and bunding across drainage line adjacent to Tycho Pit.	Sediment discharge into surface water drainage line	Ephemeral streams feeding Brown Lake; invertebrates in feeder watercourses	Surface water runoff	Increased suspended solids/ turbidity in the event of stream flow	Yes	There is potential impact to downstream receptors in the event of poorly managed construction works. It is noted that the clearing permit has stated that riparian vegetation should not be cleared if possible. Refer to section 7.4 for the detailed risk assessment.

Risk Events						Continue to detailed risk assessment	Reasoning
Sources/Activities		Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts		
		Impede drainage flow (also during operations)	Ephemeral streams (including riparian vegetation) to Brown Lake	Infrastructure restricts drainage flow	Altered drainage flows, impact to invertebrates and riparian vegetation downstream	Yes	There is a potential of water starvation to the stream ecology downstream (in the event of blockages) or altered water flows. Refer to section 7.5 for the detailed risk assessment.

Table 10: Identification of emissions, pathway and receptors during operation

Risk Events						Continue to detailed risk assessment	Reasoning
Sources/Activities		Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts		
Mine dewatering	Discharge to Bakers Find pits	Saline mine dewater	Groundwater	Infiltration into groundwater (fractured rock aquifer)	Alteration of groundwater quality	No	<p>Hydrogeology at the site consists of discrete fractured rock aquifers hosted within low – very low permeability rocks. Test pumping at Tycho deposit demonstrated that these aquifers are of 'limited areal extent with limited interconnectivity' (Rockwater 2017b). The groundwater levels are more than 30 mbgl and saline, so not likely to be a water source for vegetation.</p> <p>Groundwater quality of test bore MRPWB002 indicated metals/metalloids at limit of detection concentrations or below; with the exception of manganese (0.286 mg/L) and zinc (0.01 mg/L) (ALS 2017). Whilst not directly applicable, by way of comparison the ANZECC trigger value for 95% protection of species in marine waters for Zinc is 0.015 mg/L (ANZECC 2000). No trigger values are specified for manganese in marine waters.</p> <p>Additionally the dewater being discharged into the pit is relatively the same water quality as the receiving aquifer.</p>
		Saline mine dewater	Native vegetation	Groundwater mounding/ lateral seepage at base of the pit	Inundation of vegetation rootzones	Yes	<p>The easterly pit at Bakers Find is only 6 m deep so discharge to this pit may result in groundwater mounding /lateral seepage impacting on vegetation rootzones.</p> <p>Lateral seepage from dewater discharged to the main Bakers Find Pit may also impact on rootzone vegetation if discharged within 6m of the surface level.</p> <p>Refer to section 7.6 for the detailed risk assessment.</p>

Risk Events						Continue to detailed risk assessment	Reasoning
Sources/Activities		Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts		
	Pipeline failure	Saline mine dewater	Native vegetation, soils	Direct to ground	Death / poor health of vegetation; salinisation of soils	Yes	Refer to section 7.7 for the detailed risk assessment.
	Pipeline failure (in section traversing the drainage line)		Riparian vegetation, invertebrates (present and dormant within the creek basin), soils, downstream surface water quality drainage lines	Direct to drainage line/ surface water	Disruption of normal ecosystem function (invertebrates and surface water impacts). Death/ poor health of riparian vegetation directly impacted. Salinisation of creek beds.	Yes	A failure where the pipeline traverses the creek may result in downstream impacts due to the salinity of the mine dewater, depending on the severity of the discharge. Refer to section 7.8 for the risk assessment.
	Seepage from turkeys nests	Saline mine dewater	Native vegetation	Groundwater mounding at base of the pond	Inundation of vegetation rootzones	Yes	Refer to section 7.9 for the risk assessment.
	Overflow from turkeys nests	Saline mine dewater	Native vegetation, soils	Direct to ground	Death / poor health of vegetation; salinisation of soils	Yes	Refer to section 7.10 for the risk assessment.

7.2 Consequence and likelihood of risk events

A risk rating will be determined for risk events in accordance with the risk rating matrix set out in Table 11 below.

Table 11: Risk rating matrix

Likelihood	Consequence				
	Slight	Minor	Moderate	Major	Severe
Almost certain	Medium	High	High	Extreme	Extreme
Likely	Medium	Medium	High	High	Extreme
Possible	Low	Medium	Medium	High	Extreme
Unlikely	Low	Medium	Medium	Medium	High
Rare	Low	Low	Medium	Medium	High

DWER will undertake an assessment of the consequence and likelihood of the Risk Event in accordance with Table 12 below.

Table 12: Risk criteria table

Likelihood		Consequence		
The following criteria has been used to determine the likelihood of the Risk Event occurring.		The following criteria has been used to determine the consequences of a Risk Event occurring:		
			Environment	Public health* and amenity (such as air and water quality, noise, and odour)
Almost Certain	The risk event is expected to occur in most circumstances	Severe	<ul style="list-style-type: none"> onsite impacts: catastrophic offsite impacts local scale: high level or above offsite impacts wider scale: mid-level or above Mid to long-term or permanent impact to an area of high conservation value or special significance[^] Specific Consequence Criteria (for environment) are significantly exceeded 	<ul style="list-style-type: none"> Loss of life Adverse health effects: high level or ongoing medical treatment Specific Consequence Criteria (for public health) are significantly exceeded Local scale impacts: permanent loss of amenity
Likely	The risk event will probably occur in most circumstances	Major	<ul style="list-style-type: none"> onsite impacts: high level offsite impacts local scale: mid-level offsite impacts wider scale: low level Short-term impact to an area of high conservation value or special significance[^] Specific Consequence Criteria (for environment) are exceeded 	<ul style="list-style-type: none"> Adverse health effects: mid-level or frequent medical treatment Specific Consequence Criteria (for public health) are exceeded Local scale impacts: high level impact to amenity
Possible	The risk event could occur at some time	Moderate	<ul style="list-style-type: none"> onsite impacts: mid-level offsite impacts local scale: low level offsite impacts wider scale: minimal Specific Consequence Criteria (for environment) are at risk of not being met 	<ul style="list-style-type: none"> Adverse health effects: low level or occasional medical treatment Specific Consequence Criteria (for public health) are at risk of not being met Local scale impacts: mid-level impact to amenity
Unlikely	The risk event will probably not occur in most circumstances	Minor	<ul style="list-style-type: none"> onsite impacts: low level offsite impacts local scale: minimal offsite impacts wider scale: not detectable Specific Consequence Criteria (for environment) likely to be met 	<ul style="list-style-type: none"> Specific Consequence Criteria (for public health) are likely to be met Local scale impacts: low level impact to amenity
Rare	The risk event may only occur in exceptional circumstances	Slight	<ul style="list-style-type: none"> onsite impact: minimal Specific Consequence Criteria (for environment) met 	<ul style="list-style-type: none"> Local scale: minimal to amenity Specific Consequence Criteria (for public health) met

[^] Determination of areas of high conservation value or special significance should be informed by the *Guidance Statement: Environmental Siting*.

* In applying public health criteria, DWER may have regard to the Department of Health's *Health Risk Assessment (Scoping) Guidelines*.

“onsite” means within the Prescribed Premises boundary.

7.3 Acceptability and treatment of Risk Event

DWER will determine the acceptability and treatment of Risk Events in accordance with the risk treatment table below:

Table 13: Risk treatment table

Rating of Risk Event	Acceptability	Treatment
Extreme	Unacceptable.	Risk Event will not be tolerated. DWER may refuse application.
High	May be acceptable. Subject to multiple regulatory controls.	Risk Event may be tolerated and may be subject to multiple regulatory controls. This may include both outcome-based and management conditions.
Medium	Acceptable, generally subject to regulatory controls.	Risk Event is tolerable and is likely to be subject to some regulatory controls. A preference for outcome-based conditions where practical and appropriate will be applied.
Low	Acceptable, generally not controlled.	Risk Event is acceptable and will generally not be subject to regulatory controls.

7.4 Risk Assessment – Construction of pipeline across drainage line

7.4.1 Description of construction of pipeline across drainage line

In the event of rainfall during construction, disturbed ground and sediment may travel downstream.

7.4.2 Identification and general characterisation of emission

Increased sedimentation and turbidity in surface water downstream.

7.4.3 Description of potential adverse impact from the emission

Poor downstream surface water quality due to excess sedimentation.

7.4.4 Applicant controls

The Applicant has proposed to not install the pipeline crossing during a rainfall event.

7.4.5 Key findings

The Delegated Officer has reviewed the information regarding construction of the pipeline crossing the drainage line and has found:

1. There is a risk that sediment or disturbed ground within the drainage line bed may impact on downstream water quality or the ecological function of the drainage line (disturbance to invertebrates, including dormant stages).

7.4.6 Consequence

If construction works in the drainage line are poorly managed resulting in transport of sediment downstream, then this may result in a low level offsite impact. Therefore, the consequence of poor construction methods causing sedimentation is moderate.

7.4.7 Likelihood of Risk Event

The Delegated Officer has determined that the likelihood of poor construction methods during constructing the pipeline crossing occurring will be unlikely.

7.4.8 Overall rating of poor construction of the pipeline crossing the drainage line

The Delegated Officer has compared the consequence and likelihood ratings described above with the risk rating matrix (Table 11) and determined that the overall rating for the risk of poor construction methods or poor siting of the pipeline crossing is **medium**.

7.5 Risk Assessment – Poor siting of pipeline across drainage line

7.5.1 Description of poor siting of pipeline across drainage line

Laying of the HDPE dewatering pipeline and constructing the associated V drain bunding across the drainage line between Tycho Pit and Bakers Find Pit, as proposed, would result in disturbance to the bed of the drainage line and may impede drainage flow during construction and operations.

7.5.2 Identification and general characterisation of emission

The placement of infrastructure across the creek may impede drainage flow during construction and operations.

7.5.3 Description of potential adverse impact from the emission

Disrupted drainage flow from poor infrastructure placement.

7.5.4 Applicant controls

No specific controls are proposed.

7.5.5 Key findings

The Delegated Officer has reviewed the information regarding construction of the pipeline crossing the drainage line and has found:

2. Locating the pipe by laying it within the bed of the creek and disturbing the bed to create bunding for the pipeline may impede drainage flow.

7.5.6 Consequence

If poor management of construction of the pipeline or poor siting of the pipeline crossing the drainage line occurs, then the Delegated Officer has determined that the impact of sedimentation downstream or impeding drainage flow may result in a low level offsite impact. Therefore, the Delegated Officer considers the consequence of poor construction methods to be moderate.

7.5.7 Likelihood of Risk Event

The Delegated Officer has determined that the likelihood of poor siting of the pipeline crossing occurring will be possible.

7.5.8 Overall rating of poor siting of pipeline crossing the drainage line

The Delegated Officer has compared the consequence and likelihood ratings described above with the risk rating matrix (Table 11) and determined that the overall rating for the risk of poor siting of the pipeline crossing is **medium**.

7.6 Risk Assessment – Groundwater mounding (including lateral seepage) causing vegetation rootzone inundation

7.6.1 Description of groundwater mounding causing vegetation rootzone inundation

Increasing localised groundwater mounding following discharge to the smaller of the two Bakers Find pits may result in vegetation rootzones being inundated, with resulting poor health or death to vegetation species.

7.6.2 Identification and general characterisation of emission

The emission is saline groundwater (between 6 300 mg/L and 18 400 mg/L TDS). The pH of the groundwater is neutral (7.1 – 7.3).

7.6.3 Description of potential adverse impact from the emission

It is noted that the aquifers at the Premises are relatively confined and hosted in low permeability fractured rock leading to localised impacts. If fracturing rocks are present with the shallower Bakers Find pit, there is a possibility that groundwater mounding may occur, with seepage not able to travel to the underlying aquifer at a depth of approximately 32 mbgl.

There is also the possibility of lateral seepage following saturation of the sediments within the main Bakers Find Pit. If dewater deposition exceeds a level above 6 mbgl, lateral seepage may also inundate adjacent vegetation rootzones.

7.6.4 Applicant controls

No proposed controls.

7.6.5 Consequence

If groundwater mounding occurs, then the Delegated Officer has determined that the impact of inundating rootzones will be a mid level on site impact. Therefore, the Delegated Officer considers the consequence of groundwater mounding at Bakers Find shallower pit and main pit to be moderate.

7.6.6 Likelihood of Risk Event

The Delegated Officer has determined that the likelihood of groundwater mounding at Bakers Find shallower pit and the main pit causing vegetation rootzone inundation is possible.

7.6.7 Overall rating of groundwater mounding inundating vegetation

The Delegated Officer has compared the consequence and likelihood ratings described above with the risk rating matrix (Table 10) and determined that the overall rating for the risk of groundwater mounding inundating vegetation is **medium**.

7.7 Risk Assessment – Dewatering pipeline failure (outside of the drainage line crossing)

7.7.1 Description of dewatering pipeline failure (outside of the drainage line crossing)

A spill of saline water from a pipeline failure outside the drainage line crossing may result in localised soil salinisation, and impacts to vegetation health.

7.7.2 Identification and general characterisation of emission

The emission is saline groundwater (between 6 300 mg/L and 18 400 mg/L TDS). The pH of the groundwater is neutral (7.1 – 7.3).

7.7.3 Description of potential adverse impact from the emission

Saline water in contact with vegetation may destroy or stunt growth. Deposition to soils will increase the salinity of the soils.

7.7.4 Applicant controls

The Applicant proposed locating the pipeline within a V drain. For the first 100 m of the northern section of the pipeline, any spills will flow back to the pits. The pipeline from A-Cap Pit to Bakers Pit will drain downhill along the length back into Bakers Pit. Prior to Bakers Pit, a secondary drain will be established to drain the water directly into the existing Bakers Pit.

The southern section of the pipeline will have two 5m x 5m x 3m deep sumps dug to capture spills from the pipeline from Tycho Pit to south of the drainage line, and from the Bakers Pit to north of the drainage line.

7.7.5 Consequence

If pipeline failure (outside of the drainage line) occurs, then the impact of releasing saline dewater will be mid level on site impact. Therefore, the Delegated Officer considers the consequence to be moderate.

7.7.6 Likelihood of Risk Event

The likelihood of a pipeline failure impacting vegetation to a mid level impact is unlikely, given the provision of bunding along the length of the pipeline.

7.7.7 Overall rating of dewatering pipeline failure (outside of the drainage line crossing)

The Delegated Officer has compared the consequence and likelihood ratings described above with the risk rating matrix (Table 10) and determined that the overall rating for the risk is **medium**.

7.8 Risk Assessment – Dewatering pipeline failure (within the drainage line crossing)

7.8.1 Description of dewatering pipeline failure (within the drainage line crossing)

A pipeline failure where the pipe crosses the drainage line may result in saline water being released to a freshwater system (if water is in the creek at time of discharge), or salinisation of the drainage line bed.

7.8.2 Identification and general characterisation of emission

The emission is saline groundwater (between 6 300 mg/L and 18 400 mg/L TDS). The pH of the groundwater is neutral (7.1 – 7.3).

7.8.3 Description of potential adverse impact from the emission

If saline water is released to the drainage line during a dry period, it may impact on riparian vegetation and cause localised soil salinisation. If the discharge occurs when the drainage line is flowing, it may result in localised increase in salinity of the surface water immediately downstream.

7.8.4 Applicant controls

The Applicant has proposed to contain the pipeline within a larger diameter pipe (150mm versus 110mm) for the length of the crossing. The outlet of the larger pipe will exit into a sump located either side of the drainage line, resulting in containment of any spill and identification of a pipeline failure. The pipeline will be buried under the surface of the drainage line.

7.8.5 Consequence

If a pipeline failure occurs, such that both the initial pipeline and the containment pipeline failed, then the Delegated Officer has determined that the impact on creek bed soils and downstream surface water quality would be a low level site impact. Therefore, the consequence is considered to be minor.

7.8.6 Likelihood of Risk Event

The likelihood of a pipeline failure at this location impacting on surface water quality or on the soils in the drainage line is considered unlikely.

7.8.7 Overall rating of dewatering pipeline failure (within the drainage line)

The Delegated Officer has compared the consequence and likelihood ratings described above with the risk rating matrix (Table 10) and determined that the overall rating for the risk is **medium**.

7.9 Risk Assessment – Overflowing turkeys nests (ponds) impacting vegetation

7.9.1 Description of overflowing turkeys nests impacting vegetation

The turkeys nests are dewater storage ponds sized 30m by 30 m in area. The water is able to be reused in dust suppression. In the event of filling beyond the capacity of the pond, the water may overflow and inundate adjacent native vegetation.

7.9.2 Identification and general characterisation of emission

The emission is saline groundwater (between 6 300 mg/L and 18 400 mg/L TDS). The pH of the groundwater is neutral (7.1 – 7.3).

7.9.3 Description of potential adverse impact from the emission

Saline water released to native vegetation may result in vegetation death or poor health.

7.9.4 Applicant controls

The Applicant has stated that the dams will be monitored during pumping and rainfall events

to ensure that overtopping does not occur. The dams will be located and positioned adjacent to the open pits so as to drain back into the pits in the event of overtopping.

7.9.5 Consequence

If an overflow of saline water from the turkeys nests occurs, then the impact to vegetation will be a low level onsite impact, as most turkeys nests are located adjacent to existing open pits on disturbed ground. Therefore, the consequence is minor.

7.9.6 Likelihood of Risk Event

The likelihood of an overflow of the turkeys nests impacting on vegetation is unlikely.

7.9.7 Overall rating of overflow of the turkeys nests impacting on vegetation description

The Delegated Officer has compared the consequence and likelihood ratings described above with the risk rating matrix (Table 10) and determined that the overall rating for the risk of overflow of the turkeys nests impacting on vegetation is **medium**.

7.10 Risk Assessment – Seepage from turkeys nests (ponds) inundating vegetation

7.10.1 Description of seepage from turkeys nests

Dewater will be stored in three turkeys nests, in addition to discharge to Bakers Find Pit. Seepage from these ponds may cause localised mounding and impact on vegetation.

7.10.2 Identification and general characterisation of emission

The emission is saline groundwater (between 6 300 mg/L and 18 400 mg/L TDS). The pH of the groundwater is neutral (7.1 – 7.3).

7.10.3 Description of potential adverse impact from the emission

Seepage of saline water from the ponds may inundate the rootzones of adjacent vegetation and result in poor vegetation health or death.

7.10.4 Applicant controls

The ponds will be HDPE lined.

7.10.5 Consequence

If seepage from the turkeys nests occurs, the impact on vegetation will be low level on site. Therefore, the Delegated Officer considers the consequence to be minor.

7.10.6 Likelihood of Risk Event

Given the applicant controls, the likelihood of seepage occurring will be rare.

7.10.7 Overall rating of seepage from the turkeys nests impacting on vegetation

The Delegated Officer has compared the consequence and likelihood ratings described above with the risk rating matrix (Table 10) and determined that the overall rating for the risk of seepage from the turkeys nests is low.

7.11 Summary of acceptability and treatment of Risk Events, with Regulatory Controls

A summary of the risk assessment and the acceptability or unacceptability of the risk events set out above, with the appropriate treatment and control, are set out in Table 14 below. Controls are described further in section 8.

Table 14: Risk assessment summary

	Description of Risk Event			Applicant controls	Risk rating	Acceptability with controls (conditions on instrument)	Resulting Regulatory Controls
	Emission	Source	Pathway/ Receptor (Impact)				
1.	Sedimentation causing suspended solids/ turbidity downstream	Poor construction management	Drainage line/ downstream catchment to Brown Lake	None proposed	Moderate consequence Unlikely likelihood Medium Risk	Acceptable subject to regulatory controls	Works approval to specify: <ul style="list-style-type: none"> Surface water runoff from disturbed areas is contained during construction works. Stockpiles or disturbed soils shall be located outside of the drainage channel.
2.	Poor drainage flow	Poor siting of the pipeline	Drainage line/ downstream catchment to Brown Lake	None proposed	Moderate consequence Possible likelihood Medium Risk	Acceptable subject to outcome based regulatory controls	Works approval to specify: <ul style="list-style-type: none"> Pipeline crossing located and constructed so as to not impede surface water flow within the drainage line.
3.	Saline groundwater mounding	Dewater discharge to the shallow (depth of 6m) Bakers Find Pit or beyond 6mbgl in the main Bakers Find Pit	Seepage through fractured rock to vegetation rootzones	None proposed	Moderate consequence Possible likelihood Medium risk	Acceptable subject to regulatory controls	Licence to specify: <ul style="list-style-type: none"> No dewater to be discharged to the shallow Bakers Find Pit. A 6m freeboard within the main Bakers Find Pit to be maintained at all times. Contingency plan to be developed for managing excess water where capacity for disposal to Bakers

	Description of Risk Event			Applicant controls	Risk rating	Acceptability with controls (conditions on instrument)	Resulting Regulatory Controls
	Emission	Source	Pathway/ Receptor (Impact)				
							Find (Main) Pit is forecast to be exhausted
4.	Saline water	Dewatering pipeline failure (outside the drainage line)	Release to ground/ vegetation	V drain bunding for the pipeline	Moderate consequence Unlikely likelihood Medium risk	Acceptable subject to applicant controls	Works approval to specify: <ul style="list-style-type: none"> Where located outside the drainage line the dewatering pipeline is to be bunded , with capacity to contain a spill volume for the period between inspections. Licence to specify: <ul style="list-style-type: none"> Twice daily checks of the pipeline integrity and bunding capacity
5.	Saline water	Dewatering pipeline failure (within the drainage line crossing)	Release to drainage line soils and/or surface water	Pipeline contained within a larger diameter pipe and buried below the surface of the drainage line.	Minor consequence Unlikely likelihood Medium risk	Acceptable subject to applicant and regulatory controls	Works approval to specify: <ul style="list-style-type: none"> Containment of pipeline within larger pipeline for drainage line crossing. Burial of pipeline at the drainage line crossing. Licence to specify: <ul style="list-style-type: none"> Twice daily checks of the pipeline integrity
6.	Saline water	Overflow from turkeys nests	Release to ground/ vegetation	Ponds positioned so as to drain back to pits in the event of overtopping. Monitoring of ponds during pumping and rainfall events to	Minor consequence Unlikely likelihood Medium risk	Acceptable subject to applicant and regulatory controls	Works approval to specify: <ul style="list-style-type: none"> Positioning of turkeys nests so as to allow overtopping to flow back to each adjacent pit. Licence to specify: <ul style="list-style-type: none"> Minimum 300mm freeboard for

	Description of Risk Event			Applicant controls	Risk rating	Acceptability with controls (conditions on instrument)	Resulting Regulatory Controls
	Emission	Source	Pathway/ Receptor (Impact)				
				ensure overtopping does not occur.			operating turkeys nests <ul style="list-style-type: none"> Daily checks of the freeboard when in operation
7.	Saline water	Seepage from turkeys nests	Via soils to vegetation rootzones	HDPE lined turkeys nests	Minor consequence Rare likelihood Low risk	Acceptable subject to applicant controls	Works approval to specify: <ul style="list-style-type: none"> Installation of the HDPE liners Licence to specify: <ul style="list-style-type: none"> Annual check of the integrity of the liners

8. Regulatory controls

The risks are set out in the assessment in section 7 and the controls are detailed in this section. DWER will determine controls having regard to the adequacy of controls proposed by the Applicant. The conditions of the Works Approval and Licence will be set to give effect to the determined regulatory controls.

8.1 Works Approval controls

8.1.1 Dewatering pipeline

The following controls shall be completed so as to mitigate potential risks identified in the Decision Report:

1. The pipeline is bunded, with capacity to contain a spill volume for the period between inspections, where it is located outside of the drainage line.
2. Where the pipeline crosses the drainage line, it is contained within a larger diameter pipeline and buried.
3. Where the pipeline crosses the drainage line, it is sited so as not to impede downstream surface water flow.
4. Surface water runoff from disturbed areas is contained during construction works. Stockpiles or disturbed soils shall be located outside of the drainage channel.

8.1.2 Turkeys Nests

1. Installation of HDPE liners will be required by the Works Approval.
2. The turkeys nests will be positioned so that any potential overflow will be directed to flow back into the adjacent open pit.

8.1.3 Specified actions

The Applicant shall submit a compliance document demonstrating compliance with the Works Approval conditions.

8.2 Licence controls

8.2.1 Authorised Discharge Point

The main pit of the Bakers Find Pits (with the depth of 30m) is the only authorised discharge point for mine dewater. (Note this pit will be identified by a Figure in the Licence.)

A freeboard limit of 6m will be required to be maintained within the main Bakers Find Pit at all times.

8.2.2 Dewatering pipeline operation

The following control will be prescribed in the Licence for pipeline operation:

1. Twice daily checks of the integrity of the pipeline and the capacity of the bund will be required when in operation.

8.2.3 Turkeys Nests operation

The following control will be prescribed in the Licence for turkeys nests operation:

1. An annual check of the turkeys nests (ponds) integrity shall be completed.

2. A 300 mm freeboard shall be maintained for each of the turkeys nests, when in operation.
3. The 300mm freeboard shall be checked daily, when in operation.

8.2.4 Specified actions

The Applicant shall notify DWER within one business day of any releases of saline water that have or may cause environmental impact, consistent with section 72 of the EP Act.

8.2.5 Monitoring requirements

The Applicant shall keep a record of the volumes discharged to the Bakers Find pit.

On an annual basis the applicant shall sample and analyse pH and total dissolved solids' concentration of the dewater discharge to Bakers Find Pits.

8.2.6 Monitoring report

The Applicant shall submit an annual report comprising:

1. Discharged water volumes;
2. Results of annual groundwater quality monitoring; and
3. Detail of any incidents reported to DWER for the annual period and corrective actions taken.

9. Applicant's comments

The Applicant was provided with the draft Decision Report and draft issued Works Approval on 22 September 2017. The Applicant provided comments which are summarised, along with DWER's response, in Appendix 2.

10. Conclusion

This assessment of the risks of activities on the Premises has been undertaken with due consideration of a number of factors, including the documents and policies specified in this Decision Report (summarised in Appendix 1).

Based on this assessment, it has been determined that the Issued Works Approval will be granted subject to conditions commensurate with the determined controls and necessary for administration and reporting requirements.

Tim Gentle
Manager Licensing (Resource Industries)

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

Appendix 1: Key documents

	Document title	In text ref	Availability
1.	ALS Environmental (2017) <i>Certificate of Analysis, Work Order EP17-5243, Client Primary Gold</i> , 26 May 2017	ALS 2017	DWER record (A1455364)
2.	ANZECC & ARMCANZ (2000) <i>Australian and New Zealand Guidelines for Fresh and Marine Water Quality</i>	ANZECC 2000	Accessed at: www.agriculture.gov.au/water/quality/guidelines/volume-1
3.	DWER (2017) Clearing Permit CPS 7635/1	CPS 7635/1	accessed at www.dwer.wa.gov.au
4.	National Pump & Energy (2017) <i>Primary Gold Coolgardie Gold Groundwater Pumping Equipment for MacPhersons Reward, A-Cap and Tycho Pits. Budget Estimate Dewatering</i> , 19 June 2017	NPE 2017	DWER record (A1455367)
5.	Rockwater (2017) <i>Hydrogeological & Dewatering Assessment for the Coolgardie Gold Project</i> , unpublished report for Primary Gold Limited, May 2017	Rockwater 2017a	DWER record (A1455361)
6.	Rockwater (2017) <i>Primary Gold Ltd: Hydrogeology of Baker's Find Pit, Coolgardie</i> , July 2017	Rockwater 2017b	DWER record (A1492871)
7.	DER, July 2015. <i>Guidance Statement: Regulatory principles</i> . Department of Environment Regulation, Perth.	DER 2015a	accessed at www.dwer.wa.gov.au
8.	DER, October 2015. <i>Guidance Statement: Setting conditions</i> . Department of Environment Regulation, Perth.	DER 2015b	
9.	DER, August 2016. <i>Guidance Statement: Licence duration</i> . Department of Environment Regulation, Perth.	DER 2016a	

10.	DER, November 2016. <i>Guidance Statement: Risk Assessments.</i> Department of Environment Regulation, Perth.	DER 2016b	
11.	DER, November 2016. <i>Guidance Statement: Decision Making.</i> Department of Environment Regulation, Perth.	DER 2016c	

Appendix 2: Summary of applicant's comments on risk assessment and draft conditions

Condition/ Section of Decision Report	Summary of Licence Holder comment	DWER response
Section 7.4.4, 7.8.4 of Decision Report	Provided detail that the pipeline will be enclosed within a larger pipe whilst crossing the drainage line. The pipeline will be buried at this location so as to not impede surface water flow.	Accepted and added. Risk assessment in section 7.8.5, 7.8.6 modified to reflect reduced risk of spillage.
Section 7.7.4 of Decision Report, Table 4 of Schedule 2 of the Works Approval	Detail provided on sumps to be built either side of the drainage crossing to provide adequate capacity to contain spills.	Accepted and added.
Section 7.9.4 of the Decision Report	Detail provided that turkeys nests will be monitored during pumping and rainfall events to prevent overtopping. Also noted that the turkeys nests will be positioned to augment drainage back to each of the pits they are located adjacent to.	Noted. Will be considered in setting of Licence conditions. Related likelihood risk (section 7.9.6) modified from possible to unlikely. Table 2 in the Works Approval updated to require positioning of turkeys nests so that overflow is directed back to the adjacent open pit.
Section 8.1 of the Decision Report	Advice provided that the use of telemetry for remote monitoring is not feasible due to the absence of a control system for the bore pumping and discharge. Instead visual monitoring together with the location of the pipeline along access and haul roads will be utilised to monitor potential spills, in addition to twice daily formal inspections. Training and inductions will require immediate reporting of spills and shut off of pumps.	Accepted and will be considered in setting of Licence conditions.
Table 4 of Schedule 2 of the Works Approval	Advice provided that construction of the drainage line crossing will not occur during rainfall events.	Noted in Works Approval.

Attachment 1: Works Approval W6078/2017/1
