



Rustlers Roost and Quest 29 Open-Cut Mine Redevelopment

Supplementary Environmental Impact Statement (SEIS)

Prepared pursuant to the Environment Protection Act 2019

September 2022

Table of Contents

Acronyms, Abbreviations and Units vi

Section 1 Introduction 1

1.1 Project Overview 1

1.2 Assessment Pathway..... 1

1.3 Scope and Purpose..... 3

1.4 Document Structure and Content..... 3

1.5 Relevant Amended and New Documents 5

Section 2 Revised Project Description and Changes 7

Section 3 Summary of Submissions Received 13

Section 4 Response to Submissions..... 16

Section 5 Updated Commitments Register 106

Section 6 References 140

Figures

Figure 1-1	Project Location and Regional Setting.....	4
Figure 4-1	Groundwater Model Predicted Extents.....	96
Figure 4-2	Cumulative Groundwater Drawdown Extents.....	97
Figure 4-3	Modelled Groundwater Levels (m AHD) for the Pre-Proposed Mining Conditions (geometric mean across the 100 model realisations)	98
Figure 4-4	Modelled Groundwater Levels (m AHD) 20 years post mining (geometric mean across the 100 model realisations)	99
Figure 4-5	Rustlers Roost Water Management Schematic.....	100
Figure 4-6	Potential Indirect and Cumulative Interactions with Surrounding Projects and Activities.....	101
Figure 4-7	Rustlers Roost Proposed Site Layout.....	102
Figure 4-8	Proposed New Water Storage Facility	103
Figure 4-9	Regional Overview of Aquatic Features.....	104
Figure 4-10	Regional Overview of Aquatic Features.....	105

Tables

Table 2-1	Rustlers Roost Draft EIS Infrastructure Layout and Supplement of Draft EIS Infrastructure Layout Disturbance Comparison	9
Table 3-1	Summary of Themes and Issues Received in Submissions	13
Table 4-1	Rustlers Roost and Quest 29 Draft EIS Submissions Received.....	16
Table 5-1	List of PGO's New Commitments to the Project.....	107

Appendices

Appendix A	Air Quality Report	143
Appendix B	Construction Material	145
Appendix C	Ecological Assessment Report	147
Appendix D	Greenhouse Gas Abatement Plan	149
Appendix E	Hydrology Analysis.....	151
Appendix F	Material Characterisation.....	153
Appendix G	TSF Design Documentation.....	155
Appendix H	Acid Mine Drainage Management Plan.....	157
Appendix I	Draft Mine Closure Plan	159
Appendix J	Waste Rock Dump Design.....	161
Appendix K	Risk Assessment Register	163
Appendix L	Commitment Register	165
Appendix M	Aquatic Ecology Memorandum.....	168
Appendix N	Post-Mining Water Quality Model	170
Appendix O	Updated Groundwater Modelling Report	172
Appendix P	Groundwater Dependent Ecosystem Assessment	174
Appendix Q	Water Management Plan	176
Appendix R	Water Quality Improvement Plan	178

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Key Project Terms

Term	Definition
Adaptive Management	Systematic process for incrementally improving management practices by learning from the outcomes of past and current practices.
Carbon in Leach	This process uses a dilute alkaline cyanide solution to leach (dissolve) gold from the ore material. Activated carbon removes gold out of dilute cyanide solution by adsorption (sticking). The leaching agent and activated carbon are added together in a slurry of ore and water.
Development Envelope	Defined as the maximum area within which the Project footprint could occur. The development envelope for the Project encompasses 790 ha, inclusive of Rustlers Roost, Quest 29, the accommodation camp and haul road.
Environmental Aspect	An element of the Primary Gold's activities, products or services that can interact with the environment.
Environmental Impact	Change to the environment whether adverse or beneficial, wholly or partially resulting from the Primary Gold's environmental aspects. Environmental impacts can be caused directly or indirectly from a Project activity or cumulatively with other non-Project related activities in a set area.
Environmental Factor	The NT EPA listed environmental objectives to identify environmental matters that have value to the Northern Territory and that need to be protected; and to state the objective to be achieved for each matter. The NT EPA has prepared these environmental objectives and organised these in structured divisions of the environment, called environmental factors.
Existing Disturbance Footprint	Defined as the direct disturbance area from known historical activities associated with the Rustlers Roost, Quest 29, accommodation camp and haul road areas. For Rustlers Roost and Quest 29 this is taken from the existing Mine Management Plans. The existing direct disturbance footprint encompasses 169.4ha within the development envelope.
Heap Leach Pad	Existing areas where historic mining placed ore for processing via a leaching solution to dissolve and capture the mineral. The pads contain the remaining material.
Maximum Vegetation Clearing Extent	The maximum extent of native vegetation clearing proposed for the Project based on mapped vegetation extent layers which account for historic anthropogenic disturbances to the development envelope (e.g. historic mining and pastoral activities). This area constitutes a total of 368.86 ha.
Project	The Project includes the expansion of existing pits, waste rock landforms, water storage dams and internal roads in both the Rustlers Roost and Quest 29 MLs. Two new pits will be constructed at Rustlers Roost and new infrastructure includes an onsite processing plant, a tailings storage facility, a landfill, laydown area, magazine, administration office, accommodation camp and groundwater bores for water supply. The Project is inclusive of an expanded connecting haul road between the non-contiguous extraction areas and an accommodation camp.
Project Area	The Project area is defined as wholly including ML1083 (Rustlers Roost), ML 29783 (Quest 29), ML 29814 (accommodation camp) and the connecting haul road. The entire Project area covers 1,143.25 ha.
Direct Disturbance Footprint	Defined as the direct disturbance area based on the current proposed infrastructure and material placement inclusive of Rustlers Roost, Quest 29, the accommodation camp and haul road. This area covers both historically disturbed and undisturbed areas. The disturbance footprint encompasses 532.84 ha within the Project area.
Significant Impact	A significant impact of an action is an impact of major consequence having regard to: (a) the context and intensity of the impact; and (b) the sensitivity, value and quality of the environment impacted on and the duration, magnitude and geographic extent of the impact.
Study Area	Refers to the area of survey or investigation for a specific study. This area may be beyond the Project area or development envelope.
Tailings Storage Facility	A specially engineered and constructed impoundment into which tailings (residue) from the ore processing plant is deposited for placement in perpetuity. The storage facility is constructed with confining embankments consisting of earthen material (e.g. rock and soil) and capped following closure.
Waste Rock Dump	An engineered and constructed impoundment into which overburden from the mining process is placed for safe storage in perpetuity.

Acronyms, Abbreviations and Units

Abbreviation, Acronym or Unit	Definition
%	Percentage
AAPA	Aboriginal Areas Protection Authority
AEP	Annual Exceedance Probability
AHD	Australian Height Datum
ALARP	As Low As Reasonably Practicable
AMD	Acid and Metalliferous Drainage
AMDMP	Acid Mine Drainage Management Plan
ANC	Acid Neutralising Capacity
ANCOLD	Australian National Committee on Large Dams
ANZG	Australia and New Zealand Government
ARI	Average Recurrence Interval
BoM	Bureau of Meteorology
CPEC	Contaminants of Potential Environmental Concern
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CSL	Compact Soil Liner
CuSO ₄	Copper Sulphate
DEPWS	Department of Environment, Parks and Water Security (NT) (current)
DGV	Default Guideline Value
DITT	Department of Industry, Tourism and Trade (NT) (current)
ECNT	Environment Centre Northern Territory
EFA	Ecosystem Function Analysis
EIS	Environmental Impact Statement
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
EP Act	<i>Environment Protection Act 2019</i>
ERS	Emission Reduction Strategy
ESCP	Erosion and Sediment Control Plan
GDE	Groundwater Dependent Ecosystem
GHG	Greenhouse Gas
GHGAP	Greenhouse Gas Abatement Plan
GL	Gigalitre (1,000 Megalitres)
GV	Guideline Value
H ₂ O ₂	Hydrogen Peroxide
H ₂ SO ₄	Sulfuric Acid
ha	Hectare
HCL	Hydrochloric acid
HDPE	High Density Polyethylene
ID	Identification
IECA	International Erosion Control Association
IPP	Independent Power Provider

Abbreviation, Acronym or Unit	Definition
IWEQ	Inland Water Environmental Quality
km	Kilometre
km ²	Square Kilometre
L	Litre
L/s	Litre Per Second
LiDAR	Light Detection and Ranging
LOM	Life-of-Mine
LV	Light Vehicle
m	Metre
m ²	Metre squared
m ³	Cubic metre
mAHD	Metres Australian Height Datum
mBGL	Metres Below Ground Level
MCP	Mine Closure Plan
mg	Milligram
ML	Mining Lease (Granted)
Mlcm	Million Loose Cubic Meters
mm	Millimetre
MMP	Mining Management Plan
MNES	Matter of National Environmental Significance
MP	Management Plan
mRL	Metres Reduced Level
Mt	Million Tonnes
Mtpa	Million Tonnes Per Annum
NAF	Non-Acid Forming
NaOH	Sodium Hydroxide
NAPP	Net Acid Producing Potential
NDVI	Normalised Difference Vegetation Index
NT	Northern Territory
NT EPA	Northern Territory Environment Protection Authority
NTFRS	Northern Territory Fire, Rescue Services
NTG	Northern Territory Government
NTU	Nephelometric Turbidity Unit
PAF	Potentially Acid Forming
PASS	Potential Acid Sulfate Soil
PGO	Primary Gold Limited, a wholly owned subsidiary of Hanking Australia Investment Pty Ltd
PMLU	Post Mining Land Use
PPL	Perpetual Pastoral Lease
RO	Reverse Osmosis
ROM	Run of Mine
SEIS	Supplement to the Draft EIS
SEP	Stakeholder Engagement Plan

Abbreviation, Acronym or Unit	Definition
SER	Stakeholder Engagement Register
SoCS	Site of Conservation Significance
SRMS	Scaled Residual Mass Statistic
SSTV	Site-Specific Trigger Values
SWGs	Stock Water Drinking Guidelines
t	Tonne
ToR	Terms of Reference
TPWC Act	<i>Territory Parks and Wildlife Conservation Act 1976</i>
TSF	Tailings Storage Facility
UC	Uncertain
WDL	Waste Discharge Licence
WMP	Water Management Plan
WRD	Waste Rock Dump
WQIP	Water Quality Improvement Plan

Section 1 Introduction

1.1 Project Overview

Rustlers Roost and Quest 29 are brownfield sites on Mineral Leases (ML) located in the Mount Bunday locality, approximately 85 km south-east of Darwin in the Northern Territory (NT). These sites will be redeveloped for open-cut mining, involving connection of the non-contiguous areas by a haul road and construction of an accommodation camp (the Project). The sites have a history of gold mining activity, with first gold being discovered in the 1940s and activities occurring over intermittent periods during the past 70 years (refer to Section 1.6 of the Draft EIS). Primary Gold Limited (PGO) (the Proponent) is proposing to redevelop the existing mine by expanding open-cut gold mining operations and connecting the two non-contiguous sites with a haul road. PGO is a fully owned subsidiary of Hanking Australia Investment Pty Ltd (Hanking).

The mine sites are located approximately 11 km apart and are connected by an existing unsealed access track, which will be upgraded to accommodate haulage of ore from the Quest 29 satellite pits to a proposed processing facility at Rustlers Roost. Ore mined at both sites will be processed at a new purpose-built processing facility located at the Rustlers Roost site to produce gold bullion which will be trucked offsite for sale. The rate of production will be up to 5 million tonnes per annum (Mtpa) over an approximately 10 year life-of-mine (LOM). Following completion of mining activities, the Project area will be closed and rehabilitated in accordance with an approved Mine Closure Plan (MCP).

The main Project areas of Rustlers Roost and Quest 29 are located between 5 km and 12 km directly south-west of the Arnhem Highway on Old Mount Bunday Station, Perpetual Pastoral Lease (PPL) 1163 and McKinlay River Pastoral Station (PPL 1184). An accommodation camp for the Project workforce will be located on ML 29814 which is part of the Toms Gully Mine tenements (refer to Figure 1-1 of the Draft EIS). The proponent for Toms Gully Mine is PGO; however, that project has undergone a separate environmental assessment process and, with the exception of the camp, no additional activities or infrastructure for this Project are proposed in the Toms Gully ML. The accommodation camp will be utilised for both the construction and operational phases of the Project.

Investigations are being progressed to construct a gas pipeline connecting the processing plant directly to the existing Amadeus Gas Pipeline. A direct connection would forego the requirement to transport gas to site via road. The route options, feasibility and planning for the gas pipeline are being progressed by a third-party and any environmental approvals required to facilitate that infrastructure will be completed separately from this Project.

The Project includes the expansion of existing pits, waste rock landforms, water storage dams and internal roads. Two new pits will be constructed at Rustlers Roost (Annie's Dam pit and Annie's Oakley pit) and new infrastructure includes an onsite processing plant, a tailings storage facility, a landfill, laydown area, magazine, administration office, accommodation camp and groundwater bores for water supply. At Quest 29 the Project includes expansion of the five existing pits (Zamu, Taipan, South Koolpin, North Koolpin and BHS pits). The Project includes an entire development envelope of 790 ha which as the maximum area within which the Project disturbance could occur. However, a large portion of the additional Project footprint is within historically disturbed areas and the Project footprint is not required to encumber the entire Project development envelope. Therefore, the maximum vegetation clearing extent within this area represents less than half of the development envelope (368.86 ha, 47%).

1.2 Assessment Pathway

A proponent initiated Environmental Impact Statement (EIS) referral was submitted by PGO to the Northern Territory Environment Protection Authority (NT EPA) on 3 February 2021 for consideration under the *Environment Protection Act 2019* (EP Act). The referral was accepted for consideration on 23 February 2021 and a public consultation period held from 25 February 2021 to 9 April 2021. The NT EPA determined a standard assessment by EIS to be an appropriate

method of assessment for the proposed action to address the requirements of section 42 and section 43 of the EP Act. The NT EPA issued a formal Notice of Decision and Statement of Reasons on the assessment approach concurrently with the Terms of Reference (ToR) for the EIS on 11 May 2021.

In accordance with the ToR, the NT EPA considers that the proposed action has the potential to significantly impact environmental values associated with six environmental factors being:

1. Terrestrial Environmental Quality;
2. Terrestrial Ecosystems;
3. Hydrological Processes;
4. Inland Water Environmental Quality;
5. Aquatic Ecosystems; and
6. Community and Economy.

The NT EPA considered other environmental factors during its assessment of the referral; however, the impact on those factors was not considered to be significant. The Draft EIS was prepared to address the requirements of the ToR and the NT EPA 'Preparing an environmental impact statement (EIS): environmental impact assessment guidance for proponents' (NT EPA 2021a). The key environmental factors listed for assessment in the ToR are addressed in Section 7 of the Draft EIS, while other factors not considered likely to be significantly impacted are addressed in Section 8 of the Draft EIS.

As the Project engineering was further refined and informed by additional data that had been recently acquired (e.g. environmental, geological, geochemical), the Project was progressively refined to the scope included in the Draft EIS. These changes result in an increase to the development envelope, vegetation clearing extent, LOM, processing throughput and waste volume outputs detailed in the original referral (refer to Section 1.10 of the Draft EIS for specific details of the changes). As such, in accordance with Section 51 of the EP Act, PGO notified the NT EPA of a significant variation on 08 August 2021.

The NT EPA issued a notice of decision to accept the significant variation to the action on 26 August 2021 and the documents associated with the variation were made available for public consultation from 30 August 2021 to 24 September 2021. During this period 5 public submissions related to the significant variation were received; however, these were withheld from publication in accordance with regulation 269 of the *Environment Protection Regulations 2020*. A subsequent notice of decision and statement of reasons about assessment of the significant variation was released by the NT EPA on 5 October 2021. It was determined the revised Project could be adequately assessed through the Key Environmental Factors identified in the original ToR; however, minor amendments were made to the ToR to account for the Project changes.

Based on NT EPA decision on the significant variation, the Draft EIS for the Project was submitted to the NT EPA on 5 November 2021 with the public exhibition period finishing on 13 January 2022. The public exhibition period resulted in 9 submissions on the Draft EIS which generally provided several comments and addressing multiple themes (refer to Section 3). The NT EPA subsequently provided the formal request for supplementary information to the Draft EIS on 17 February 2022. This Supplement to the Draft EIS (SEIS) was developed to address all additional information received during the public consultation period facilitate informed decision-making by the regulatory authorities. Section 4 provides PGO's responses to all submissions received.

1.3 Scope and Purpose

In fulfilment of its obligations under the EPBC Act and EP Act, PGO is required to prepare a SEIS to provide further information requested as part of the public review of the Draft EIS, finalised on 13 January 2022. This SEIS addresses several aspects of the Project to facilitate informed decision-making by the regulatory authorities. Aspects addressed in this SEIS include the following:

- Design updates: description of significant changes in the Project design since the Draft EIS was submitted on 05 November 2021;
- Additional information: further data, information and technical studies carried out relevant to environmental impacts and the assessment process, provided in addition to that contained in the Draft EIS; and
- Responses to submissions: responses to all submissions received during the public consultation period for the Draft EIS.

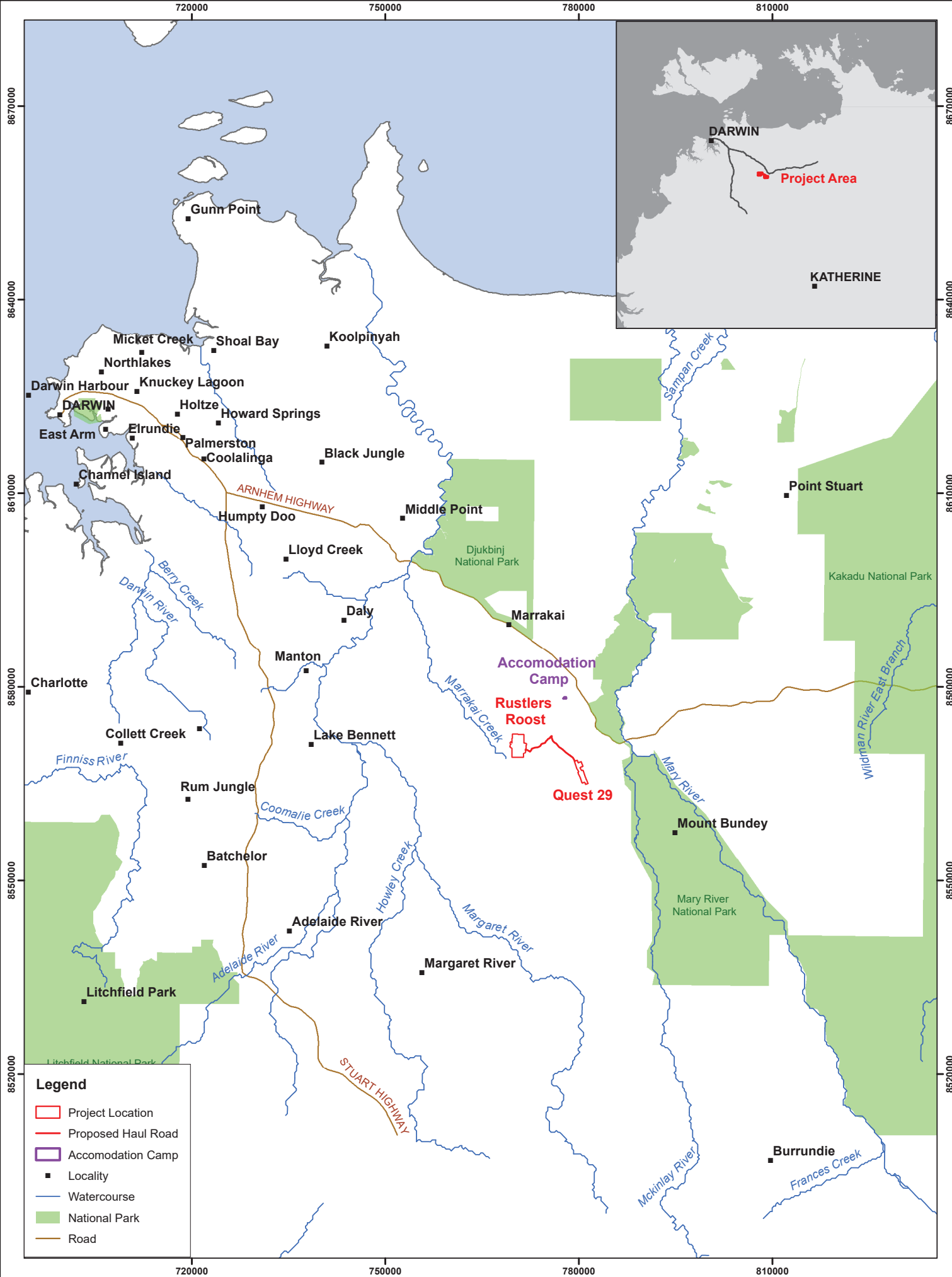
Along with the Draft EIS, this SEIS represents the finalisation of the environmental impact statement for the Project under the EPBC Act and EP Act.

The Commonwealth and Northern Territory Governments will initiate the assessment of the Project once this SEIS is formally submitted, prior to a final ministerial determination on the Project's approval.

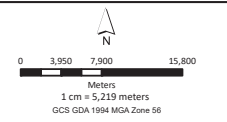
1.4 Document Structure and Content

This SEIS has been developed in accordance with the Northern Territory Environment Protection Authority (NT EPA) *Preparing an Environmental Impact Statement: Environmental impact assessment guidance for proponents* (NT EPA 2021a). This SEIS document has been structured as follows:

- **Section 1 – Introduction:** provides an overview of the Project and outlines the scope and purpose of the SEIS;
- **Section 2 – Revised Project Description and Changes:** outlines all changes in Project design since the submission of the Draft EIS;
- **Section 3 – Summary of Submissions Received:** provides a summary of all themes and issues received in submissions during the public review period of the Draft EIS;
- **Section 4 – Response to Submissions:** provides PGO's responses to all submissions received during the public review period of the Draft EIS;
- **Section 5 – Updated Commitments Register:** outlines PGO's new commitments to the Project taken on as part of this SEIS;
- **Section 6 – References:** provides a list of references used in this SEIS; and
- **Appendices** – provides all technical reports and documents updated or created since the submission of the Draft EIS to address all submissions received.



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1	First Draft	29/06/21	DESIGNED	SS	CHECKED	TK
2	Final	27/07/21	DRAWN	SS	CHECKED	TK
			APPROVED	TK	DATE	27/07/21
	Notes:					



DISCLAIMER
CDM Smith has endeavoured to ensure accuracy and completeness of the data. CDM Smith assumes no legal liability or responsibility for any decisions or actions resulting from the information contained within this map.

DATA SOURCE
NT Government Open Source Data



FIGURE 1-1
Project Location and Regional Setting
DRG Ref: 1001087-EIS-01-1.1

1.5 Relevant Amended and New Documents

To address submissions received during the public consultation period of the Draft EIS and also to provide additional information to facilitate regulatory agencies to assess the Project environmental impacts, the following documents have been updated or prepared since the Draft EIS submission:

- **Air Quality Report:** outlines the results of the air quality modelling undertaken for the Project (Appendix A);
- **Construction Material:** provides an inventory of construction materials required for the Project (Appendix B);
- **Ecological Assessment Memorandum:** outlines the results of the threatened fauna species assessment undertaken on site as well as information on potential Groundwater Dependent Ecosystem (GDEs) to be impacted by the Project (Appendix C) (full GDEs assessment provided in the separate GDE Assessment Report);
- **Greenhouse Gas Abatement Plan:** describes all Greenhouse Gas (GHG) emissions from the Project and sets out interim and long term targets for the Project (Appendix D);
- **Hydrology Analysis:** provides surface water modelling results to address submissions to assess impacts of surface water discharge to the local environment (Appendix E);
- **Material Characterisation:** provides further results on the material characterisation assessment that has been investigated since the Draft EIS (Appendix F);
- **TSF Design Documentation:** provides updated TSF design to account for changes in design since the Draft EIS was submitted. It also provides further tailings multi-element supernatant analysis (Appendix G);
- **Acid Mine Drainage Management Plan:** provides updated information on potentially acid forming material from the Project (Appendix H);
- **Draft Mine Closure Plan:** updated Draft Mine Closure Plan (MCP) to account for updated information and changes in Project design since the Draft EIS submission (Appendix I);
- **Waste Rock Dump Design:** provides the proposed waste rock dump (WRD) construction design that have been updated since the Draft EIS submission (Appendix J);
- **Risk Assessment Register:** provides an updated version of the risk assessment register to account for recent studies undertaken and to amend formatting issues as identified in submission number 32 (Appendix K);
- **Commitment Register:** outlines all PGO's commitments, including new commitments as part of this SEIS, and new commitments as a result of thorough review of technical studies submitted within the Draft EIS. A list of new commitments is provided in Section 5 and Appendix L provides a complete commitment register for the Project, including new commitments identified in Section 5;
- **Aquatic Ecology Memorandum:** provides an assessment on potential impacts of changes to surface water hydrology on aquatic ecosystems as a result of the Project (Appendix M);
- **Post-Mining Water Quality Model:** presents the outcomes of modelled post-closure pit lake water quality, based on 12 months kinetic test results (Appendix N);
- **Updated Groundwater Modelling Report:** provides updated results from additional groundwater modelling that has revised and updated understanding of hydraulic conditions as they relate to pit development. This has enabled

the refinement and improvement of predicting hydraulic influences on the surrounding environment through further defining model parameters with due consideration to receptors and risk (Appendix O);

- **Groundwater Dependent Ecosystems Assessment Report:** provides an assessment on GDE's present within the area of influence and potential impacts as a result of the Project activities (Appendix P);
- **Water Management Plan:** an updated version of the water management plan to include results and commitments around new studies undertaken since the submission of the Draft EIS (Appendix Q); and
- **Water Quality Improvement Plan:** in conjunction with the Hydrology Analysis report provided as Appendix E, the Water Quality Improvement Plan (WQIP), provided as Appendix R, focuses on maintaining or improving catchment sediment and water quality consistent with the National Water Quality Management Strategy.

Section 2 Revised Project Description and Changes

Section 4 of the Draft EIS outlines the Project description, including the existing and proposed disturbance footprint, proposed Project schedule and construction and operation activities. Further studies have been carried out to fulfill some information gaps and address requests for further information and no significant changes in Project layout and activities have been proposed since the submission of the Draft EIS. However, several design amendments have been incorporated to improve environmental management and therefore, no significant additional potential impacts to the environment as a result of the Project activities, are expected. The key amendments since the submission of the Draft EIS are summarised below and detailed in Table 2-1:

- **TSF Liner Design** – The proposed basin of the TSF in the Draft EIS was proposed to be a compacted soil liner (CSL) (a 300 mm thickness imported or 200 mm thickness *in situ*) across the entire TSF basin. Laboratory testing was conducted on a number of samples obtained from select test pits. Laboratory testing on these samples yielded permeabilities in the range of 1×10^{-8} m/s to 9×10^{-10} m/s, which would result in a low seepage rate from the TSF.

Nevertheless, to improve certainty that risk associated with potentially acid forming material will be adequately managed, Primary Gold has proposed a new design for the base of the TSF, which will comprise a composite liner of high-density polyethylene (HDPE) and CSL over the entire base to inhibit infiltration into underlying soils/groundwater. Further details regarding the proposed TSF design is provided in Appendix G;

- **Infrastructure Setback from Mine Lease (ML) Boundary** – Submission on the Draft EIS noted the location of Project infrastructure in close proximity to the ML boundary. The Annie Oakley pit and northern WRD were setback from the boundary approximately 20 m and 30 m, respectively. As a means of preventing encroachment beyond the ML boundary during operation, Primary Gold will increase the boundary setback for this infrastructure to maintain a consistent 50 m buffer between the boundary and Annie Oakley pit, northern WRD and the TSF;
- **Toms Gully Mine Road and Arnhem Highway Intersection Upgrade** – The Project area is proposed to be accessed through the existing Toms Gully Mine Road and Arnhem Road intersection. Due to the small number of daily traffic movements for the Project, sufficient sight lines and consecutive rather than concurrent operation of the Toms Gully Mine project, Primary Gold had prepared to retain the current unpaved intersection. This has been revised to address input from the Transport and Civil Services Division of DIPL on the Draft EIS. Primary Gold will undertake an intersection upgrade that aligns with the appropriate NTG standards. The proposed design is detailed in response to Item 54;
- **Limitation of Controlled Releases from Rustlers Roost to Mount Bunday Creek** – As detailed in the Draft EIS, Primary Gold committed to only release during the wet season in order to limit potential impact to aquatic ecosystem functions reliant on the natural drying in ephemeral waterways and associated with natural flow regimes (natural variability/seasonality).

The additional analysis of flows and velocity changes for dewatering discharges during the operational phase indicate the discharge point can be limited to Mount Bunday Creek (refer to Appendix E). Thus, in addition to limiting discharges to the wet season, the Project no longer proposes to discharge into Marrakai Creek post completion of the initial dewatering phase (i.e. beyond 2023). This arrangement is considered a benefit as it limits operational dewatering discharges from Rustlers Roost to the high to moderately disturbed Mount Bunday Creek, excluding the moderately to low disturbed Marrakai Creek; and

- **Expanded Water Storage Infrastructure** – Submission on the Draft EIS raised concerns regarding the foreseen water storage limitations. Primary Gold has introduced an expanded water storage dam in place of Annie's Dam (refer to Figure 4-7 and Figure 4-8). The new storage dam, titled the northern TSF water storage dam (NTSF WSD), is a 6,998 ML capacity storage facility. This feature is within the footprint of the TSF and will eventually become

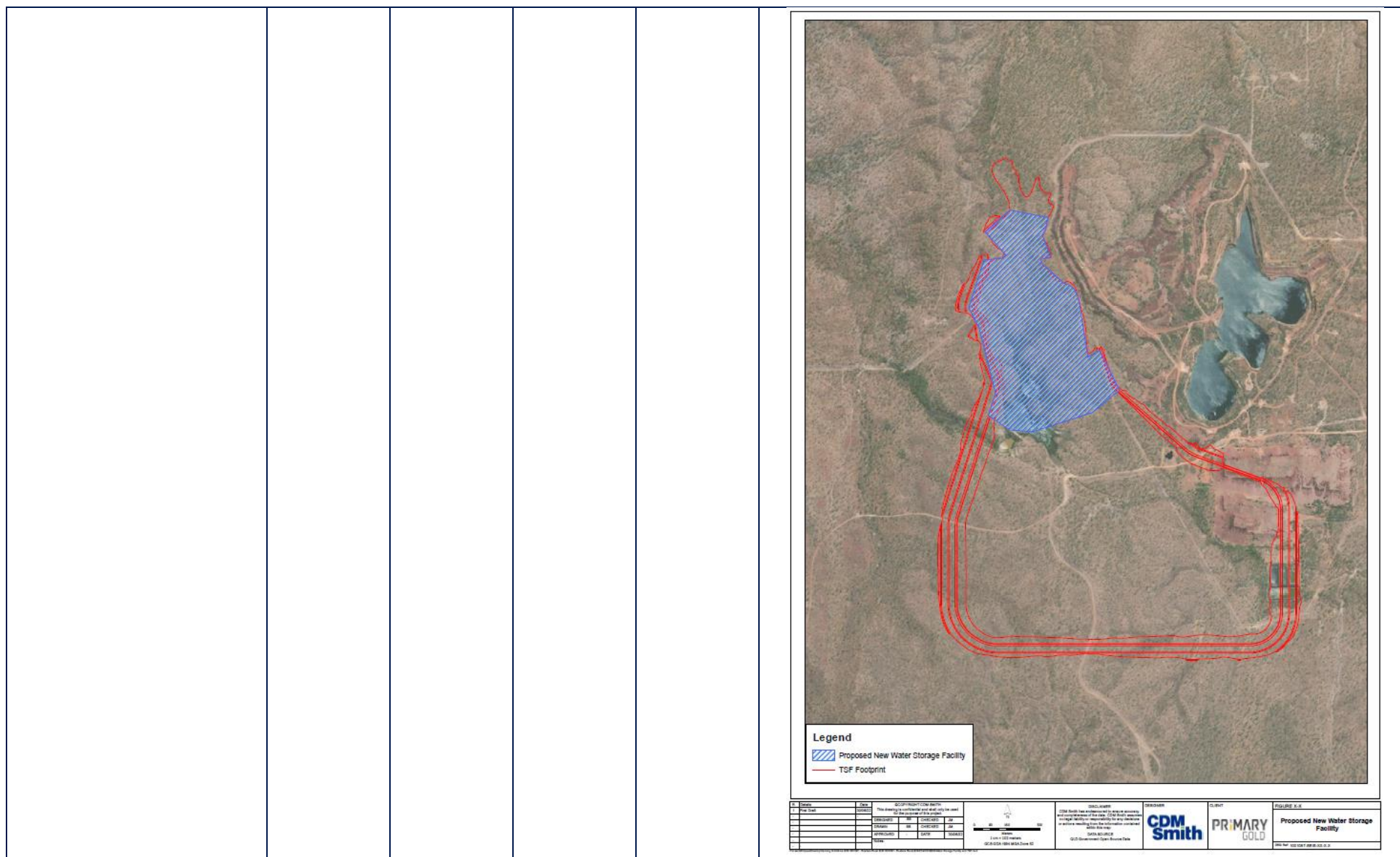
Section 2 Revised Project Description and Changes

filled with tailings . The new arrangement has been included in the updated water balance model for the Project (Appendix O), with the results showing the water management system can accommodate the dry season storage in almost all circumstances.

Note – additional information on the WRD and TSF design and construction approach has been provided in this SEIS. However, this is considered additional information and does not present a change to design (with exception of the TSF HPDE liner commitment).

Table 2-1 Rustlers Roost Draft EIS Infrastructure Layout and Supplement of Draft EIS Infrastructure Layout Disturbance Comparison

Main Project Infrastructure		EIS Disturbance (ha)	SEIS Disturbance (ha)	Total Difference in Disturbance Area (ha)	% of Change (Area / Volume)	Details of Change
Rustlers Roost						
WRD	Southern WRD	43.2	43.2	0	0%	No change in disturbance area is proposed. Appendix J provides new information on the WRD design, construction method, final waste capping of the WRD and TSF, including the topsoiling of the WRDs and TSF.
	Northern WRD	48.9	48.9			
TSF		257.1	257.1 ¹	0	0%	The proposed basin of the TSF in the Draft EIS was proposed to be a CSL (a 300 mm thickness imported or 200 mm thickness in situ) across the entire TSF basin. PGO has proposed a new design for the base of the TSF, which will comprise a composite liner of HDPE and CSL over the entire base. Further details in the proposed TSF design is provided in Appendix G. In addition to the composite liner, the design comprises a cut-off trench, basin underdrainage system and embankment toe-drain (refer to Section 8 of Appendix G for the design details). In order to manage water storage during the dry season where no surface water discharges will occur, PGO has proposed a new water storage dam within the northern part of the TSF. The new water storage dam will temporarily occupy approximately 46.6 ha of land within the northern part of the TSF (refer to Figure 4-7 and Figure 4-8). This new storage dam will have capacity to store approximately 7 GL of water and this has been calculated to account for all dewatering required from the pits during the period of dry season (9 months at pump rate of 300 L/s). The water storage dam will be consumed at the end of mining for final TSF placement and it will be treated as part of the TSF for closure purposes. Below is an indicative location of the proposed water storage dam within the TSF and Appendix O provides further details. This change does not alter the total disturbance footprint of the Project as proposed in the Draft EIS.



Section 2 Revised Project Description and Changes

Main Project Infrastructure		EIS Disturbance (ha)	SEIS Disturbance (ha)	Total Difference in Disturbance Area (ha)	% of Change (Area / Volume)	Details of Change
Pits	Main Pit	69.9	69.9	0	0%	No change in disturbance area or design is proposed.
	Annie's Oakley and Annie's Dam Pit ²	6.2	6.2			
Processing Plant and ROM		6.0	6.0	0	0%	No change in disturbance area or design is proposed.
Miscellaneous mining and maintenance Infrastructure areas		4.42	4.42	0	0%	No change in disturbance area or design is proposed.
Rustlers Roost additional land clearing required³		333.4	333.4	0	0%	No further clearing is required.
Rustlers Roost project development envelope		611	611	0	0%	No change to development envelope is proposed.
Quest 29						
Pits	BHS Pit	1.7	1.7	0	0%	No change in disturbance area or design is proposed.
	Zamu Pit	11.4	11.4	0	0%	No change in disturbance area or design is proposed.
	North Koolpin Pit	4.7	4.7	0	0%	No change in disturbance area or design is proposed.
	South Koolpin Pit	6.4	6.4	0	0%	No change in disturbance area or design is proposed.
	Taipan Pit	4	4	0	0%	No change in disturbance area or design is proposed.
East Koolpin WRD		16.6	16.6	0	0%	No change in disturbance area is proposed. Appendix J provides new information on the WRD design, construction method, final waste capping of the WRD and TSF, including the topsoiling of the WRDs and TSF.
Miscellaneous Infrastructure areas		<1	<1	0	0%	No change in disturbance area or design is proposed.

Section 2 Revised Project Description and Changes

Main Project Infrastructure	EIS Disturbance (ha)	SEIS Disturbance (ha)	Total Difference in Disturbance Area (ha)	% of Change (Area / Volume)	Details of Change
Quest 29 additional land clearing required ²	26.16	26.16	0	0%	No further clearing is required.
Quest 29 project development envelope	139.5	139.5	0	0%	No change to development envelope is proposed.
Accommodation Camp					
Accommodation Camp	7.3	7.3	0	0%	No change in disturbance area or design is proposed.
Camp additional land clearing required ²	7.3	7.3	0	0%	No further clearing is required.
Camp project development envelope	17.8	17.8	0	0%	No change to development envelope is proposed.
Haul Road					
Haul Road and Access Roads	21.7	21.7	0	0%	No change in disturbance area or design is proposed.
Haul Road additional land clearing required ²	2	2	0	0%	No further clearing is required.
Haul Road project development envelope	21.9	21.9	0	0%	No change to development envelope is proposed.
Total Proposed Clearing²	368.86	368.86	0	0%	No further clearing is required.
Development Envelope	790	790	0	0%	No change to development envelope is proposed.

1- The water storage dam will be temporary located within the TSF and will occupy an area of 46.6 ha. At the end of mining, the water storage dam will be consumed for final TSF placement and therefore, it will be treated as part of the TSF for closure purposes.

2- The 4.5 ha of Annie's Dam pit is wholly within the TSF disturbance area and therefore the disturbance of the Annie's pits only accounts for Annie's Oakley Pit.

3- Required clearance value is based on disturbing the entire development envelope, which is considered overly conservative.

Section 3 Summary of Submissions Received

During the public consultation period, a total of nine submissions were received on the Draft EIS. Submitters generally provided several comments addressing multiple themes, totalling twenty five main themes as identified in Table 3-1. Among these themes, potential 'Impact to GDEs' was the most common theme raised, followed by potential 'Impact on Fauna and Flora' and 'Water Balance', 'Extraction and Storage'. Table 3-1 provides a list of the submitters and the respective theme/issue raised in their comments. A detailed list of the submissions received, the PGO response and where relevant proposed actions is provided in Section 4.

Table 3-1 Summary of Themes and Issues Received in Submissions

Stakeholder	Terrestrial Environmental Quality				Terrestrial Ecosystems		Hydrological Processes				Inland Water Environmental Quality				Aquatic Ecosystems	Community and Economy	Other Environmental Themes and Factors			General						
	Waste Rock Characterisation	Block Model for Waste Management	Waste Rock Dump (WRD) Design	Construction / Rehabilitation Material Availability	Impact on Fauna and Flora	Impacts to GDEs	Groundwater Model	Water Balance / Extraction / Storage	Hydrogeology and Hydrology	Pit Dewatering and Water Quality	Water Quality	Surface Water Runoff	Surface Water Discharge	Erosion and Sediment Control	Aquatic Fauna and Flora	Social and Economic Impacts	Cultural Heritage	Sea – Marine Ecosystems	Air – Atmospheric Processes	People – Human Health	Mine Closure Plan	Cumulative Impact Assessment	Mine Infrastructure Design	Commitment Register	Risk Assessment / Management Measures	Other
Northern Territory Environmental Protection Authority (NT EPA)	X	X	X	X	X	X	X	X	X	X	X	X	X			X			X		X	X	X			
Aboriginal Areas Protection Authority (AAPA)																X										

Section 3 Summary of Submissions Received

[illegible]

Section 3 Summary of Submissions Received

Transport and Civil Services Division																X				X							
Environment Centre NT (ECNT)	X				X	X													X					X		X	
NT Police, Fire and Emergency Services																											X
Total	2	1	1	2	3	5	2	3	2	1	2	2	2	2	0	2	1	0	2	1	1	1	2	1	2	4	

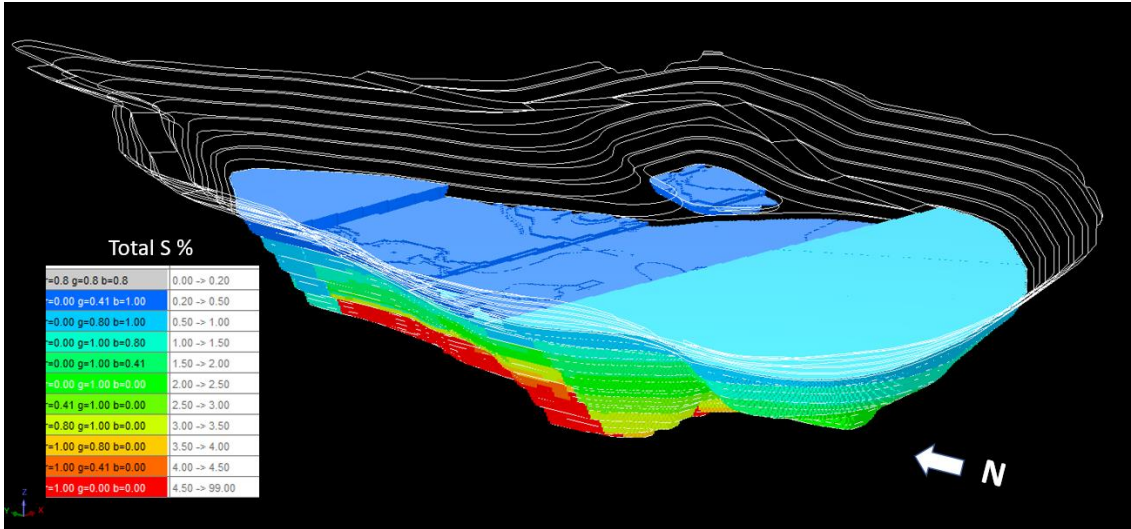
Section 4 Response to Submissions

This section collates all submissions received during the public consultation period for the Draft EIS. Table 4-1 identifies all comments received from each department or organisation and provides the proposed action/response. Where additional information or investigation was required, this has been included in Section 2 and Section 3and has been cross-referenced in Table 4-1.

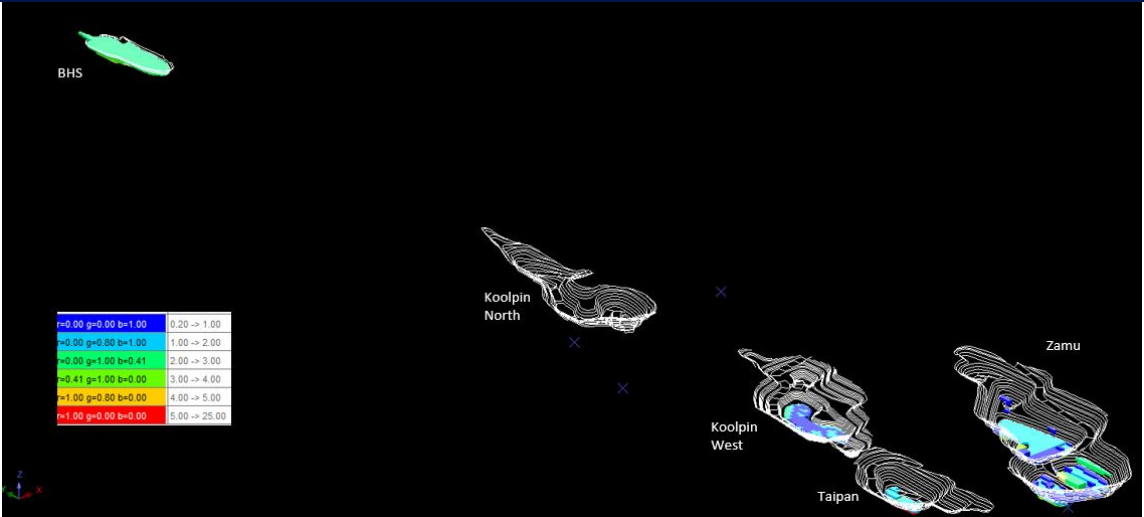
Table 4-1 Rustlers Roost and Quest 29 Draft EIS Submissions Received

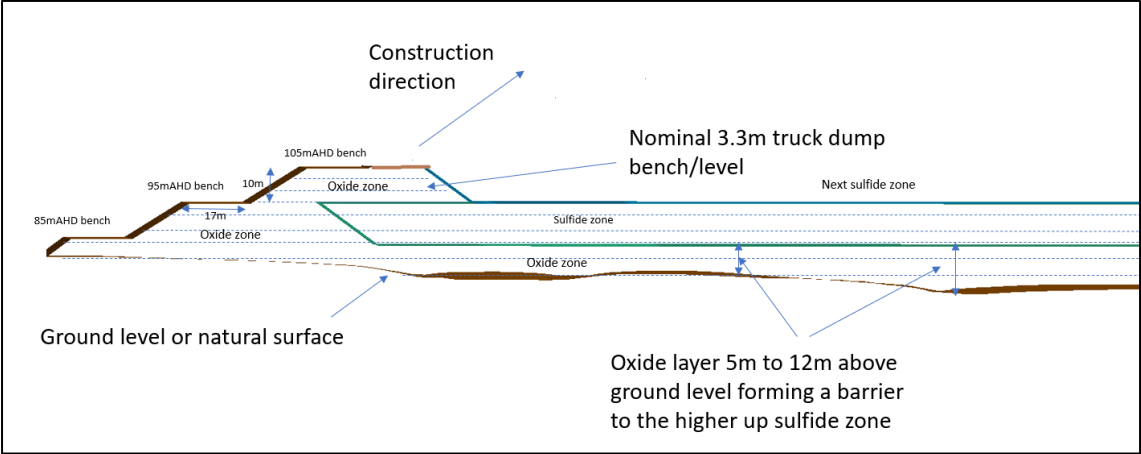
No.	EIS Section	Theme or Issue	Comment / Requested Additional Information	Required Action / Response
Northern Territory Environmental Protection Authority (NT EPA)				
1	Section 7.1, Appendix D, and Appendix L	Terrestrial environmental quality	Comment <u>Waste rock characterisation</u> It is estimated that 56.4 Mt and 12.1 Mt (total 68.5 Mt) of waste material will be produced from Rustlers Roost and Quest 29 pits respectively. A proportion will be used to backfill select pits, and the remainder will be managed as constructed waste rock dumps. For Rustlers Roost, waste was characterised based on sulfur data, and where sulfur data were not available, the visible presence of pyrite logged was used as an indicator. For Quest 29, ≤ 0.3 % gold concentration in ore is considered waste rock. Static test results suggest a high proportion of samples from the transition and oxide zone plot as UC. The waste rock characterisation studies and the kinetic test work to determine the physical and chemical characteristics of waste rock and contaminated materials related to the proposal are not complete. Additional Information Required The information is required to clarify and demonstrate further waste characterisation work is robust, and supports the development of a geochemical block model as a management tool for mine waste (Non Acid Forming (NAF), Potentially Acid Forming (PAF) and Uncertain (UC) material), the control of Acid and Metalliferous Drainage (AMD). 1. Complete the waste rock characterisation studies, including the kinetic testing program, to determine the physical and chemical characteristics of waste rock and contaminated materials to provide a robust dataset that gives a high degree of confidence in mine waste predictions. 2. Provide the results and interpretation of the kinetic test work apply these findings to mine waste management. 3. Clarify the criteria used for classification of oxide, transition and fresh material. 4. As part of the waste characterisation studies, clarify the number of samples where sulfur data were not available, and where the visible presence of pyrite logged was used as an indicator. 5. Review the dataset for the waste rock characterisation work, and ensure the sample size is representative, can statistically support the results, and can inform the block model described in item # 2 with a high degree of confidence.	Additional Information Point 1 The kinetic column program has now been completed for a 12 month period. Ten columns containing waste, low grade ore, ore and tailings have progressed through the 12-month schedule. The Material Characterisation Study provided in the Draft EIS contained the original month 5 data results. The Material Characterisation Study has been reissued with the month 12 data results and analysis provided as an attachment (refer to Appendix C of the Material Characterisation Report provided as Appendix F of the SEIS). Month 12 of the kinetic test was completed in June 2022. The results have been considered in the management and monitoring approaches included in the AMDMP (refer to Appendix H). Based on the 10 month and 12 month kinetic test results, PAF from Quest 29 will continue to leach acidic drainage for a considerable period of time. It is the ore samples that have the longest sulfide depletion time (>600 years), this is reflected in the results for the tailings >500 years for sulfide depletion (refer to Appendix C of the Material Characterisation Report provided as Appendix F). The approach of implementing a composite HPDE and CSL liner to the TSF and encapsulating PAF waste material is an outcome of the geochemical testing completed to date. However, the 12 month results indicate the waste rock generated at Rustlers Roost will likely contain less PAF than previously thought given additional NAF material may be present at Rustlers Roost in the transition zone with the PAF(LC) sample (Psl tr, column 2) currently classifying as NAF (refer to Appendix C of the Material Characterisation Report). The latest geochemical analysis results provide a high degree of confidence in mine waste predictions that are potentially an overestimate due to the conservative methodology applied to waste rock characterisation studies. Additional Information Point 2 The results of the kinetic testing program have informed the mine waste management approach, design and commitments presented in the EIS and SEIS. These include the following: ➤ The SEIS includes the TSF design report (Appendix G) that now accounts for a composite HDPE and CSL basin liner; ➤ The WRD design (Appendix J) assumes that any material classed as transitional or fresh is PAF for the purpose of handling and encapsulation. Based on the results of the kinetic column leach program and the block model, this is considered a highly conservative approach. While all five columns analysed for Quest 29 presented as PAF, three of the five for Rustlers Roost presented as NAF with two being in the fresh zone and one in the transitional zone; ➤ Capping of the WRD with suitable NAF material to reduce ongoing water infiltration and seepage; ➤ Rock lined drainage trenches will be the initial receiving structure for WRD runoff. The drainage trenches will capture the WRD runoff and slow the velocity of water running down the 17 degree slope to prevent erosion; ➤ To limit air and water contact with PAF material that causes AMD generation for the Rustlers Roost and Quest 29 WRDs: - Material classified as NAF will be placed at the outer annulus of the WRD; - NAF material with sufficient ANC will be placed on the natural surface, lining the drainage lines; - Temporary and/or final cover systems over waste rock will be designed to limit infiltration to the extent needed based on the propensity for the material to generate AMD; and - PAF material will be encapsulated by NAF within the central areas of the dump, not near the outer slopes or toe areas and covered with NAF waste material from the outer perimeter. ➤ The Annie Oakley and Annie’s Dam pits will be backfilled as part of closure; ➤ The material from the BHS (Quest 29) will be used for beneficial mine closure purposes, such as use in rehabilitation (capping) of the decommissioned heap leach facility in the Project area; ➤ To minimise erosion and offsite discharges of AMD, ESCPs will be designed and implemented; ➤ Ore will only be stored for extended periods on the ROM Pad; ➤ ROM pad or other areas which stockpile or process ore material will be bunded and surface water run-on and runoff controls implemented to manage stormwater and erosion;

No.	EIS Section	Theme or Issue	Comment / Requested Additional Information	Required Action / Response																				
				➤ Drainage from the ROM pad shall be directed to a stormwater sump which shall be managed to prevent overflow; ➤ Daily monitoring of waste rock handling and tailings disposal; ➤ The block model will be updated with regular sampling, will provide updated estimates of anticipated volumes of PAF and NAF material as mining continues, which will be used to develop management strategies for that material within the WRD and/or backfilled within the pits; ➤ Seepage control for the TSF will be designed that includes: - Low-permeability composite liner of HDPE and CSL over the entire base to inhibit infiltration into underlying soils/groundwater; - Cut-off key trenches along the embankment perimeter to reduce seepage along the interface between original ground and the new embankment; - Underdrainage collection system designed to reduce the phreatic surface within the tailings and embankments, reduce seepage potential, improves embankment stability, increases tailings density and maximises storage capacity, and increases geotechnical stability of the tailings mass adjacent to the embankment; - Embankment toe drains designed to reduce the phreatic surface within the tailings adjacent to the embankments and improve geotechnical stability of the tailings; and - Underdrainage collection sump installed at the lowest point in the TSF underdrainage collection system. The sump will be designed to route water back to the supernatant pond and ultimately into the process water circuit. ➤ Sampling will be undertaken for in-pit identification and differentiation of waste rock during construction and operation. This information will inform simulation modelling to confirm the thickness of cover needed to limit infiltration during a defined design-storm events. The AMDMP will be continuously updated as geochemical testing is undertaken during operation. The operational testing and acid base accounting including sulphide sulfur, NAG and ANC and metals content in waste will inform the selection of most appropriate contingency measures where water monitoring or visual indicators identify deteriorating conditions. This will include establishing trigger actions that are consistent with the Project WMP and define the actions to be taken when conditions change from normality and have the potential to trigger an event. Additional Information Point 3 Regarding the criteria used for classification of oxide, transition and fresh material the weathering class is provided in the core logging data. A description of the weathering classes, and how they relate to the logging for Mt Bundy area is included in the new block model memorandums provided in Appendix A and B of the Material Characterisation Report (Appendix F of the SEIS). In the Mt Bundy area, the oxide zone is characterised as generally brown to red colour due to oxidation of Fe, broken core from the logging, no sulphide present and lighter weight. The oxidation class definition is provided in the table below. <table><tr><th></th><th colspan="2">Degree of weathering</th><th>Oxidation of primary sulphides</th><th>Dissolution of primary carbonates</th><th>Density</th></tr><tr><td>Oxide</td><td rowspan="3"> ↑ ↑ ↑ Increase in the degree of weathering </td><td>Moderately to intensely weathered</td><td>Complete oxidation and destruction</td><td>Complete dissolution</td><td rowspan="3"> ↑ ↑ ↑ Decrease in density </td></tr><tr><td>Transitional</td><td>Weakly to moderately weathered</td><td>Partial oxidisation</td><td>Partial dissolution</td></tr><tr><td>Fresh</td><td>No weathering</td><td>No oxidation</td><td>No dissolution</td></tr></table> Additional Information Point 4 For Rustlers Roost (2,154 samples) and Quest 29 (773 samples), none of the samples available for selection had assay data containing a sulfur value. Sulfur assay data was available for historical samples and this was utilised to inform the selection of the latest samples. All samples for testing were selected by the method described in the Material Characterisation Report (Appendix F), that included the use of visible presence of sulfide (pyrite) in the logs. Samples were selected from each lithology and each core where that lithology was recorded to provide as best a spatial representation as possible. Sampling was undertaken from the pulps remaining from exploration assays. For Rustlers Roost these samples are those in storage from the 2018 drill program. material from nine drill holes were available for testing. At Quest 29		Degree of weathering		Oxidation of primary sulphides	Dissolution of primary carbonates	Density	Oxide	↑ ↑ ↑ Increase in the degree of weathering	Moderately to intensely weathered	Complete oxidation and destruction	Complete dissolution	↑ ↑ ↑ Decrease in density	Transitional	Weakly to moderately weathered	Partial oxidisation	Partial dissolution	Fresh	No weathering	No oxidation	No dissolution
	Degree of weathering		Oxidation of primary sulphides	Dissolution of primary carbonates	Density																			
Oxide	↑ ↑ ↑ Increase in the degree of weathering	Moderately to intensely weathered	Complete oxidation and destruction	Complete dissolution	↑ ↑ ↑ Decrease in density																			
Transitional		Weakly to moderately weathered	Partial oxidisation	Partial dissolution																				
Fresh		No weathering	No oxidation	No dissolution																				

No.	EIS Section	Theme or Issue	Comment / Requested Additional Information	Required Action / Response
				samples were selected from six drill holes undertaken during the 2020 drill program which targeted the waste units within the proposed expanded pits. The sampling program was designed to sample all major lithologies described in the available data, with coverage of all weathering zones while providing as great a spatial distribution as possible. The samples were selected from the assay database. This data set contained the hold identification (i.d.), sample i.d., gold concentration and also provided some indication of the sulfide mineralogy present. Additional Information Point 5 The collection of data for the waste characterisation was designed to fill data gaps with respect to transitional and fresh weathering zone materials given that previous assessments were limited to the oxide and transitional zone. The sampling was undertaken on waste materials as these were the materials intersected by the cores available for testing. Most material within the ore zone was used for resource estimation purposes. For the kinetic program, a sample of an ore interval was provided as an additional sample to the data set. The sample size assessed to date is considered sufficient for an exploration/resource definition phase of a mining project as defined by DoITR 2011 (noting the 2016 update references the 2011 document for sample densities). The spatial and lithological selection of the samples provide a good representation on which to base the conservative block model. The data has been used in development of the block model discussed in response to comment no. 2. The models have used statistical assessment of the sulfur distribution and have provided conservative estimates of PAF distribution where they have assumed all sulfur is sulfide and secondly if sulfur is present above 0.2%S then the material is PAF. There is a high degree of confidence that the block model presents a conservative estimate and spatial distribution of PAF at Rustlers Roost and Quest 29.
2	Appendix D – Materials Characterisation Study	Terrestrial environmental quality	Comment <u>Block model for waste management</u> The terms of reference (TOR) required details of the design for each of the key proposal components, including geochemical characterisation (to specified minimum standards) and outcomes of the geochemical characterisation, which will inform the geological waste block model included as part of the draft environmental impact statement (EIS). The Commonwealth government guidelines “Preventing acid and metalliferous drainage – leading practice sustainable development programme for the mining industry” (DFAT, 2016) states that the waste block model should be integrated with the ore block model and the mine plan to optimise materials handling on site and to define final pit wall rock types. The materials characterisation study does not demonstrate a reasonable level of certainty regarding the geochemical characteristics of waste and the potential for the proposal to generate Acid and Metalliferous Drainage (AMD). The data available for the draft EIS was not sufficient to develop a waste block model, which is a significant part of mine planning and closure and should be included in the EIS. Additional Information Required 1. Using the data from the waste characterisation work referred to in item #1 above, develop a waste block model to inform the management of potential AMD from mine waste and exposed pit walls. 2. Estimate volumes of NAF and PAF waste rock and waste rock with saline and/or metalliferous drainage characteristics under near neutral conditions with a reasonable level of certainty.	Additional Information Point 1 An integrated ore and waste/sulfur block model has been prepared for the Project based on the geochemical data received from laboratory analysis to date. The models have used statistical assessment of the sulfur distribution and have provided conservative estimates of PAF distribution where they have assumed all sulfur is sulfide and secondly if sulfur is present above 0.2%S then the material is PAF. This approach is conservative and is expected to have resulted in an overestimation of the actual amount of PAF at Rustlers Roost and Quest 29. Primary Gold has committed to ongoing infield monitoring to validate the model. The block model will be continuously updated to identify actual S% content of waste material and inform the handling and placement in accordance with the AMDMP. For Rustlers Roost the modelling indicates the higher sulfur content material is near the 480 mRL to 460 mRL, about 100 m below surface (-20 to -40m AHD). Below the 530 mRL or 30 m AHD level there is a considerable amount of PAF material in the pit. The figure below provides an extract of the block model showing material with a S% content above 0.2% which is the cut-off concentration for PAF. The Sulfur model has >0.2% total sulfur results below the geological oxide zone, confirming the oxide material is NAF.  Note – Refer to Appendix F – Material Characterisation Plan for the full block model description and output images. Additional Information Point 2

No.	EIS Section	Theme or Issue	Comment / Requested Additional Information	Required Action / Response																																																										
				Evaluation of the Sulfur model using 0.2% total sulfur as a cutoff, the following tonnages of NAF and PAF are estimated from the sulfur model. <table><tr><th>Item</th><th>Tonnes Mt</th><th>Total sulphur %</th><th>% of pit waste</th></tr><tr><td>PAF waste >0.2% S</td><td>19.34</td><td>1.46</td><td>38%</td></tr><tr><td>NAF waste <0.2% S</td><td>31.56</td><td>0.00</td><td>62%</td></tr></table> In the designed pit the PAF waste tonnes with a S% above 0.2% amounts to 19.34 Mt at an average percentage of 1.46% sulfur. There is approximately 0.29 Mt of sulfur in the PAF pit waste. In the Sulfur model 62% of the waste is classed as NAF and 38% is PAF. With a total waste volume of 56.4 Mt (inclusive of all three pits at Rustlers Roost), this provides 37.06 Mt of waste material below the 0.2% sulfur content cutoff (NAF) (with 31.56 Mt coming from the main Rustlers Roost pit). All construction material volumes for the WRDs and TSF at Rustlers Roost are presented in the table below (also refer to Appendix B). The table below presents the material source locations and destinations for this material in the Project. <table><tr><th rowspan="2">Material Source</th><th rowspan="2">Quantity (Mlcm)</th><th colspan="4">Destination</th></tr><tr><th>North WRD¹</th><th>South WRD¹</th><th>TSF Walls</th><th>TSF Top Capping</th><th rowspan="2">Total (Mlcm)</th></tr><tr><td>Historic Leach Pad</td><td>3.40</td><td>0</td><td>0</td><td>1.50</td><td>1.90</td><td>3.40</td></tr><tr><td>Historic WRD</td><td>1.75</td><td>0.17</td><td>0.17</td><td>1.41</td><td>0</td><td>1.75</td></tr><tr><td>Main Pit</td><td>10.30</td><td>6.50</td><td>3.80</td><td>0</td><td>0</td><td>10.30</td></tr><tr><td>TSF Floor</td><td>2.99</td><td>0</td><td>0</td><td>2.99</td><td>0</td><td>2.44</td></tr><tr><td>Total</td><td>18.44</td><td>6.67</td><td>3.97</td><td>5.90</td><td>1.9</td><td>18.44</td></tr></table> 1 – Including for base and capping The waste block model identifies 31.56 Mt of waste material coming from the main Rustlers Roost pit, below the 0.2% sulfur content cut-off (NAF). This refined NAF estimate is higher than the initial estimate presented in the Draft EIS of 25.9 Mt. Based on a conservative conversion of million lcm to tonnes the Rustlers Roost construction will require 37.06 Mt (18.44 Mlcm) of waste material. Of this, only 20.70 Mt (10.30 Mlcm) is required to be sourced from the main pit (refer to table above), thus providing 10.86 Mt excess of NAF oxide material from the main pit and an additional 5.5 Mt from the Annie Oakley pit (3.9 Mt oxide) and Annie’s Dam pit (1.6 Mt oxide) that is a buffer for construction requirements (total of 16.36 Mt). The Sulfur model indicates that there is also NAF material in the transitional and fresh zones. By assuming any material that is classed as transitional or fresh is classed as PAF leads to a conservative building of the WRDs. For Quest 29 the modelling indicates there is high sulfur content (PAF) material occurring in the base of the pits. The exceptions being BHS pit is high total sulfur (3% to 4%) from near surface and Koolpin North pit has no high S% sulfur (PAF material). In the mine planning, oxide material will be used to encapsulate the transitional and fresh material. Most of the +0.2% sulfur material is below the base of oxide. The figure below provides an extract of the block model showing material with a S% content above 0.2.	Item	Tonnes Mt	Total sulphur %	% of pit waste	PAF waste >0.2% S	19.34	1.46	38%	NAF waste <0.2% S	31.56	0.00	62%	Material Source	Quantity (Mlcm)	Destination				North WRD ¹	South WRD ¹	TSF Walls	TSF Top Capping	Total (Mlcm)	Historic Leach Pad	3.40	0	0	1.50	1.90	3.40	Historic WRD	1.75	0.17	0.17	1.41	0	1.75	Main Pit	10.30	6.50	3.80	0	0	10.30	TSF Floor	2.99	0	0	2.99	0	2.44	Total	18.44	6.67	3.97	5.90	1.9	18.44
Item	Tonnes Mt	Total sulphur %	% of pit waste																																																											
PAF waste >0.2% S	19.34	1.46	38%																																																											
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Historic Leach Pad	3.40	0	0	1.50	1.90		3.40																																																							
Historic WRD	1.75	0.17	0.17	1.41	0	1.75																																																								
Main Pit	10.30	6.50	3.80	0	0	10.30																																																								
TSF Floor	2.99	0	0	2.99	0	2.44																																																								
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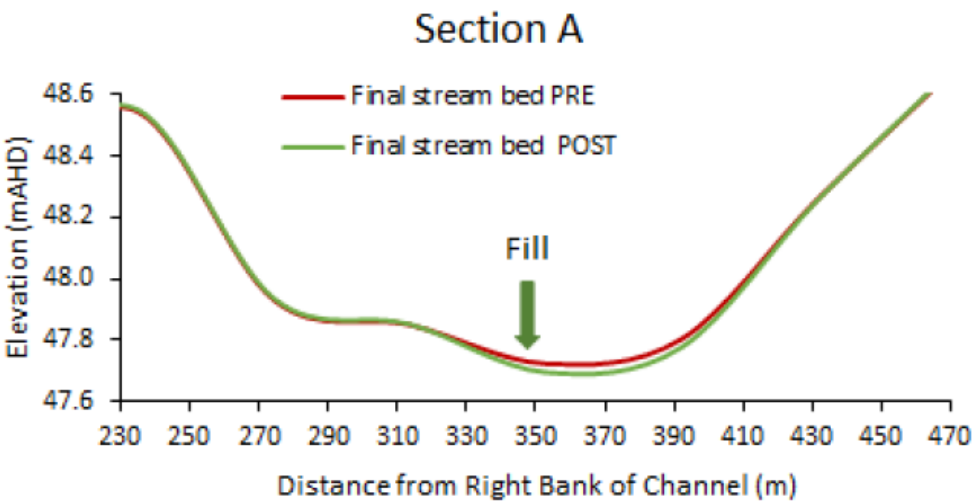
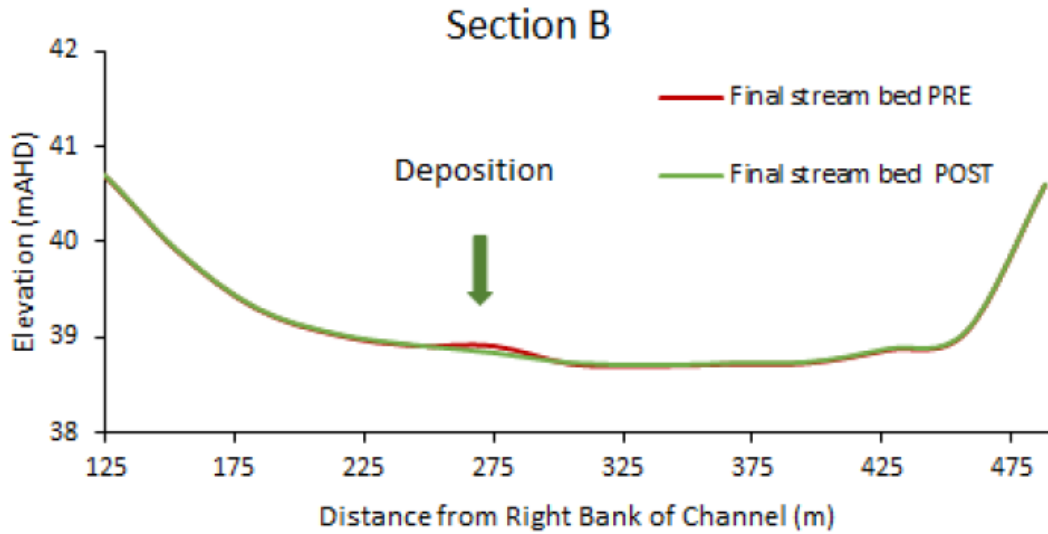
No.	EIS Section	Theme or Issue	Comment / Requested Additional Information	Required Action / Response
				 Note – Refer to Appendix F – Material Characterisation Plan for the full block model description and output images In the designed pits the PAF waste tonnes with a 5% above 0.2% amounts to 0.8 Mt at an average percentage of 2.30% sulfur. This equates to approximately 18.8 kt of sulfur in the PAF pits waste. The Quest 29 pits are relatively shallow, consequently this results in a relatively low tonnage of PAF material. With a total waste volume of 12.1 Mt, this provides 11.3 Mt of waste material below the 0.2% sulfur content cutoff (NAF). This provides greater certainty that sufficient NAF material is available for construction and PAF encapsulation purposes. In the construction of the Quest 29 WRD the proponent has used the oxidation class of Zamu pit as an indicator of PAF. Oxide material is classed as NAF and transitional and fresh material is classed as PAF. It can be concluded from the sulfur block model analysis that using oxidation class to determine PAF is over conservative and the sulphide model has substantially less PAF. Thus, the method of building the Quest 29 WRD detailed in Appendix J is extremely conservative using the oxidation class to estimate PAF. Details of the separate Rustlers Roost and Quest 29 block models have been integrated into the latest version of the Materials Characterisation Report (Appendix F).
3	Section 4.7 - Waste Rock Dump	Terrestrial environmental quality	Comment There are potential issues and uncertainty with the waste rock dump (WRD) design and construction that demonstrates avoidance and/or mitigation of risks to the environment including: ▪ no apparent low permeability base to prevent AMD migrating to groundwater. ▪ no apparent low permeability material encapsulating PAF waste to limit gas and water infiltration. ▪ 4 x 10 m high lifts with a face angle of 37° that are proposed for the construction of the WRDs are unlikely to provide adequate compaction to limit gas and water infiltration. ▪ the bulk of the acid neutralising capacity present in the oxide waste rock may be unavailable to neutralise AMD due to the particle size and coating that will occur on the oxide rock. ▪ no methodology has been outlined for separating PAF and NAF waste in the transitional zone. This is a key component of waste rock management. Additional Information Required 1. Provide an improved classification system that considers more than just PAF/NAF in waste rock properties as required in items #1 and #2 above. 2. Provide methods for in-pit identification, and differentiation of waste rock with different geochemical properties to ensure appropriate segregation, handling and disposal. 3. Incorporate consideration of different waste rock drainage characteristics such as saline and/or metalliferous and/or acidic in terms of management of AMD generation. 4. Provide details of the materials, design, and methods of construction that ensures adequate compaction of the WRD and subsequent (4) lifts is achieved to limit gas and water infiltration.	Additional Information Point 1 An integrated ore and waste/sulfur block model has been prepared for the Project based on the geochemical data received from laboratory analysis to date. All samples selected for phase 2 of the geochemical program were digested with four acids and their elemental composition determined. It was found that there is little to distinguish the lithologies or which weathering zone they are from. Figures of all trace elements assessed for each weathering zone is presented in the Materials Characterisation Study, Appendix F. Refer to the response provided for Item 2 and Appendix F. Additional Information Point 2 Regarding methods for in-pit identification and differentiation of waste rock, during operations waste rock sampling and acid base accounting will continue, including sulphide sulfur, NAG and ANC and metals content in waste for mining planning, mapping, and marking out on ground and for closure planning (refer to the additional commitments below). Additional Information Points 3 and 4 Details of the WRD design and construction approach are provided in Section 4.7 of the Draft EIS and within the supporting Materials Characterisation Study (Appendix F). This content has been supplemented with additional design, construction methodology and final capping information, which is provided in Appendix J of this SEIS. Construction of the WRDs will commence with the placement of NAF material for the base and outer annulus. PAF material encountered will be placed onto of the NAF base, encapsulated within the centre of the WRD. No PAF material will be placed on outer perimeter, slopes, toe, surface or base of the dump. Both the Rustlers Roost and Quest 29 WRDs will be constructed with a compacted oxide (NAF) material base prior to placement of sulfide material. This compacted oxide base will elevate the sulfide material above any groundwater flow at the ground level and the WRD interface. The final design includes the placement of stored waste cladding material to the top of the WRDs, approximately 5 m thick and compacted every 1 m lift. The final surface of the top cladding will be shaped into a slight dome shape to prevent water collecting on the top of the WRD, facilitate runoff and limit seepage. The compacted cladding will be topped with 0.2 m of topsoil spread and seeded with low level native shrubs and grasses. Rock lined trenches will be constructed to capture runoff water and slow velocity of water running down the 17 degree slopes to prevent

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				erosion. The drainage, topsoil capping and revegetation approach is consistent with the Western Australia Guidelines on Waste Rock Dumps (DMIRS 2021). Regarding provision of an improved classification system, an integrated ore and waste block model has been prepared for the project based on the geochemical data received from laboratory analysis. Total sulfur % has been added to the geological model to schedule and locate waste for encapsulating. Total sulfur is used because it provides a conservative estimate of the sulfide content and acid potential of a sample (ANC). Other waste rock elements that may mobilise under neutral conditions shall be monitored for during operation. A key aspect for this mine is managing mineral waste to minimise or eliminate impacts to groundwater and surface water. For example data shall be gathered data on: - Field water quality parameters at time of sample collection: pH, temperature and electrical conductivity [EC]; and - Laboratory water quality parameters: EC, major anions (SO₄, Cl, alkalinity and acidity), major cations (Ca, Mg, Na and K) and a broad suite of dissolved metals/metalloids by ICPMS – including, but not limited to Ag, Al, As, B, Ba, Be, Cd, Co, Cr, Cu, Fe, Hg, Mn, Mo, Ni, Pb, Sb, Se, V, Zn. Refer to Section 6.4 of the updated Material Characterisation Report in Appendix F of this SEIS for further details. Regarding compaction, the height between working benches of the construction WRD is 10 m, the width of the berms is 17 m, and the batter angle is 32 degrees. The 10 m bench height will be constructed by three lifts of close packed paddock dumping of the oxide material at the outer edge of the WRD and then dozing the material flat. The internal sulfide zone material will also be paddock dumped and dozed flat. This will be equivalent to constructing the 10 m benches in nominal three separate 3.3 m lifts. The top of each nominal 3.3 m lift will be flattened and compacted by a dozer first and then by wheel compaction by the mine dump trucks when the next lift is being constructed. The figure below presents the construction approach. Refer to Appendix J for further details.  Additional Commitment – During operations waste rock sampling and Acid base accounting will continue, including sulphide sulfur, NAG and metals content in waste for mining planning, mapping, and marking out on ground and for closure planning. Additional Commitment – As mining progresses the existing Sulfur block model will be continuously updated to identify actual S% content of waste material and inform the handling and placement in accordance with the AMDMP.
4	Section 4 and Appendix T – AMD Management Plan	Terrestrial environmental quality	Comment The TOR required information on construction materials required for each mine site component including major types, quantities and specifications of materials for different purposes such as lining and capping, and sources (both on and off lease), storage requirements and potential hazards. The Draft EIS does not provide adequate information to demonstrate that sufficient material with appropriate characteristics is available for construction of the mine site components such as dams, the WRD and tailings storage facility (TSF), and where it would otherwise be sourced. For example, the TSF is proposed to be lined with low permeability clay. The detail to support the adequacy of volumes and characteristics of the in-situ material as an effective liner for the TSF, has not been provided in the Draft EIS. Additional Information Required	Additional Information Points 1 and 2 A full estimate of construction material and plant for the project is provided in Appendix B of this SEIS. Appendix J is a collation of the construction material estimates from the feasibility analysis. The construction material volumes for the WRDs and TSF at Rustlers Roost are presented in the table below (also refer to Appendix J).

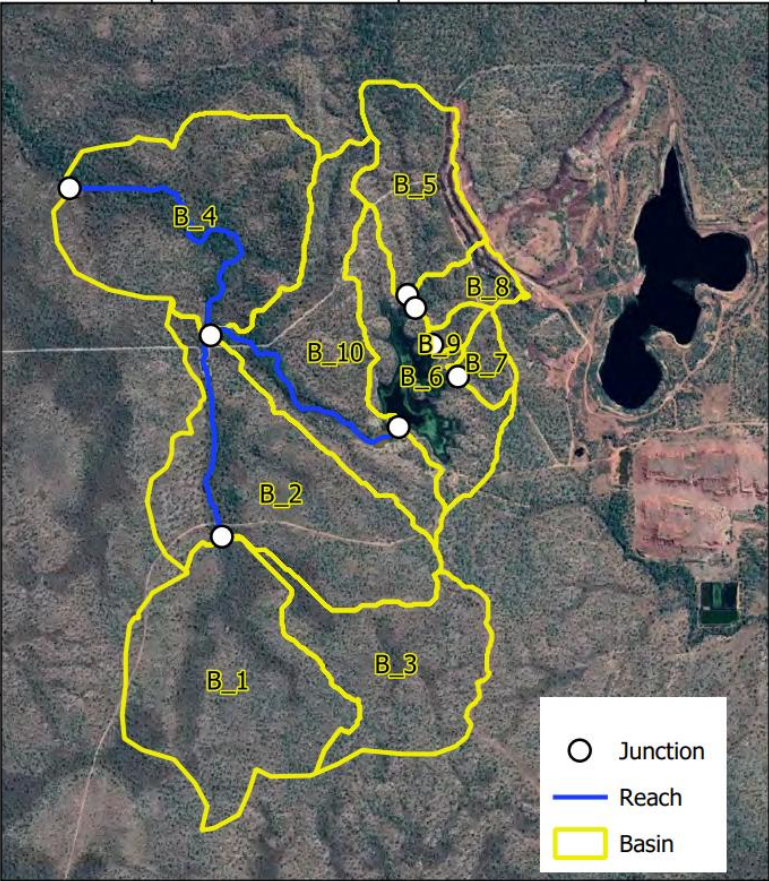
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			1. Determine (identify and quantify) the availability of suitable material (to meet target specifications) on the site for construction of base and embankments of waste storage facilities. 2. Develop strategies and a contingency plan for obtaining suitable material or alternatives to liners and covers on waste storage facilities if suitable material is not available.	<table><tr><th rowspan="2">Material Source</th><th rowspan="2">Quantity (Mlcm)</th><th colspan="4">Destination</th><th rowspan="2">Total (Mlcm)</th></tr><tr><th>North WRD¹</th><th>South WRD¹</th><th>TSF Walls</th><th>TSF Top Capping</th></tr><tr><td>Historic Leach Pad</td><td>3.40</td><td>0</td><td>0</td><td>1.50</td><td>1.90</td><td>3.40</td></tr><tr><td>Historic WRD</td><td>1.75</td><td>0.17</td><td>0.17</td><td>1.41</td><td>0</td><td>1.75</td></tr><tr><td>Main Pit</td><td>10.30</td><td>6.50</td><td>3.80</td><td>0</td><td>0</td><td>10.30</td></tr><tr><td>TSF Floor</td><td>2.99</td><td>0</td><td>0</td><td>2.99</td><td>0</td><td>2.44</td></tr><tr><td>Total</td><td>18.44</td><td>6.67</td><td>3.97</td><td>5.90</td><td>1.9</td><td>18.44</td></tr></table> 1 – Including for base and capping The waste block model identifies 31.56 Mt of waste material coming from the main Rustlers Roost pit, below the 0.2% sulfur content cutoff (NAF). This refined NAF estimate is higher than the initial estimate presented in the Draft EIS of 25.9 Mt. Based on a conservative conversion of million lcm to tonnes the Rustlers Roost construction will require 37.06 Mt (18.44 Mlcm) of waste material. Of this, only 20.70 Mt (10.30 Mlcm) is required to be sourced from the main pit (refer to table above), thus providing 10.86 Mt excess of NAF oxide material from the main pit and an additional 5.5 Mt from the Annie Oakley pit (3.9 Mt oxide) and Annie’s Dam pit (1.6 Mt oxide) that is a buffer for construction requirements (total of 16.36 Mt). There is also excess NAF material proposed to be sourced from stripping of the TSF footprint, the Leach pad and some off the top the old WRD. The estimate of available NAF material for construction of the WRD is considered conservative as the entire transition and fresh zones have been assumed to be PAF, which is unlikely to be the case. The WRD design accounts for the following encapsulation and capping layers: ▪ Oxide NAF material will used to build the base of the WRD from ground level; ▪ A 5 m thick oxide layer will be placed on top of the WRD compacted in 1 m lifts; and ▪ A 0.2 m final topsoil layer. As per the assessment detailed in Appendix J, as estimated 1,978,820 m² (1.98 Mlcm) of topsoil will be stripped and available for capping and rehabilitation purposes (based on a nominal topsoil depth of 0.5 m). The topsoil stripping areas are identified in Appendix G and have been calculated to match the quantity required for rehabilitation purposes. The quantity required per key infrastructure component in Mlcm is: ▪ TSF – 1.18; ▪ North WRD – 0.08; ▪ South WRD – 0.08; ▪ Administration and Operations Area – 0.01; and ▪ Misc. Disturbed Areas – 0.62. The geochemical testing of a combined tailings sample derived from the different ore bodies was conducted by CDM Smith during the study. Knight Piesold conducted an independent review of the report for the TSF feasibility design report. Based on the results it was determined that a low permeability capping layer is necessary to reduce long-term infiltration and oxidation. A composite store and release cover system is considered appropriate. The TSF design parameters include the following capping estimates: ▪ 0.5 m capillary break, comprising mine waste rockfill material (910,000 m³); ▪ 0.3 m thick low permeability layer (550,000 m³); and ▪ 0.2 m thick topsoil as growth medium (445,000 m³). A low-permeability composite liner of HDPE and CSL will be constructed over the entire TSF basin area, comprising either reworked in-situ material or imported low permeability material for the CSL component. The TSF design incorporates a 300 mm thickness imported (or 200 mm thickness in situ) CSL across the TSF basin. The design feasibility report for the TSF (Appendix G) quantifies the volume of in-situ material available for the CSL (1,338,000 m³) and the additional volume of external low permeability material required to supplement this (182,000 m³). Based on the geotechnical analysis, sufficient in-situ material for the embankment exists onsite and it is anticipated that further material is not required to be imported from offsite.	Material Source	Quantity (Mlcm)	Destination				Total (Mlcm)	North WRD ¹	South WRD ¹	TSF Walls	TSF Top Capping	Historic Leach Pad	3.40	0	0	1.50	1.90	3.40	Historic WRD	1.75	0.17	0.17	1.41	0	1.75	Main Pit	10.30	6.50	3.80	0	0	10.30	TSF Floor	2.99	0	0	2.99	0	2.44	Total	18.44	6.67	3.97	5.90	1.9	18.44
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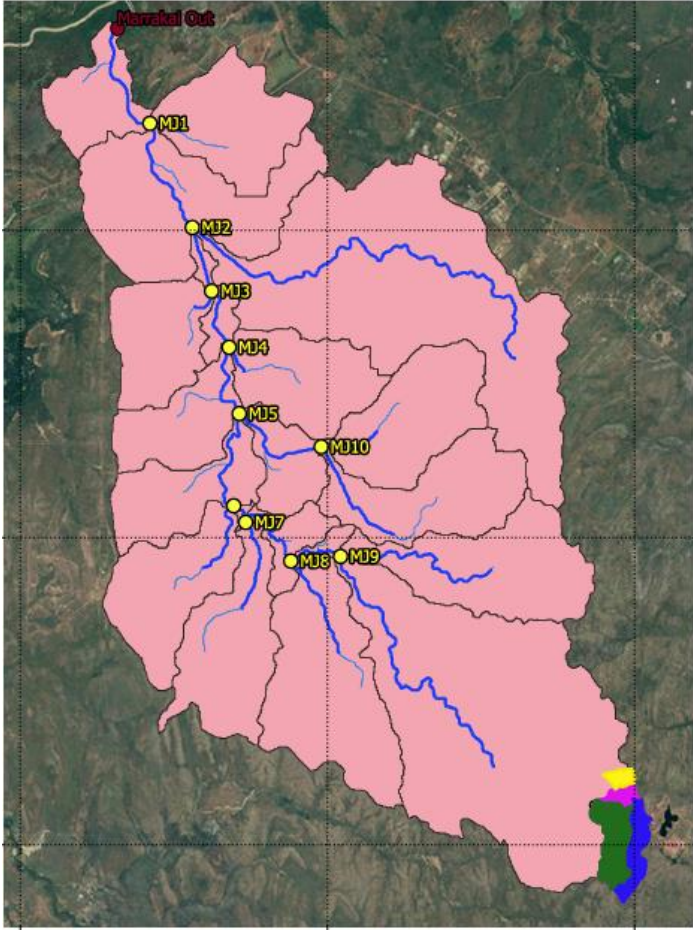
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5	Section 7.5.7	Terrestrial ecosystems	Comment The Draft EIS does not consider the impacts of increased flows on riparian vegetation, despite modelling indicating that discharges could double or potentially triple surface flow volumes in receiving waterways. Additional Information Required Demonstrate that riparian vegetation will not be significantly impacted by modelled discharge and flows from the mine site.	Additional Information Point 1 An updated hydrological assessment has been completed to consider the potential change in water flows in the surface water systems using hydrologic modelling. The assessment also used hydraulic modelling to provide flow velocities to assess changes in riparian vegetation and aquatic ecosystems. The modelling has considered changes in system flows due to the physical alterations in the catchment from the Project and from the episodic discharges due to dewatering. For the pre and post-development scenario the model applied a 90-year rainfall scenario increasing due to climate change using the RCP 4.5 model to both mine landform models, inserted in the broader catchment. This gives flows at points throughout the catchment for the 90-year period. From the 90-year+ flows for each landform the annual peak discharge was extracted giving 90+ data points for each. Long-term hydrologic modelling was conducted to assess the effects of mine redevelopment on the Marrakai, Mt Bunday, Charles Creek and the Mary River. Two simulations for the period from 1 October 2030 to 30 September 2121 were run for the catchments with inputs from the mining areas in their present condition before the redevelopment and in the post-redevelopment condition. A climate change component using the RCP 4.5 model was applied to both scenarios. The main approach was to assess changes in flow regimes of the creeks pre- and post-redevelopment. Two statistical methods were used to assess changes: ▪ Log Pearson 3 distribution: The annual peak discharges were assessed at intervals down the creek using the 2030 to 2121 simulations. Annual peak discharges for the simulated pre- and postmining conditions we extracted, and log-Person 3 (LP3) distributions were. For all catchments, the relationships showed little change in frequency distributions between the pre- and post-mining condition. ▪ Nash-Sutcliffe statistic (NSS): This the statistic used in HEC-HMS to assess fits of predicted to observed hydrographs. In this study the pre-redevelopment hydrographs were used as observed hydrograph and the post-redevelopment compared and the statistic noted. The following tables present the pre- and post-development peak discharges and total discharges for three systems relevant to the Project. Table 1 – Charles Creek Comparison of Pre- and Post-Development Peak and Total Discharges <table><tr><th rowspan="2">Junction</th><th rowspan="2">Change in drainage area (%)</th><th colspan="3">Pre-redevelopment</th><th colspan="3">Post-redevelopment</th><th rowspan="2">Nash-Sutcliffe statistic</th><th rowspan="2">Change in total volume (%)</th></tr><tr><th>Peak discharge (m³/s)</th><th>Total discharge (TL)</th><th>Average annual discharge (GL)</th><th>Peak discharge (m³/s)</th><th>Total discharge (TL)</th><th>Average annual discharge (GL)</th></tr><tr><td>CJ9</td><td>0</td><td>55.6</td><td>1.76</td><td>19.4</td><td>57.1</td><td>1.75</td><td>19.3</td><td>0.998</td><td>-0.6</td></tr><tr><td>CJ5</td><td>0</td><td>74.4</td><td>2.53</td><td>27.8</td><td>75.0</td><td>2.52</td><td>27.6</td><td>0.999</td><td>-0.4</td></tr><tr><td>Outlet</td><td>0</td><td>106.2</td><td>3.78</td><td>41.6</td><td>107.1</td><td>3.77</td><td>41.5</td><td>1</td><td>-0.3</td></tr></table> Table 2 – Marrakai Creek Comparison of Pre- and Post-Development Peak and Total Discharges <table><tr><th rowspan="2">Junction</th><th rowspan="2">Change in drainage area (%)</th><th colspan="3">Pre-redevelopment</th><th colspan="3">Post-redevelopment</th><th rowspan="2">Nash-Sutcliffe statistic</th><th rowspan="2">Change in total volume (%)</th></tr><tr><th>Peak discharge (m³/s)</th><th>Total discharge (TL)</th><th>Average annual discharge (GL)</th><th>Peak discharge (m³/s)</th><th>Total discharge (TL)</th><th>Average annual discharge (GL)</th></tr><tr><td>J9</td><td>0.73</td><td>245.6</td><td>9.10</td><td>100.0</td><td>244.3</td><td>9.03</td><td>99.3</td><td>1</td><td>-0.7</td></tr><tr><td>Outlet</td><td>0.61</td><td>316.3</td><td>16.27</td><td>178.8</td><td>315.6</td><td>16.21</td><td>178.1</td><td>1</td><td>-0.4</td></tr></table> Table 3 – Mount Bunday Creek Comparison of Pre- and Post-Development Peak and Total Discharges <table><tr><th rowspan="2">Junction</th><th rowspan="2">Change in drainage area (%)</th><th colspan="3">Pre-redevelopment</th><th colspan="3">Post-redevelopment</th><th rowspan="2">Nash-Sutcliffe statistic</th><th rowspan="2">Change in total volume (%)</th></tr><tr><th>Peak discharge (m³/s)</th><th>Total discharge (GL)</th><th>Average annual discharge (GL)</th><th>Peak discharge (m³/s)</th><th>Total discharge (GL)</th><th>Average annual discharge (GL)</th></tr><tr><td>J26</td><td>-</td><td>3.4</td><td>82.5</td><td>0.91</td><td>9.9</td><td>340.8</td><td>3.75</td><td>-</td><td></td></tr><tr><td>J15</td><td>6.5</td><td>85.8</td><td>2611.3</td><td>28.7</td><td>86.9</td><td>2784.3</td><td>30.6</td><td>0.99</td><td>6.6</td></tr><tr><td>J28</td><td>3.3</td><td>160.4</td><td>5520.6</td><td>60.7</td><td>162.1</td><td>5693.6</td><td>62.6</td><td>1</td><td>3.1</td></tr><tr><td>Outlet</td><td>1.8</td><td>245.7</td><td>9735.9</td><td>107.0</td><td>246.7</td><td>9908.9</td><td>108.9</td><td>1</td><td>1.8</td></tr></table> Comparing the distributions for each landform, pre- and post-redevelopment there is no significant difference in pre- and post-redevelopment peak discharge, total discharge and mean annual discharge at the studied junctions, a part from J26 at Mount Bunday Creek which is the entry point of changed flow (this change in flow is fully absorbed in the greater catchment). The results indicate that in the long term there will be no significant change to flow regimes in the broader catchments. For the hydraulic modelling to assess inundation areas and flow velocities the 1% AEP (1 in 100y) and 0.1% AEP (1in 1000y) rainfall events were applied to both the pre-development and post-development landforms in the broader catchments. For each of the creek systems the results indicate that visual inspections of simulated water depth and velocity plotted along the thalweg of the stream channels showed little difference in the hydraulic parameters for the pre- and post-redevelopment conditions. Peak discharges and hydrographs were determined using HEC-HMS. The Nash-Suttcliffe statistic used to test difference between conditions was generally ≈ 1 indicating no significant difference in the hydrology of the pre and post-redevelopment conditions (refer to Appendix E).	Junction	Change in drainage area (%)	Pre-redevelopment			Post-redevelopment			Nash-Sutcliffe statistic	Change in total volume (%)	Peak discharge (m³/s)	Total discharge (TL)	Average annual discharge (GL)	Peak discharge (m³/s)	Total discharge (TL)	Average annual discharge (GL)	CJ9	0	55.6	1.76	19.4	57.1	1.75	19.3	0.998	-0.6	CJ5	0	74.4	2.53	27.8	75.0	2.52	27.6	0.999	-0.4	Outlet	0	106.2	3.78	41.6	107.1	3.77	41.5	1	-0.3	Junction	Change in drainage area (%)	Pre-redevelopment			Post-redevelopment			Nash-Sutcliffe statistic	Change in total volume (%)	Peak discharge (m³/s)	Total discharge (TL)	Average annual discharge (GL)	Peak discharge (m³/s)	Total discharge (TL)	Average annual discharge (GL)	J9	0.73	245.6	9.10	100.0	244.3	9.03	99.3	1	-0.7	Outlet	0.61	316.3	16.27	178.8	315.6	16.21	178.1	1	-0.4	Junction	Change in drainage area (%)	Pre-redevelopment			Post-redevelopment			Nash-Sutcliffe statistic	Change in total volume (%)	Peak discharge (m³/s)	Total discharge (GL)	Average annual discharge (GL)	Peak discharge (m³/s)	Total discharge (GL)	Average annual discharge (GL)	J26	-	3.4	82.5	0.91	9.9	340.8	3.75	-		J15	6.5	85.8	2611.3	28.7	86.9	2784.3	30.6	0.99	6.6	J28	3.3	160.4	5520.6	60.7	162.1	5693.6	62.6	1	3.1	Outlet	1.8	245.7	9735.9	107.0	246.7	9908.9	108.9	1	1.8
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				The following tables present a comparison of the differences in 1% AEP and 0.1% AEP rainfall events for three systems relevant to the Project for the pre- and post-redevelopment. Table 4 - Comparison of the differences in 1% AEP and 0.1% AEP rainfall events in the Marrakai Creek catchment pre- and post-redevelopment of the Rustler’s Roost Mine <table><tr><th colspan="10">1% AEP</th></tr><tr><th rowspan="2">Element</th><th colspan="4">Pre-redevelopment</th><th colspan="4">Post-redevelopment</th><th rowspan="2">Nash-Sutcliffe</th></tr><tr><th>Peak Discharge (m³/s)</th><th>Total Discharge (GL)</th><th>Velocity (m/s)</th><th>Depth (m)</th><th>Peak Discharge (m3/s)</th><th>Total Discharge (GL)</th><th>Velocity (m/s)</th><th>Depth (m)</th></tr><tr><td>J9</td><td>328.7</td><td>36.3</td><td>0.2</td><td>0.31</td><td>328.7</td><td>36</td><td>0.2</td><td>0.25</td><td>1</td></tr><tr><td>Outlet</td><td>374.8</td><td>64.9</td><td>1.16</td><td>3.37</td><td>374.8</td><td>64.6</td><td>1.15</td><td>3.46</td><td>1</td></tr><tr><td colspan="10"></td></tr><tr><th colspan="10">0.1% AEP</th></tr><tr><td>J9</td><td>498</td><td>53.9</td><td>0.19</td><td>1.21</td><td>498</td><td>53.5</td><td>0.19</td><td>1.2</td><td>1</td></tr><tr><td>Outlet</td><td>551</td><td>96.4</td><td>1.41</td><td>6.45</td><td>551</td><td>96</td><td>1.43</td><td>6.28</td><td>1</td></tr></table> Table 5 - Comparison of the differences in 1% AEP and 0.1% AEP rainfall events in the Mt Bunday Creek catchment pre- and post-redevelopment of the Rustler’s Roost Mine <table><tr><th colspan="10">1% AEP</th></tr><tr><th rowspan="2">Element</th><th colspan="4">Pre-redevelopment</th><th colspan="4">Post-redevelopment</th><th rowspan="2">Nash-Sutcliffe</th></tr><tr><th>Peak Discharge (m³/s)</th><th>Total Discharge (GL)</th><th>Velocity (m/s)</th><th>Depth (m)</th><th>Peak Discharge (m3/s)</th><th>Total Discharge (GL)</th><th>Velocity (m/s)</th><th>Depth (m)</th></tr><tr><td>J26</td><td>7.9</td><td>0.33</td><td>0.1</td><td>0.02</td><td>32.1</td><td>1.32</td><td>0.15</td><td>0.03</td><td>-</td></tr><tr><td>J15</td><td>206.7</td><td>10.2</td><td>0.21</td><td>0.53</td><td>211.6</td><td>10.9</td><td>0.21</td><td>0.51</td><td>0.99</td></tr><tr><td>J28</td><td>290.7</td><td>21.8</td><td>0.52</td><td>1.76</td><td>284.7</td><td>22.5</td><td>0.52</td><td>1.76</td><td>0.997</td></tr><tr><td>J1</td><td>292.41</td><td>38.4</td><td>1.14</td><td>3.43</td><td>287.39</td><td>39.1</td><td>1.14</td><td>3.41</td><td>0.997</td></tr><tr><td colspan="10"></td></tr><tr><th colspan="10">0.1% AEP</th></tr><tr><td>J26</td><td>12.7</td><td>0.50</td><td>0.13</td><td>0.025</td><td>52.4</td><td>2.10</td><td>0.18</td><td>0.07</td><td>-</td></tr><tr><td>J15</td><td>329.6</td><td>15.2</td><td>0.22</td><td>0.73</td><td>337.8</td><td>16.4</td><td>0.23</td><td>0.77</td><td>0.991</td></tr><tr><td>J28</td><td>421.2</td><td>32.4</td><td>0.66</td><td>2.11</td><td>413</td><td>33.5</td><td>0.67</td><td>2.17</td><td>0.996</td></tr><tr><td>J1</td><td>432.9</td><td>57.1</td><td>1.25</td><td>4.13</td><td>432.8</td><td>58.2</td><td>1.26</td><td>4.21</td><td>0.997</td></tr></table> Table 6 - Comparison of the differences in 1% AEP and 0.1% AEP rainfall events in the Charles Creek catchment pre- and post-redevelopment of the Quest 29 mining precinct <table><tr><th colspan="10">1% AEP</th></tr><tr><th rowspan="2">Element</th><th colspan="4">Pre-redevelopment</th><th colspan="4">Post-redevelopment</th><th rowspan="2">Nash-Sutcliffe</th></tr><tr><th>Peak Discharge (m³/s)</th><th>Total Discharge (GL)</th><th>Velocity (m/s)</th><th>Depth (m)</th><th>Peak Discharge (m3/s)</th><th>Total Discharge (GL)</th><th>Velocity (m/s)</th><th>Depth (m)</th></tr><tr><td>Q29S</td><td>21.4</td><td>0.93</td><td>0.2</td><td>0.06</td><td>21</td><td>0.92</td><td>0.2</td><td>0.06</td><td>-</td></tr><tr><td>CJ9</td><td>155.5</td><td>7.15</td><td>0.31</td><td>1</td><td>154.6</td><td>7.14</td><td>0.31</td><td>0.98</td><td>1</td></tr><tr><td>CJ5</td><td>155.5</td><td>10.19</td><td>0.57</td><td>1.5</td><td>155</td><td>10.18</td><td>0.57</td><td>1.47</td><td>1</td></tr><tr><td>Outlet</td><td>160.3</td><td>15.2</td><td>0.95</td><td>2.24</td><td>160.3</td><td>15.19</td><td>0.95</td><td>2.24</td><td>1</td></tr><tr><td colspan="10"></td></tr><tr><th colspan="10">0.1% AEP</th></tr><tr><td>Q29s</td><td>34.8</td><td>1.38</td><td>0.38</td><td>0.14</td><td>38.4</td><td>1.38</td><td>0.42</td><td>0.17</td><td>-</td></tr><tr><td>CJ9</td><td>240.3</td><td>10.63</td><td>0.36</td><td>0.025</td><td>241.3</td><td>10.63</td><td>0.36</td><td>0.07</td><td>1</td></tr><tr><td>CJ5</td><td>241.3</td><td>15.14</td><td>0.52</td><td>0.73</td><td>241.7</td><td>15.14</td><td>0.53</td><td>0.77</td><td>1</td></tr><tr><td>Outlet</td><td>241.3</td><td>22.59</td><td>1.04</td><td>2.11</td><td>241.7</td><td>22.59</td><td>1.04</td><td>2.17</td><td>1</td></tr></table> The impacts of dewatering and sporadic discharging to the effected watercourses were also assessed considering the longest pumping sequence (2021-2023) using the CAESAR-Lisflood landform evolution model. Simulations were conducted for the no-pump conditions and the pump conditions. For Rustlers Roost, peak flow velocities reduce during the pumping scenario. The pumping lowers the pit water to below the decant level, therefore direct rainfall does not contribute to downstream flow when the decant level is exceeded. The pump scenario has greater total discharge but lower velocities as once water is below the decant level the pump rate is the peak velocity. Peak flows are lower than the no-pump scenario. There is some deposition in the streams during pumping but no more than would be expected during the wet season in these sand bed streams. The analysis concludes that pumping reduces peak flows in the upper Mt Bunday catchment but not to an extent that environment flows are impacted. Using the landform evolution model we can analyse impacts to channel profiles from scouring. Section A below is in the upper area of Mount Bunday Creek while Section B is in the downstream section. These show that there is little difference in channel profiles for the pre- and post- conditions at both sections. Furthermore, the observed effects of the pre- and post-condition have disappeared by the downstream Section B.	1% AEP										Element	Pre-redevelopment				Post-redevelopment				Nash-Sutcliffe	Peak Discharge (m³/s)	Total Discharge (GL)	Velocity (m/s)	Depth (m)	Peak Discharge (m3/s)	Total Discharge (GL)	Velocity (m/s)	Depth (m)	J9	328.7	36.3	0.2	0.31	328.7	36	0.2	0.25	1	Outlet	374.8	64.9	1.16	3.37	374.8	64.6	1.15	3.46	1											0.1% AEP										J9	498	53.9	0.19	1.21	498	53.5	0.19	1.2	1	Outlet	551	96.4	1.41	6.45	551	96	1.43	6.28	1	1% AEP										Element	Pre-redevelopment				Post-redevelopment				Nash-Sutcliffe	Peak Discharge (m³/s)	Total Discharge (GL)	Velocity (m/s)	Depth (m)	Peak Discharge (m3/s)	Total Discharge (GL)	Velocity (m/s)	Depth (m)	J26	7.9	0.33	0.1	0.02	32.1	1.32	0.15	0.03	-	J15	206.7	10.2	0.21	0.53	211.6	10.9	0.21	0.51	0.99	J28	290.7	21.8	0.52	1.76	284.7	22.5	0.52	1.76	0.997	J1	292.41	38.4	1.14	3.43	287.39	39.1	1.14	3.41	0.997											0.1% AEP										J26	12.7	0.50	0.13	0.025	52.4	2.10	0.18	0.07	-	J15	329.6	15.2	0.22	0.73	337.8	16.4	0.23	0.77	0.991	J28	421.2	32.4	0.66	2.11	413	33.5	0.67	2.17	0.996	J1	432.9	57.1	1.25	4.13	432.8	58.2	1.26	4.21	0.997	1% AEP										Element	Pre-redevelopment				Post-redevelopment				Nash-Sutcliffe	Peak Discharge (m³/s)	Total Discharge (GL)	Velocity (m/s)	Depth (m)	Peak Discharge (m3/s)	Total Discharge (GL)	Velocity (m/s)	Depth (m)	Q29S	21.4	0.93	0.2	0.06	21	0.92	0.2	0.06	-	CJ9	155.5	7.15	0.31	1	154.6	7.14	0.31	0.98	1	CJ5	155.5	10.19	0.57	1.5	155	10.18	0.57	1.47	1	Outlet	160.3	15.2	0.95	2.24	160.3	15.19	0.95	2.24	1											0.1% AEP										Q29s	34.8	1.38	0.38	0.14	38.4	1.38	0.42	0.17	-	CJ9	240.3	10.63	0.36	0.025	241.3	10.63	0.36	0.07	1	CJ5	241.3	15.14	0.52	0.73	241.7	15.14	0.53	0.77	1	Outlet	241.3	22.59	1.04	2.11	241.7	22.59	1.04	2.17	1
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				Section A  Figure 1 – Mount Bunday Creek Upstream Comparison of Pre- and Post-Development Bed Scouring Analysis Section B  Figure 1 – Mount Bunday Creek Downstream Comparison of Pre- and Post-Development Bed Scouring Analysis Notably the model shows a small increase in flow velocity during discharge, which is slightly different to the original analysis presented in the Draft EIS. The reason for this difference is the original study used a small DEM and made comment that with the small DEM there were big differences in discharge, but that the differences would be “diluted” as the hydrograph travelled down the larger catchment when other catchment flows entering the system. For the additional analysis supporting the SEIS the model domain was expanded and at the outlet there is now little difference. This is because the larger area has been included instead of the immediate reach. An aquatic ecology assessment has been completed based current extent and inclusions of the Project, the surface water modelling, existing aquatic ecosystem values for the receiving waterways and known species occurrence. The assessment of ecological functions of flow identified the following: ▪ Water availability for native flora and fauna – Changes in flow are relatively minor in the main branches of waterways given the small area of catchment removed and the predicted impacts of releases during the wet season (when compared to the discharge in the catchment). As such, permanent pools and reaches are expected to be available in the main branches, with no substantial reductions in water availability; ▪ Instream habitat (channel maintenance, sediment and organic matter transport, riparian condition) – Modelling results indicate minor stream bed reshaping, which is common in ephemeral and seasonal streams in the region during large flow events. As such, changes in flow are not expected to significantly impact instream habitat.

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				Slight increases in water depth during releases will increase the area of habitat available to aquatic flora and fauna; ▪ Protect natural flow regimes (wet season flow) / seasonality (timing and duration of flow) – No releases are proposed during the dry season when many of the waterways are dry. The release regime will be dependent on rainfall, to maintain seasonality in waterway flows; ▪ Maintain natural variability (a system should retain its perennial or seasonal nature) – The ephemeral stream character will be maintained given no releases will occur during the dry season, and seasonality of flow will be maintained by varying release volumes depending on rainfall in the region; ▪ Manage groundwater for ecosystems – A GDE assessment was recently undertaken to assess the presence of GDEs within the Project area and potential impact as a result of the Project activities (refer to Appendix P). The report concluded it is unlikely that aquatic GDEs exist within the area of predicted drawdown. However, the report identified that there is a likelihood that riparian vegetation within the areas of drawdown exist. Due to the uncertainties regarding the riparian vegetation groundwater use patterns, it is recommended a Groundwater Dependent Ecosystem Monitoring Program (GDMP) is developed to monitor and protect the ecological condition of the Type 3 GDEs within the Project area; ▪ Protect important rises in water levels (important wet season flows) – Given water releases will not occur in the dry season and releases will be variable depending on rainfall, impacts to rises in water levels (during the wet season) are expected to be minor during operation of the Project. Despite the small loss of catchment area, important wet season flows will still occur; ▪ Maintain seasonal wetland/floodplain inundation / protect natural low flows in perennial systems – Given the relatively small changes in flow compared to the large flows of main branch waterways, important wetland and floodplain habitat in downstream reaches of Mount Bunday Creek, Charles Creek, Marrakai Creek, Hardies Creek, McKinley River, Mary River and Adelaide River are expected to be maintained; ▪ Minimise the effect of weirs/dams or other structures on flow – No dams or weir are proposed on waterways. All infrastructure will be within the ML in the upper reaches of the catchments; ▪ Emulate natural drying in seasonal waterways – There will be no dry season releases; as such natural drying in waterways during the dry season will be maintained; and ▪ Maintain flow requirements for aquatic biota – The onset of stream flow at the beginning of the wet season and changes in water levels are expected to be maintained by adjusting the volume of releases based on rainfall in the region. This will maintain breeding cues for fish and fish use off-channel habitats during flooding. Peak floods and minimum flows that are vital to the connectivity of streams and provide stimulus for breeding and dispersal are expected to be maintained. Additional Commitment – Controlled site water discharges will be restricted to the wet season and limited to Mount Bunday Creek for Rustlers Roost and Charles Creek for Quest 29.
6	Appendix N	Terrestrial ecosystems	Comment Appendix N of the Draft EIS indicates that the predicted reduction in flow of Annie’s Dam catchment exceeds a maximum 20%, which is required for river health. This is because nearly 50% of Annie’s dam catchment is consumed by the proposed tailings storage facility (TSF). The potential for significant impacts from flow reduction to a groundwater dependent ecosystem (GDE) that appears to occur below Annie’s Dam has not been considered. Additional Information Required 1. Assess the impacts to GDEs downstream from Annies Dam due to reductions in groundwater flows from the TSF post-closure. 2. Assess the impacts to GDEs downstream from Annies Dam due to contaminated seepage flows from the TSF post-closure.	Additional Information Points 1 and 2 The comment is correct that the Annies Dam catchment will experience a reduction of flows above the 20% threshold (modelled at 34%). This is because the Annies Dam model domain is small, and it is in the head waters of the very large Adelaide River catchment (refer to the extent of the Annies Dam catchment in the extract below). As such, it was surmised in the original surface water assessment (Appendix N of the Draft EIS), that the reduced flow in the small Annies Dam catchment would significantly affect the downstream Marrakai Creek flows.

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				 To confirm the inferences from the original model results, an additional hydrologic and hydraulic model has been developed for Marrakai Creek (refer to Appendix E). For the Marrakai Creek catchment the assessment of changes to hydrology due to the Rustlers Roost expansion in the upper catchment involved a 90 year simulation from 2030 applying climate change using the RCP 4.5 model. The figure below shows the extent of the Marrakai Creek model.

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				 The pre-mine and post-mine results for various junction points throughout the catchment were analysed. The results show an insignificant difference in the pre and post mine flow regime with changes in the upper catchment (immediately downstream of the TSF) experiencing a flow reduction of approximately -1.8% in total volume, whereas the output junction for the system experiences a flow reduction of approximately -0.5% in total volume. A groundwater dependent ecosystem assessment has been undertaken to assess potential impact of the Project on GDEs and provide an ongoing approach to actively manage the potential risks to GDEs from the Project activities. A summary of the results and recommendations is provided below and Appendix P provides the GDEs assessment report with detailed information on the assessment scope, results and recommendation to mitigate any potential impact on GDEs. The GDE assessment has concluded the following: Aquifer and Cave Ecosystems (Subterranean GDEs) There is no data available on subterranean GDEs for the area. Given the regional nature of the groundwater system, species present are likely to be ubiquitous across the Project area, with no particular species occurring within isolation to other species with geographic boundaries. Ecosystems Dependent on the Surface Expression of Groundwater (Aquatic GDEs) It is unlikely aquatic GDEs exist within the area of predicted drawdown. While no future work is recommended regarding aquatic GDEs, additional monitoring with respect to Terrestrial GDEs will provide confirmation of this conclusion (see below). Ecosystems Dependent on the Subsurface Presence of Groundwater (Terrestrial GDEs) Additional mapping of terrestrial GDEs has identified that there is a likelihood that riparian vegetation within the areas of drawdown exist. These are likely restricted to narrow zones of riparian vegetation, dominated by the presence of medium sized trees <i>Eucalyptus bigalerita</i>, and <i>Lophostemon grandifloras</i>. These areas are considered likely to be using groundwater due to their persistent high NDVI trend and the presence of shallow water tables. However, it is largely unknown at this stage if these trees, present across the study area have

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				the root structure to access deeper soil moisture from the capillary fringe above the water table, and if indeed they require groundwater as part of their annual water requirements. Irrespective of the uncertainty regarding their groundwater use patterns, a conservative risk assessment has been conducted. The risk assessment has identified areas of potential high risk is associated with areas of initial depth to water table of less than 5 metres and a change to that water depth due to mining of greater than 5 meters. As a result of the risk assessment the development of a Groundwater Dependent Ecosystem Monitoring Program (GDEMP) is proposed. The objective of the monitoring program is to protect the ecological condition of the Type 3 GDEs in the Project area; ▪ Data collected will be used to monitor the degree of hydro(geo)logical change and influencing factors (informing the likelihood component of the risk assessment); ▪ Data collected will be used to monitor the condition of the GDEs and their sensitivity to changes and influencing factors (informing the consequence component of the risk assessment); and ▪ A key component of this summary is the acknowledgment there remains uncertainty within the current system – and with this consideration a future works program has been developed. The proposed monitoring program is driven by the GDEMP objective that aims to protect the ecological condition of the Type 3 GDEs in the Project area. The monitoring data provides the backbone of the GDEMP and will occur as an array of monitoring components that will track the conditions during the construction, operational and post-operational phases of the Project. The data collected will be used to address a series of monitoring objectives which are aligned with the risk assessment methodology, as detailed below. 1. Monitor the degree of hydro(geo)logical change and influencing factors, including background influences (which informs the likelihood element of the risk assessment), by: a. Monitoring groundwater levels in the alluvial aquifer in areas of probable drawdown and in areas outside of the predicted zone of influence; b. Monitoring groundwater levels in regional aquifers to monitor the predicted drawdown at depth, its propagation towards the surface and the relationship / hydraulic gradient to groundwater levels within the alluvial aquifer supporting the GDEs; c. Monitoring streamflow; d. Monitoring soil moisture levels using leaf water potentials as a surrogate; and e. Monitoring climatic conditions (rainfall, temperature). 2. Monitoring the condition of GDEs, their sensitivity to hydro(geo)logical change, and other influencing factors including background influences (which informs the consequence element of the risk assessment), by: a. Monitoring the condition of GDEs by: i. Leaf water potential monitoring; to identify likely depth of water use by the vegetation, this can be related to the existing depth of the water table at each site. ii. Remote sensing; Using high resolution temporal data develop a time series of NDVI response to climate to observe any trends that may be related to changes in groundwater levels. iii. Vegetation surveys; to assess the condition of the vegetation and assess any trends against changes in groundwater levels. b. Monitoring other threats to GDEs (e.g. weeds and pests, grazing pressure, soil erosion, storms, fire) by vegetation surveys.
7	Numerical groundwater model – Section 7.2, Appendix H and Appendix I	Hydrological processes	Comment <u>Groundwater model classification</u> It is noted that the results of the groundwater model are considered preliminary due to the lack of detailed input data (e.g. transient groundwater levels, aquifer hydraulic property data) that could be used for model refinement and model calibration.	Additional Information Points 1 and 2 The groundwater model has been revised and updated to refine and improve the characterisation of the surrounding environment through further defining model parameters with due consideration to receptors and risk. This comment has been addressed as part of the revised model scope as follows: ▪ Literature review to collect additional hydrogeological data and review/revise/update conceptualisation with new datasets where available.

No.	EIS Section	Theme or Issue	Comment / Requested Additional Information	Required Action / Response
			The constructed groundwater model has characteristics of a Class 1 model based on the criteria in the Australian Groundwater Modelling Guidelines (Barnett et al. 2012). The current model is a regional scale (Class 1) model. Guidelines recommend at least a Class 2 model for adequate impact assessment and water balance modelling for dewatering projects. The revised model must be capable of accurately predicting drawdown effects, inform dewatering requirements, and provide for adequate water balance calculations. Additional Information Required 1. Refine the constructed numerical model to at least a Class 2 model based on the criteria in the Australian Groundwater Modelling Guidelines (Barnett et al. 2012) noting the existing groundwater monitoring is inadequate for the calibration of the numerical model to a Class 2 standard. 2. Improve the groundwater model's performance and capability for predicting potential impacts to the surrounding environment including GDEs with a high degree of confidence. The model must be capable of accurately predicting drawdown effects, inform dewatering requirements, and provide for adequate water balance calculations. 3. Model and describe how the proposal has been designed to consider, or allow for, impacts of a changing climate e.g. capacity and efficiency of water facilities to allow for potential increase in evaporation and/or large rainfall events, and changes in the frequency or intensity of extreme weather events.	- Rebuild and recalibration of the model with a move to transient model to improve estimate of drawdown impacts and reflect the short period of mine operation. A Scaled Residual Mass Statistic (SRMS) of 0.9% is noted for the original model. The updated model has a SRMS of 4.2%, confirming the model has a good fit to the data in general. GoldSim flux estimates were used as a calibration tool. - Model uncertainty outcomes have been assessed by running numerical groundwater model through PESTPP-IES (White 2018) and AWS cloud computing. Different from traditional PEST (Doherty et al. 1994), PESTPP-IES can generate multiple calibrated models that better address the issue of non-uniqueness and enable a more robust uncertainty analysis. A pilot point calibration technique is therefore possible where parameter values are estimated at the pilot point locations and then interpolated to other model cells (Doherty et al., 2010). This technique enables spatial heterogeneity to be better captured in the model, which is critical for this work due to the scale of modelling. - Revised reporting has been prepared to collate a model uncertainty table defining all lines of uncertainty and their impact on the model. The intent of this table is to demonstrate significance of uncertainties relative to each other and is intended to provide a weighting of concern for each uncertainty so that all stakeholders have a clear appreciation of the relative risk relating to the uncertainties identified. Numerical model limitations regarding the revised model conditions have been detailed. An assessment of what model Class has been achieved as well as a summary of how the model class should be applied considering the risk profile of the project. The updated Groundwater Modelling Report has been reviewed by an external technical reviewer who concluded that <i>“the groundwater modelling and related impact assessment has been competently conducted and documented and it meets best practice criteria for modelling and uncertainty analysis”</i> (refer to Appendix D of Appendix O of this SEIS for a summary of the external reviewer). Understanding of the surrounding environment has been improved through additional field surveys of potential GDEs, spatial analysis of mapped GDE areas and downstream extents with groundwater depth and NDVI data (refer to Appendix P). Additional Information Point 3 The uncertainty related to climate change over the life of mine (10 years) is minor when compared to other uncertainties in the model (i.e. conceptualisation of hydraulic parameters). Nevertheless, the groundwater model and water balance have been refined and updated using climate datasets derived from surface water climate works already completed for the project. The model accounts for climate change using RCP 4.5 model, which is consistent with the hydrologic modelling. The update of the model to transient assist in assessing changing climate. The life of mine is 10 years and therefore the effect of climate change on operational water storages is minimal. However, these updates have been made to assist with post closure planning described below. Refer to Appendix O for the updated Groundwater Modelling Report.
8	Water balance including seepage to pits, rainfall and runoff – Section 7.4 and Appendix H	Hydrological processes	Comment <u>Groundwater inflow to pits and throughflow</u> It is acknowledged by the proponent that there is a notable amount of uncertainty regarding the degree of groundwater inflow to pits. The current estimates of inflow range between 100 L/s to 600 L/s, or approximately 9 and 52 ML/day respectively. Groundwater seepage is currently considered the biggest contributor to the water balance amounting to approximately 83% of all inflows. This volume of water needs to be appropriately accounted for and managed. Additional Information Required 1. Develop the groundwater model referenced in item #7 to accurately predict groundwater inflows, throughflow, and to quantify seepage to pits with a high degree of certainty. 2. Develop the site water balance where all inputs and outputs to the site water balance are appropriately evaluated to ensure the site water inventory can be managed, potential impacts to hydrological processes and inland water quality are assessed, and mining is not at risk of stopping. 3. Identify and verify that adequate capacity for water storage is available if treatment and release cannot be implemented. 4. Specify the contingences in the event that treatment and release is required, or is necessary. 5. Clarify the strategies to be adopted and implemented for effective management of this volume water.	Additional Information Point 1 There is limited available data to improve the conceptualisation related to hydraulic parameters. The updated approach to modelling uncertainty in the model revision improves the degree of uncertainty in regard to groundwater inflow into the pits. This approach is described in response to submission number 7 and the results of this assessment are provided in the updated Groundwater Modelling Report in Appendix O. The potential for the pits to act as groundwater throughflow features was assessed conceptually as a first step to this conceptualisation. This is described below. Additional Information Point 2 The site-wide water balance has been revised using the literature review outcomes, revised modelling outputs and any other additional assessment works completed. This includes updates in regard to inflow, hydraulic properties, TSF hydraulics and climate model considerations. Management approaches in relation to the site water inventory are presented in the revised Water Management Plan (WMP). Additional Information Point 3 The updated water balance model outputs shows that there is enough storage capacity to store water during the dry season when no discharges to creek lines will occur (refer to Appendix O). The WMP includes a provision for water to be released from the site during the wet season into the surrounding creeks, while during the dry season the water is stored on site (predominately in the northern TSF WSD at Rustlers Roost and in non-worked pits at Quest 29). During the wet season the stored water inventory will be reduced so that there is maximum storage capacity available at the beginning of each dry season. Requirements for water storage capacity/treatment on site, and water capacity and capacity management are discussed further in the site WMP (refer to Appendix Q). Additional Information Point 4 Contingency measures to address treatment and discharges into creek lines are provided in the revised site WMP (refer to Appendix Q). Additional Information Point 5

No.	EIS Section	Theme or Issue	Comment / Requested Additional Information	Required Action / Response
				As mentioned in response to point 3 above, the revised water balance model shows that there is enough storage capacity to store water during the dry season where no discharges to creek lines will occur (refer to Appendix O). The WMP includes a provision for water to be released from the site during the wet season into Mount Bunday Creek and McKinley River, while during the dry season the water is stored on site (predominately in the northern TSF WSD at Rustlers Roost and in non-worked pits at Quest 29) (refer to Appendix Q).
9	Water balance – Groundwater and TSF representation – Section 7.4 and Appendix H	Hydrological processes	Comment <u>Omission in the water balance</u> In addition to pit inflows in item #8 above, a key input to the site water balance will be derived from operation of the TSF. These two inputs are a material omission in the water balance and will need to be carefully assessed and included in the water balance for the proposal. Additional Information Required 1. Review available data and develop a water balance for the TSF (as a component of the overall site water balance) accounting for all inputs and outputs. 2. Review and revise the management of the TSF to determine accurate estimates of water that will need to be managed i.e. captured, re-used, stored, and/or disposed.	Additional Information Point 1 A conceptual water balance has been developed for the TSF and included in the modelling report. It should firstly be noted that the TSF is a dynamic environment and operational parameters will change with time. TSF fill rates, water level (due to rainfall, evaporation) and TSF development will evolve as the project evolves. Given this fluid environment it is very difficult to define a set of reasonable scenarios that would best represent the system to allow a water balance to be modelled. There are risks of under/over estimation in the water balance model due to the range of variables. To overcome this challenge, a conceptual water balance has been developed relative to the current risk profile. Three conceptual water balance models for the TSF were developed, using key likely TSF use scenarios. A short risk assessment was then completed using the conceptual outputs relative to identified environmental receptors. The updated TSF Feasibility Report (Appendix G) has been used to inform the water balance, including updates to design such as installation of a HDPE liner to the full footprint (refer to Appendix G). Additional Information Point 2 Estimates of water the TSF will need to accommodate are an output of the water balance models (Appendix O). The management approaches in relation to the management of the water volumes from the modelling are presented in the revised site WMP (Appendix Q).
10	Section 7.3	Hydrological processes	Comment <u>Hydrogeology and hydrology</u> The management of contaminated groundwater on the Rustlers Roost site during operation and post-closure relies largely on the pit being a groundwater sink. The Draft EIS indicates that the pit lake acts as a hydraulic sink for a large portion of the disturbed catchment, meaning that the pit lake water evaporates faster than the influx of water (rainfall, runoff and groundwater ingress). Based on this assumption, the Draft EIS states that influence on surrounding groundwater quality [from the pit] is likely to be spatially limited. Several of the key assumptions made in predicting the outcomes and conclusions for hydrological processes do not appear to be well supported by the available data. There is insufficient assurance that the Rustlers Roost mine site will not become a source of contamination to waterways in the longer term. Additional Information Required 1. Provide an assessment of the Rustlers Roost pit post closure, with further evidence to support the scenario that the Rustlers Roost pit will continue to act as a groundwater sink. 2. Develop contingency measures for the alternate scenario where the pit void is determined to be a flow-through system to ensure contamination of groundwater and surface water down gradient into the long term is avoided or minimised.	Additional Information Point 1 The updated modelling outcomes have been used to examine alternate post closure scenarios where the pit void is potentially a flow-through system as a first step in assessing potential groundwater and surface water contamination down gradient in the long term. This was initially addressed conceptually to assess validity of the approach, with numerical modelling undertaken (particle tracking to understand through flow condition and assessment of contaminant migration downgradient) based on conceptual outcomes. Conceptual scenarios considered pit water levels (high vs low), under what conditions flow through occurs, and evaluating where the water may flow to. Results of the modelling indicates that during mining the pits will be dewatered to maintain a dry working environment. Following mining the pits will fill with groundwater, rainfall and runoff and a pit lake will develop. Pit lake levels are expected to reach equilibrium within a decade for the Quest 29 pits and within 30 years for the Rustlers Roost pit. The pit lake levels are expected to stabilise to a similar level as groundwater, suggesting that the pit lakes interaction with groundwater will vary seasonally, sometimes acting as a sink and sometimes as a source. Throughflow (where groundwater levels are higher on one side of the pit than the other) will occur during periods where inflows equal outflows and the ambient water table is higher on one side of the pit than the other (which will depend on the pits position in the catchment). This is more likely to occur at the Quest 29 pits as they are on a regional groundwater flow path, whereas the Rustlers Roost pit is within a groundwater divide and may more likely act as a recharge source to groundwater. The pit lake water quality is expected to be similar to the groundwater quality (based on the mass balance and not taking into account rock reactions that may occur due to dewatering). Additional Information Point 2 The site WMP (pit lake water treatment) addressed contingency measures for the scenario where the pit is a long term through flow system.
11	Section 7.3, Appendix N, Appendix I	Hydrological processes	Comment There are potentially significant issues with the water management strategy. A key concern is an inadequate water storage volume on site with the only option for water management being discharge of mine influenced water to the receiving environment. Pit dewatering is estimated to be between 100 L/s and 600 L/s and with only a 50 ML water storage dam, this provides between 6 days and 1 day of storage respectively. While peak flows for Mount Bunday Creek and Marrakai Creek are estimated at 2,400 L/s and 700 L/s respectively, which have been observed for ~3-4 weeks, for the majority of the wet season, the catchment area is only capable of receiving discharges of ~50 L/s. Given that any opportunity for controlled discharge of mine affected water is only possible during the wet season (December to March), and probably to a discharge point where a minimum flow rate is available for mixing and dilution, the site must have the available storage capacity to enable the retention of excess volumes of mine affected water.	Additional Information Point 1 The updated site wide water balance model (described in response to submission number 9) has been used to inform water volumes that will need to be managed with management practices outlined in the site WMP. As mentioned in response to submission 8 above, the revised water balance model outputs show that there is enough storage capacity to store water during the dry season when no discharges to creek lines will occur (refer to Appendix O). Water will be stored on site and discharged to creeks in the wet season (Mount Bunday Creek and McKinley River). At the Rustlers Roost site the primary storage is the Northern TSF Water Storage Dam (6,998 ML capacity) and at the Quest 29 site the water is stored in non-operational pits. The model empties water storages during the wet season and discharges this stored water and dewatering water to the creeks so that maximum storage is available during the dry season. For 95% of model runs there is no uncontrolled release during the dry season (i.e. there is sufficient storage on site). For the 95th percentile and maximum scenarios (i.e. high hydraulic conductivity and high runoff) there is some dry season release. The model is set up to maintain 5% storage in the storages to allow for water reuse in the dry season

No.	EIS Section	Theme or Issue	Comment / Requested Additional Information	Required Action / Response
			The proposed site water storage of ~50 ML provides very limited storage or buffering capacity for the site. Additional Information Required The information is required to clarify and demonstrate adequacy of the site water storage capacity and effectiveness of the water management strategy during pit dewatering. 1. Ensure that the site has adequate, available water storage capacity available to store captured mine affected water, and describe the management strategies for managing excess mine affected water requiring storage, treatment or release. 2. In particular, describe the management of excess mine affected water when there is no opportunity for discharge. 3. Describe alternative options for water management including the appropriate treatment options should water quality deteriorate, and requires treatment for a controlled release. 4. Provide a separate water balance model considering these scenarios should be produced to evaluate the post closure management options. Note: The above information should be provided in consideration of the— the NT EPA's Principles of environment protection and management incorporating the principles of ecologically sustainable development, and management hierarchies (refer to Part 2 of the EP Act).	and lowering this threshold may negate the requirement for dry season release in these unlikely scenarios. Cumulatively, about 36 GL of water is required to be released (with an uncertainty range from 17 GL to 78 GL) over the LOM. Results of this assessment is provided in the WMP (Appendix Q). Additional Information Point 2 Contingency measures to address excess mine effected water and discharges into creek lines is provided in the revised site WMP (refer to Appendix Q). Additional Information Point 3 Contingency measures to address excess mine effected water and discharges into creek lines is provided in the revised site WMP (refer to Appendix Q). Additional Information Point 4 A site wide post closure water balance model has been developed to inform water volumes for the water management plan. The site water balance was modelled with Goldsim software to estimate the water production and management related to the mining activities on site (pit dewatering, ore processing and other water consumption on site). The model was run in a stochastic mode to account for the parameter uncertainties that are controlling the water production. The model shows that: ▪ The groundwater seepage into the pits is the main inflow into the water management system as it constitutes an average of 77% of all inflows to the system with an average of 4,000 ML/yr for the life of mining operations. It is also the most uncertain contributor due to the lack of data to constrain the representative value of hydraulic conductivity of the regional aquifer (and implicit heterogeneity of fractured rock aquifers). Pit dewatering volumes will be monitored during operations to provide constraints on the hydraulic conductivity and refine the predictions, especially Rustlers Roost pit and any variation with depth. Due to uncertainties in hydraulic properties some uncertainty remains regarding the volume of water to be managed and the period for complete recovery of pit water levels. It has however, little influence on the final pit lake stabilisation levels which approximate the groundwater table level; ▪ During mining operations excess water will be discharged to the creeks during the wet season and stored during the dry season. An estimated amount of 36 GL of water will need to be released to the local creeks during mining operation during the wet season. According to current uncertainty analysis, this amount could comprise between 17 GL and 78 GL. The water management system on site can accommodate the dry season storage in almost all model runs, with only the very highest hydraulic conductivity scenarios resulting in temporary dry season discharge (i.e. 5% of modelled scenarios); ▪ Post-mining, the pit lakes are unlikely to overflow. The water level for all pit lakes stabilised around the groundwater table levels, suggesting that the pit lakes interaction with groundwater will vary seasonally, sometimes acting as a sink and sometimes as a source; ▪ As excess water is produced during mining operations, the bore field is only required to supply the demand of drinkable water (reverse osmosis water). Only 5 % of models indicate a requirements for more than 12.5 L/sec in the second half of 2032 where 55L/sec is required for make-up water. The model has assumed this water is to be supplied by the bore field, but it could also be sourced from an extension of the Rustlers Roost pit dewatering; and ▪ Post-mining, the Rustlers Roost pit lake is predicted to stabilise within 30 years post-mining (median estimate) to a level similar to the current one. The likelihood of overflow is very small (regardless of the uncertainty on model parameters including aquifer hydraulic conductivity). Detailed results of this assessment is provided in Appendix O of this SEIS.
12	Groundwater drawdown - Section 7.3, and Appendix H	Hydrological processes	Comment <u>Drawdown from pit dewatering</u> The current (regional scale) groundwater modelling has shown that the calculated 1 m drawdown from the pit dewatering extends 5 km to the north and 3 km to the south of the Rustlers Roost pits, and 2 km to the south-west of the Quest 29 pits. The baseflow contribution to creeks and streams would normally sustain hyporheic zones, any permanent and semipermanent pools/waterholes, and support associated flora and fauna (e.g. riparian vegetation including potential GDEs) following the wet season. These processes are likely to be interrupted as a result of drawdown and alteration of the natural flow characteristics. Additional Information Required The information is required to clarify and demonstrate riparian vegetation and GDEs will not be significantly impacted by groundwater drawdown, seepage, and discharges from the mine site. 1. Assess (quantify) the pre-mining groundwater contribution (baseflow) to creeks and stream flows where drawdown effects are expected to occur, and	Additional Information Point 1 An assessment of pre mining conditions has been included in the updated groundwater numerical modelling described in response to submission number 7, including an estimates of groundwater contribution to stream flows. This has been cross referenced with the results of the GDE study described in more detail below. Additional Information Point 2 The updated groundwater model has been used to assess any reduction in baseflow contributions (quantity) due to drawdown from pit dewatering. The spatial extent of the drawdown has been compared to the GDE map produced from the additional GDE study described below in more detail to determine whether any GDEs are within the zone of impact. A GDE assessment has been undertaken to assess potential impact of the Project on GDEs and provide an ongoing approach to actively manage the potential risks to GDEs from the Project activities. A summary of the results and recommendations is provided below and Appendix P provides the GDEs assessment report with detailed information on the assessment scope, results and recommendation to mitigate any potential impact on GDEs. The GDE assessment has concluded the following:

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			2. Identify and assess the likely impacts to environmental flows (quality and quantity), and riparian vegetation including potential GDEs. 3. Assess the interaction of groundwater behaviour in the primary aquifer with groundwater in alluvial aquifers as well as surface water. 4. Review the water management strategy and update the Water Management Plan to ensure impacts to environmental flows (quality and quantity), and riparian vegetation including potential GDEs are avoided or minimised to be as low as practicable. Note: The above information should be provided in consideration of the NT EPA’s hierarchies for environmental decision-making and waste management (avoid, mitigate, re-use, recycle etc.) Refer to Part 2 of the EP Act.	Aquifer and Cave Ecosystems (Subterranean GDEs) There is no data available on subterraneous GDEs for the area. Given the regional nature of the groundwater system, species present are likely to be ubiquitous across the Project area, with no particular species occurring within isolation to other species with geographic boundaries. Ecosystems Dependent on the Surface Expression of Groundwater (Aquatic GDEs) It is unlikely aquatic GDEs exist within the area of predicted drawdown. While no future work is recommended regarding aquatic GDEs, additional monitoring with respect to Terrestrial GDEs will provide confirmation of this conclusion (see below). Ecosystems Dependent on the Subsurface Presence of Groundwater (Terrestrial GDEs) Additional mapping of terrestrial GDEs has identified that there is a likelihood that riparian vegetation within the areas of drawdown exist. These are likely restricted to narrow zones of riparian vegetation, dominated by the presence of medium sized trees <i>Eucalyptus bigalerita</i>, and <i>Lophostemon grandifloras</i>. These areas are considered likely to be using groundwater due to their persistent high NDVI trend and the presence of shallow water tables. However, it is largely unknown at this stage if these trees, present across the study area have the root structure to access deeper soil moisture from the capillary fringe above the water table, and if indeed they require groundwater as part of their annual water requirements. Irrespective of the uncertainty regarding their groundwater use patterns, a conservative risk assessment has been conducted. The risk assessment has identified areas of potential high risk is associated with areas of initial depth to water table of less than 5 metres and a change to that water depth due to mining of greater than 5 meters. As a result of the risk assessment the development of a Groundwater Dependent Ecosystem Monitoring Program (GDEMP) is proposed. The objective of the monitoring program is to protect the ecological condition of the Type 3 GDEs in the Project area; ▪ Data collected will be used to monitor the degree of hydro(geo)logical change and influencing factors (informing the likelihood component of the risk assessment); ▪ Data collected will be used to monitor the condition of the GDEs and their sensitivity to changes and influencing factors (informing the consequence component of the risk assessment); and ▪ A key component of this summary is the acknowledgment there remains uncertainty within the current system – and with this consideration a future works program has been developed. The proposed monitoring program is driven by the GDEMP objective that aims to protect the ecological condition of the Type 3 GDEs in the Project area. The monitoring data provides the backbone of the GDEMP and will occur as an array of monitoring components that will track the conditions during the construction, operational and post-operational phases of the Project. The data collected will be used to address a series of monitoring objectives which are aligned with the risk assessment methodology, as detailed below. 3. Monitor the degree of hydro(geo)logical change and influencing factors, including background influences (which informs the likelihood element of the risk assessment), by: a. Monitoring groundwater levels in the alluvial aquifer in areas of probable drawdown and in areas outside of the predicted zone of influence; b. Monitoring groundwater levels in regional aquifers to monitor the predicted drawdown at depth, its propagation towards the surface and the relationship / hydraulic gradient to groundwater levels within the alluvial aquifer supporting the GDEs; c. Monitoring streamflow; d. Monitoring soil moisture levels using leaf water potentials as a surrogate; and e. Monitoring climatic conditions (rainfall, temperature). 4. Monitoring the condition of GDEs, their sensitivity to hydro(geo)logical change, and other influencing factors including background influences (which informs the consequence element of the risk assessment), by: a. Monitoring the condition of GDEs by:

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				i. Leaf water potential monitoring; to identify likely depth of water use by the vegetation, this can be related to the existing depth of the water table at each site. ii. Remote sensing; Using high resolution temporal data develop a time series of NDVI response to climate to observe any trends that may be related to changes in groundwater levels. iii. Vegetation surveys; to assess the condition of the vegetation and assess any trends against changes in groundwater levels. b. Monitoring other threats to GDEs (e.g. weeds and pests, grazing pressure, soil erosion, storms, fire) by vegetation surveys. Additional Information Point 3 As part of the GDE assessment (refer to Appendix P), groundwater-surface water interaction within the Project area has been assessed. Conceptually, across the broader landscape there are three general conceptual models of groundwater and stream interaction (See Figure 1 below). It is likely that the ephemeral stream reaches within the area of impact (predicted drawdown) are losing disconnected streams, where water levels are above the adjacent water table, a hydraulic gradient is generated away from the watercourse, resulting in stream losses to groundwater (i.e. the stream is losing). As well as recharging the water table aquifer, these stream losses potentially replenish storage in the stream banks (bank storage). In disconnected stream reaches, bank storage will drain away to the water table or back to the stream as flood heights decline. Given there is no streamflow gauging in the catchment, the frequency and magnitude of flows are not known but it is inferred that losing conditions will sometimes occur during and following high intensity rainfall and runoff events from tributary catchments.

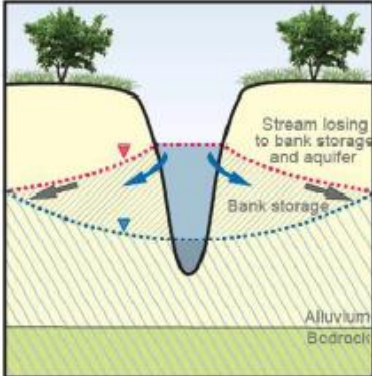
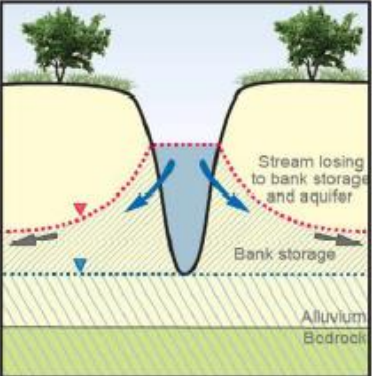
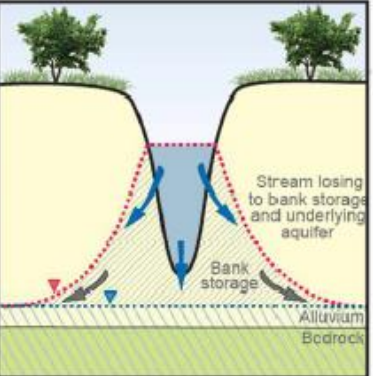
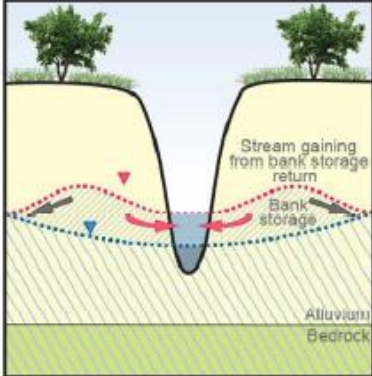
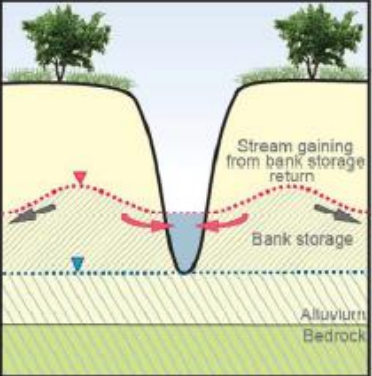
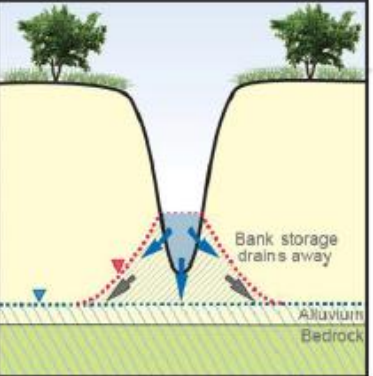
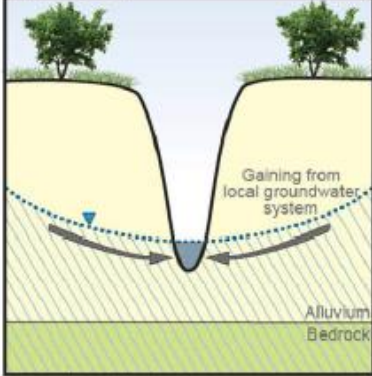
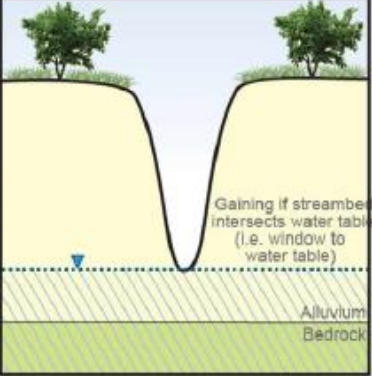
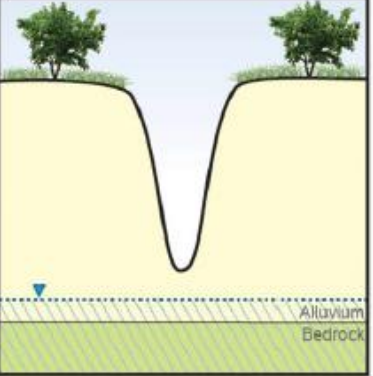
No.	EIS Section	Theme or Issue	Comment / Requested Additional Information	Required Action / Response
				LOWER REACH – PREDOMINANTLY GAINING, PERMANENTLY CONNECTED STREAM REACH  Stream losing to bank storage and aquifer Bank storage Alluvium Bedrock MID-REACH – LOSING/GAINING, SEMI-PERMANENTLY AND NON-PERMANENTLY CONNECTED STREAM REACH  Stream losing to bank storage and aquifer Bank storage Alluvium Bedrock UPPER REACH – LOSING, DISCONNECTED STREAM REACH  Stream losing to bank storage and underlying aquifer Bank storage Alluvium Bedrock Note: Occurs during and following large and sustained stream flow events FALLING STREAM  Stream gaining from bank storage return Bank storage Alluvium Bedrock MID-REACH  Stream gaining from bank storage return Bank storage Alluvium Bedrock UPPER REACH  Bank storage drains away Alluvium Bedrock Note: Occurs as stream flow recedes DRY SEASON  Gaining from local groundwater system Alluvium Bedrock MID-REACH  Gaining if streambed intersects water table (i.e. window to water table) Alluvium Bedrock UPPER REACH  Gaining from local groundwater system Alluvium Bedrock Note: When bank storage has depleted streams return to pre-stream flow condition Legend Steady state water table Transient water table Stream fluxes: Loss Gain Groundwater flow Figure 3 2 - Conceptualisation of groundwater surface water connection CDM Smith

Figure 1 Conceptualisation of groundwater surface water connection

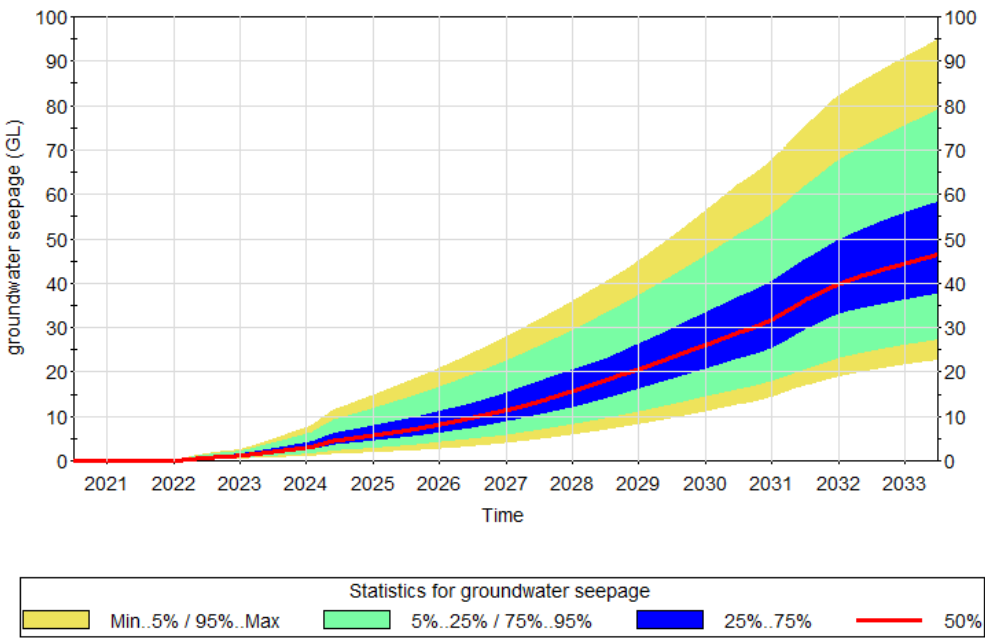
Additional Information Point 4

The WMP has been updated and includes consideration of GDEs based on the recent assessment (refer to Appendix P). The development of a Groundwater Dependent Ecosystem Monitoring Program (GDMP) is proposed and will be implemented during the Project so any potential impact to GDE is avoided or minimised to be as low as practicable. The proposed monitoring program is driven by the GDMP objective that aims to protect the ecological condition of

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				the Type 3 GDEs in the Project area. The objective of the monitoring program is to protect the ecological condition of the Type 3 GDEs in the Project area: - Data collected will be used to monitor the degree of hydro(geo)logical change and influencing factors (informing the likelihood component of the risk assessment); - Data collected will be used to monitor the condition of the GDEs and their sensitivity to changes and influencing factors (informing the consequence component of the risk assessment); and - A key component of this summary is the acknowledgment there remains uncertainty within the current system – and with this consideration a future works program has been developed. Further detailed information on monitoring and management of GDEs is provided in the WMP (refer to Appendix Q of this SEIS).
13	Pit Lake Water Quality – Section 7.4, Appendix O and Appendix P	Hydrological processes	Comment <u>Pit lake water quality and seepage</u> Pit lake water quality as an aquatic ecosystem habitat for the Rustlers Roost pit lake was assessed to be moderately poor, with high nutrient concentrations and low oxygen concentrations. However, pit lake water quality in terms of concentrations of contaminants of particular concern was good, with only slight exceedances of ecosystem values for total iron and ammonium and drinking water for ammonium. The study was conducted to support the waste discharge licence for dewatering pits prior to mining. The water quality of the pit lake and surrounding groundwater post mining would likely be of much poorer quality due to contact/interaction with exposed oxide, transition and fresh wall rock lithologies that would have undergone some degree of weathering during, and post-mining. Therefore, the EIS should not rely on current pit lake water quality as a predictor of post-closure quality. Additional Information Required 1. Conduct the appropriate, groundwater and water balance modelling (referenced in item #8 and 9), and update the geochemical modelling to accurately predict the pit lake water quality where pit lakes are proposed post-mining. 2. Develop the appropriate strategies and control measures for post closure management of water quality in pit lakes where potential seepage or mine affected water from pit lakes into groundwater to potentially impact the receiving environment 3. Identify water storages, the capacity, and appropriate contingencies to manage the expected, and unexpected volumes of contaminated water that will potentially be captured on site post closure.	Additional Information Point 1 The groundwater numerical model and water balance model have been updated as described in responses to submissions 7 and 9. The geochemical modelling has been updated with the following key scope aspects: - Review of the most recent kinetic test dataset including investigation of metals and other parameter's response to oxidation (expand on what has already been included re. determining the source term and show visually that all parameters have been considered by this review); - Compare the leachate data against current pit lake water quality and tier 1 criteria; - Comment on the level of risk posed from PAF oxidation regarding specific parameters; and - Prepare series of plots to demonstrate the Eh/pH relationship which can be used to predict future water quality for given solutes. This work is provided in Appendix N of this SEIS and a summary is provided below. A highly conservative predictive analysis of post-mining pit lake water quality was completed for the Rustlers Roost main pit and the Quest 29 satellite pits (Appendix N) The objective was to provide potential water quality composition of key elements in pit lake water during and following recovery of the water table. For the Rustlers Roost pit the analysis predicts the following: - Lake water in the Rustlers Roost pit is predicted to have high concentrations of contaminants of potential environmental concern (CPEC, relative to screening criteria) for Years 1 – 5 after mining has ceased. This is largely driven by the surface water run-off contacting the PAF rock in pit walls; - In year 10 copper is predicted to be elevated above the ANZECC & ARMCANZ 2000 Long-Term Irrigation Water and also the Mount Bundy Creek Site-Specific Trigger Value (SSTV), ANZG default guideline value (DGV) and ambient groundwater; - At this point the calculations assume pit wall run-off is contributing to <20% inflow. This decreases further at year 20 and copper continues to exceed ANZECC & ARMCANZ 2000 Long-Term Irrigation Water due to the strong pit wall run-off signature; and - By Year 30, most CPEC are at ambient groundwater concentrations except cobalt and copper which exceeds the average ambient ground water concentration (and Mount Bundy Creek SSTV). The predictions are conservative and likely over-predict lake water concentrations. The predictions also do not cater for limnological, hydrological and hydrogeological development of the pit. For the Quest 29 the analysis predicts the following: - When adopting the CSF and mean groundwater concentrations, lake water in the Quest 29 pits is predicted to have high concentrations of CPEC (relative to screening criteria) for Years 1 – 5 after mining has ceased. This is largely driven by the surface water run-off contacting the PAF rock in pit walls; and - In year 10, cobalt, copper, nickel, and zinc are predicted to be elevated above the ANZECC & ARMCANZ 2000 Long-Term Irrigation Water and also the Mount Bundy Creek SSTV, ANZG DGV and ambient groundwater. At this point the calculations assume pit wall run-off is contributing to 20% inflow. This decreases at year 20 and only copper continues to exceed ANZECC & ARMCANZ 2000 Long-Term Irrigation Water due to the strong pit wall run-off signature. By Year 30, most CPEC are at ambient groundwater concentrations except cobalt, copper, and nickel, which exceed the average ambient ground water concentration (and maximum concentration, nickel excepted). Given the presumed nature of lakes recovery, the elevated concentrations are predicted to occur in the early recovery period where net flow outwards are minimal or not occurring during recovery. Thus, this period is considered low risk to receptors. When the lakes recover the flow may become through flow and at this point the predicted concentrations are either below groundwater concentrations, laboratory limits of reporting (LOR) or in the case of cobalt, copper and nickel are still elevated above ecological criteria (i.e. ANZG DGV). The risk then may be mitigated by reactive retardation as

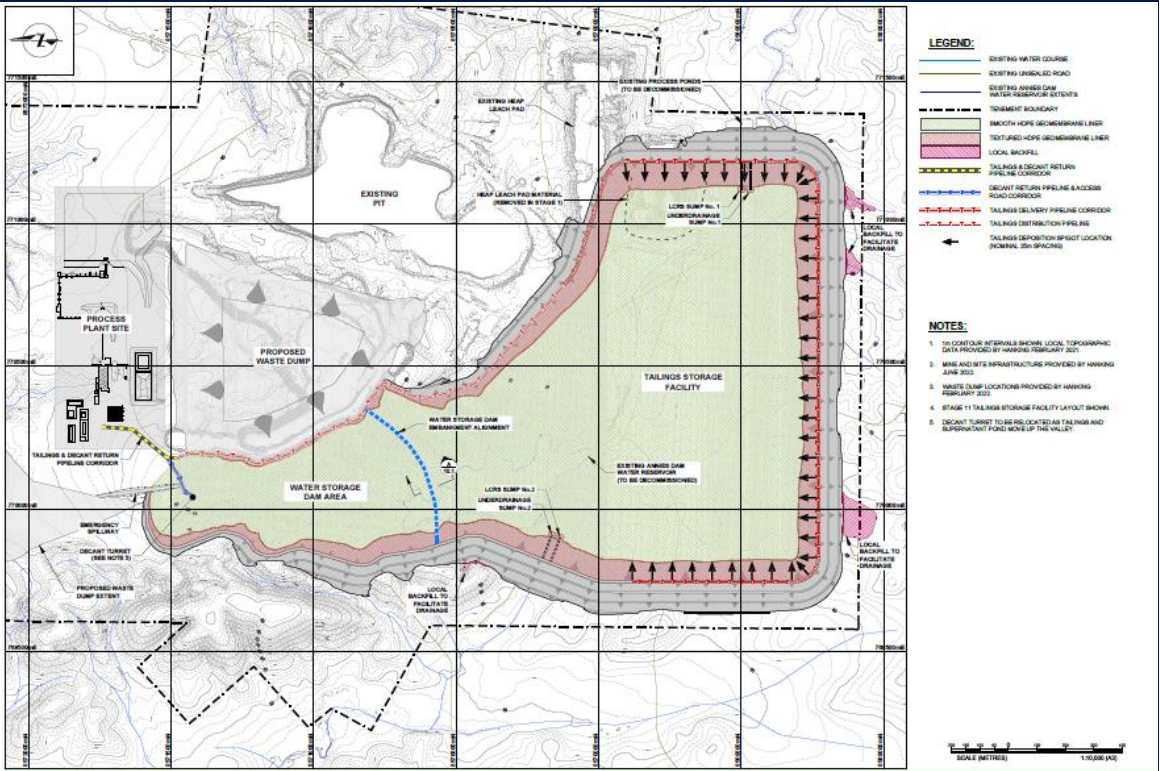
No.	EIS Section	Theme or Issue	Comment / Requested Additional Information	Required Action / Response
				the groundwater flows outwards from the pits, with respect to down hydraulic gradient receptors (groundwater dependant ecosystems). Furthermore, the groundwater analysis and water balance modelling (refer to Appendix O) indicates that post-mining, the pit lakes are unlikely to overflow. The water level for all pit lakes stabilised around the groundwater table levels in the modelling, suggesting that the pit lakes interaction with groundwater will vary seasonally, sometimes acting as a sink and sometimes as a source, but are unlikely to overflow. For Rustlers Roost the pit lake is predicted to stabilise within 30 years post-mining (median estimate) to a level similar to the current one. The likelihood of overflow is very small (regardless of the uncertainty on model parameters including aquifer hydraulic conductivity). Note that concentrations are not predicted to exceed stock watering criteria by year 10 post mining i.e. during the net inflow period. Tier 2 review of avian toxicity data does not indicate an unacceptable risk profile to migratory birds using the lakes during the recovery period or post steady state. The AMDMP (Appendix H) and WMP (Appendix Q) have been updated with an additional section on the post-mining pit lake water quality analysis results, including actions to address recommendations for continued data gathering and analysis. The post-mining water quality analysis results are conservative and will be refined as additional data becomes available during operation. At that point it is possible that predictive analysis shows fewer or no exceedance of guideline levels for contaminants of concern. However, Section 9.2.6 of the AMDMP also includes additional contingency measures for addressing these potential concentration levels if they are still predicted once additional data is analysed. These contingency measures include: ▪ In situ pit lake treatment – control of oxidation conditions through introduction of substances such as alkaline material and organic carbon substrate; ▪ Addition of Neutralising Material – addition of neutralising agents to control pit water pH during refill. This could simply involve replacement of unutilised onsite NAF material; ▪ Landform contouring and retention infrastructure – the groundwater modelling indicates the post-mining pits are unlikely to overflow. Therefore, contouring and bunding infrastructure that increases the downslope spill/crest height of the pits further reduces this this likelihood; and ▪ Mechanical water treatment – involving mechanical filtration. Additional Commitment – Ongoing analysis recommendations from the Post-mining Pit Lake Water Quality Analysis will be implemented as per the timing presented in the AMDMP. Additional Information Point 2 The WMP includes strategies and control measures in relation to post-mining pit lake water quality with due consideration to the outcomes of the latest geochemical modelling works. The revised post closure water balance was used to inform water volumes with management approaches relating to these water volumes detailed in the revised site WMP (Appendix Q). The revised modelling indicates that groundwater seepage into the open pits is the most significant contributor to the water balance as it amounts for about 77% of all inflows. Figure 1 below shows the groundwater seepage from the combined Rustlers Roost pits (Rustlers Roost pit, Annie Oakley pit, Annie Dam pit), and Figure 2 below shows groundwater seepage from the combined Quest 29 pits (Zamu pit, Southern Koolpin pit, North Koolpin pit, Taipan pit and BHS pit). The groundwater seepage is expected to increase as the pits deepen during mining operation. At the Rustlers Roost mine site there are three pits with deepening works happening at different times; Rustlers Roost pit begins operation in March 2023 and is active for the rest of the operation period whereas deepening of Annie Oakley pit and Annie Dam pit only occurs for 4 months and 10 months respectively, in 2023 and 2024. At the end of the mining operations, groundwater inflow into the Rustlers Roost pits would be 100 L/s. However, uncertainty analysis suggests that this inflow could vary between 30 L/s and 270 L/s. For the Quest 29 pits operations start in July 2025 at Zamu pit which is mined until end of June 2030, followed by operations in South Koolpin, North Koolpin and Taipan pits from July 2030 and BHS pit from August 2032. This means that the maximum groundwater seepage rate occurs around April 2031 where an estimated inflows of 200 L/s for all Q29 pits is expected, although with an uncertainty range from 60 L/s to 370 L/s. Total combined pit inflows are expected to be at their maximum in April 2031 at 290 L/s, with an uncertainty range from 90 L/s to 360 L/s. Monitoring of pit seepage during the initial phase of mining operation would greatly reduce the uncertainty. Figure 3 below illustrates the cumulative groundwater seepage volume into the pits. According to the model, at the end of the mining operations (in October 2031) about 46 GL of water is estimated to have seeped into the open pits. Based on the uncertainty analysis, this amount ranges from 23 GL (for a lower end hydraulic conductivity range) to 95 GL (for a higher end hydraulic conductivity range).

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				Figure 1 Predicted Total Amount of Groundwater Seepage from the Rustlers Roost Pits combined over Time Figure 2 Predicted Total Amount of Groundwater Seepage from the Quest 29 Pits Combined over Time

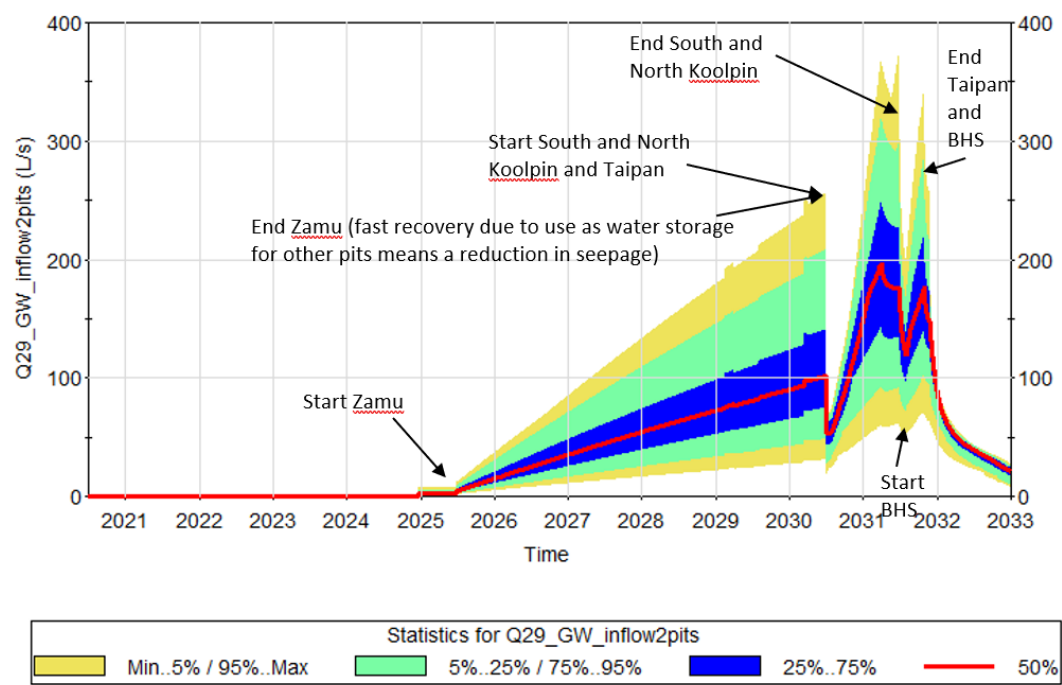
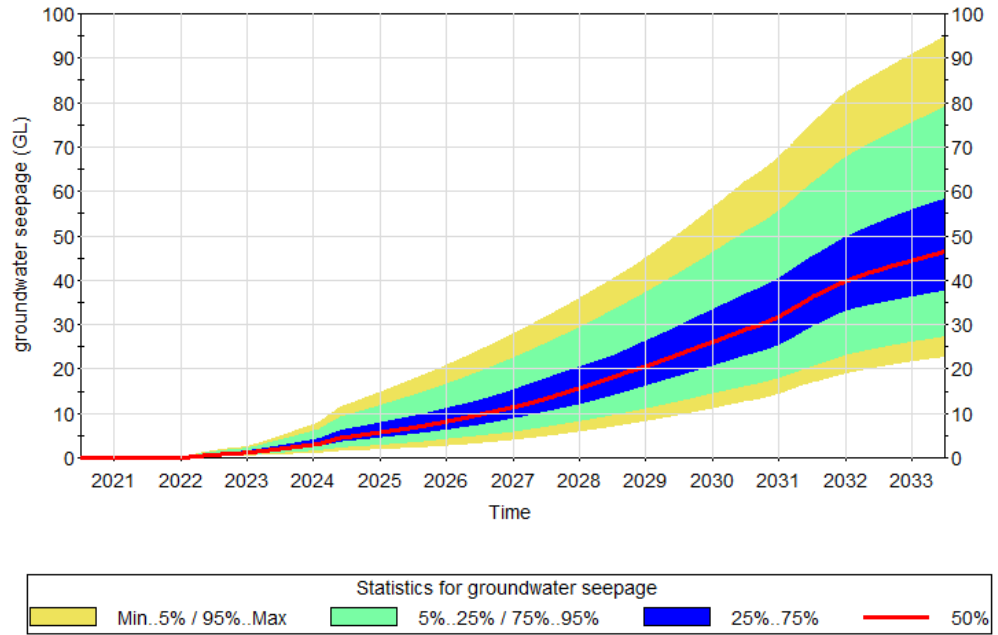
No.	EIS Section	Theme or Issue	Comment / Requested Additional Information	Required Action / Response
				 Figure 3 Cumulative Groundwater Seepage Volume into all Pits over Time Additional Information Point 3 The revised site WMP considers contingency approaches to the management of unexpected water volumes. The post closure water balance was used to inform potential water volumes that will dictate potential contingencies as part of the revised site WMP (Appendix Q).
14	Water quality impacts – Section 7.4 and Section 7.5, and Appendix H	Inland water environmental quality	Comment Due to the nature of the proposal, and current understanding of significant risks to the environment and water quality, it is acknowledged that impacts are likely, and development of site specific criteria is warranted, as opposed to the conservative approach of applying the default Australia and New Zealand Government (ANZG) Guidelines for Fresh and Marine Water Quality (2018). Current monitoring data provided in the Draft EIS indicates exceedances of aquatic ecosystem guideline values for metals, nutrients, and physico-chemical parameters in groundwater. If the modelling predicts a Waste Discharge Licence (WDL) is required to manage excess mine affected water, various criteria will need to be developed to address water treatment options, address criteria for discharge water quality to ensure the environment is protected, and to facilitate the application for a WDL. Additional Information Required If required, to manage excess mine affected water, and to protect groundwater and surface water quality, site-specific criteria and trigger values for constituents of concern and water quality will need to be developed in preference to ANZG (2018) default 95% species protection values. 1. In addition to collecting baseline data, develop and apply methods for carrying out the environmental risk assessment of the aquatic systems as relevant to the proposed action and the receiving environment. 2. Clarify the approach that will be taken to establish the site specific trigger values in addition to collecting baseline data, including using multiple lines of evidence such as direct toxicity assessment. 3. Demonstrate that methods adopted for developing site-specific criteria conform with recommendations provided by ANZG (2018) e.g. Water Quality Guidelines - Accounting for local conditions.	Additional Information Point 1, 2, and 3 Baseline monitoring of ground and surface waters, macroinvertebrate and sediments within the Project catchment is ongoing. In addition to water quality characterisation, Primary Gold have undertaken assessment of changes to catchment flows as they relate to the Project development (Appendix E) and demonstrated that changes are not significant. Primary Gold engaged the CSIRO (CSIRO 2018) to assess the suitability of the Site Specific Trigger Values (SSTVs) derived by GHD in 2015 and, if required, re-derive trigger values for physical and chemical indicators appropriate to the proposed range of beneficial uses of on-site water at the Tom's Gully Mine site. Since the Toms Gully catchment is downstream of Rustlers Roost it presents the same environmental values as the Project, and the conclusions from the CSIRO (2018) report can be applied as SSTVs for the Project. Analysis of flows and velocity changes for dewatering discharges during the operational phase indicate the discharge point can be limited to Mount Bundy Creek (Appendix E). Thus, it is not proposed to discharge into Marrakai Creek post completion of the initial dewatering phase (i.e. beyond 2023). SSTVs for Tom Gully were able to be calculated for the wet season, however, due to the lack of available monitoring points in the dry season, it was recommended that Primary Gold can use either the 2018 derived SSTVs or ANZG (2018) guidelines. Using the re-derived SSTVs, the CSIRO concluded that treated mine affected water could be discharged to the environment, provided that it meets, or exceed these SSTVs, and that this would result in a 90-95% species protection of the Mount Bundy creek. The CSIRO also concluded that, provided the SSTVs are met, that water discharge could be released in both the wet and dry season, without the need of a mixing zone. For the Rustlers Roost and Quest 29 Project, Primary Gold have committed to only release during the wet season in order to limit potential impact to aquatic ecology ecosystem functions reliant on the natural drying in ephemeral waterways and associated with natural flow regimes (natural variability/seasonality). The updated water balance modelling indicated the proposed system can accommodate the dry season storage in almost all circumstances. For the release of mine affected water for stock watering or irrigation, lower levels of treatment were found to be satisfactory, as these guidelines are less stringent than those for an aquatic ecosystem. Primary Gold has stated it is committed to the monitoring of sulfate and other ions in soils to ensure that there is no negative impact to the natural environment (CSIRO 2018). The methods applied by the CSIRO conform with the recommendations of the ANZG (2018) as they relate to accounting for local conditions in the development of water quality guidelines. The WMP includes site specific trigger values for surface water based on the CSIRO review. The values applied are as follows:

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				Analytes	Units	SSTV
				pH	pH	5.8-8.0
				Electrical Conductivity	µS/cm	41
				Turbidity	NTU	87
				Total Suspended Solids	mg/L	54
				Total Cyanide	mg/L	0.018
				Sulphate	mg/L	210
				Ammonia (pH 8)	mg/L	1.4
				Aluminium	µg/L	295
				Arsenic (total)	µg/L	42
				Cadmium	µg/L	0.4
				Chromium	µg/L	6
				Copper	µg/L	1.8
				Iron	µg/L	2,700
				Lead	µg/L	5.6
				Manganese	µg/L	2,500
				Molybdenum	µg/L	34**
				Nickel	µg/L	13
				Zinc	µg/L	15
15	Section 4.5.2 – Tailings storage Appendix H – 6.2.1 Appendix T – Acid Mine Drainage Management Plan	Inland water environmental quality	Comment The TOR explicitly required that the draft EIS demonstrates the acceptability of the TSF’s location over the existing heap leach pad and drainage lines in the Mount Bunday Creek catchment. Information on the TSF design, including minimum standards that would be incorporated, is not included in the Draft EIS. The Draft EIS lacks information and adequate design detail for the TSF to address concerns including: ▪ The TSF is situated on the mine lease boundary. This means that any seepage from the TSF will immediately flow off the mine lease boundary. Any groundwater monitoring bores will be situated off the mine lease boundary. Potential future repair works may exceed the mine lease boundary. Final capping might exceed the mine lease boundary. ▪ The TSF covers multiple drainage lines. These have an increased risk of transporting tailings liquid beneath the TSF walls and into both Mount Bunday Creek and Marrakai Creek. ▪ There does not appear to be a low permeability liner for the TSF. This would allow tailings seepage to migrate below the TSF and into groundwater or follow drainage lines into surrounding water bodies. ▪ Details have not been provided on the shaping of the TSF floor to understand tailings placement and water movement to decant. Poor shaping will allow TSF water to pool and potentially infiltrate instead of returning to the decant location. If tailings placement and water management is not adequate then tailings will not settle adequately. This in turn reduces stability of the tailings and increases infiltration. ▪ Inadequate detail is provided on how the tailings water inventory would be managed to avoid the potential for failure of the TSF embankments and minimise seepage. The information is required to clarify and demonstrate the proposed tailings storage facility is fit for purpose, planned, designed, constructed and operated to best practice standards, and Australian National Committee on Large Dams (ANCOLD) Guidelines on Tailings Dams. Additional Information Required Provide further information to adequately address the TOR including but not limited to:	Section 4.5.2 of the Project Description within the draft EIS details the proposed design parameters for the TSF. Specifically, Table 4-5 lists the minimum design standards for the TSF based on the Australian National Committee on Large Dams (ANCOLD) Guidelines on Tailings Dams – Planning, Design, Construction, Operation and Closure (2019). Refer to extract below.		

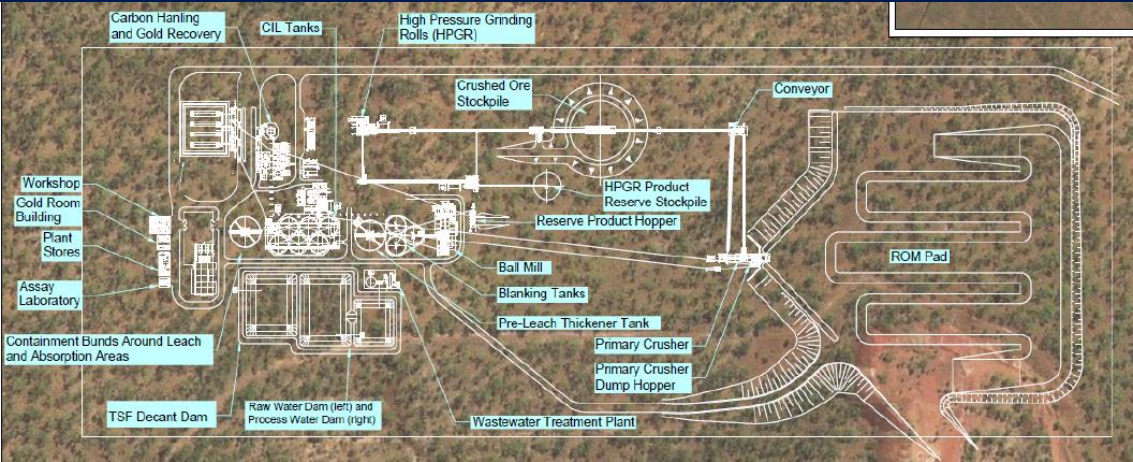
No.	EIS Section	Theme or Issue	Comment / Requested Additional Information	Required Action / Response																																																
			1. Details on design and construction of TSF base (foundation) and embankments including drainage zones and low-permeability cores. 2. Drainage line preparation details to ensure it is not a preferred flow path for TSF seepage. 3. Target design specifications such as permeabilities to demonstrate avoidance of impacts to groundwater via seepage, and to provide certainty about the effectiveness of mitigating/ protection measures. 4. Discharge point and receiving waterway for the TSF emergency spillway. 5. Tailings placement strategy and plan to provide context on the design and to demonstrate the TSF filling sequence. 6. Map showing location of decant dam. 7. Likely residual concentration of cyanide and other contaminants in tailings. 8. Volumes of water removed from the TSF to maintain safe freeboard and phreatic surface.	<table><tr><th>Component</th><th>Criteria</th></tr><tr><td>Dam failure consequence category</td><td>High A</td></tr><tr><td>Dam spill consequence category</td><td>Significant</td></tr><tr><td colspan="2">Design Storage Allowance Parameters</td></tr><tr><td>Design storage allowance</td><td>10% AEP notional wet season runoff (1 in 10)</td></tr><tr><td>Extreme storm storage</td><td>1% AEP, 72-hr flood (1 in 100)</td></tr><tr><td>Contingency freeboard (wave run-up)</td><td>10% AEP wind</td></tr><tr><td>Contingency freeboard (additional freeboard)</td><td>0.3</td></tr><tr><td colspan="2">Emergency Spillway Design Parameters</td></tr><tr><td>Design flood</td><td>Probable maximum flood</td></tr><tr><td>Wave freeboard allowance</td><td>Nil for given design flood</td></tr><tr><td colspan="2">Design Earthquake Loadings</td></tr><tr><td>Operating basis earthquake</td><td>0.1% AEP</td></tr><tr><td>Safety evaluation earthquake</td><td>0.01% AEP (median 50% fractile 1 in 10,000)</td></tr><tr><td>Maximum credible earthquake for post closure</td><td>Ground motion from known active faults calculated deterministically or probabilistically 1 in 10,000 AEP</td></tr><tr><td colspan="2">Factors of Safety</td></tr><tr><td>Long-term drained</td><td>1.5 (effective strength)</td></tr><tr><td>Short-term under drained (potential loss of containment)</td><td>1.5 (consolidated under drained strength)</td></tr><tr><td>Short-term under drained (no potential loss of containment)</td><td>1.3 (consolidated under drained strength)</td></tr><tr><td>Post-seismic</td><td>1.0-1.2 (post seismic shear strength)</td></tr><tr><td colspan="2">Dam Safety / Inspection Frequency</td></tr><tr><td>Comprehensive inspection</td><td>By Dams Engineer and Specialist (where relevant) after first year of operation then every five years.</td></tr><tr><td>Intermediate inspection</td><td>By Dams Engineer annually</td></tr><tr><td>Routine inspection</td><td>Weekly to twice weekly inspection by operations personnel/inspector</td></tr></table> The full TSF Feasibility Design Report is now provided in Appendix G of the SEIS. Responses to the specific concerns are as follows: Additional Information Point 1 The TSF footprint has been designed to provide a 50 m corridor between the downstream toe of the embankment and the site boundary. This setback is inclusive of the estimated final capping. This setback is considered sufficient for any required future maintenance. There is existing groundwater, surface water, macroinvertebrate and sediment monitoring sites outside the lease boundary. The area immediately to the west of ML1083 is Old Mount Bunday Station. Primary Gold maintain a land access agreement with the existing pastoral lease holder of Old Mount Bunday Station for accessing land outside the lease for various activities including monitoring. As such, the necessity to maintain groundwater monitoring bores outside the lease boundary is not considered a constraining factor on the placement of the TSF. Figure 10-2 of Appendix G presents the TSF General Arrangement including liner and drainage systems.	Component	Criteria	Dam failure consequence category	High A	Dam spill consequence category	Significant	Design Storage Allowance Parameters		Design storage allowance	10% AEP notional wet season runoff (1 in 10)	Extreme storm storage	1% AEP, 72-hr flood (1 in 100)	Contingency freeboard (wave run-up)	10% AEP wind	Contingency freeboard (additional freeboard)	0.3	Emergency Spillway Design Parameters		Design flood	Probable maximum flood	Wave freeboard allowance	Nil for given design flood	Design Earthquake Loadings		Operating basis earthquake	0.1% AEP	Safety evaluation earthquake	0.01% AEP (median 50% fractile 1 in 10,000)	Maximum credible earthquake for post closure	Ground motion from known active faults calculated deterministically or probabilistically 1 in 10,000 AEP	Factors of Safety		Long-term drained	1.5 (effective strength)	Short-term under drained (potential loss of containment)	1.5 (consolidated under drained strength)	Short-term under drained (no potential loss of containment)	1.3 (consolidated under drained strength)	Post-seismic	1.0-1.2 (post seismic shear strength)	Dam Safety / Inspection Frequency		Comprehensive inspection	By Dams Engineer and Specialist (where relevant) after first year of operation then every five years.	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Routine inspection	Weekly to twice weekly inspection by operations personnel/inspector																																																			

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				 LEGEND: - EXISTING WATER COURSE - EXISTING UNPAVED ROAD - EXISTING MINERAL WATER RESOURCES EXTENTS - TERMINAL BOUNDARY - SMOOTH HDPE UNDERDRAINAGE LINER - TEXTURED HDPE UNDERDRAINAGE LINER - LOCAL BACKFILL - TAILINGS & DECANT RETURN PIPELINE CORRIDOR - DECANT RETURN PIPELINE & DECANT ROAD CORRIDOR - TAILINGS DELIVERY PIPELINE CORRIDOR - TAILINGS DISTRIBUTION PIPELINE - TAILINGS DEPOSITION SPACED LOCATION (NORMAL 30M SPACING) NOTES: 1. TO CONTOUR INTERVALS SHOWN, LOCAL TOPOGRAPHIC DATA PROVIDED BY HANNOCK FEBRUARY 2021. 2. MINE AND SITE INFRASTRUCTURE PROVIDED BY HANNOCK JUNE 2022. 3. WASTE DUMP LOCATIONS PROVIDED BY HANNOCK FEBRUARY 2021. 4. STAGE 11 TAILINGS STORAGE FACILITY LAYOUT SHOWN. 5. DECANT TUNNEL TO BE LOCATED AS TAILINGS AND SUPERFUND TUNNELS UP THE VALLEY. Figure 10 RUSTLERS ROOST GOLD PROJECT FEASIBILITY DESIGN REPORT GENERAL ARRANGEMENT PLAN - FINAL Additional Information Point 2 While certain areas such as the existing drainage lines and Annie's Dam are likely to contain soil conditions that are more permeable and susceptible to higher infiltration rates, the entire TSF basin is proposed to be covered by composite liner of HDPE and CSL (refer to details below). The characteristics of the near surface ground are variable with some areas comprising fine grained material whilst other areas comprise more permeable coarse grained material and/or weak rock. It is estimated that 60% of the site has suitable material below the topsoil layer to scarify and recompact to form a suitable subgrade for the installation of HDPE liner, with the remainder of the site requiring material to be sourced from borrow (i.e. other portions of the proposed Project disturbance area). The design incorporates an upstream toe drain and basin underdrainage system in lowlying basin areas to reduce pressure head acting on the liner, reduce seepage, increase tailings densities, and improve the geotechnical stability of the embankment. The underdrainage system comprises a network of finger drains and collector drains. The toe drain and underdrainage system drain by gravity to a collection sump located at the lowest point in the TSF (refer Appendix G). Additional Information Point 3 As per Table 4-4, Section 4.5.2 of the Draft EIS, the basin of the TSF is proposed to comprise a composite liner of HDPE and CSL over the entire base. The TSF design incorporates a full HDPE liner underlain by 300 mm thickness imported (or 200 mm thickness in situ) CSL across the TSF basin (refer Figure 10-2 Appendix G). In addition to the composite liner the design comprises a cut-off trench, basin underdrainage system and embankment toe-drain (refer to Section 8 of Appendix G for the design details). Laboratory testing was conducted on a number of samples obtained from select test pits. Laboratory testing on these samples yielded permeabilities in the range of 1×10^{-8} m/s to 9×10^{-10} m/s. The permeability of the HDPE liner will be in the range of 1×10^{-10} m/s to 1×10^{-11} m/s. It is estimated that 60% of the site has suitable material below the topsoil layer to scarify and recompact to form a suitable subgrade for the installation of HDPE liner, with the remainder of the site requiring material to be sourced from borrow. The target permeability for the CSL will be in the range of 1×10^{-7} m/s to 1×10^{-8} m/s. Based on the design criteria and testing values the TSF seepage is estimated to be up to 2.2 mm/y (i.e. this is an upper bound estimate). This is a low seepage rate (refer to Appendix G). The seepage assessment presented in Appendix G was completed for design and stability purposes. CDM Smith has completed a separate seepage assessment to inform the additional groundwater modelling component (refer to Appendix O). A summary of this assessment is provided below. The groundwater seepage is expected to increase as the pits deepen during mining operation. At the Rustlers Roost mine site there are three pits with deepening works happening at different times; Rustlers Roost pit begins operation in March 2023 and is active for the rest of the operation period whereas deepening of Annie Oakley pit and Annie Dam pit only occurs for 4 months and 10 months respectively, in 2023 and 2024. At the end of the mining

No.	EIS Section	Theme or Issue	Comment / Requested Additional Information	Required Action / Response
				operations, groundwater inflow into the Rustlers Roost pits would be 100 L/s. However, uncertainty analysis suggests that this inflow could vary between 30 L/s and 270 L/s. For the Quest 29 pits operations start in July 2025 at Zamu pit which is mined until end of June 2030, followed by operations in South Koolpin, North Koolpin and Taipan pits from July 2030 and BHS pit from August 2032. This means that the maximum groundwater seepage rate occurs around April 2031 where an estimated inflows of 200 L/s for all Q29 pits is expected, although with an uncertainty range from 60 L/s to 370 L/s. Total combined pit inflows are expected to be at their maximum in April 2031 at 290 L/s, with an uncertainty range from 90 L/s to 360 L/s. Monitoring of pit seepage during the initial phase of mining operation would greatly reduce the uncertainty. Figure 3 below illustrates the cumulative groundwater seepage volume into the pits. According to the model, at the end of the mining operations (in October 2031) about 46 GL of water is estimated to have seeped into the open pits. Based on the uncertainty analysis, this amount ranges from 23 GL (for a lower end hydraulic conductivity range) to 95 GL (for a higher end hydraulic conductivity range). Figure 1 Predicted Total Amount of Groundwater Seepage from the Rustlers Roost Pits combined over Time

No.	EIS Section	Theme or Issue	Comment / Requested Additional Information	Required Action / Response
				 Figure 2 Predicted Total Amount of Groundwater Seepage from the Quest 29 Pits Combined over Time  Figure 3 Cumulative Groundwater Seepage Volume into all Pits over Time Additional Information Point 4 The TSF is designed to hold the tailings plus the design rainfall conditions, and thus has sufficient stormwater storage capacity for all storm events and rainfall sequences considered in the design. Refer to Section 7 of Appendix G for the site water management details and Section 8 for the design details. The TSF is designed to contain a range of design storm events, in accordance with ANCOLD. In the event that a storm event greater than the TSF design criteria occurs, rainfall and supernatant water which cannot be stored within the supernatant pond will discharge from the TSF in a controlled manner via an engineered emergency spillway. An emergency spillway will be available at all times during TSF operation, constructed as part of each embankment raise. The spillway inlet will be completely cut into an abutment of the TSF embankment. The emergency spillway

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				channel will be lined with rock erosion protection (Zone E). The spillway channel is designed to discharge downstream of the embankment toe into a natural drainage channel. The emergency spillway system is designed on the basis that attenuation of the storm event occurs within the supernatant pond. The attenuation on the TSF and spillway design will allow single storm events with an average recurrence interval of up to the Probable Maximum Flood (PMF) to be safely discharged from the TSF whilst protecting the embankment from overtopping. The location and details of the Stage 1 emergency spillway are shown on Drawing. No. 801-102-A3001-505 of Appendix G TSF Design Report. The closure spillway will be excavated through the waste dump to the northeast of the TSF towards the open pit and will allow conveyance of PMP storm events without any attenuation in the TSF. Deposition during the final stage of operation will be managed to push the supernatant pond to the eastern side of the TSF to reduce the required closure spillway excavation. In all respects the TSF is being designed to the ANCOLD Guidelines (2019) accounting for site-specific considerations. The design criteria for the TSF are governed by the ANCOLD consequence category (refer to Section 9 of Appendix G). The overarching design objectives for the TSF are as follows: ▪ Permanent and secure containment of all solid waste materials (tailings) generated by the process plant. ▪ Maximisation of tailings densities using sub-aerial deposition. ▪ Removal and reuse of free water. ▪ Control of seepage. ▪ Containment of extreme storm events and design rainfall sequences within the ▪ TSF to comply with ANCOLD (2019) guidelines (Ref. 1). ▪ Ease of operation. ▪ Rapid and effective rehabilitation. ▪ Monitoring network comprising embankment (standpipe and vibrating wire) piezometers, survey pins and groundwater bores. Additional Information Point 5 As per Section 4.5.2 of the Draft EIS, a composite liner of HDPE, and CSL comprising primarily reworked in situ soils, will be constructed over the full TSF basin. The previous TSF design comprised a CSL to the entire basin excluding within the Annie’s Dam footprint; however, this has now been updated to include a composite liner (CSL and HDPE) to the entire TSF basin. The design incorporates an underdrainage system to reduce pressure head acting on the liner, reduce seepage, increase tailings densities, and improve the geotechnical stability of the embankments. The design of the underdrainage system takes advantage of the natural fall of the ground and thus minimal re-shaping of the basin will be required (refer to Appendix G for further details of the TSF shaping and drainage approach). Tailings will be discharged into the facility by sub-aerial deposition methods, using banks of spigots at regular intervals predominantly from the main embankments for supernatant pond location control. The active tailings beach will be regularly rotated around the facility so as to improve tailings density and control the supernatant pond. Deposition will be managed from eastern, southern and western embankments to ensure that the supernatant pond will be located in the northern valley of the TSF. During the later stages of operation, deposition will be relocated to the head of the northern valley to push the supernatant pond further south towards the proposed closure spillway location. Additional Information Point 6 The TSF decant dam sits within the disturbance footprint of the processing plant (refer Appendix G). Figure 4-7 of the Draft EIS incorrectly labelled the TSF decant dam as a stormwater pond. The TSF decant dam is located on the south-western side of the processing plant. The processing plant layout figure has been updated with labelling of the TSF decant dam. The location is shown below and the layout is included as Figure 4-10 of this SEIS. A HDPE lined pipeline containment trench will be constructed for Stage 1 to provide secondary containment of the decant return and tailings delivery pipelines between the Plant Site and the TSF.

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				 Additional Information Point 7 The material characterisation assessment, included as Appendix F of the SEIS, contains static test results from analysis of cyanide species from the tailings sample (refer to Section 6.14.4 of Appendix F Material Characterisation Study of this SEIS). During the static test, the tailings sample was leached in de-ionised water to release the stored cyanide compounds. The leachate produced was assessed via colorimetric methods. The results of these tests for cyanide are presented in Table 1 below and within the appendices of the Material Characterisation Study (Appendix F) for other contaminants. Table 1 Results of Cyanide Species Testing in Tailings <table><tr><th colspan="2">Analyte</th><th>CN_total</th><th>CN_WAD</th><th>SCN_L</th></tr><tr><th>Sample</th><th>Units</th><th>mg/kg</th><th>mg/kg</th><th>mg/kg</th></tr><tr><td>Tailings</td><td></td><td><0.5</td><td><0.5</td><td>27</td></tr></table> Where CN_total is total cyanide (CN), CN_WAD is weak acid dissociable cyanide, which includes free and moderately stable complexes such as those with Cu, Cd and Zn. SCN_L is thiocyanate, the sulfur cyanide complex. From these results it is clear the cyanide in the tailings sample is present as thiocyanate, the sulfur form. Toxicity and stability of this complex is dependent on the cation associated with this anion. The tailings are acid forming and thus the thiocyanate may decompose to free cyanide during tailing storage. This in turn could be a source of HCN either as a gas or dissolved solute in water. Both the gas and solute can be toxic to organisms. Given the tailings represent a composite of all lithologies at Rustlers Roost, and are acid forming, as per the preliminary risk assessment, the additional COPCs likely to be released from tailings are Ag, As, Al, Cd, Co, Cr, Cu, Fe, Mo, Ni, P, Pb, Se, Ti, U, V and Zn, and nitrate. The likely residual concentration of contaminants released from tailings is provided in tables at the end of Appendix C within Appendix F of this SEIS. The month 12 sample showed exceedances of Mount Bundy SSTV or the ANZECC & ARMCANZ 2000 long-term irrigation water guideline criteria for Cu, Mn, Mo, S and SO₄. In the prior months, the analysis also presented various exceedances for Ni, As, Zn, and Fe. Although cyanide in the tailings will likely be present as thiocyanate which could oxidise and release additional contaminants as described above, the National Environment Protection (Assessment of Site Contamination) Measure Health Investigation Level for residential land use is 250 mg/kg. As such, the values from the static test are ~10% of the tier 1 criteria for sensitive land use. Cyanide is an important component of vitamin B-12. Which is an essential vitamin in the human diet that prevents vitamin B-12 deficient anaemia. The cyanide in vitamin B-12 is tightly bound and not harmful. With respect to ecology, and ingestion/ direct contact, there are no specific agreed criterion for eco-toxicity, which implies that soil/sediment may have up to 250 mg/kg cyanide and there is no specific reason to assess ecological effects. New Zealand identifies the acute LD50 (lethal dose where 50% of population is affected) to mammals and birds is generally 1-10 mg/kg bodyweight. This bodyweight consideration is stating that mammals/ birds would need to ingest 1 mg per kg of body weight for half that population to experience mortality. So for birds, such as a Zebra Finch which weighs around 16 g or 0.016 kg, they must not ingest more than 0.016 mg. Where there is ~27 mg in every kg of tailings (present as thiocyanate) this is 0.027 mg for every g, so a Zebra Finch would need to consume around 500 mg of tailings to experience a possibly (1 in 2) mortality. For context, 100 mg per day is used for defining human	Analyte		CN_total	CN_WAD	SCN_L	Sample	Units	mg/kg	mg/kg	mg/kg	Tailings		<0.5	<0.5	27
Analyte		CN_total	CN_WAD	SCN_L															
Sample	Units	mg/kg	mg/kg	mg/kg															
Tailings		<0.5	<0.5	27															

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				health risk of a child purposefully ingesting soil. As per the example species, a Zebra Finch would need to ingest 500 mg on a regular basis of which there is expected to be no inclination to ingest the tailings material. Regarding the potential effect on flora and possible transfer to fauna, there are several plant species that are toxic due to inherent cyanide based compounds (e.g. sudangrass, Johnsongrass, sorghums and sorghum-sudangrass hybrids). Cyanide is produced in plant tissues as the result of hydrolysis of cyanogenic compounds and is also released as a co-product of ethylene biosynthesis. Most cyanide produced in plants is detoxified primarily by the key enzyme β-cyanoalanine synthase. The remaining HCN at non-toxic concentration may play a role of signalling molecules involved in the control of some metabolic processes in plants. Thus, HCN may play a dual role in plants, depending on its concentration. Cyanides in water and soil form hydrogen cyanide (HCN) that is eventually volatilised into the air and disperses quickly due to its low density. Micro-organisms in water and soil convert some of the cyanide to less harmful chemicals; some form metal-cyanides. Soil concentrations are expected to be low as the cyanide ion is strongly adsorbed and retained in soils, and numerous micro-organisms are able to degrade free cyanide to carbon dioxide and ammonia. Certain bacteria, fungi, and algae also produce cyanides. A specific eco-tox criteria for soils with respect to plant growth and health is not readily available, noting the role of cyanide in plant physiology. A pronounced wilting after a 3-days exposure to 25 mg NaCN/kg soil (DW) has been observed in bush bean (<i>Phaseolus vulgaris</i> L.), while addition of 100 mg NaCN/kg causes significant reduction in growth, with 100 % mortality after 9 days (Wallace et al. 1977). With regard to cyanide in the TSF supernatant water, the Australian Government Leading Practice Sustainable Development Program for the Mining Industry – Cyanide Management (Australian Government, 2008) states there is a clear difference in susceptibility of cyanide to wildlife for freshwater TSFs compared with hyper saline. It is recognised that wildlife at freshwater TSFs are protected by the accepted safe no discharge WAD cyanide level of 50 mg/L. The supernatant results demonstrate that the WAD cyanide are below 50 mg/L (27.5 mg/L, Appendix G). Tailings from the CIL circuit will be screened to recover activated carbon and then detoxification as required to maintain residual cyanide below 50 mg/L CN_{WAD} prior to being pumped to the TSF for disposal. As discussed in points 1 to 5 above, the basin of the TSF is proposed to comprise a composite liner of HDPE and CSL over the entire base. The TSF design incorporates a full HDPE liner underlain by 300 mm thickness imported (or 200 mm thickness in situ) CSL across the TSF basin. In addition to the composite liner the design comprises a cut-off trench, basin underdrainage system and embankment toe-drain. Additionally, the TSF is designed to hold the tailings plus the design rainfall conditions, and thus has sufficient stormwater storage capacity for all storm events and rainfall sequences considered in the design. The TSF is designed to contain a range of design storm events, in accordance with ANCOLD. In the event that a storm event greater than the TSF design criteria occurs, rainfall and supernatant water which cannot be stored within the supernatant pond will discharge from the TSF in a controlled manner via an engineered emergency spillway. Therefore, PGO acknowledges that with the proposed TSF design and the relevant management measures in place, the risk of contamination from tailings through seepage or runoff is considered low. The tailings are not considered a growth medium as it will be capped for rehabilitation. Controls have been nominated to limit seepage or runoff from the TSF. Further, the embankments of the TSF are designed to always sit higher than the tails and prevent erosion to external areas. Given the nominated controls and the natural cycling of cyanide as summarised above, the risk to the environment from residual cyanide in the tailings at the levels identified from the geochemical analysis is considered low. Additional Information Point 8 TSF recycle details are available in Appendix D of Appendix G TSF Design Report of this SEIS (tables 3.1, 3.3 and 3.5). The TSF stability and seepage modelling have been completed for the average pond with a 72hr 1% Annual Exceedance Probability storm superimposed as estimated by the Water Balance Model. It is noted that based on the Water Balance Modelling sufficient freeboard and storm water capacity is available to be compliant with ANCOLD 2019.
16	Section 6.2.1 of Appendix H	Inland water environmental quality	Comment The TOR requires a detailed description of all construction and operational aspects including WRDs. The Draft EIS states: <i>‘given the small catchment area associated with each WRD, potential runoff from the WRDs will be captured into dedicated decant dams, with the runoff water treated before release to the surrounding creeks’.</i> Additional Information Required Clarify the design, construction, and operation of WRDs and provide additional information on: 1. Risk of contamination of runoff from WRDs with metals and other contaminants. 2. The details of decant dams for WRDs 3. The details of water treatment for runoff water prior to release.	Additional Information Point 1, 2 and 3 The top cladding of the WRDs will be slightly domed to prevent water collecting, facilitate runoff and limit seepage. Rock lined drainage trenches will be the initial receiving structure for WRD runoff. The drainage trenches will capture the WRD runoff and slow the velocity of water running down the 17 degree slope to prevent erosion. The erosion and sediment planning for the project incorporates two types of basis for capturing and treating WRD runoff prior to discharge: 1) Catch drains along the WRD contours; 2) Temporary check dams; and 3) Sediment basins (termed the decant dams in the extract). The proposed network of drains and retention structures is identified in Appendix L of the Draft EIS and is based on analysis in accordance with the International Erosion Control Association (IECA) best practice guideline Best Practice

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				Erosion and Sediment Control (IECA 2008). Additional information on the design and construction of the WRDs is provided in Appendix J of the SEIS. A map showing all decant dams for the Project (including WRDs) is provided in Appendix D.2 of Appendix L Erosion and Sediment Control Plan of the Draft EIS. However, Appendix L of the Draft EIS has adopted a different terminology for the decant dams and called it as ‘Sediment Basin’. Figure 1 below is an extract of the figure provided in Appendix D.2 of the ESCP which shows the location of all decant dams (referred to as ‘SB’ – Sediment Basin) in blue, the catch drains in green and check dams in black. Table 6-1 in Appendix L Erosion and Sediment Control Plan of the Draft EIS provides calculation of maximum sediment basin capacity, as shown in Table 1 below. Table 1 Calculation of Maximum Sediment Basin Capacity <table><tr><th>Parameters</th><th>SB 1</th><th>SB 2</th><th>SB 3</th><th>SB 4</th><th>SB 5</th><th>SB 6</th><th>SB 7</th><th>SB 8</th><th>SB 9</th><th>SB 10</th><th>SB 11</th></tr><tr><td>Soil Loss (t/ha/y)</td><td>287</td><td>629</td><td>366</td><td>1465</td><td>300</td><td>264</td><td>368</td><td>113</td><td>164</td><td>21</td><td>620</td></tr><tr><td>Soil Loss Volume (m³/ha/y)</td><td>221</td><td>484</td><td>281</td><td>1127</td><td>231</td><td>203</td><td>283</td><td>87</td><td>126</td><td>16</td><td>477</td></tr><tr><td>Annual Soil Loss (m³/y)</td><td>3955</td><td>10927</td><td>21266</td><td>17061</td><td>3860</td><td>7213</td><td>1220</td><td>4911</td><td>1319</td><td>229</td><td>29619</td></tr><tr><td>Soil Hydrologic Group</td><td>C</td><td>C</td><td>C</td><td>C</td><td>C</td><td>C</td><td>C</td><td>C</td><td>C</td><td>C</td><td>C</td></tr><tr><td>Volumetric runoff coefficient</td><td>0.9</td><td>0.9</td><td>0.9</td><td>0.9</td><td>0.9</td><td>0.9</td><td>0.9</td><td>0.9</td><td>0.9</td><td>0.9</td><td>0.9</td></tr><tr><td>Settling Zone Volume (m³)</td><td>5645</td><td>7113</td><td>23807</td><td>4769</td><td>5262</td><td>11169</td><td>1358</td><td>17749</td><td>3289</td><td>4502</td><td>19555</td></tr><tr><td>Storage Zone Volume (m³)</td><td>3955</td><td>10927</td><td>21266</td><td>17061</td><td>3860</td><td>7213</td><td>1220</td><td>4911</td><td>1319</td><td>229</td><td>29619</td></tr><tr><td>Total Volume (m³)</td><td>9600</td><td>18040</td><td>45072</td><td>21830</td><td>9122</td><td>18382</td><td>2578</td><td>22660</td><td>4608</td><td>4730</td><td>49174</td></tr></table> Note: Basin capacity is calculated for the anticipated highest disturbance condition during construction.	Parameters	SB 1	SB 2	SB 3	SB 4	SB 5	SB 6	SB 7	SB 8	SB 9	SB 10	SB 11	Soil Loss (t/ha/y)	287	629	366	1465	300	264	368	113	164	21	620	Soil Loss Volume (m³/ha/y)	221	484	281	1127	231	203	283	87	126	16	477	Annual Soil Loss (m³/y)	3955	10927	21266	17061	3860	7213	1220	4911	1319	229	29619	Soil Hydrologic Group	C	C	C	C	C	C	C	C	C	C	C	Volumetric runoff coefficient	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	Settling Zone Volume (m³)	5645	7113	23807	4769	5262	11169	1358	17749	3289	4502	19555	Storage Zone Volume (m³)	3955	10927	21266	17061	3860	7213	1220	4911	1319	229	29619	Total Volume (m³)	9600	18040	45072	21830	9122	18382	2578	22660	4608	4730	49174
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				Figure 1 – Rustlers Roost Catchments and Drainage at Closure Appendix E.1 of Appendix L of this SEIS provides the sediment basin design details (as shown in Figure 1 below) and sediment basin emergency spillway details is provided in Appendix E.2 (as shown in Figure 2 below).

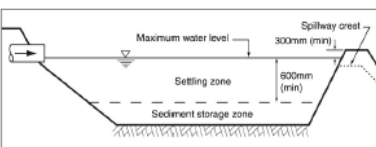
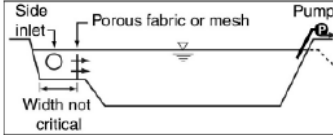
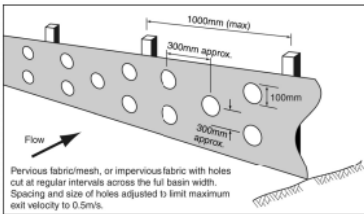
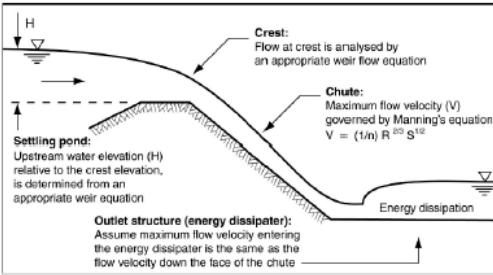
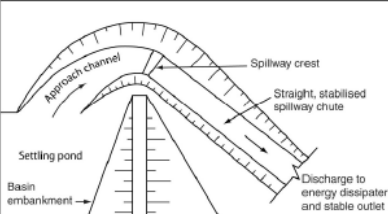
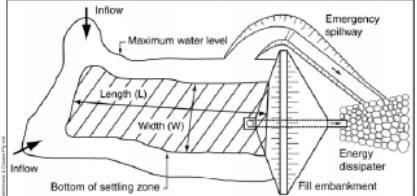
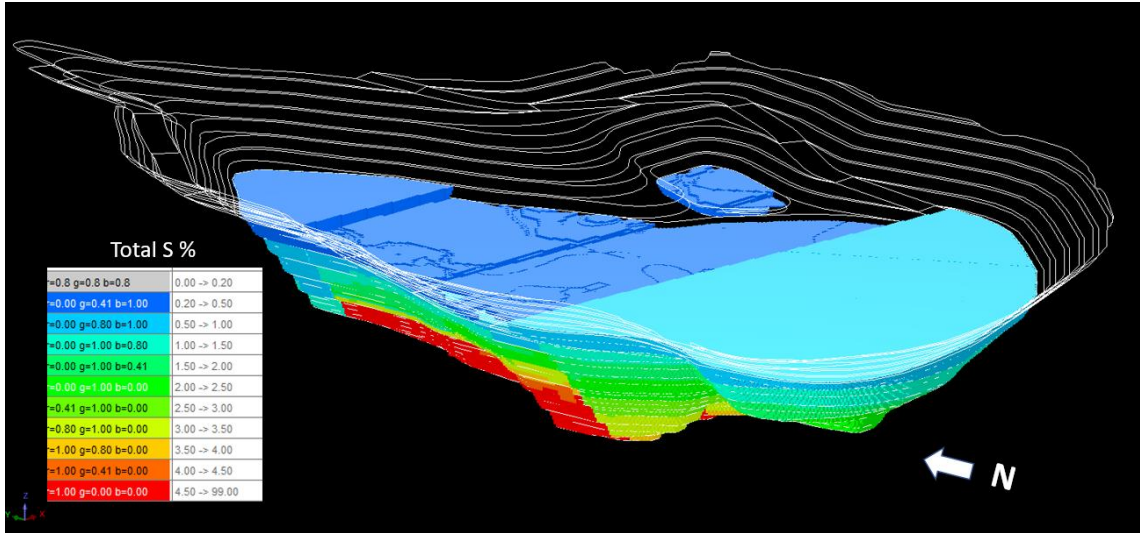
No.	EIS Section	Theme or Issue	Comment / Requested Additional Information	Required Action / Response								
				 Above: Long section through type D sediment basin with pipe inlet showing the settling zone and sediment storage zone. (See Figure B.25(b) IECA, 2018)  Above: Longitudinal section through type D sediment basin with side inlet and porous barrier. The length to width ratio of the basin is 3:1 and the internal wall slopes are 2:1 (H:V). An energy dissipater should be used at the inlet to the basin. For plan view see Figure (d1) Appendix E.3 with side inlet and porous barrier (IECA 2018). The length to width ratio of the basin is 3:1 and the internal wall slopes are 2:1 (H:V). An energy dissipater should be used at the inlet to the basin. The external wall slopes are a minimum 3:1 (H:V).  Above: Example arrangement of perforated fabric inlet baffle (Figure B28, IECA 2018) Notes - The sediment basin dimensions in the main report are designed in accordance with Appendix B. Sediment basin design and operation IECA (2018) - Sediment basin construction should be completed prior to the wet season after the first disturbance. The basins can be implemented sequentially depending on the catchment disturbed area. - Final basin size can be adjusted depending on the final disturbance area. - This is a preliminary plan and should be updated throughout the mine life. - Type D basins usually require a pumped discharge system. If a piped gravity or siphon outlet exists then a flow control valve is required to allow full control of the basin discharge. - When de-watering the basin there must not be any resuspension of previously settled sediment. Intake pipes must be housed in an appropriate flow control chamber and must not be allowed to rest on the bottom of the basin or any location that will entrain settled sediment. - An alternative is suspension of the inlet pipe on a floating raft. - The type D sediment basin is designed to retain the water for up to 3 days and the basin must be fully drained between storm events. - Settled sediment must be removed regularly to provide sufficient volume for the next rainfall runoff event. - The basins require regular maintenance during the wet season and the need for defoculation of suspended fine sediment must be tested. - No geotechnical investigations were conducted for this study and the basins have not been geotechnically designed.   Tim Elder #4390 Appendix E.1 30  Project Rustlers Roost and Quest 29 Open-Cut Mine Redevelopment - Erosion & Sediment Control Plan Sediment Basin Type D Detail <table><tr><td>Designed IECA 2018</td><td>Drawn KGE</td><td>Checked TE</td><td>Sheet Size A3</td></tr><tr><td colspan="3">Date:</td><td>Sheet No</td></tr></table>	Designed IECA 2018	Drawn KGE	Checked TE	Sheet Size A3	Date:			Sheet No
Designed IECA 2018	Drawn KGE	Checked TE	Sheet Size A3									
Date:			Sheet No									
				 Sediment basin type D exit spillway (Figure B36 IECA, 2018). See Appendix E.3 for energy dissipaters and drainage chutes.  Plan view layout of the emergency spillway to be designed to a 2% AEP event as the basins design life is > 12 months. Construction, maintenance and removal detail are available in in Drawing CH-06 (IECA, 2008), https://austrleca.com.au/documents/item/80.  Relationship between the emergency spillway and the energy dissipater for a Type C sediment basin which can similarly apply to the type D sediment basin (Figure B9, IECA, 2008). Notes - The emergency spillway has a trapezoidal profile. - See Main report sediment basin size schedule for emergency spillway design parameters. - The design storm is the 2% AEP event peak discharge determine from BOM IFDs in accordance with IECA (2008) guidelines.   Tim Elder #4390 Appendix E.2 32  Project Rustlers Roost and Quest 29 Open-Cut Mine Redevelopment - Erosion & Sediment Control Plan Sediment Basin Emergency Spillway Detail <table><tr><td>Designed KGE</td><td>Drawn KGE</td><td>Checked KGE</td><td>Sheet Size A3</td></tr><tr><td colspan="3">Date:</td><td>Sheet No</td></tr></table>	Designed KGE	Drawn KGE	Checked KGE	Sheet Size A3	Date:			Sheet No
Designed KGE	Drawn KGE	Checked KGE	Sheet Size A3									
Date:			Sheet No									

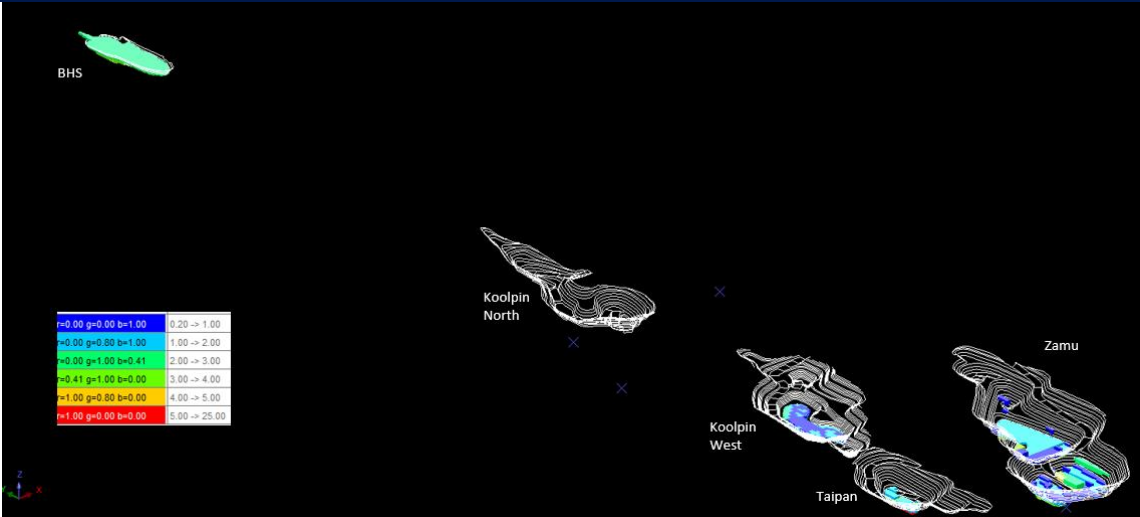
Figure 1 Sediment Basin Type D Detail

Figure 2 - Sediment Basin Emergency Spillway Detail

Figure 2 - Sediment Basin Emergency Spillway Detail

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				Sediment basins proposed for the Rustlers Roost, Quest 29 mining areas and accommodation camp are sized as Type D basins, which assume dispersive soils requiring the use of flocculating agents for settlement. Basin design will be revised prior to implementation of mine development to ensure the most efficient basin configuration is adopted. Final basin location will be subject to final site layout; however, the following criteria will apply: ▪ Located to maximise collection of sediment-laden runoff generated within the site; ▪ Not located within waterways or drainage channels; ▪ Located above the 1 in 5-year ARI; ▪ Have suitable access for maintenance; and ▪ Placed near site perimeter for ease of dewatering. Basin construction will incorporate the following elements: ▪ Earth embankments to be certified as structurally sound by geotechnical engineer/specialist; ▪ Stable inflow system (e.g., rock chute); ▪ Minimum 3:1 length to width ratio (may require internal baffles); ▪ Primary outlet (e.g., siphon, perforated riser) for controlled release; ▪ Emergency spillway (minimum design storm 1 in 50-year ARI); and ▪ Marker to identify the sediment storage zone depth. Basins are to be managed as follows: ▪ Discharged within 5 days of cessation of rainfall (min 25 mm); ▪ Controlled sediment basin discharge to be in accordance with the MMP and project approvals; ▪ Prior to discharge, water quality to meet project discharge criteria specified in site Water Management Plan (flocculant or coagulant may be required); ▪ Designed to ensure easy and safe access to dose retained water with flocculants as required; ▪ Marker peg to be installed to indicate sediment storage capacity; ▪ Removal of sediment where sediment storage capacity exceeds 50% and disposal/management of sediment so as not to create an erosion or pollution hazard; and ▪ Be regularly monitored to ensure structural integrity is maintained, including inlets and outlets. Surface water guideline values that will apply to release of captured water from the basins are included in Section 5.2.1 of Appendix Q of the SEIS (Water Management Plan). The values are based on the based on a CSIRO review of SSTV for Tom’s Gully mine for Mount Bunday Creek (Stauber and Batley 2018). These are listed below: <table><tr><th>Analytes</th><th>Units</th><th>SSTV</th></tr><tr><td>pH</td><td>pH</td><td>5.8-8.0</td></tr><tr><td>Electrical Conductivity</td><td>µS/cm</td><td>41</td></tr><tr><td>Turbidity</td><td>NTU</td><td>87</td></tr><tr><td>Total Suspended Solids</td><td>mg/L</td><td>54</td></tr><tr><td>Total Cyanide</td><td>mg/L</td><td>0.018</td></tr><tr><td>Sulphate</td><td>mg/L</td><td>210</td></tr><tr><td>Ammonia (pH 8)</td><td>mg/L</td><td>1.4</td></tr><tr><td>Aluminium</td><td>µg/L</td><td>295</td></tr><tr><td>Arsenic (total)</td><td>µg/L</td><td>42</td></tr><tr><td>Cadmium</td><td>µg/L</td><td>0.4</td></tr><tr><td>Chromium</td><td>µg/L</td><td>6</td></tr><tr><td>Copper</td><td>µg/L</td><td>1.8</td></tr><tr><td>Iron</td><td>µg/L</td><td>2,700</td></tr><tr><td>Lead</td><td>µg/L</td><td>5.6</td></tr></table>	Analytes	Units	SSTV	pH	pH	5.8-8.0	Electrical Conductivity	µS/cm	41	Turbidity	NTU	87	Total Suspended Solids	mg/L	54	Total Cyanide	mg/L	0.018	Sulphate	mg/L	210	Ammonia (pH 8)	mg/L	1.4	Aluminium	µg/L	295	Arsenic (total)	µg/L	42	Cadmium	µg/L	0.4	Chromium	µg/L	6	Copper	µg/L	1.8	Iron	µg/L	2,700	Lead	µg/L	5.6
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				<table><tr><td>Manganese</td><td>µg/L</td><td>2,500</td></tr><tr><td>Molybdenum</td><td>µg/L</td><td>34**</td></tr><tr><td>Nickel</td><td>µg/L</td><td>13</td></tr><tr><td>Zinc</td><td>µg/L</td><td>15</td></tr></table> Flocculation of basins will be required where the contained water does not meet discharge criteria standard within five days of cessation of rainfall. The application of a coagulant is to occur within 12 hours upon receiving runoff producing rainfall. Typically, gypsum (calcium sulfate) is used for this purpose. This requires application across the sediment basin surface (spray or hand cast) at a rate of 32 kg per 100 m³ of water volume. Given the capping and water shedding design of the WRDs, metals in the surface runoff are unlikely to originate from oxidation of sulfidic material but would be naturally bound to any sediment particles. Thus, reduction of suspended sediments is considered the primary management approach to limiting mobilisation and downstream discharge. Through the rigorous implementation of the erosion and sediment controls details in the Draft EIS Appendix L of the Draft EIS (Erosion and Sediment Control Plan), measures listed in Appendix K of the SEIS (Risk Assessment) and Appendix L of the SEIS (Commitment Register) the residual risk has been classified as ‘Moderate’ in the project risk assessment (refer to IWEQ-7 in Table 4 of the Risk Assessment in the Draft EIS). The residual risk is largely based on the propensity for high precipitation events in the wet season that can challenge the design and capacity of stormwater and ES controls. In accordance with the risk assessment the definition of ‘Moderate’ risk means this aspect is likely to require active monitoring as they are positioned on the risk acceptance threshold. Active monitoring to address this risk is presented in Appendix Q (Water Management Plan) and Appendix L (ESCP) of the Draft EIS.	Manganese	µg/L	2,500	Molybdenum	µg/L	34**	Nickel	µg/L	13	Zinc	µg/L	15
Manganese	µg/L	2,500														
Molybdenum	µg/L	34**														
Nickel	µg/L	13														
Zinc	µg/L	15														
17	Appendix I – Water Management Plan Appendix J – Mine Closure Plan	Inland water environmental quality	Comment The TOR requires a draft Mine Closure Plan (MCP) that includes assessment of predicted post-closure pit lakes including predicted water quality and water balance, accounting for potential density driven exchange between pit lakes and the surrounding groundwater resources. Rustlers Roost pit lake water level is predicted to recover to equilibrium water levels between 10 and 60 years. The risk assessment indicates that the residual risks of pit wall acidity and evapo-concentration leading to poor water quality in the pit after closure is low. Without adequate materials characterisation data and a block model for the pit in the Draft EIS, the post-closure water quality trajectory cannot be assessed. Additional Information Required 1. Using the block model developed as required in item #2 above, indicate the potential for and likely extent of PAF wall rock that might be exposed at end of mining in the Rustlers Roost pit. 2. Update the water management plan and post-closure water balance to account for changes in volumes and quality of mine-affected water as a result of AMD calculations.	Additional Information Point 1 Integrated ore and waste/sulfur block model has been undertaken for the Project. The result of this modelling is presented in Appendix A (Rustlers Roost) and Appendix B (Quest 29) of the Material Characterisation report (Appendix F of this SEIS). Primary Gold have conservatively modelled the spatial distribution of PAF in the pits of Quest 29 and Rustlers Roost. The material not classified as PAF is designated as NAF. The model shows the pit shell outline and the PAF extent. The Draft MCP (Appendix I) has also been updated to account for the block model results. In summary, for Rustlers Roost the modelling indicates the higher sulfur content material is near the 480 mRL to 460 mRL, about 100 m below surface (-20 to -40m AHD). Below the 530 mRL or 30 m AHD level there is a considerable amount of PAF material in the pit. The figure below provides an extract of the block model showing material with a S% content above 0.2% which is the cut-off concentration for PAF.  For Quest 29 the modelling indicates there is high sulfur content (PAF) material occurring in the base of the pits. The exceptions being BHS pit is high total sulfur (3% to 4%) from near surface and Koolpin North pit has no high S% sulfur (PAF material). Most of the +0.2% sulfur material is below the base of oxide. The figure below provides an extract of the block model showing material with a S% content above 0.2.												

No.	EIS Section	Theme or Issue	Comment / Requested Additional Information	Required Action / Response
				 Additional Information Point 2 A predictive analysis of post-mining pit lake water quality was completed for the Rustlers Roost main pit and the Quest 29 satellite pits (Appendix N). The objective was to provide potential water quality composition of key elements in pit lake water during and following recovery of the water table to further inform the risks and management approach. The AMDMP (Appendix H) and WMP (Appendix Q) have been updated with an additional section on the post-mining pit lake water quality analysis results, including actions to address recommendations for continued data gathering and analysis. The post-mining water quality analysis results are conservative and will be refined as additional data becomes available during operation. At that point it is possible that predictive analysis shows fewer or no exceedance of guideline levels for contaminants of concern. However, the AMDMP also includes additional contingency measures for addressing these potential concentration levels if they are still predicted once additional data is analysed. Additional Commitment – Ongoing analysis recommendations from the Post-mining Pit Lake Water Quality Analysis will be implemented as per the timing presented in the AMDMP.
18	Section 7.5.7	Aquatic ecosystems	Comment The TOR refers to hydrological processes, and requires an assessment of potential impacts and risks as a result of alteration of surface water flow volumes associated with mine site discharges and surface water extraction. The Draft EIS does not consider the impacts of increased flows on aquatic ecosystems, despite modelling indicating that discharges could double or potentially triple surface flow volumes in receiving waterways. Additional Information Required 1. Provide an analysis that demonstrates aquatic ecosystems downstream of the proposal will not be significantly impacted by increased surface water flow volumes from mine discharges.	Additional Information Point 1 An updated hydrological assessment has been completed to consider the potential change in water flows in the surface water systems using hydrologic modelling. The assessment also used hydraulic modelling to provide flow velocities to assess changes in riparian vegetation and aquatic ecosystems. The modelling has considered both the changes in the system flows for due to the physical alterations in the catchment from the Project and from the episodic discharges due to dewatering. The Hydrology Analysis report is provided in Appendix E. Comparing the distributions for each landform, pre- and post-redevelopment there is little difference in the distributions indicating minimal change in the catchment long term flow regimes. The results indicate there is a decrease in the long-term flow regimes for Marrakai Creek and Charles Creek with the size of the decrease reducing downstream. At the outlet for Marrakai Creek there is predicted to be a -0.4% change in total flow volume and -0.3% for Charles Creek. Mount Bunday Creek gains some additional catchment due to the development with an increase of 1.8% in the total volume at the outlet point. For the hydraulic modelling to assess inundation areas and flow velocities the 1% AEP (1 in 100y) and 0.1% AEP (1 in 1000 year) rainfall events were applied to both the pre-development and post-development landforms in the broader catchments. For each of the creek systems the results indicate that visual inspections of simulated water depth and velocity plotted along the thalweg of the stream channels showed little difference in the hydraulic parameters for the pre- and post-redevelopment conditions. Peak discharges and hydrographs were determined using HEC-HMS. The Nash-Sutcliffe statistic used to test difference between conditions was generally ≈ 1 indicating no significant difference in the hydrology of the pre and post-redevelopment conditions (refer to Appendix E). The following tables present a comparison of the differences in 1% AEP and 0.1% AEP rainfall events for three systems relevant to the Project for the pre- and post-redevelopment. Table 4 - Comparison of the differences in 1% AEP and 0.1% AEP rainfall events in the Marrakai Creek catchment pre- and post-redevelopment of the Rustler's Roost Mine

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				<table><tr><th colspan="10">1% AEP</th></tr><tr><th rowspan="2">Element</th><th colspan="4">Pre-redevelopment</th><th colspan="4">Post-redevelopment</th><th rowspan="2">Nash-Sutcliffe</th></tr><tr><th>Peak Discharge (m³/s)</th><th>Total Discharge (GL)</th><th>Velocity (m/s)</th><th>Depth (m)</th><th>Peak Discharge (m3/s)</th><th>Total Discharge (GL)</th><th>Velocity (m/s)</th><th>Depth (m)</th></tr><tr><td>J9</td><td>328.7</td><td>36.3</td><td>0.2</td><td>0.31</td><td>328.7</td><td>36</td><td>0.2</td><td>0.25</td><td>1</td></tr><tr><td>Outlet</td><td>374.8</td><td>64.9</td><td>1.16</td><td>3.37</td><td>374.8</td><td>64.6</td><td>1.15</td><td>3.46</td><td>1</td></tr><tr><th colspan="10">0.1% AEP</th></tr><tr><td>J9</td><td>498</td><td>53.9</td><td>0.19</td><td>1.21</td><td>498</td><td>53.5</td><td>0.19</td><td>1.2</td><td>1</td></tr><tr><td>Outlet</td><td>551</td><td>96.4</td><td>1.41</td><td>6.45</td><td>551</td><td>96</td><td>1.43</td><td>6.28</td><td>1</td></tr></table> Table 5 - Comparison of the differences in 1% AEP and 0.1% AEP rainfall events in the Mt Bunday Creek catchment pre- and post-redevelopment of the Rustler’s Roost Mine <table><tr><th colspan="10">1% AEP</th></tr><tr><th rowspan="2">Element</th><th colspan="4">Pre-redevelopment</th><th colspan="4">Post-redevelopment</th><th rowspan="2">Nash-Sutcliffe</th></tr><tr><th>Peak Discharge (m³/s)</th><th>Total Discharge (GL)</th><th>Velocity (m/s)</th><th>Depth (m)</th><th>Peak Discharge (m3/s)</th><th>Total Discharge (GL)</th><th>Velocity (m/s)</th><th>Depth (m)</th></tr><tr><td>J26</td><td>7.9</td><td>0.33</td><td>0.1</td><td>0.02</td><td>32.1</td><td>1.32</td><td>0.15</td><td>0.03</td><td>-</td></tr><tr><td>J15</td><td>206.7</td><td>10.2</td><td>0.21</td><td>0.53</td><td>211.6</td><td>10.9</td><td>0.21</td><td>0.51</td><td>0.99</td></tr><tr><td>J28</td><td>290.7</td><td>21.8</td><td>0.52</td><td>1.76</td><td>284.7</td><td>22.5</td><td>0.52</td><td>1.76</td><td>0.997</td></tr><tr><td>J1</td><td>292.41</td><td>38.4</td><td>1.14</td><td>3.43</td><td>287.39</td><td>39.1</td><td>1.14</td><td>3.41</td><td>0.997</td></tr><tr><th colspan="10">0.1% AEP</th></tr><tr><td>J26</td><td>12.7</td><td>0.50</td><td>0.13</td><td>0.025</td><td>52.4</td><td>2.10</td><td>0.18</td><td>0.07</td><td>-</td></tr><tr><td>J15</td><td>329.6</td><td>15.2</td><td>0.22</td><td>0.73</td><td>337.8</td><td>16.4</td><td>0.23</td><td>0.77</td><td>0.991</td></tr><tr><td>J28</td><td>421.2</td><td>32.4</td><td>0.66</td><td>2.11</td><td>413</td><td>33.5</td><td>0.67</td><td>2.17</td><td>0.996</td></tr><tr><td>J1</td><td>432.9</td><td>57.1</td><td>1.25</td><td>4.13</td><td>432.8</td><td>58.2</td><td>1.26</td><td>4.21</td><td>0.997</td></tr></table> Table 6 - Comparison of the differences in 1% AEP and 0.1% AEP rainfall events in the Charles Creek catchment pre- and post-redevelopment of the Quest 29 mining precinct <table><tr><th colspan="10">1% AEP</th></tr><tr><th rowspan="2">Element</th><th colspan="4">Pre-redevelopment</th><th colspan="4">Post-redevelopment</th><th rowspan="2">Nash-Sutcliffe</th></tr><tr><th>Peak Discharge (m³/s)</th><th>Total Discharge (GL)</th><th>Velocity (m/s)</th><th>Depth (m)</th><th>Peak Discharge (m3/s)</th><th>Total Discharge (GL)</th><th>Velocity (m/s)</th><th>Depth (m)</th></tr><tr><td>Q29S</td><td>21.4</td><td>0.93</td><td>0.2</td><td>0.06</td><td>21</td><td>0.92</td><td>0.2</td><td>0.06</td><td>-</td></tr><tr><td>CJ9</td><td>155.5</td><td>7.15</td><td>0.31</td><td>1</td><td>154.6</td><td>7.14</td><td>0.31</td><td>0.98</td><td>1</td></tr><tr><td>CJ5</td><td>155.5</td><td>10.19</td><td>0.57</td><td>1.5</td><td>155</td><td>10.18</td><td>0.57</td><td>1.47</td><td>1</td></tr><tr><td>Outlet</td><td>160.3</td><td>15.2</td><td>0.95</td><td>2.24</td><td>160.3</td><td>15.19</td><td>0.95</td><td>2.24</td><td>1</td></tr><tr><th colspan="10">0.1% AEP</th></tr><tr><td>Q29s</td><td>34.8</td><td>1.38</td><td>0.38</td><td>0.14</td><td>38.4</td><td>1.38</td><td>0.42</td><td>0.17</td><td>-</td></tr><tr><td>CJ9</td><td>240.3</td><td>10.63</td><td>0.36</td><td>0.025</td><td>241.3</td><td>10.63</td><td>0.36</td><td>0.07</td><td>1</td></tr><tr><td>CJ5</td><td>241.3</td><td>15.14</td><td>0.52</td><td>0.73</td><td>241.7</td><td>15.14</td><td>0.53</td><td>0.77</td><td>1</td></tr><tr><td>Outlet</td><td>241.3</td><td>22.59</td><td>1.04</td><td>2.11</td><td>241.7</td><td>22.59</td><td>1.04</td><td>2.17</td><td>1</td></tr></table> The analysis also considered episodic controlled discharges due to dewatering. For dewatering, there will be no releases during the dry season. Seasonal releases would only commence after natural creek flow has begun and cease when natural creek flow ends (i.e. releases will likely commence in December and end during recessional creek flows in April). The rate of release will be variable, determined on analysis of wet season rainfall recorded at Old Mount Bunday Station and available forecasts. In general, during times of low to no rainfall in the wet season, the pump release rate will be reduced to a minimum of 50 L/s, with the objective that the creek systems are not overwhelmed by the influx of water. As the rainfall volume increases, the rate of release will increase up to 200 L/s. On occasions where the rainfall is expected to be large (i.e. monsoon or cyclone events), the pump is expected to be turned on to its maximum capacity of approximately 300 L/s. Controlled releases for the dewatering during the wet season will comply with water quality release criteria outlined in the Water Management Plan (WMP) and operational Waste Discharge Licence (WDL), with a new WDL for ongoing controlled releases required post-2023 when the current WDL expires. The current WDL specifies releases to only occur when natural flow is present in the watercourse (as such the proposed release regime is slightly more stringent as they will be restricted to the wet season regardless of downstream flow). In the upper ephemeral channels of Mount Bunday Creek (1.1 km downstream of the mine), the releases will result increase the total volume of water discharged through the creek threefold. However, peak discharges will only increase by 7% and velocity will only increase by 9% within this reach, which is within acceptable levels for the low to moderate ecosystem value of the upper Mount Bunday Creek tributaries..	1% AEP										Element	Pre-redevelopment				Post-redevelopment				Nash-Sutcliffe	Peak Discharge (m³/s)	Total Discharge (GL)	Velocity (m/s)	Depth (m)	Peak Discharge (m3/s)	Total Discharge (GL)	Velocity (m/s)	Depth (m)	J9	328.7	36.3	0.2	0.31	328.7	36	0.2	0.25	1	Outlet	374.8	64.9	1.16	3.37	374.8	64.6	1.15	3.46	1	0.1% AEP										J9	498	53.9	0.19	1.21	498	53.5	0.19	1.2	1	Outlet	551	96.4	1.41	6.45	551	96	1.43	6.28	1	1% AEP										Element	Pre-redevelopment				Post-redevelopment				Nash-Sutcliffe	Peak Discharge (m³/s)	Total Discharge (GL)	Velocity (m/s)	Depth (m)	Peak Discharge (m3/s)	Total Discharge (GL)	Velocity (m/s)	Depth (m)	J26	7.9	0.33	0.1	0.02	32.1	1.32	0.15	0.03	-	J15	206.7	10.2	0.21	0.53	211.6	10.9	0.21	0.51	0.99	J28	290.7	21.8	0.52	1.76	284.7	22.5	0.52	1.76	0.997	J1	292.41	38.4	1.14	3.43	287.39	39.1	1.14	3.41	0.997	0.1% AEP										J26	12.7	0.50	0.13	0.025	52.4	2.10	0.18	0.07	-	J15	329.6	15.2	0.22	0.73	337.8	16.4	0.23	0.77	0.991	J28	421.2	32.4	0.66	2.11	413	33.5	0.67	2.17	0.996	J1	432.9	57.1	1.25	4.13	432.8	58.2	1.26	4.21	0.997	1% AEP										Element	Pre-redevelopment				Post-redevelopment				Nash-Sutcliffe	Peak Discharge (m³/s)	Total Discharge (GL)	Velocity (m/s)	Depth (m)	Peak Discharge (m3/s)	Total Discharge (GL)	Velocity (m/s)	Depth (m)	Q29S	21.4	0.93	0.2	0.06	21	0.92	0.2	0.06	-	CJ9	155.5	7.15	0.31	1	154.6	7.14	0.31	0.98	1	CJ5	155.5	10.19	0.57	1.5	155	10.18	0.57	1.47	1	Outlet	160.3	15.2	0.95	2.24	160.3	15.19	0.95	2.24	1	0.1% AEP										Q29s	34.8	1.38	0.38	0.14	38.4	1.38	0.42	0.17	-	CJ9	240.3	10.63	0.36	0.025	241.3	10.63	0.36	0.07	1	CJ5	241.3	15.14	0.52	0.73	241.7	15.14	0.53	0.77	1	Outlet	241.3	22.59	1.04	2.11	241.7	22.59	1.04	2.17	1
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				Further downstream on the main branch of Mount Bunday Creek, total discharges increase by up to 6%, which will cause a very minor change in peak discharges and velocity (1%) At the outlet of Mount Bunday Creek, near the confluence of Hardies Creek and the Mary River, releases from the mine will only result in a 2% increase in total discharge volume, resulting in a very minor increase in flow (<1%). These changes in flow are within acceptable limits for these moderate to high aquatic ecosystem waterways. Modelling results indicate that releases are expected to result in a 4 cm (36%) increase in water depth near the release point, but only minor increases in water depth (<1% and <1cm) on the main branch of Mount Bunday Creek. These increases in water depth will result in inundation of a greater area of aquatic habitat, which is not expected to result in negative impacts to aquatic flora and fauna. Minor changes to stream bed reshaping are also expected, which naturally occurs during high flow events in ephemeral and seasonal streams in this region. Based on the hydrological analysis results, it was determined that Mount Bunday Creek could adequately accommodate surface water discharges without adversely impacting the aquatic ecosystem values and it was consequently determined that a secondary discharge to point to Marrakai Creek is not necessary, thus further protecting the relatively undisturbed Marraki Creek catchment (refer to additional commitment). For dewatering releases from Quest 29 flow impacts from discharging in Charles Creek were analysed. At the release point to the upper ephemeral channels of Charles Creek, total discharge (volume of water) is expected to increase by 33% as a result of the releases, with peak discharges increasing by 29%, and velocity will increase by 12%. This is within the acceptable levels for the low ecosystem value of the waterway at the release point adjacent to the mine. Further downstream on the main branch of Charles Creek, total discharges increase by up to 7%, which will cause a minor change in peak discharges and velocity (<6%). At the outlet of Charles Creek, near the confluence of the McKinney River, releases from the mine will only result in a 0.1% increase in total discharge volume, resulting in a very minor increase in flow and velocity (<1%). These changes in flow are within acceptable limits for these moderate to high aquatic ecosystem waterways. Modelling results indicate that releases are expected to result in only minor increases in water depth (<5% and 1 cm or less) on the main branch of Charles Creek. This is not expected to result in negative impacts to aquatic flora and fauna. Refer to the response to Item No. 5 and Appendix E for further details of the surface water modelling and Appendix M for the aquatic ecology assessment. Additional Commitment – Controlled site water discharges will be restricted to the wet season and limited to Mount Bunday Creek for Rustlers Roost and Charles Creek for Quest 29.
19	-	Community and economy	Comment The TOR requires an assessment of potential impacts and risks to community and economy including net positive benefits. The Draft EIS states: <i>‘the outcome is for the Project to realise economic and social benefits associated with recommencement of mining, combined with an opportunity to rectify and reduce the hazards associated with the historic activities by application of contemporary industry practice in environmental management’.</i> The proponent must demonstrate that the proposal is designed in accordance with industry best practice so that the community benefits in the longer term and is not left with a legacy of post-closure residual adverse impacts. The Draft EIS does not provide the assurance and commitment that there will be net positive benefits to the community as a result of the proposal. Additional Information Required 1. For all components of the proposal that are likely to remain at the end of mine life, detail the design features that align with contemporary leading practice in the context of minimising impacts from the mine site to the receiving environment, and include these as commitments in relevant sections of the Supplement.	The following infrastructure are expected to remain onsite post-closure. These infrastructures will be designed and constructed as per their relevant industry guideline and standard for closure and rehabilitation. Section 5 of the MCP (Appendix I) describes the post-mining land use and closure objectives for all closure domains. PGO commit to complying with all relevant closure guidelines and standards as identified below and within the approved MCP. Ongoing closure planning and key stakeholder engagement may identify additional mine infrastructure to remain post closure (i.e., fences, ponds, roads, buildings, camp area). Formal agreements with post-mining land users will also be established confirming that they assume on-going responsibility for any remaining infrastructure. As additional PMLU is identified as part of ongoing stakeholder engagement, these will be incorporated in the subsequent revision of the MCP, including appropriate relevant closure guideline and standards. Section 6 of the MCP (Appendix I) provides the closure outcomes and completion criteria for all infrastructure of the Project, including the proposed infrastructure to remain onsite post-closure (listed below). Additionally, Section 9 of the MCP (Appendix I) provides the closure implementation for each domain which describes the post-mining land use, closure work tasks (including relevant closure guidelines for each domain), schedule of work and proposed monitoring post closure. Below is a concise summary of the closure outcomes of some of the infrastructure to remain post closure. Landform (WRD and TSF) Final landform will be closed in compliance with approved landform closure design that will provide as a minimal the following design requirements: ▪ Slope angle; ▪ Application of armouring/capping materials; and ▪ Drainage features. Relevant parameters of erosion features on WRD and TSF may include: ▪ Mean gully length; ▪ Mean and maximum gully depth; and ▪ Mean and maximum gully width. Final designs will be in accordance with relevant guidelines and standards: ▪ The Australian Government Preventing Acid and Metalliferous Drainage: Leading Practice Sustainable Development Program for the Mining Industry handbook (2016); ▪ Code of Practice: Tailings Storage Facilities in Western Australia (DMP 2013); and

No.	EIS Section	Theme or Issue	Comment / Requested Additional Information	Required Action / Response
				AS 1726-1993 SAA Geotechnical Site Investigations. Open Pit (Abandonment bunds) Abandonment bunds will be constructed around closed “open pits” to reduce the likelihood of vehicle and human access to open pits. Abandonment bunds will be designed and constructed as per the Safety Bund Walls around Abandoned Open Pit Mines (DIR 1997). Groundwater Bores All bores not required post-closure decommissioned as per the Minimum Construction Requirements of Water Bores in Australia (NUDLC 2012). This includes the removal of above ground infrastructure, grouting of the bore from top to bottom and capping of the bore. This has been included as a new commitment in Section 5 and Appendix L.
20	Section 4.5.1.2, 7.2, and section 8	Other environmental factors (Air Quality)	Comment The TOR included a requirement to provide outputs from processing, including types and volumes of gaseous emissions from the smelter. While there is consideration of greenhouse and dust emissions from the proposal, the draft EIS does not specifically reference emissions from the smelter in terms of greenhouse gases or contaminants that could impact the surrounding land and water. The smelter has the potential to produce acid gas (H₂SO₄) and toxicants such as metals and metalloids in its emissions. Additional Information Required 1. Provide detailed specifications for the proposed smelter. 2. Provide predicted emissions including likely volumes and characteristics of airborne particulates and gaseous contaminants/toxicants. 3. Identify and assess the potential impacts from the smelter on the receiving environment. 4. Provide an assessment of the potential impacts of fallout from the smelter on the surrounding environment (including flora and fauna) using the Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales (2016). Note: The impact assessment criteria for some air pollutants in this NSW document are based on National Environment Protection (Ambient Air Quality) Measure standards, some of which have recently been strengthened.	An air quality assessment involving modelling of operational emissions has been prepared and provided in Appendix A of the SEIS. The assessment utilises the Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales (2016). The assessment accounted for emissions from the following project sources: - Mining – fugitive particulates from the mining process; - Mining Operations and Processing Facility (Crushing Circuit) – from drilling and blasting, material transfers, wind erosion, vehicle movements and combustion emissions; - Processing Plant (Milling Circuit) – including drying of the slurry (carbon regeneration kiln), acid wash (to remove inorganics), elution, electrowinning, dewatering, and smelting; - Power Station – emissions from the CAT engines; and - Vehicle Combustion Emissions – mining fleet emissions. The emission rates for the above listed activities were calculated using approved methodologies (NPI) and data from the consultant emissions monitoring database. Specifications for the smelter are included in Section 7.4.3.5 of Appendix A. The assessment included the Rustlers Roost, Quest 29 and haul road components of the Project. The assessment considered sensitive receptors including residential, natural (wetlands, National Parks, and conservation) and Indigenous sites of importance. The analysis of the results has identified that the maximum predicted total and incremental ground level concentrations at the sensitive receptors and Indigenous site of importance comply at all receptors for all pollutants and time periods (refer to Appendix A). Separate to the air quality assessment report, a Greenhouse Gas Abatement Plan (GHGAP) has been prepared for the Project in accordance NTG’s ‘Greenhouse Gas Emissions Management for New and Expanding Large Emitters’ policy (Appendix D). The GHGAP expands upon the GHG inventory provided in Section 8 of the Draft EIS and has accounted for the indirect emission of power to operate the smelter and the direct GHG emissions from smelting.
21	Cumulative impact assessment	Whole of environment considerations	Comment The EIS and the modelling work presented in Appendix H suggests around 5,800 ML/annum (or 78%) of the water produced on site will accumulate and require storage, or treatment and disposal. With the location of Toms Gully and other mining activity downstream of Rustlers Roost and Quest 29, there is a potential for successive, incremental, and combined impacts to sensitive receptors in the Mary River catchment. Additional Information Required 1. Conduct a cumulative impact assessment of potential significant environmental impact to environmental values and beneficial uses of the Mary River system as a result of both controlled and uncontrolled discharges from mine sites (Rustlers Roost, Quest 29 and Toms Gully). 2. The assessment should focus on maintaining or improving catchment sediment and water quality consistent with the National Water Quality Management Strategy.	Additional Information Point 1 Each Key Environmental Factor the Draft EIS included consideration of potential whole of environment cumulative impacts as it related to that factor. Holistic impacts are further considered in Section 11 of the Draft EIS. For instance, Section 7.2 – Terrestrial Ecosystems quantified potential cumulative impacts to habitat of Project relevant threatened flora (<i>H. macrothrix</i> and <i>S. ensatum</i>). The cumulative assessment also quantified potential cumulative impacts at the property/catchment scale, region and bioregion level for the primary ecosystem and fauna habitat required to be cleared for the Project (Eucalyptus woodland). This assessment was based on review of environmental assessment and project documentation for the known projects throughout these geographic extents. Furthermore, CDM Smith have completed additional technical studies following the submission of the Draft EIS in order to address further information requested during the public consultation period. These studies enabled CDM Smith to better understand the potential impact to the environment within and surrounding the Project area. Additional studies undertaken were: Updated groundwater modelling assessment An updated groundwater and water balance modelling assessment was undertaken to reduce the uncertainties around the volume of water required to be dewatered and discharged. Detailed information on the results of this assessment is presented in Appendix O of this SEIS. In summary, the updated modelling indicates that around 36 GL of water will be required to be dewatered from the pits during the life of mine (10 years). The updated water balance model indicates that there is enough storage on site to store dewatered water during the dry season. As previously mentioned, water discharge into the local creeks will only occur during the wet season, so the seasonality of the creeks is maintained. Updated hydrological assessment An updated hydrological assessment has been completed to consider the potential change in water flows in the surface water systems using hydrologic modelling. The assessment also used hydraulic modelling to provide flow

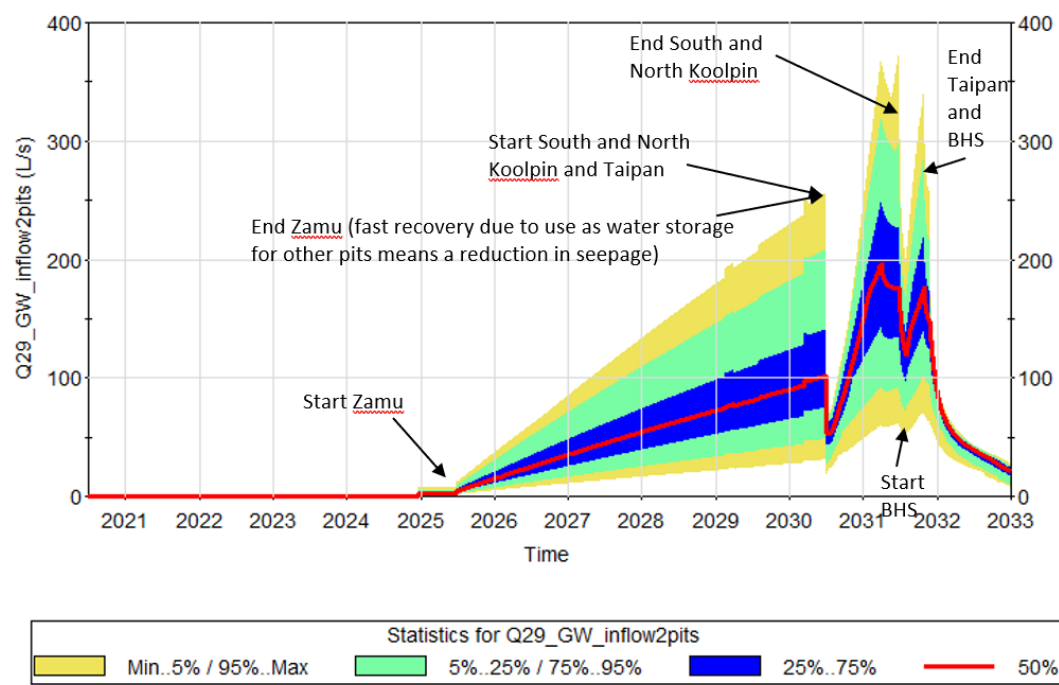
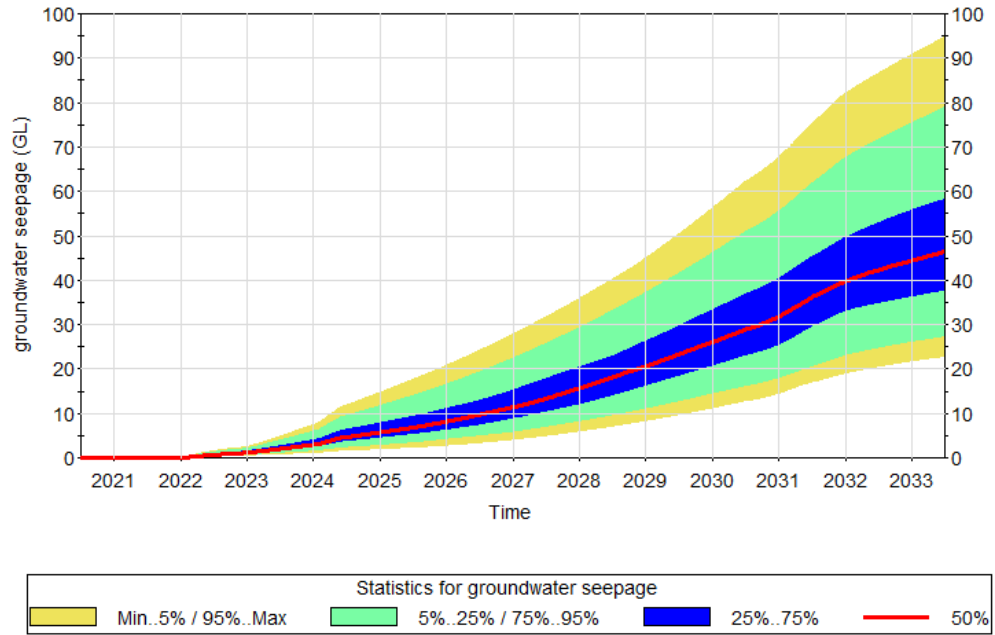
No.	EIS Section	Theme or Issue	Comment / Requested Additional Information	Required Action / Response
				velocities to assess potential impacts to riparian vegetation and aquatic ecosystems. The modelling has considered changes in system flows due to the physical alterations in the catchment from the Project and from the episodic discharges due to dewatering. The local catchment is composed of ephemeral drainage lines or creeks which only flows during rainfall events. As proposed in Water Management Plan (Appendix Q of the SEIS), discharge will occur during periods of stream flow only, to reduce possible impacts on sensitive receptors from an altered flow regime downstream of the receiving waters. Based on the outcomes of this assessment, the Project is not expected to significantly change current natural conditions (e.g. flow volume and velocity, seasonality etc) of the local catchment and therefore, it concludes that impacts from the Project are expected to be minimal. Further detailed information on this assessment and its results is provided in Appendix E of this SEIS. ▪ GDE assessment GDE assessment was recently undertaken to assess the presence of GDEs within the Project area and potential impact as a result of the Project activities (refer to Appendix P). The report concluded it is unlikely that aquatic GDEs exist within the area of predicted drawdown. However, the report identified that there is a likelihood that riparian vegetation within the areas of drawdown exist. Due to the uncertainties regarding the riparian vegetation groundwater use patterns, it is recommended the development of a Groundwater Dependent Ecosystem Monitoring Program (GDEMP) to monitor and protect the ecological condition of the Type 3 GDEs within the Project area. ▪ Aquatic ecology assessment The aquatic ecology assessment has been completed based current extent and inclusions of the Project, the surface water modelling, existing aquatic ecosystem values for the receiving waterways and known species occurrence. The objective of the aquatic assessment is to provide a concise assessment of the potential impacts to aquatic ecology associated with alterations to flow regimes as a result of the Project. This includes: – assessment of the existing downstream aquatic ecosystem values – summary of potential impacts to aquatic ecosystems associated with flow, including a risk assessment framework – brief summary of the proposed project, particularly the expected changes in flow regimes – assessment of the potential impacts to aquatic ecology associated with alterations to the flow regime as a result of the Project, including a risk assessment, and – outline of assumptions or limitations of the assessment. In summary, the aquatic ecology assessment report identified the Project is not expected to have a significant impact on aquatic ecology. Further detailed information on the assessment and results is provided in Appendix M of this SEIS. Based on all professional opinions in regard to potential impact to the environment as a result of the Project activities, it is concluded that the Project is unlikely have a significant impact on the local and surrounding environment and therefore, potential for cumulative impact to the downstream environmental receptor are expected to be minimal. Additional Information Point 2 There is no intention or proposal to discharge poor water quality from the site and Primary Gold is committed to applying the environmental decision-making hierarchy that prioritises avoidance of adverse impacts. Application of buffers are a standard environmental protection measure and ensure Project activities do not encroach on more sensitive riparian vegetation where this is not accounted for in the Project design. By limiting/protecting riparian vegetation, the edge stability of water features is not compromised and the risk of erosion and sedimentation (i.e. poor water quality) is reduced. Management and mitigation measures will be implemented to firstly prevent erosion and retain sediment in place, and secondly to capture and treat sediment in runoff water where the initial prevention measures may not have adequately prevented mobilisation. A selection of the committed management measures to prevent degradation of off-site water quality are provided below and included within an updated version of the Commitment Register in Appendix L: ▪ Adherence to ground disturbance procedures; ▪ Progressive clearing and rehabilitation; ▪ Revegetation of exposed areas where not proposed to be utilised; ▪ Implementation of erosion and sediment controls in accordance with the Project ESCP (Appendix L of the Draft EIS); ▪ Only clearing what is absolutely necessary for the portion of the Project to be implemented; ▪ Clearly marking limits of clearing;

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				▪ Avoiding land clearing during the wet season (Dec-May); ▪ Ongoing and regular (weekly) inspection of Project areas after rainfall events; ▪ Minimising concentrated flow of surface water and ponding (drainage lines, sediment bunds, liners etc.); ▪ Implementing fencing and access restrictions to prevent vehicle and livestock accessing rehabilitation areas; ▪ Drainage will incorporate check dam controls (e.g., rock check dam, filter bag/tube, coir logs) to provide flow energy dissipation in addition to providing sediment control; ▪ Specific Progressive ESCPs will be prepared to guide implementation of specific engineering plans for these structures; ▪ Protected vegetation and significant areas of vegetation are to be retained, and clearly identified prior to the commencement of clearing; ▪ Topsoil is to be stored within topsoil berms or designated stockpile areas; ▪ Stockpiles are not to be located within protected areas of vegetation, driplines of trees, or within 10 m of retained trees, drainage lines, flood zones or any area otherwise likely to be inundated with water; ▪ Avoid placement of stockpiles within 50 m of any drains, drainage lines or other waterways. Where not practicable, specific erosion and sedimentation controls to be implemented; ▪ Spoil stockpiles are to be protected upslope by earth diversion banks to divert run-on water, and downslope by an appropriate Type 2/3 sediment control measure (e.g., mulch berm, rock berm); ▪ Long term (> 10 days) stockpiles, batters and other erosion sensitive areas shall be adequately stabilised through velocity reduction, covering, grassing, vegetation, soil binding, water diversion or other as appropriate; ▪ Topsoil berms are to be protected from erosion by: - Amelioration of topsoil layer for plant growth; - Light ripping of final topsoil layer; - Application of hydromulch at 4 t/ha complete with 40 kg/ha grass seed; and - Placement and pinning of jute matting over hydromulched surface on external batter. ▪ Temporary stockpiling of soil, equipment, and materials within watercourses, or on adjacent banks and floodplains, is to be avoided (unless integral to drainage control requirements). Note, this is only applicable to the identified disturbance area as setbacks will apply; ▪ Site runoff from exposed surfaces is to be prevented from directly entering watercourses; ▪ Where culvert pipes are to be utilised, the following guidelines are to be considered: - The long-term stability of the bed and bank of the waterway are not compromised; - Culverts are to have sufficient capacity to ensure minimal disturbance to stream flow for the design discharge; - Culvert cells are aligned with the channel; - Culvert cells extend well beyond the fill embankment; - Rock (or similar) is to be used to protect fill abutments; and - Energy dissipation is provided downstream of culvert. ▪ Additional contingencies are required in the event of wet conditions, which will include diversion of flows around active work areas, protection of disturbed areas, and restricting vehicular access as far as practicable; ▪ The WRD will be bordered by a flow diversion berm (topsoil) to divert external clean water runoff, including exclusion of the watercourse to the west of the WRD; ▪ Site runoff will be diverted to a sediment basin(s) for containment and treatment prior to reuse or discharge via internal drainage; ▪ At Quest 29 the minimisation of sediment delivered to the sediment basins from the WRD will be achieved through: - A clean water channel running north south to the east of the pits between the pits and the East Koolpin WRD; - Incorporation of diversion channels will be placed along the toe of East Koolpin WRD batters to enable diversion of runoff to rock check dam discharge points, prior to entering the sediment basin drainage network. The catchments main clean water channel to the west of the Taipan pit will be diverted to the north of the Taipan pit and south of the south Koolpin pit; - Construction of slope breaks to reduce slope length and promote infiltration; - Application of soil binders to batters for dust suppression and temporary erosion control; and

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				- Composition of the WRD will include a significant proportion of low erodibility material (i.e., rock), reducing sediment generation. ▪ At Rustlers Roost no watercourses will be diverted as the placement of infrastructure does not require diversions; ▪ Where the proposed expansion of mining activities requires the diversion of watercourses at Quest 29, preparation of specific ESCPs prior to commencement of works, reflecting the specific engineering design requirements and construction sequence, will be developed; ▪ A clean water channel along the left bank of the North and South Koolpin pit is proposed to convey water from upstream to downstream without mixing with dirty water; ▪ The expansion of the Taipan pit will be undertaken to exclude disturbance to the current flow path of the previously altered watercourse, or construction of a stabilised creek diversion; ▪ The expansion of the Zamu pit will be undertaken to maintain the existing natural watercourse in an undisturbed condition to allow for clean water bypass through mining areas; ▪ Diversion channels to be constructed as per applicable engineering designs, including rock erosion control protection to bed and banks. Upstream and downstream ends to remain blocked (e.g., earth bund or rock wrapped in geofabric) from clean water flows until works are completed, and stabilisation is achieved; ▪ Active earthworks areas to be isolated and protected to maintain clean water separation from site runoff (e.g., perimeter berms, rock berm) during construction; and ▪ Permanent erosion control measures will include a combination of vegetative, hardstand and structural erosion control techniques, implemented progressively. With regard to controlled site water releases, Primary Gold has committed to no release during the dry season. Seasonal discharges would only commence after natural creek flow has begun and cease when natural creek flow ends. This will likely commence in December and end during recessionary creek flows in April. Controlled discharges for the dewatering during the wet season must comply with water quality release criteria presented in the Water Management Plan (updated version in Appendix Q). Site specific trigger values for surface water in the Project area have been based on a CSIRO review of SSTV for the downstream Tom's Gully mine. The SSTVs reference ANZG (2018) trigger values for 90% aquatic ecosystem protection in tropical lowland river systems and local background conditions. Thus, this is the water quality that the proponent must guarantee at the monitoring points. In addition, the proponent will need to apply for an operational Waste Discharge Licence (WDL) for the ongoing controlled discharge of pit water post-2023, when the current WDL expires. The WDL will set discharge trigger values which are expected to generally align the current WDL trigger values (noting that several values were to be updated as additional site-specific water quality data became available). An additional and standalone WQIP, that aligns with the existing WMP, has been developed and it is provided as Appendix Q. The WQIP aligns specifically with the National Water Quality Management Strategy.
22	Section 4.5.1.3	Whole of environment considerations	Comment The proposed 31 Megawatt power station requires a gas supply. The Draft EIS states that an independent power provider designs, builds and operates a gas pipeline to transfer gas from an existing supply. In the interim, gas would be trucked in. As the pipeline assessment is not included, there is no information provided to determine the risk of the pipeline traversing sensitive/significant habitats and any potential significant impacts. Additional Information Required 1. Provide the feasibility and high level scoping studies for construction and commissioning the power station gas supply. 2. Provide indicative design and route options, and for each option, a detailed risk assessment of potential environmental impacts. 3. Address outcomes of the risk assessment with the appropriate mitigating actions and controls. Note: The above information should be provided in consideration of the NT EPA's hierarchies for environmental decision-making and waste management (avoid, mitigate, reuse, recycle etc.), and refer to Part 2 of the EP Act.	Investigations are being progressed to construct a gas pipeline connecting the processing plant directly to the existing Amadeus Gas Pipeline. A direct connection would forego the requirement to transport gas to site via road. The route options, feasibility and planning for the gas pipeline are being progressed by a third-party and any environmental approvals required to facilitate that infrastructure will be completed separately from this Project. The feasibility including route alignments and designs are being progressed wholly by the third-party infrastructure provider and are not available to Primary Gold. The third-party infrastructure provider is not the Independent Power Provider (IPP) referenced in the Draft EIS. The IPP will be solely responsible for the onsite power station and not the supply of gas to the plant. Should the scoping and feasibility studies being progressed by the third-party fail to proceed, Primary Gold can operate the Project through trucking gas to site. For each Key Environmental Factor the Draft EIS included consideration of potential whole of environment cumulative impacts as it related to that factor. Holistic impacts are further considered in Section 11 of the Draft EIS. For instance, Section 7.2 – Terrestrial Ecosystems quantified potential cumulative impacts to habitat of Project relevant threatened flora (<i>H. macrothrix</i> and <i>S. ensatum</i>). The cumulative assessment also quantified potential cumulative impacts at the property/catchment scale, region and bioregion level for the primary ecosystem and fauna habitat required to be cleared for the Project (Eucalyptus woodland). This assessment was based on review of environmental assessment and project documentation for the known projects throughout these geographic extents. Primary Gold is not privy to the route assessment and environmental risk assessment work being completed by the IPP and simply has a commercial arrangement to purchase gas if it can be supplied by the IPP. Applying assumptions to routes and impact areas for separate future projects with unknown definition would reduce the accuracy and value of the cumulative impact quantification. It is expected the EPA would seek to understand potential whole of environment and cumulative impacts from the separate project when and if that separate project is referred for consideration under the EP Act.
23	General	Whole of environment considerations	Comment	The Department of Industry, Tourism and Trade -Mining Operations Division have provided the following comments during on the referral. PGO has addressed each comment as below.

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			There are instances where Government authorities (in their submissions) have noted that comments made in their previous submissions on the referral and significant variation still apply. Refer to the submission from the Department of Industry, Tourism and Trade -Mining Operations Division for the comments. The comments should be addressed in the relevant sections of the Supplement.	Comment 1 - Section 1.5.2 Proposed footprint and site layout <i>Figure 1-2 indicates that the proposed tailings dam on Rustlers Roost will overlie the existing heap leach pad. This is not acknowledged or addressed in the referral document. An analysis of environmental risks associated with construction of a tailings dam over the heap leach pad should be completed, particularly as the footprint crosses several drainage lines of the Upper Mount Bundey Creek tributary.</i> Since referral, the proposed Project layout has changed. A tailings dam over the existing heap leach pad has been expanded north of Annie’s Dam to utilise the existing landform contours to assist with the impoundment and reduce earthworks. The revised TSF layout consumes the artificial Annie’s Dam and will incorporate the entire upper catchment feeding Annie’s Dam thus allowing for easier runoff management. While the size and tailings volume increased, details around the TSF design and potential impacts to hydrological processes and inland waters are accounted for in the Draft EIS. A full risk assessment and management measures associated with this change is provided in the Draft EIS. The SEIS provides a revised TSF design (refer to Appendix G). While certain areas such as the existing drainage lines and Annies Dam are likely to contain soil conditions that are more permeable and susceptible to higher infiltration rates, the entire TSF basin is proposed to be covered by a composite liner of HDPA and a compact soil liner (CSL) (refer to details below). The characteristics of the near surface ground are variable with some areas comprising fine grained material whilst other areas comprise more permeable coarse grained material and/or weak rock. It is estimated that 60% of the site has suitable material below the topsoil layer to scarify and recompact to form a suitable subgrade for the installation of HDPE liner, with the remainder of the site requiring material to be sourced from borrow in other parts of the site disturbance footprint. Comment 2 - Section 1.5.6 Waste Rock material <i>The referral outlines that it is likely that a significant amount of potentially acid forming (PAF) material will be encountered during mining, indicating that the potential for acid metalliferous drainage (AMD) from mine structures (e.g. the waste rock dump ((WRD) is high. Primary Gold acknowledges that further studies are required to adequately understand the geochemical characterisation of the sites. These studies are required before potential risks (e.g. AMD) can be fully understood and management methodology developed. It is recommended that waste characterisation studies include samples that adequately reflect the proposed disturbances i.e. from within pit footprints and at depths similar to proposed mine depths.</i> Further material characterisation studies have been undertaken to identify PAF and NAF material within the Project footprint. Kinetic and sulfur block model studies have been undertaken and an updated material characterisation report is provided in Appendix F. A summary of these findings is also provided in responses to submissions n^o 1 and 2 above. Comment 3 - Section 1.5.8 Tailings Disposal <i>The tailings storage facility (TSF) has a very large footprint across multiple drainage lines and it is not yet clear how potential seepage will be prevented or managed to adequately protect the greater environment. Further studies and modelling are required.</i> The basin of the TSF is proposed to comprise a composite liner of HDPE and CSL over the entire base. The TSF design incorporates a full HDPE liner underlain by 300 mm thickness imported (or 200 mm thickness in situ) CSL across the TSF basin. In addition to the composite liner the design comprises a cut-off trench, basin underdrainage system and embankment toe-drain (refer to Section 8 of Appendix G for the design details). Laboratory testing was conducted on a number of samples obtained from select test pits. Laboratory testing on these samples yielded permeabilities in the range of 1 x 10⁻⁸ m/s to 9 x 10⁻¹⁰ m/. The permeability of the HDPE liner will be in the range of 1x10⁻¹⁰ m/s to 1x10⁻¹¹ m/s. It is estimated that 60% of the site has suitable material below the topsoil layer to scarify and recompact to form a suitable subgrade for the installation of HDPE liner, with the remainder of the site requiring material to be sourced from borrow. The target permeability for the CSL will be in the range of 1x10⁻⁷ m/s to 1x10⁻⁸ m/s. Based on the design criteria and testing values the TSF seepage is estimated to be up to 2.2 mm/y (i.e. this is an upper bound estimate). This is a low seepage rate (refer to Appendix G). The seepage assessment presented in Appendix G was completed for design and stability purposes. CDM Smith has completed a separate seepage assessment to inform the additional groundwater modelling component (refer to Appendix O). A summary of this assessment is provided below. The groundwater seepage is expected to increase as the pits deepen during mining operation. At the Rustlers Roost mine site there are three pits with deepening works happening at different times; Rustlers Roost pit begins operation in March 2023 and is active for the rest of the operation period whereas deepening of Annie Oakley pit and Annie Dam pit only occurs for 4 months and 10 months respectively, in 2023 and 2024. At the end of the mining operations, groundwater inflow into the Rustlers Roost pits would be 100 L/s. However, uncertainty analysis suggests that this inflow could vary between 30 L/s and 270 L/s.

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				For the Quest 29 pits operations start in July 2025 at Zamu pit which is mined until end of June 2030, followed by operations in South Koolpin, North Koolpin and Taipan pits from July 2030 and BHS pit from August 2032. This means that the maximum groundwater seepage rate occurs around April 2031 where an estimated inflows of 200 L/s for all Q29 pits is expected, although with an uncertainty range from 60 L/s to 370 L/s. Total combined pit inflows are expected to be at their maximum in April 2031 at 290 L/s, with an uncertainty range from 90 L/s to 360 L/s. Monitoring of pit seepage during the initial phase of mining operation would greatly reduce the uncertainty. Figure 3 below illustrates the cumulative groundwater seepage volume into the pits. According to the model, at the end of the mining operations (in October 2031) about 46 GL of water is estimated to have seeped into the open pits. Based on the uncertainty analysis, this amount ranges from 23 GL (for a lower end hydraulic conductivity range) to 95 GL (for a higher end hydraulic conductivity range). Figure 1 Predicted Total Amount of Groundwater Seepage from the Rustlers Roost Pits combined over Time

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				 Figure 2 Predicted Total Amount of Groundwater Seepage from the Quest 29 Pits Combined over Time  Figure 3 Cumulative Groundwater Seepage Volume into all Pits over Time Comment 4 - Section 4.3.2 Groundwater <i>The referral identifies contamination of groundwater from mined pits and potential draw down of groundwater as potential risks and states groundwater and hydrogeology studies are required.</i> <i>The referral does not describe adequate mitigation measures, because these cannot be developed until an understanding of groundwater and hydrogeology is obtained. Further studies and modelling potential impacts to groundwater are required.</i>

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				As required in submission n^o 7 above, the groundwater model has been revised and updated since the Draft EIS to refine and improve the characterisation of the surrounding environment through further defining model parameters with due consideration to receptors and risk. The revised model scope included: ▪ Literature review to collect additional hydrogeological data and review/revise/update conceptualisation with new datasets where available; ▪ Rebuild and recalibration of the model with a move to transient model to improve estimate of drawdown impacts and reflect short period of mine operation. A Scaled Residual Mass Statistic (SRMS) of 0.9% is noted for the original model. The updated model has a SRMS of 4.2%. GoldSim flux estimates were used as a calibration tool; ▪ Model uncertainty outcomes have been assessed by running numerical groundwater model through PESTPP-IES (White 2018) and AWS cloud computing. Different from traditional PEST (Doherty 1994), PESTPP-IES can generate multiple calibrated models that better address the issue of non-uniqueness and enable a more robust uncertainty analysis. A pilot point calibration technique is therefore possible where parameter values are estimated at the pilot point locations and then interpolated to other model cells (Doherty et al., 2010). This technique enables spatial heterogeneity to be better captured in the model, which is critical for this work due to the scale of modelling; and ▪ Revised reporting has been prepared to collate a model uncertainty table defining all lines of uncertainty and their impact on the model. The intent of this table is to demonstrate significance of uncertainties relative to each other and is intended to provide a weighing of concern for each uncertainty so that all stakeholders have a clear appreciation of the relative risk relating to the uncertainties identified. Numerical model limitations regarding the revised model conditions have been detailed. An assessment of what model Class has been achieved as well as a summary of how the model class should be applied considering the risk profile of the project. Understanding of the surrounding environment has been improved through additional field surveys of potential GDEs, spatial analysis of mapped GDE areas and downstream extents with groundwater depth and NDVI data. Appendix O provides detailed results of the recent groundwater modelling undertaken. The following comments were provided by DITT (Mining Division) on the Notice of Significant Variation. PGO has addressed each comment as below. Comment 1 – Table 2 - A new waste rock dump (WRD) has been introduced to the north of the TSF and processing plant <i>"The northern WRD expands the project footprint for the entire upper catchment of an unnamed watercourse flowing north m Mount Bunday Creek and thus increases risks associated with surface water runoff". DITT recommends this change and the associated risks are addressed in the future EIS.</i> The Draft EIS provides a detailed risk assessment that considered potential impacts to the environment as a result of the proposed WRD and the proposed management measures to avoid or reduce any potential impact. Comment 2 - Table 2 - Expanded main pit and two new small pits are now proposed <i>The location of the new Annie Oakley Pit poses risk of additional environmental impacts. The southern edge of Annie Oakley Pit is on the mineral lease boundary and a creek line. DITT recommends potential environmental risks associated with this be identified and the EIS should demonstrate management of these risks.</i> The Draft EIS provides a detailed risk assessment that considered potential impacts to the environment as a result of the proposed pits, including the Annie Oakley Pit and the proposed management measures to avoid or reduce any potential impact. Comment 3 - Table 2 Overall water demand for the operation has changed from 3.3 GL/yr. to 6.5 GL/yr <i>DITT recommends the EIS address the significant increase in water demands, identify potential impacts and mitigation strategies and provide an updated water balance.</i> As part of the SEIS, the groundwater and water balance modelling have been revised. Appendix O provides detailed information on the assessment undertaken and outputs from the modellings. In summary, Groundwater seeping into pits during dewatering (to maintain dry environment in the pits) is the main inflow of water into the water management system (77% of inflows). Average dewatering requirements from the pits (combination of groundwater seepage, rainfall and runoff minus evaporation) are estimated at 103 L/sec for the Rustlers Roost pit (maximum rate of 600 L/sec) and between 15 and 52 L/sec for the Quest 29 pits (maximum rate of 125 L/sec applied based on pump capacity). Water will be stored on the site during the wet season and discharged to creeks in the wet season (Mount Bunday Creek and McKinley River). At the Rustlers Roost site the primary storage is the Northern TSF Water Storage Dam (6,998 ML capacity) and at the Quest 29 site the water is stored in non-operational pits. The model empties water storages during the wet season and discharges this stored water and dewatering water to the creeks so that maximum storage is available during the dry season.

No.	EIS Section	Theme or Issue	Comment / Requested Additional Information	Required Action / Response						
				For 95% of model runs there is no uncontrolled release during the dry season (i.e. there is sufficient storage on site). For the 95th percentile and maximum scenarios (i.e. high hydraulic conductivity and high runoff) there is some dry season release. The model is set up to maintain 5% storage in the storages to allow for water reuse in the dry season and lowering this threshold may negate the requirement for dry season release in these unlikely scenarios. Cumulatively, about 36 GL of water is required to be released (with an uncertainty range from 17 GL to 78 GL) over the LOM.						
Aboriginal Areas Protection Authority (AAPA)										
24	2.2.5	NT Legislation	This section correctly addresses the Northern Territory <i>Aboriginal Sacred Sites Act 1989</i> and states that Primary Gold’s existing Authority Certificate C2016/168 is for mineral exploration. While no sacred sites are recorded in the area covered by C2016/168, the Authority does have records of sacred sites in the vicinity of the proposal. The Authority will consider potential impacts of the proposal on these sites during the processing of Primary Gold’s application for a new Authority Certificate (reference 202113141). This application addresses the proposed mining activities outlined in the draft EIS.	No Action – to be addressed through AAPA application.						
25	7.6	Community & Economy	Section 7.6.3 and table 7-76 list the mechanism for avoiding impacts to cultural heritage values in relation to sacred sites as ‘survey over the Project area with the AAPA’. The Authority notes that the survey itself is not sufficient for avoiding impact. Rather, impacts to sacred sites will be avoided by obtaining and complying with a valid Authority Certificate for the proposed works. As noted above, Primary Gold has applied for an Authority Certificate for the proposed works.	Primary Gold has applied to AAPA for an Authority Certificate and will comply with conditions of any forthcoming certificate in order to avoid impacts to sacred sites.						
Department of Environment, Parks and Water Security (DEPWS)										
Flora and Fauna Division - The Flora and Fauna Division recommends that the Northern Territory Environment Protection Authority (NT EPA) request further information relating to the risks to biodiversity, aquatic health and significant and sensitive vegetation.										
26	7.1	Terrestrial Ecosystem	The Terms of Reference (ToR) required the proponent to: "Provide details of survey program timing, locations and methodology to demonstrate appropriate and statistically sufficient survey designs. Results and interpretation of surveys should be presented in the draft EIS including survey effort and absence records. In particular, detail the outcomes of targeted surveys undertaken for the threatened plant species <i>Helicteres macrothrix</i> and <i>Stylidium ensatum</i> ." The Flora and Fauna Division has reviewed the results of targeted surveys provided with the draft EIS. The surveys appear to have been undertaken at an appropriate time of year and at an effort necessary to detect the relevant threatened species. The risk to threatened species from the proposal is considered to be low.	Noted – no further action required						
27	7.1	Terrestrial Ecosystem	The Terms of Reference require the proponent to: "Describe and map the extent of terrestrial ecosystems of the proposal footprint and area of influence following the appropriate guidelines (e.g. Brocklehurst et al 2007, Land Clearing Guidelines (DENR 2019) with detail on: • riparian vegetation and any other significant vegetation types" ... and "Provide an assessment of potential impacts and risks, and quantify the significance of impacts and risks, to terrestrial ecosystems using outcomes of field studies, modelling and other relevant information. As a minimum, the assessment should consider: • the extent to which groundwater drawdown and seepage or discharge of mine affected water could impact riparian vegetation over time". Table 4.4 of the Flora and Fauna Survey Report identifies four main vegetation types that contain flora species that are indicative of being partially or regularly subject to inundation. Under the NT Planning Scheme Land Clearing Guidelines, these vegetation types are referred to as "wetlands" and are considered to be significant/sensitive. With the exception of describing and mapping the features, the draft EIS provides no assessment of their value (using the criteria outlined in the Land Clearing Guidelines) and does not assess the impact from all phases of the proposal (i.e. construction, operation, rehabilitation and post closure).	The Land Clearing Guidelines state that sensitive vegetation is a term applied to ecosystems easily impacted by neighbouring or adjacent land uses or management. Significant vegetation also includes spatially restricted habitat types that are important to a relatively large number of wildlife species including rainforest, monsoon vine forest or vine thicket; sandsheet heath; riparian vegetation; mangroves; and vegetation containing large trees with hollows suitable for fauna. Many of these significant vegetation types are also sensitive (DEPWS 2021a). In accordance with the Land Clearing Guidelines, the value of any occurrence of sensitive or significant vegetation communities is based on the following criteria: ▪ The type, location, extent and spatial arrangement of any sensitive or significant vegetation present; ▪ The known presence or likelihood of occurrence of threatened or otherwise significant plants or animals within the sensitive or significant vegetation; ▪ The known occurrence of or likelihood of occurrence of particular attributes of the vegetation (e.g. high density of fruiting trees, important reproductive sites likely to act as genetic ‘sources’) which contribute to the maintenance of regional biodiversity values; and ▪ The local and regional context of the occurrence. An assessment of their value and potential impact from the Project is provided below. <table><tr><th>Vegetation Type</th><th>Occurrence within Project Area</th><th>Assessment of Value*</th></tr><tr><td>Major Creek Line</td><td>Tom Gully (outside project area) – The vegetation type lies to the west of the Toms Gully mine development which was been assessed by the NT EPA (2020). This creek line extends to the east for approximately 3 km</td><td> - This is described as a major creek line habitat, however at the time of survey, the creek bed was dry. - There was no significant flora recorded within the vegetation type, however, during the 2016 and 2017 surveys (LES 2016, LES 2017) weeds were recorded to be present in the area. There is no known occurrence of any species within </td></tr></table>	Vegetation Type	Occurrence within Project Area	Assessment of Value*	Major Creek Line	Tom Gully (outside project area) – The vegetation type lies to the west of the Toms Gully mine development which was been assessed by the NT EPA (2020). This creek line extends to the east for approximately 3 km	- This is described as a major creek line habitat, however at the time of survey, the creek bed was dry. - There was no significant flora recorded within the vegetation type, however, during the 2016 and 2017 surveys (LES 2016, LES 2017) weeds were recorded to be present in the area. There is no known occurrence of any species within
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					until it is intersected by the Arnhem Highway, and to the southwest where it appears to lead into a small ephemeral waterhole before continuing southward.	this vegetation type which is considered to be fundamentally significant to the biodiversity with the local or wider areas, and it is unlikely that the species that are present have any significant impact to the future viability of any flora species. The flora species within this area are considered to be common and widespread throughout the local and regional areas. - The area is mapped as a potential high habitat area for <i>Helicteres marcothrix</i> (DLRM 2016a) and <i>Stylidium ensatum</i> (DLRM 2016b). The proponent engaged EcOz Environmental to undertake targeted surveys for these species in 2020 (EcOz, 2020), and developed the survey methodology in consultation with the NT government. No observations of either species, <i>Stylidium ensatum</i> and <i>Helicteres marcothrix</i>, were identified during these targeted field surveys. - The single observance of the Arnhem sheath-tailed bat (<i>Taphozous kapalgensis</i>) was recorded within this habitat during the 2017 survey (LES 2017). - This vegetation type which lies predominately north of the Toms Gully project, which has been assessed by the NT EPA (NT EPA 2020). This vegetation type is not located near the proposed accommodation village, which is part of this Draft EIS and SEIS, and is unlikely to be impacted from the activities described for the Rustlers Roost and Quest 29 mine redevelopment. Due to the location of this vegetation type to the proposed Project's, it is unlikely that this vegetation type will be impacted by activities associated with the Rustlers Roost and Quest29 Mine Redevelopment.	
				Seasonally inundated plain	Toms Gully – this vegetation type lies to the north of the Toms Gully Mine project, and runs north to south for approximately 600 m before it intersects with another major creek line running east-west. The major creek line lies approximately 750 m north of the Toms Gully evaporation pond. Quest29 – The location that was identified with this vegetation type lies within the Quest 29 portion of the Project area along the boundary of the proposed waste rock dump.	- This area is described as a seasonally inundated plain. The vegetation in this creek line is slightly denser than the surrounding vegetation, with no significant flora being recorded in the area (LES 2016, LES 2017). - There are no significant flora or fauna recorded within the vegetation type. There is no known occurrence of any species within this vegetation type which is considered to be fundamentally significant to the biodiversity within the local, or wider areas, and it is unlikely that the species that are present have any significant impact to the future viability of any flora species. The flora species within this area are considered to be common and widespread throughout the local and regional areas. - This vegetation type which lies with the Development Envelope of the Toms Gully project, just south of the northern boundary, has been assessed (NT EPA 2020). This area of vegetation type is not located near the proposed accommodation camp, and is unlikely to be impacted from the activities from the	

No.	EIS Section	Theme or Issue	Comment / Requested Additional Information	Required Action / Response			
						Rustlers Roost and Quest 29 mine redevelopment. EcOz (2020) reports that much of the vegetation within the riparian systems have been disturbed, with the original vegetation already cleared and large stockpiles of fill material present adjacent to the riparian zones. - There is no known occurrence of any species within this vegetation type which is considered to be fundamentally significant to the biodiversity with the local or wider areas, and it is unlikely that the species that are present have any significant impact to the future viability of any flora species. The flora species within this area are considered to be common and widespread throughout the local and regional areas. The location of the seasonally inundated plain within the Toms Gully boundary will not be impacted by activities associated with the Rustlers Roost and Quest29 Mine Redevelopment. The location of this vegetation type with the Quest 29 Development Envelope will be impacted by the activities from the Project, however, due to current level of historic disturbance, and the widespread nature of the flora species that comprise the seasonally inundated vegetation type, the impacts are anticipated to be localised, and not have a significant impact the viability of any of the species comprising this vegetation type.	
				Creek Floodplain	Toms Gully – Located south of a minor creek channel and to the north of the Toms Gully project area Rustlers Roost – Located west of the Rustlers Roost outside of the Development Envelope, approximately 400 m west of Annies Dam.	- This area is described as a creek floodplain and is represented at two locations within the survey area. Weeds are present in the area with <i>Mesophaerum suaveolens</i> and <i>Sida acuta</i> recorded during the flora surveys (LES 2016, LES 2017). - The creek floodplain vegetation types within the Toms Gully project area is located over 200 m from the accommodation camp and forms part of the assessment of the Toms Gully Mine (NT EPA, 2020). The survey reports (LES 2016 & LES 2017) for the creek floodplain vegetation type at Rustlers Roost, does not identify any weeds within the area at either locations. - The area is mapped by the NT government (DLRM 2016a) as presenting as potential habitat for the <i>Helecteres macorthrix</i>. However, during the targeted surveys conducted by EcOz (2020), no records of this species were identified with the project area for either Quest 29 or Rustlers Roost. - There are no significant flora or fauna recorded within the creek floodplain vegetation type. There is no known occurrence of any species within this vegetation type which is considered to be fundamentally significant to the biodiversity within the local, or wider areas,	

No.	EIS Section	Theme or Issue	Comment / Requested Additional Information	Required Action / Response			
						and it is unlikely that the species that are present have any significant impact to the future viability of any flora species. The flora species within this area are considered to be common and widespread throughout the local and regional areas. The location of the seasonally inundated plain within the Toms Gully boundary will not be impacted by activities associated with the Rustlers Roost and Quest 29 Mine Redevelopment. The creek flood plain identified outside of the Rustlers Roost Development Envelope will not be impacted by the project activities. This vegetation type appears to be mapped by Connect (2022) as vegetation type 61a – Minor creek lines and broad drainage system; <i>Corymbia bella</i>, <i>C. polycarpa</i> and <i>C. grandiflora</i> mid high (10 – 15 m tall) and occasional <i>Eucalypt bigalerita</i> woodland (refer to Table 7 and Figure 8 of Appendix C).This vegetation type was not found to support any conservation significant fauna or flora from either the LES (2016 and 2017) or Connect (2022) reports, and any impact to this vegetation type will be localised and not adversely impact the broader species viability or biodiversity values.	
				Dam-side Low Open Forest	Rustlers Roost – It is located on the western bank of Annies Dam, approximately 250 m east of the Rustlers Roost Development Envelope.	- This riparian area is described as a dam-side low open forest. The area shows no evidence of recent disturbance, and both LES (2016 & 2017) and EcOz (2020) report the western area of Rustlers Roost as being weed free. - No significant flora or fauna have been recorded within the dam-side low open forest vegetation type. There is no known occurrence of any species within this vegetation type which is considered to be fundamentally significant to the biodiversity within the local, or wider areas, and it is unlikely that the species that are present have any significant impact to the future viability of any flora species. The flora species within this area are considered to be common and widespread throughout the local and regional areas. The survey area from LES (2016 and 2017) does not lie within either the mapped areas for <i>Helecteres macorthrix</i> (DLRM 2016a) or <i>Stylidium ensatum</i> (DRLM 2016b). This area will be impacted by the and become part of the Tailings Storage Facility. Noting that survey results, over multiple visits, have do not identified any significant flora or fauna within the area, it is anticipated that the overall impact to the vegetation type, within this localised area, is considered to be acceptable, with the appropriate mitigations outlines in the Draft EIS (PGO 2021)	

* Based on the criteria listed in the Land Clearing Guideline

No.	EIS Section	Theme or Issue	Comment / Requested Additional Information	Required Action / Response
28	Table 7-62	Terrestrial Ecosystem Aquatic Health	The proponent proposes to manage poor water quality released from the site by adhering to the buffer widths recommended in the Land Clearing Aquatic Guidelines. It should be noted that the buffer widths specified in the Health Guidelines were not intended to manage the stormwater discharge of poor water quality. The buffers in the Guidelines are intended to provide for the protection of riparian vegetation from clearing impacts, edge effects, invasive flora, etc. If the proponent intends to use vegetation buffers to manage poor water quality discharges, it is recommended that further information is provided demonstrating that the proposed buffers in the EIS will be effective for protecting riparian vegetation and aquatic systems.	While the application of clearing buffers in the Land Clearing Guidelines may not have been implemented to manage runoff water quality, setbacks inherently act to protect water quality from diffuse water runoff from cleared areas. There is no intention or proposal to discharge poor water quality from the site and Primary Gold is committed to applying the environmental decision-making hierarchy that prioritises avoidance of adverse impacts. Nevertheless, application of buffers are a standard environmental protection measure and ensure Project activities do not encroach on more sensitive riparian vegetation where this is not accounted for in the Project design. By limiting/protecting riparian vegetation, the edge stability of water features is not compromised and the risk of erosion and sedimentation (i.e. poor water quality) is reduced. This is single measure in a plethora of committed management and mitigation actions to firstly prevent erosion and retain sediment in place, and secondly to capture and treat sediment in runoff water where the initial prevention measures may not have adequately prevented mobilisation. A selection of the committed management measures to prevent degradation of off-site water quality are provided below and included within an updated version of the Commitment Register in Appendix L: ▪ Adherence to ground disturbance procedures; ▪ Progressive clearing and rehabilitation; ▪ Revegetation of exposed areas where not proposed to be utilised; ▪ Implementation of erosion and sediment controls in accordance with the Project ESCP (Appendix L of the Draft EIS); ▪ Only clearing what is absolutely necessary for the portion of the Project to be implemented; ▪ Clearly marking limits of clearing; ▪ Avoiding land clearing during the wet season (Dec-May); ▪ Ongoing and regular (weekly) inspection of Project areas after rainfall events; ▪ Minimising concentrated flow of surface water and ponding (drainage lines, sediment bunds, liners etc.); ▪ Implementing fencing and access restrictions to prevent vehicle and livestock accessing rehabilitation areas; ▪ Drainage will incorporate check dam controls (e.g., rock check dam, filter bag/tube, coir logs) to provide flow energy dissipation in addition to providing sediment control; ▪ Specific Progressive ESCPs will be prepared to guide implementation of specific engineering plans for these structures; ▪ Protected vegetation and significant areas of vegetation are to be retained, and clearly identified prior to the commencement of clearing; ▪ Topsoil is to be stored within topsoil berms or designated stockpile areas; ▪ Stockpiles are not to be located within protected areas of vegetation, driplines of trees, or within 10 m of retained trees, drainage lines, flood zones or any area otherwise likely to be inundated with water; ▪ Avoid placement of stockpiles within 50 m of any drains, drainage lines or other waterways. Where not practicable, specific erosion and sedimentation controls to be implemented; ▪ Spoil stockpiles are to be protected upslope by earth diversion banks to divert run-on water, and downslope by an appropriate Type 2/3 sediment control measure (e.g., mulch berm, rock berm); ▪ Long term (> 10 days) stockpiles, batters and other erosion sensitive areas shall be adequately stabilised through velocity reduction, covering, grassing, vegetation, soil binding, water diversion or other as appropriate; ▪ Topsoil berms are to be protected from erosion by: - Amelioration of topsoil layer for plant growth; - Light ripping of final topsoil layer; - Application of hydromulch at 4 t/ha complete with 40 kg/ha grass seed; and - Placement and pinning of jute matting over hydromulched surface on external batter. ▪ Temporary stockpiling of soil, equipment, and materials within watercourses, or on adjacent banks and floodplains, is to be avoided (unless integral to drainage control requirements). Note, this is only applicable to the identified disturbance area as setbacks will apply; ▪ Site runoff from exposed surfaces is to be prevented from directly entering watercourses; ▪ Where culvert pipes are to be utilised, the following guidelines are to be considered: - The long-term stability of the bed and bank of the waterway are not compromised; - Culverts are to have sufficient capacity to ensure minimal disturbance to stream flow for the design discharge; - Culvert cells are aligned with the channel; - Culvert cells extend well beyond the fill embankment;

No.	EIS Section	Theme or Issue	Comment / Requested Additional Information	Required Action / Response
				- Rock (or similar) is to be used to protect fill abutments; and - Energy dissipation is provided downstream of culvert. ▪ Additional contingencies are required in the event of wet conditions, which will include diversion of flows around active work areas, protection of disturbed areas, and restricting vehicular access as far as practicable; ▪ The WRD will be bordered by a flow diversion berm (topsoil) to divert external clean water runoff, including exclusion of the watercourse to the west of the WRD; ▪ Site runoff will be diverted to a sediment basin(s) for containment and treatment prior to reuse or discharge via internal drainage; ▪ At Quest 29 the minimisation of sediment delivered to the sediment basins from the WRD will be achieved through: - A clean water channel running north south to the east of the pits between the pits and the East Koolpin WRD; - Incorporation of diversion channels will be placed along the toe of East Koolpin WRD batters to enable diversion of runoff to rock check dam discharge points, prior to entering the sediment basin drainage network. The catchments main clean water channel to the west of the Taipan pit will be diverted to the north of the Taipan pit and south of the south Koolpin pit; - Construction of slope breaks to reduce slope length and promote infiltration; - Application of soil binders to batters for dust suppression and temporary erosion control; and - Composition of the WRD will include a significant proportion of low erodibility material (i.e., rock), reducing sediment generation. ▪ At Rustlers Roost no watercourses will be diverted as the placement of infrastructure does not require diversions; ▪ Where the proposed expansion of mining activities requires the diversion of watercourses at Quest 29, preparation of specific ESCPs prior to commencement of works, reflecting the specific engineering design requirements and construction sequence, will be developed; ▪ A clean water channel along the left bank of the North and South Koolpin pit is proposed to convey water from upstream to downstream without mixing with dirty water; ▪ The expansion of the Taipan pit will be undertaken to exclude disturbance to the current flow path of the previously altered watercourse, or construction of a stabilised creek diversion; ▪ The expansion of the Zamu pit will be undertaken to maintain the existing natural watercourse in an undisturbed condition to allow for clean water bypass through mining areas; ▪ Diversion channels to be constructed as per applicable engineering designs, including rock erosion control protection to bed and banks. Upstream and downstream ends to remain blocked (e.g., earth bund or rock wrapped in geofabric) from clean water flows until works are completed, and stabilisation is achieved; ▪ Active earthworks areas to be isolated and protected to maintain clean water separation from site runoff (e.g., perimeter berms, rock berm) during construction; and ▪ Permanent erosion control measures will include a combination of vegetative, hardstand and structural erosion control techniques, implemented progressively. With regard to controlled site water releases, Primary Gold has committed to no release during the dry season. Seasonal discharges would only commence after natural creek flow has begun and cease when natural creek flow ends. This will likely commence in December and end during recessional creek flows in April. Controlled discharges for the dewatering during the wet season must comply with water quality release criteria presented in the Water Management Plan (updated version in Appendix Q). Site specific trigger values for surface water in the Project area have been based on a CSIRO review of SSTV for the downstream Tom’s Gully mine. The SSTVs reference ANZG (2018) trigger values for 90% aquatic ecosystem protection in tropical lowland river systems and local background conditions. Thus, this is the water quality that the proponent must guarantee at the monitoring points. An additional and standalone WQIP, that aligns with the existing WMP, has been developed and it is provided as Appendix R. The WQIP aligns specifically with the National Water Quality Management Strategy. Furthermore, the proponent will need to apply for an operational Waste Discharge Licence (WDL) for the ongoing controlled discharge of pit water post-2023, when the current WDL expires. The WDL will set discharge trigger values which are expected to generally align the current WDL trigger values (noting that several values were to be updated as additional site-specific water quality data became available).
29	7.5.7	Aquatic Ecosystem	Section 7.5.7 states: "Section 7.3 states that the Project is unlikely to significantly affect surface water flows and therefore the aquatic ecosystem assessment has assumed that there is unlikely to be any significant impact to aquatic ecosystems from runoff quantity/flow changes". This statement appears inconsistent with the results of the modelled discharge scenarios in the EIS	The local catchment is composed of ephemeral drainage lines or creeks which only flows during rainfall events. As proposed in Water Management Plan (Appendix Q of the SEIS), discharge will occur during periods of stream flow only, to reduce possible impacts on sensitive receptors from an altered flow regime downstream of the receiving waters. Strong flow in the headwaters of both creeks have been observed for 3-4 weeks only during the wet season.

No.	EIS Section	Theme or Issue	Comment / Requested Additional Information	Required Action / Response
			which suggests that the volume of surface water will double and potentially triple to 13.3GL/year. As the modelling suggests that there will be a change in the volume of surface water due to the proposal, it is unclear why the draft EIS has not considered the change as a risk to aquatic ecosystems and riparian vegetation. It is recommended that further information is requested by the NT EPA including an assessment of how increased surface flows may impact on riparian vegetation and aquatic ecosystems.	However, it is assumed that low flow occurs for approximately 3-4 months, during which controlled discharges for dewatering will be possible. An updated hydrological assessment has been completed to consider the potential change in water flows in the surface water systems using hydrologic modelling. The assessment also used hydraulic modelling to provide flow velocities to assess potential impacts to riparian vegetation and aquatic ecosystems. The modelling has considered changes in system flows due to the physical alterations in the catchment from the Project and from the episodic discharges due to dewatering. The Hydrology Analysis report is provided in Appendix E of this SEIS. The analysis considered episodic controlled discharges due to dewatering. For dewatering, there will be no releases during the dry season. Seasonal releases would only commence after natural creek flow has begun and cease when natural creek flow ends (i.e. releases will likely commence in December and end during recessional creek flows in April). The rate of release will be variable, determined on analysis of wet season rainfall recorded at Old Mount Bunday Station and available forecasts. In general, during times of low to no rainfall in the wet season, the pump release rate will be reduced to a minimum of 50 L/s, with the objective that the creek systems are not overwhelmed by the influx of water. As the rainfall volume increases, the rate of release will increase up to 200 L/s. On occasions where the rainfall is expected to be large (i.e. monsoon or cyclone events), the pump is expected to be turned on to its maximum capacity of approximately 300 L/s. Controlled releases for the dewatering during the wet season will comply with water quality release criteria outlined in the Water Management Plan (WMP) and operational Waste Discharge Licence (WDL), with a new WDL for ongoing controlled releases required post-2023 when the current WDL expires. The current WDL specifies releases to only occur when natural flow is present in the watercourse (as such the proposed release regime is slightly more stringent as they will be restricted to the wet season regardless of downstream flow). An additional and standalone WQIP, that aligns with the existing WMP, has been developed and it is provided as Appendix R. The WQIP aligns specifically with the National Water Quality Management Strategy. In the upper ephemeral channels of Mount Bunday Creek (1.1 km downstream of the mine), the releases will result increase the total volume of water discharged through the creek threefold. However, peak discharges will only increase by 7% and velocity will only increase by 9% within this reach, which is within acceptable levels for the low to moderate ecosystem value of the upper Mount Bunday Creek tributaries. Further downstream on the main branch of Mount Bunday Creek, total discharges increase by up to 6%, which will cause a very minor change in peak discharges and velocity (1%) At the outlet of Mount Bunday Creek, near the confluence of Hardies Creek and the Mary River, releases from the mine will only result in a 2% increase in total discharge volume, resulting in a very minor increase in flow (<1%). These changes in flow are within acceptable limits for these moderate to high aquatic ecosystem waterways. Modelling results indicate that releases are expected to result in a 4 cm (36%) increase in water depth near the release point, but only minor increases in water depth (<1% and <1cm) on the main branch of Mount Bunday Creek. These increases in water depth will result in inundation of a greater area of aquatic habitat, which is not expected to result in negative impacts to aquatic flora and fauna. Minor changes to stream bed reshaping are also expected, which naturally occurs during high flow events in ephemeral and seasonal streams in this region. Based on the hydrological analysis results, it was determined that Mount Bunday Creek could adequately accommodate surface water discharges without adversely impacting the aquatic ecosystem values and it was consequently determined that a secondary discharge to point to Marrakai Creek is not necessary, thus further protecting the relatively undisturbed Marraki Creek catchment (refer to additional commitment). For dewatering releases from Quest 29 flow impacts from discharging in Charles Creek were analysed. At the release point to the upper ephemeral channels of Charles Creek, total discharge (volume of water) is expected to increase by 33% as a result of the releases, with peak discharges increasing by 29%, and velocity will increase by 12%. This is within the acceptable levels for the low ecosystem value of the waterway at the release point adjacent to the mine. Further downstream on the main branch of Charles Creek, total discharges increase by up to 7%, which will cause a minor change in peak discharges and velocity (<6%). At the outlet of Charles Creek, near the confluence of the McKinney River, releases from the mine will only result in a 0.1% increase in total discharge volume, resulting in a very minor increase in flow and velocity (<1%). These changes in flow are within acceptable limits for these moderate to high aquatic ecosystem waterways. Modelling results indicate that releases are expected to result in only minor increases in water depth (<5% and 1 cm or less) on the main branch of Charles Creek. This is not expected to result in negative impacts to aquatic flora and fauna. A summary of the aquatic ecology assessment has been completed based current extent and inclusions of the Project, the surface water modelling, existing aquatic ecosystem values for the receiving waterways and known species occurrence. The assessment of ecological functions of flow identified the following: ▪ Water availability for native flora and fauna – Changes in flow are relatively minor in the main branches of waterways given the small area of catchment removed and the predicted impacts of releases during the wet season (when compared to the discharge in the catchment). As such, permanent pools and reaches are expected to be available in the main branches, with no substantial reductions in water availability; ▪ Instream habitat (channel maintenance, sediment and organic matter transport, riparian condition) – Modelling results indicate minor stream bed reshaping, which is common in ephemeral and seasonal streams in the region

No.	EIS Section	Theme or Issue	Comment / Requested Additional Information	Required Action / Response
				during large flow events. As such, changes in flow are not expected to significantly impact instream habitat. Slight increases in water depth during releases will increase the area of habitat available to aquatic flora and fauna; ▪ Protect natural flow regimes (wet season flow) / seasonality (timing and duration of flow) – No releases are proposed during the dry season when many of the waterways are dry. The release regime will be dependent on rainfall, to maintain seasonality in waterway flows; ▪ Maintain natural variability (a system should retain its perennial or seasonal nature) – The ephemeral stream character will be maintained given no releases will occur during the dry season, and seasonality of flow will be maintained by varying release volumes depending on rainfall in the region; ▪ Manage groundwater for ecosystems – A GDE assessment was recently undertaken to assess the presence of GDEs within the Project area and potential impact as a result of the Project activities (refer to Appendix P). The report concluded it is unlikely that aquatic GDEs exist within the area of predicted drawdown. However, the report identified that there is a likelihood that riparian vegetation within the areas of drawdown exist. Due to the uncertainties regarding the riparian vegetation groundwater use patterns, it is recommended a Groundwater Dependent Ecosystem Monitoring Program (GDEMP) is developed to monitor and protect the ecological condition of the Type 3 GDEs within the Project area; ▪ Protect important rises in water levels (important wet season flows) – Given water releases will not occur in the dry season and releases will be variable depending on rainfall, impacts to rises in water levels (during the wet season) are expected to be minor during operation of the Project. Despite the small loss of catchment area, important wet season flows will still occur; ▪ Maintain seasonal wetland/floodplain inundation / protect natural low flows in perennial systems – Given the relatively small changes in flow compared to the large flows of main branch waterways, important wetland and floodplain habitat in downstream reaches of Mount Bunday Creek, Charles Creek, Marrakai Creek, Hardies Creek, McKinley River, Mary River and Adelaide River are expected to be maintained; ▪ Minimise the effect of weirs/dams or other structures on flow – No dams or weir are proposed on waterways. All infrastructure will be within the ML in the upper reaches of the catchments; ▪ Emulate natural drying in seasonal waterways – There will be no dry season releases; as such natural drying in waterways during the dry season will be maintained; and ▪ Maintain flow requirements for aquatic biota – The onset of stream flow at the beginning of the wet season and changes in water levels are expected to be maintained by adjusting the volume of releases based on rainfall in the region. This will maintain breeding cues for fish and fish use off-channel habitats during flooding. Peak floods and minimum flows that are vital to the connectivity of streams and provide stimulus for breeding and dispersal are expected to be maintained. Refer to the response to Item No. 5 and Appendix E for further details of the surface water modelling and Appendix M for the aquatic ecology assessment.
30	S.3.13.1 7.3.2.S	Aquatic Ecosystem Terrestrial Ecosystems	The ToR for the proposal requested that the EIS provide the following: "As a minimum, the assessment should consider: • the extent to which Terrestrial groundwater drawdown and seepage or discharge of mine affected water Ecosystems could impact riparian vegetation over time". This requirement does not appear to have been addressed with the applicant providing the following response: Section 7.3.2.6 states: "There are no recorded GDE's within the Quest 29 Project area. The GOE atlas (BOM 2021) maps a low-moderate potential for terrestrial GDEs at two locations on ephemeral watercourses that drain north of the lease (ML 29783) between 2 km to 3 km downstream from the Project area (Appendix H). Groundwater modelling in Appendix H suggest that drawdown contours (1m) extend towards the location of the potential terrestrial GDEs and states that the proposal has the "potential of affecting terrestrial and aquatic GDEs". The EIS describes and maps potential GDE's (Types 1-3) adjacent to the proposal area but provides no quantification or assessment of the risk to those habitats. It is recommended that further information is sought to quantify the extent and value of GDEs at risk of being impacted by drawdown and changes in groundwater quality.	As required in submission no. 7 above, the groundwater model has been revised and updated since the Draft EIS to refine and improve the characterisation of the surrounding environment through further defining model parameters with due consideration to receptors and risk. The revised model scope included: ▪ Literature review to collect additional hydrogeological data and review/revise/update conceptualisation with new datasets where available; ▪ Rebuild and recalibration of the model with a move to transient model to improve estimate of drawdown impacts and reflect short period of mine operation. A Scaled Residual Mass Statistic (SRMS) of 0.9% is noted for the original model. The updated model has a SRMS of 4.2%. GoldSim flux estimates were used as a calibration tool; ▪ Model uncertainty outcomes have been assessed by running numerical groundwater model through PESTPP-IES (White 2018) and AWS cloud computing. Different from traditional PEST (Doherty 1994), PESTPP-IES can generate multiple calibrated models that better address the issue of non-uniqueness and enable a more robust uncertainty analysis. A pilot point calibration technique is therefore possible where parameter values are estimated at the pilot point locations and then interpolated to other model cells (Doherty et al., 2010). This technique enables spatial heterogeneity to be better captured in the model, which is critical for this work due to the scale of modelling; and ▪ Revised reporting has been prepared to collate a model uncertainty table defining all lines of uncertainty and their impact on the model. The intent of this table is to demonstrate significance of uncertainties relative to each other and is intended to provide a weighing of concern for each uncertainty so that all stakeholders have a clear appreciation of the relative risk relating to the uncertainties identified. Numerical model limitations regarding the revised model conditions have been detailed. An assessment of what model Class has been achieved as well as a summary of how the model class should be applied considering the risk profile of the project.

No.	EIS Section	Theme or Issue	Comment / Requested Additional Information	Required Action / Response
				Understanding of the surrounding environment has been improved through additional field surveys of potential GDEs, spatial analysis of mapped GDE areas and downstream extents with groundwater depth and NDVI data. Appendix O provides detailed results of the recent groundwater modelling undertaken. An assessment has been undertaken to assess potential impacts of the Project on GDEs and provide an ongoing approach to actively manage the potential risks to GDEs from the Project activities. A summary of the results and recommendations is provided below and Appendix P provides the GDEs assessment report with detailed information on the assessment scope, results and recommendation to mitigate any potential impact on GDEs. The GDE assessment has concluded the following: Aquifer and Cave Ecosystems (Subterranean GDEs) There is no data available on subterranean GDEs for the area. Given the regional nature of the groundwater system, species present are likely to be ubiquitous across the Project area, with no particular species occurring within isolation to other species with geographic boundaries. Ecosystems Dependent on the Surface Expression of Groundwater (Aquatic GDEs) It is unlikely aquatic GDEs exist within the area of predicted drawdown. While no future work is recommended regarding aquatic GDEs, additional monitoring with respect to Terrestrial GDEs will provide confirmation of this conclusion (see below). Ecosystems Dependent on the Subsurface Presence of Groundwater (Terrestrial GDEs) Additional mapping of terrestrial GDEs has identified that there is a likelihood that riparian vegetation within the areas of drawdown exist. These are likely restricted to narrow zones of riparian vegetation, dominated by the presence of medium sized trees <i>Eucalyptus bigalerita</i>, and <i>Lophostemon grandifloras</i>. These areas are considered likely to be using groundwater due to their persistent high NDVI trend and the presence of shallow water tables. However, it is largely unknown at this stage if these trees, present across the study area have the root structure to access deeper soil moisture from the capillary fringe above the water table, and if indeed they require groundwater as part of their annual water requirements. Irrespective of the uncertainty regarding their groundwater use patterns, a conservative risk assessment has been conducted. The risk assessment has identified areas of potential high risk is associated with areas of initial depth to water table of less than 5 metres and a change to that water depth due to mining of greater than 5 meters. As a result of the risk assessment the development of a Groundwater Dependent Ecosystem Monitoring Program (GDEMP) is proposed. The objective of the monitoring program is to protect the ecological condition of the Type 3 GDEs in the Project area; ▪ Data collected will be used to monitor the degree of hydro(geo)logical change and influencing factors (informing the likelihood component of the risk assessment); ▪ Data collected will be used to monitor the condition of the GDEs and their sensitivity to changes and influencing factors (informing the consequence component of the risk assessment); and ▪ A key component of this summary is the acknowledgment there remains uncertainty within the current system – and with this consideration a future works program has been developed. The proposed monitoring program is driven by the GDEMP objective that aims to protect the ecological condition of the Type 3 GDEs in the Project area. The monitoring data provides the backbone of the GDEMP and will occur as an array of monitoring components that will track the conditions during the construction, operational and post-operational phases of the Project. The data collected will be used to address a series of monitoring objectives which are aligned with the risk assessment methodology, as detailed below. 1. Monitor the degree of hydro(geo)logical change and influencing factors, including background influences (which informs the likelihood element of the risk assessment), by: a. Monitoring groundwater levels in the alluvial aquifer in areas of probable drawdown and in areas outside of the predicted zone of influence; b. Monitoring groundwater levels in regional aquifers to monitor the predicted drawdown at depth, its propagation towards the surface and the relationship / hydraulic gradient to groundwater levels within the alluvial aquifer supporting the GDEs;

No.	EIS Section	Theme or Issue	Comment / Requested Additional Information	Required Action / Response
				c. Monitoring streamflow; d. Monitoring soil moisture levels using leaf water potentials as a surrogate; and e. Monitoring climatic conditions (rainfall, temperature). 2. Monitoring the condition of GDEs, their sensitivity to hydro(geo)logical change, and other influencing factors including background influences (which informs the consequence element of the risk assessment), by: a. Monitoring the condition of GDEs by: i. Leaf water potential monitoring; to identify likely depth of water use by the vegetation, this can be related to the existing depth of the water table at each site; ii. Remote sensing; Using high resolution temporal data develop a time series of NDVI response to climate to observe any trends that may be related to changes in groundwater levels; and iii. Vegetation surveys; to assess the condition of the vegetation and assess any trends against changes in groundwater levels. b. Monitoring other threats to GDEs (e.g. weeds and pests, grazing pressure, soil erosion, storms, fire) by vegetation surveys.
31	Table 7-28	Aquatic Health	Table 7-28 (Risk HP-9) lists the inherent and residual risk from groundwater drawdown as being high. This appears inconsistent with the stated summary of controls" which notes that the "hydrogeological assessment indicated minimal connection of groundwater to Mount Bunday Creek Water" and "No documented drawdown impacts from previous operations". It is recommended that further information is requested to be included in the Supplement clarifying why the proponent believes the risk from drawdown is high despite there being minimal connection of groundwater to the Mount Bunday Creek Water. Further evidence should also be provided to justify the proponent's claim that there have been no documented drawdown impacts from previous operations.	Note – the comment references HP-9; however, it is understood the comment is relevant to HP-6. Despite the minimal connection of groundwater to the Mount Bunday Creek water, the Draft EIS considered the inherent and residual risks (Table 7-28 – risk HP-6) from groundwater drawdown to be “High” as modelling adopted a steady state and conservative approach (e.g. it overestimated drawdown). The modelling has subsequently been refined to perform transient simulation to predict the groundwater drawdown more precisely. The model has also been reviewed by an external reviewer (Hugh Middlemis) and deemed fit for purpose as a Class 2 model for groundwater drawdown impact assessment. The model upgrades have substantially reduced the uncertainty associated with the drawdown prediction. Based on the updated model, the groundwater drawdown risk in the risk assessment (HP-6) (Appendix K) has been changed to moderate. Appendix O of the SEIS provides the updated groundwater modelling report.
32	Table 3	Terrestrial Ecosystem Aquatic Ecosystems	Formatting in Appendix B of the draft EIS appears to have covered up some of the text for the "Discussion" in Risk# HP-2 making it difficult to read. It is recommended that the proponent provide a full summary of the risk in the Supplement.	An updated version of the risk assessment has been included in this SEIS (Appendix K).
Water Resources Division - The project area does not fall within a water control district or water allocation plan area. The mine is located within a declared Beneficial Use area - Mary River (NT Gazette G6, 13 February 2022). The beneficial uses are environment, riparian and cultural for surface water and environment, riparian and agriculture for groundwater.				
33	General Groundwater Assessment		The BoM Groundwater Dependent Ecosystems (GDEs) Atlas (comprised of mostly coarse national-scale datasets in this area) should not be relied on solely to survey potential GDEs in the project area and the receiving environment. More thorough site-specific surveys (combination of field-based and publicly available remote sensing) should be undertaken.	Ground-thruthing surveys have been carried out after the submission of the Draft EIS in order to identify potential GDEs in proximity of the Project area and also to assess potential impact from pit water discharge within the existing ephemeral streams. This assessment is presented in the Ecological Assessment Memorandum (Appendix C). The Site specific GDE surveys recently undertaken included desktop assessment, field survey and remote sensing (refer to Appendix P). The scope of works included: Desktop assessment of GDEs: ▪ Correlate vegetation present with GDE potential; ▪ Review hydrology information to characterise typical stream frequency of flow to describe likely water use patterns; ▪ Review existing field surveys with photos; and ▪ Review the GDE Atlas information in detail. Field based survey: ▪ Assess vegetation and soils around the base of the creeks, targeting relevant drainage lines to the project; ▪ Any emergent vegetation, semi aquatic, cracking soils and substrate description; and ▪ Height and girth of trees. Remote sensing: ▪ Use sentinel data to do time series of NDVI (Normalised Difference Vegetation Index) response; and ▪ Selected from field survey patches of veg that are mapped by the GDE Atlas and ones that are not.

No.	EIS Section	Theme or Issue	Comment / Requested Additional Information	Required Action / Response
				The information gathered from the above tasks was used to create a map of potential GDEs as they relate to the Project and is provided in Appendix P.
34			Any unregistered bores (i.e. bore with no RN number assigned by the NT Government) in the proponent's lease need to be registered with the Water Resources Division (water.regulation@nt.gov.au).	PGO has reviewed the bores in the lease areas and is unaware of any bores that are unregistered. All bores within and surrounding the Project area, including PGO and third party's bores, have been included and identified as requested in response to item 36 below. These are: - Updated Draft EIS Figure 7-27 - Groundwater Model Predicted Extents (provided in Figure 4-1 below this table); and - Updated Draft EIS Figure 7-28 - Cumulative Groundwater Drawdown Extents (provided in Figure 4-2 below this table).
35			Where potentiometric surfaces and groundwater flow directions are referred to in the text, also provide a map showing this information. Text-only descriptions make it difficult to visualise the information.	Section 7.3.2.1 of the Draft EIS refers to potentiometric surface and groundwater flow direction. As part of additional groundwater and surface water modelling undertaken for the SEIS, additional figures were created which display pre and post mining potentiometric groundwater flow direction to facilitate its visualisation. Results of the groundwater modelling assessment, including new figures 5-24 and 5-25 (pre and post mining respectively) showing the potentiometric flow direction are provided in Appendix O. Figure 4-3 and Figure 4-4 below this table illustrate the pre and post potentiometric flow direction. Surface water flow direction is provided in Appendix E.
36			On maps that show maximum extent of 1m drawdown, also include all nearby bores (highlighting which bores are the proponent's and which belong to nearby users) for reference.	The following figures have been updated to show the nearby groundwater bores and to distinguish their ownership. As part of the recent groundwater modelling, drawdown data has also been updated to decrease uncertainties from the first groundwater modelling assessment. Section 7.3 Hydrological Processes of the Draft EIS - Draft EIS Figure 7-27 - Groundwater Model Predicted Extents ((provided in Figure 4-1 below this table); and - Draft EIS Figure 7-28 - Cumulative Groundwater Drawdown Extents (provided in Figure 4-2 below this table). Additionally, as part of the groundwater modelling assessment currently being undertaken for the SEIS, a new figure was created to show the 1 m, 5 m, 10 m and 15 m drawdown contours (median quantile 0.5 and 95th percentile quantile 0.95). Results of the groundwater modelling assessment, including new figure showing the drawdown extents are provided in Appendix O.
37	Page 99 (Section 4.10.1 0 Water Demand)		Potential typo reads '4,8881' ML/year. Is this figure correct?	There is a typo in Section 4.10.1 of the Draft EIS where it reads that “<i>The demand is to be covered by recirculation of 4,8881 ML/yr from the TSF, and the remaining to be provided by the water produced on site from pits dewatering.</i>” The correct value should be 4,881 ML/yr which was also shown in the Draft EIS Figure 4-18 - Rustlers Roost Water Management Schematic in Section 4 of the Draft EIS. However, as part of the recent groundwater modelling assessment, the water balance for the Project has been revised and updated to account for the updated water demand for the Project. Figure 4-5 below this table provides an updated Water Management Schematic for Rustlers Roost and Appendix O provides detailed information on the updated water balance for the Project.
38	Appendix H, Figure 4-17 (Hydrogeochemistry)		Cations on the piper diagram on the right look incorrect - very unlikely that they all cluster on the same point.	The piper diagram correctly represents the data. The data in the plot is presented in Appendix A.2 of Appendix H of the Draft EIS. The piper diagram has been redone and is provided below for reference. An explanation of data display is provided below. The concentration of major ions for the pit water is very low and the concentrations of individual cations is either below the limit of reporting (LOR) or a consistent value (2 mg/L Na, <1 or 1 mg/L K, <1 mg/L Ca, <1 mg/L Mg). For this plot, values reported as below limit of reporting (LOR) have been plotted as the LOR value (i.e. <1 mg/L plotted as 1 mg/L). As piper plots show the relative proportion of ions, the cations plot as one point as the LOR is not low enough to report actual concentrations.

No.	EIS Section	Theme or Issue	Comment / Requested Additional Information	Required Action / Response
39	General – Mining and Petroleum	Interference with a waterway	The draft EIS provides limited information in regard to the management and impact on existing surface water drainage lines on site as a result of the project. Further, potential impacts to waterways due to construction of the haul roads is not sufficiently considered. Under the <i>Water Act 1992</i>, activities which cause a material change to the shape; volume speed or direction of flow; or alter the stability of bed and banks constitute an interference with a waterway. Permitting requirements under the act apply to such activities. The draft EIS does not provide sufficient detail to determine what if any activities associated with the project may constitute an interference with a waterway. This is reflected further in subsequent comments below.	It is understood that under Section 40(1) of the <i>Water Act 1992</i> a person must not interfere with a waterway unless under Section 41(1) a permit has been granted. Interference with a waterway includes any activities that: (a) cause a material change to the shape of a waterway; (b) cause a material change to the volume, speed or direction of the flow or likely flow of water in or into a waterway; (c) cause an alteration to the stability of the bed or banks of a waterway, including by the removal of vegetation Under Part 1 of the <i>Water Act 1992</i> a waterway includes, but is not limited to the following: (a) a river, creek, stream or watercourse; and (b) a natural channel in which water flows, whether or not the flow is continuous; and (c) a channel formed wholly or partly by the alteration or relocation of a waterway described in paragraph (a) or (b). The Draft EIS maps all watercourse intersecting the project area (Figure 7-31) including those that will be resumed for Project infrastructure. Section 7.4 – Inland Water Environmental Quality of the Draft EIS includes a conceptual site model (Table 7-47) that considers impact and contaminant pathways for waterways including the haul road. Section 7.5 – Aquatic Ecosystems identifies all streams and minor drainage lines (waterways) intersecting the Project area and the placement of infrastructure within (refer to Figure 7-38, Figure 7-39 and Figure 7-42). The Draft EIS identified that the Project infrastructure will result in the removal and/or intersection of approximately 2,500 m of mapped natural drainage and creek lines due to the construction of the TSF, pit expansion, and haul road. A total of 4.85 ha of this area has been mapped as riparian vegetation through field surveys. Potential impacts to the waterway crossings from the haul road are also addressed in Section 7.5. The haul road crosses two culverts and one bridge. The bridge was structurally repaired as part of the site maintenance program and no works are proposed within the watercourses for the two culvert crossings. Therefore, direct interference and the requirement for a permit is not considered necessary at this point in time. The infrastructure including the TSF and expanded pit require the resumption of waterways which are at the top of the catchment and limited clean water diversions are required (refer to the ESCP provided as Appendix L of the Draft

No.	EIS Section	Theme or Issue	Comment / Requested Additional Information	Required Action / Response
				EIS). In accordance with the requirements under the <i>Water Act 1992</i> , Primary Gold will apply for a permit to interfere with these waterways prior to construction occurring.
40	General, and: Table 2-1 Summary of Other Legislation and Approvals Applicable to the Project	Applicability of the <i>Water Act 1992</i> to the Project	Throughout the EIS, and specifically documented in Table 2-1, the proponent indicates that surface water and groundwater extraction licences will not be required to support the project, this is incorrect. The project is not within a declared water control district however, this does not impact on the requirements to obtain licences, permits or other authorisations under the <i>Water Act 1992</i> unless specific exemptions apply. Current exemptions are listed on the DEPWS website at: https:// depws.nt.gov.au/water /legislation/ exemptions. Relevant approvals and licences which are likely to be required to support the activity include: ▪ Surface water extraction licences for extraction from existing pit lakes on Rustlers Roost and Quest 29; ▪ Groundwater extraction licence for take of water from bores in excess of 5ML p.a.; ▪ Permit to interfere with a waterway; and ▪ Bore work permits.	A review of the project requirements against each of the listed potential approvals and licences is provided below: ▪ Surface water extraction licences – Primary Gold is not proposing to extract surface water from watercourses. Incidental overland flows within the Project area will be captured within site features and reused in the Project operation. The water demand for the Project will be fulfilled by utilising pit water. It is noted that the <i>Water Act 1992</i> was recently amended to no longer exempt mining and Primary Gold also understand that the NTG is seeking to review the Act to establish a fit for purpose regulatory framework to manage mining as it relates to water use. It is understood this process will not be resolved until late 2022. Representatives for Primary Gold have engaged with the Water Resources Division of DEPWS to seek clarification on requirements. This process is ongoing and Primary Gold commits to complying with any and all requirements of the legislation as advised, including the submission of a surface water extraction licence in accordance with Section 45 of the <i>Water Act 1992</i>; ▪ Groundwater extraction licences – With exception of mine pit water, Primary Gold will only be seeking to extract groundwater for potable use associated with the accommodation camp located on ML29814. There are several existing bores on the ML29814 and adjacent MLs associated with the Toms Gully Mine that could be utilised for the potable water supply. The accommodation camp is estimated to require 20 ML of potable water per year. The potable water for the camp is based on a 275 L per day per person with a peak workforce of 300 people on-site/in camp on any one day (includes operations and construction personnel. Given the 20 ML exceeds the 5 ML limit, Primary Gold will seek a groundwater extraction licence under Section 60 of the <i>Water Act 1992</i>; ▪ Permit to interfere with a waterway – The Project intersects several mapped waterways. However, the Project area sits at the top of the catchment and a majority of the mapped features either do not constitute a watercourse or are heavily modified from historic mining activities. Nevertheless, it is acknowledged the TSF will be constructed over the top reaches of Marrakai Creek and Mount Bunday Creek and will thus result in a change to waterway discharge volume, speed and direction. Details on the hydrological changes due to placement of Project infrastructure is provided in Appendix E of this Supplement to the EIS. Primary Gold will apply for a permit to interfere with a waterway directly with the Controller of Water Resources in accordance with Section 41(1) of the <i>Water Act 1992</i>. The permit application will be submitted following completion of the EIS process; and ▪ Bore work permit – Groundwater may be sourced from bores to supply potable and raw water for the accommodation camp. There is an existing groundwater bore in proximity to the proposed camp that is earmarked for use. Should the existing bore be altered such that it constitutes ‘bore work’ under the definition provided in Part 1(4) of the <i>Water Act 1992</i>, or additional bore(s) be required to satisfy demand, Primary Gold will seek a bore work permit with the Controller of Water Resources in accordance with Section 57(1) of the <i>Water Act 1992</i>.
41	Figure E-7 - potential indirect and cumulative interactions with surrounding projects and activities.	Impact of erosion on waterways	Potential for the key issue of erosion to impact surface water appears to not be considered in the figure. Erosion has the potential to impact the flow regime of water ways as well as water quality and should be further considered. Refer to the 'General - Mining and Petroleum' comment above in relation to interference with a waterway permitting requirements.	Draft EIS Figure E-7 has been updated to include erosion as potential cumulative impact to surface water. Updated Draft EIS Figure E-7 is provided below this table as Figure 4-6. However, although erosion is known to present potential risk to surface water flow regime and quality, it is not expected that erosion will cause significant impact to surface water as a result of the Project activities with the implementation of management measures presented in the risk assessment (Appendix K) and the detailed ESCP provided in Appendix L of the Draft EIS. Management measures and commitments included to prevent erosion and watercourse degradation include: ▪ Adherence to ground disturbance procedures; ▪ Progressive clearing and rehabilitation; ▪ Revegetation of exposed areas where not proposed to be utilised; ▪ Implementation of erosion and sediment controls in accordance with the Project ESCP (Appendix L of the Draft EIS); ▪ Only clearing what is absolutely necessary for the portion of the Project to be implemented; ▪ Clearly marking limits of clearing; ▪ Avoiding land clearing during the wet season (Dec-May); ▪ Ongoing and regular (weekly) inspection of Project areas after rainfall events; ▪ Minimising concentrated flow of surface water and ponding (drainage lines, sediment bunds, liners etc.); ▪ Implementing fencing and access restrictions to prevent vehicle and livestock accessing rehabilitation areas; ▪ Drainage will incorporate check dam controls (e.g., rock check dam, filter bag/tube, coir logs) to provide flow energy dissipation in addition to providing sediment control; ▪ Specific Progressive ESCPs will be prepared to guide implementation of specific engineering plans for these structures;

No.	EIS Section	Theme or Issue	Comment / Requested Additional Information	Required Action / Response
				- Protected vegetation and significant areas of vegetation are to be retained, and clearly identified prior to the commencement of clearing; - Topsoil is to be stored within topsoil berms or designated stockpile areas; - Stockpiles are not to be located within protected areas of vegetation, driplines of trees, or within 10 m of retained trees, drainage lines, flood zones or any area otherwise likely to be inundated with water; - Avoid placement of stockpiles within 50 m of any drains, drainage lines or other waterways. Where not practicable, specific erosion and sedimentation controls to be implemented; - Spoil stockpiles are to be protected upslope by earth diversion banks to divert run-on water, and downslope by an appropriate Type 2/3 sediment control measure (e.g., mulch berm, rock berm); - Long term (> 10 days) stockpiles, batters and other erosion sensitive areas shall be adequately stabilised through velocity reduction, covering, grassing, vegetation, soil binding, water diversion or other as appropriate; - Topsoil berms are to be protected from erosion by: - Amelioration of topsoil layer for plant growth; - Light ripping of final topsoil layer; - Application of hydromulch at 4 t/ha complete with 40 kg/ha grass seed; and - Placement and pinning of jute matting over hydromulched surface on external batter. - Temporary stockpiling of soil, equipment, and materials within watercourses, or on adjacent banks and floodplains, is to be avoided (unless integral to drainage control requirements). Note, this is only applicable to the identified disturbance area as setbacks will apply; - Site runoff from exposed surfaces is to be prevented from directly entering watercourses; - Where culvert pipes are to be utilised, the following guidelines are to be considered: - The long-term stability of the bed and bank of the waterway are not compromised; - Culverts are to have sufficient capacity to ensure minimal disturbance to stream flow for the design discharge; - Culvert cells are aligned with the channel; - Culvert cells extend well beyond the fill embankment; - Rock (or similar) is to be used to protect fill abutments; and - Energy dissipation is provided downstream of culvert. - Additional contingencies are required in the event of wet conditions, which will include diversion of flows around active work areas, protection of disturbed areas, and restricting vehicular access as far as practicable; - The WRD will be bordered by a flow diversion berm (topsoil) to divert external clean water runoff, including exclusion of the watercourse to the west of the WRD; - Site runoff will be diverted to a sediment basin(s) for containment and treatment prior to reuse or discharge via internal drainage; - At Quest 29 the minimisation of sediment delivered to the sediment basins from the WRD will be achieved through: - A clean water channel running north south to the east of the pits between the pits and the East Koolpin WRD; - Incorporation of diversion channels will be placed along the toe of East Koolpin WRD batters to enable diversion of runoff to rock check dam discharge points, prior to entering the sediment basin drainage network. The catchments main clean water channel to the west of the Taipan pit will be diverted to the north of the Taipan pit and south of the south Koolpin pit; - Construction of slope breaks to reduce slope length and promote infiltration; - Application of soil binders to batters for dust suppression and temporary erosion control; and - Composition of the WRD will include a significant proportion of low erodibility material (i.e., rock), reducing sediment generation. - At Rustlers Roost no watercourses will be diverted as the placement of infrastructure does not require diversions; - Where the proposed expansion of mining activities requires the diversion of watercourses at Quest 29, preparation of specific ESCPs prior to commencement of works, reflecting the specific engineering design requirements and construction sequence, will be developed; - A clean water channel along the left bank of the North and South Koolpin pit is proposed to convey water from upstream to downstream without mixing with dirty water;

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				▪ The expansion of the Taipan pit will be undertaken to exclude disturbance to the current flow path of the previously altered watercourse, or construction of a stabilised creek diversion; ▪ The expansion of the Zamu pit will be undertaken to maintain the existing natural watercourse in an undisturbed condition to allow for clean water bypass through mining areas; ▪ Diversion channels to be constructed as per applicable engineering designs, including rock erosion control protection to bed and banks. Upstream and downstream ends to remain blocked (e.g., earth bund or rock wrapped in geofabric) from clean water flows until works are completed, and stabilisation is achieved; ▪ Active earthworks areas to be isolated and protected to maintain clean water separation from site runoff (e.g., perimeter berms, rock berm) during construction; and ▪ Permanent erosion control measures will include a combination of vegetative, hardstand and structural erosion control techniques, implemented progressively. An updated Commitment Register is provided in Appendix L. With regard to instream erosion from Project water runoff and discharges Section 3.3.4 of the Draft EIS stated <i>“Cumulative discharges from the Project area and the downstream Toms Gully Mine are unlikely to impact the hydrological processes as discharges will be proportional to flows occurring in the Mount Bunday Creek Catchment. Mount Bunday Creek is a higher stream order, has intact riparian vegetation and is able to withstand high flows throughout the wet season, and it is anticipated very little erosion beyond natural occurrence will occur (Aquatic Ecology Services 2019).”</i>
Parks and Wildlife Division - The Rustlers Roost and Quest 29 project has the potential to significantly impact the values of a number of parks and reserves along with the Mary River and Adelaide River Coastal Floodplains, which are recognised as international Sites of Conservation Significance. The following list of parks and reserves are located downstream of the project sites: ▪ Mary River National Park is located 6.5km to the east; ▪ Djukbinj National Park is located 14km to the north; ▪ Leaning Tree Lagoon Nature Park is located 25km to the north; ▪ Harrison Dam Conservation Area is located 32km to the north east; ▪ Adelaide River Foreshore Conservation Area is located 24km to the east and north east; ▪ Black Jungle/ Lambell's Lagoon Conservation Reserves is located 42km to the north east; ▪ Fogg Dam Conservation Reserve is located 45km to the north east; and ▪ Melacca Swamp Conservation Area is located 65km to the north east. The significant values located downstream of the project areas must be adequately protected both now and into the future. Water quality and aquatic ecosystems surrounding the mining pits, and within the wider catchments, must be managed and monitored in accordance with industry best practice standards.				
42	Sections 1-4 Page 43 Table 3-1 Key Project Stakeholders		Under Group 'Indigenous Stakeholders, Traditional Owners or representative organisations': ▪ Delete 'Limilngan and Uqynmil Traditional Owners (Local Management Committees of the Mary River and Djukbinj National Parks)' and replace with 'Mary River Joint Management Committee and Djukbinj Local Management Committee (Djukbinj Board)'	Noted
43	Section 5 and 6 Page 122	5.1.4.1	Small typo - under 5.1.4.1 Mount Bunday Creek - Mary River change reference from '5.2.4' to '5.2.5'.	Noted
44		5.1.4.2	Recommended wording change - 'The majority of the Quest 29 mine site (eastern and southern parts) are located in the McKinlay River catchment. Unnamed ephemeral drainage lines downstream of the site discharge to the east through floodplains towards the McKinlay River main branch, which is approximately 15 km downstream of the Project area. From this location, the McKinlay River flows north through Mary River National Park, and discharges into the Mary River at a location 2km upstream from the Arnhem Highway Mary River Bridge'.	Noted
45	Page 132	5.2.5	Recommend replacing the first paragraph to: 'Mary River National Park is managed by the Limilngan and Uwynmil Traditional Owners and the Parks and Wildlife Commission of the Northern Territory through a joint management agreement and guided by a Joint Management Plan and the Mary River Joint Management Committee. The national park protects and conserves outstanding natural, cultural and visitor values and provides opportunities for the public to enjoy high quality experiences. The national park protects part of Chambers Bay and the Mary River Coastal Floodplains, which are defined as international SoCS. The floodplain and Chambers Bay include a complex mosaic of wet and dry habitats which support large and diverse populations of waterbirds'.	Noted
46	Page 132	526	Recommend changing the section name to be 'Adelaide River Floodplain System and Djukbinj National Park'	Noted

No.	EIS Section	Theme or Issue	Comment / Requested Additional Information	Required Action / Response
			Recommend changing the paragraph to: 'Located 14km downstream (north) of the Rustlers Roost portion (ML 1803) of the Project area is Djukbinj National Park (Marrakai sector). Owned by the Limilngan-Wulna Landholding Aboriginal Corporation, the national park is jointly managed by the Limilngan-Wulna Traditional Owners and the Parks and Wildlife Commission of the Northern Territory. Managed under the terms of a Memorandum of Lease and a Deed of Management, the Djukbinj Local Management Committee (Djukbinj Board) and a plan of management provide direction for the parks management. The national park is situated on the Adelaide River coastal floodplain and is part of the Adelaide River wetlands system. A biodiverse area, nearly 40% of the park is contained within two internationally important SoCS (Chambers Bay and Adelaide River Coastal Floodplain) and provide habitat for large numbers of shore and waterbirds. The Adelaide River floodplain is also a major tourist attraction for recreational fishing in the region'.	
47	Page 134	5.3	Recommend the following changes to the list of parks and reserves: ~~▪ Mary River Crossing Reserve (15 km);~~ ▪ Mary River National Park (156.5km); ▪ Djukbinj National Park (14 km); ▪ Leaning Tree Lagoon Nature Park (25km); ▪ Harrison Dam Conservation Area (32km); ▪ Manton Dam Recreation Area (36km); ▪ Adelaide River Foreshore Conservation Area (24km); ~~▪ Wildman Reserve (40 km); and~~ ▪ Black Jungle / Lambell's Lagoon Conservation Reserves (42km); and ▪ Fogg Dam Conservation Reserve (45 km); The boundary of the Kakadu National Park, managed by the Commonwealth Government Parks Australian National Parks and Wildlife Service, lies 60km east of the Project area along the lowlands of the Wildman River. The park currently covers 1.3 million hectares, encompassing the drainage systems associated with the Wildman, West Alligator and South Alligator Rivers.	Noted
48	Section 7.5 Page 408	7.5.2.2	The following conservations areas should be added to the list of downstream receiving environments: • Djukbinj National Park around 14 km to the north; • Harrison Dam Conservation Area around 32km to the north east.	Noted
Department of Industry, Tourism and Trade (DITT)				
Mining Operations Division - DITT has reviewed the Draft EIS for the Rustlers Roost and Quest 29 Open-Cut Mine Redevelopment and considers that both the previous comments on the EIS referral (EP2021/005), and the comments on the Notice of Significant Variation (under Section 51 of the <i>Environmental Protection Act 2019</i>) are still relevant. The below comments are also provided to clarify.				
49	Appendix H -Water Balance and Groundwater Modelling Report And Appendix I – Water Management Plan	Water considerations	The site water balance does not account for the considerable increase in the footprint of the proposed tailings storage facility (TSF); consequently/ Primary Gold has not demonstrated an understanding of water management needs across the site/ which makes potential impacts on and off site difficult to assess. It is recommended that the water balance and resulting water management plan updated to enable a thorough understanding of the future proposed water balance and to identify that potential impacts can be managed. In addition, it would be appropriate that the groundwater modelling (and management) should be updated to inform assessment of the potential migration of contamination from the mining structures.	The site wide water balance and groundwater modelling have been revised and updated as described in response to submissions 7 and 9 above. These updates provide a more robust assessment of the water storage requirements on site as well as the potential for contaminant migration from the site. The results of these assessments are provided in Appendix O of the SEIS. Based on the outcomes of the site water balance, the site WMP has been updated to more accurately reflect the approaches to water management on site. The updated WMP is provided in Appendix Q of the SEIS.
50	Appendix B-Risk Assessment Register	Seepage risk and controls for the TSF	The proposed expansion of the TSF will encompass Annie's Dam/ various drainage lines/ the heap leach pad and heap leach ponds. Annie's Dam in particular is a potential groundwater source for the identified downstream groundwater fed riparian vegetation site (see RP6-US site in Appendix M)/ which may make this a likely vector for seepage from the expanded TSF footprint. Primary Gold has not demonstrated an adequate analysis of environmental risks/ or developed the necessary mitigating management actions associated with construction of the expanded TSF/ making potential impacts difficult to ascertain.	A groundwater dependent ecosystem assessment has been undertaken to assess potential impact of the Project on GDEs and provide an ongoing approach to actively manage the potential risks to GDEs from the Project activities. A summary of the results and recommendations is provided below and Appendix P provides the GDEs assessment report with detailed information on the assessment scope, results and recommendation to mitigate any potential impact on GDEs. The GDE assessment has concluded the following: Aquifer and Cave Ecosystems (Subterranean GDEs) There is no data available on subterranean GDEs for the area. Given the regional nature of the groundwater system, species present are likely to be ubiquitous across the Project area, with no particular species occurring within isolation to other species with geographic boundaries.

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				Ecosystems Dependent on the Surface Expression of Groundwater (Aquatic GDEs) It is unlikely aquatic GDEs exist within the area of predicted drawdown. While no future work is recommended regarding aquatic GDEs, additional monitoring with respect to Terrestrial GDEs will provide confirmation of this conclusion (see below). Ecosystems Dependent on the Subsurface Presence of Groundwater (Terrestrial GDEs) Additional mapping of terrestrial GDEs has identified that there is a likelihood that riparian vegetation within the areas of drawdown exist. These are likely restricted to narrow zones of riparian vegetation, dominated by the presence of medium sized trees <i>Eucalyptus bigalerita</i>, and <i>Lophostemon grandifloras</i>. These areas are considered likely to be using groundwater due to their persistent high NDVI trend and the presence of shallow water tables. However, it is largely unknown at this stage if these trees, present across the study area have the root structure to access deeper soil moisture from the capillary fringe above the water table, and if indeed they require groundwater as part of their annual water requirements. Irrespective of the uncertainty regarding their groundwater use patterns, a conservative risk assessment has been conducted. The risk assessment has identified areas of potential high risk is associated with areas of initial depth to water table of less than 5 metres and a change to that water depth due to mining of greater than 5 meters. As a result of the risk assessment the development of a Groundwater Dependent Ecosystem Monitoring Program (GDEMP) is proposed. The objective of the monitoring program is to protect the ecological condition of the Type 3 GDEs in the Project area; ▪ Data collected will be used to monitor the degree of hydro(geo)logical change and influencing factors (informing the likelihood component of the risk assessment); ▪ Data collected will be used to monitor the condition of the GDEs and their sensitivity to changes and influencing factors (informing the consequence component of the risk assessment); and ▪ A key component of this summary is the acknowledgment there remains uncertainty within the current system – and with this consideration a future works program has been developed. The proposed monitoring program is driven by the GDEMP objective that aims to protect the ecological condition of the Type 3 GDEs in the Project area. The monitoring data provides the backbone of the GDEMP and will occur as an array of monitoring components that will track the conditions during the construction, operational and post-operational phases of the Project. The data collected will be used to address a series of monitoring objectives which are aligned with the risk assessment methodology, as detailed below. 1. Monitor the degree of hydro(geo)logical change and influencing factors, including background influences (which informs the likelihood element of the risk assessment), by: a. Monitoring groundwater levels in the alluvial aquifer in areas of probable drawdown and in areas outside of the predicted zone of influence; b. Monitoring groundwater levels in regional aquifers to monitor the predicted drawdown at depth, its propagation towards the surface and the relationship / hydraulic gradient to groundwater levels within the alluvial aquifer supporting the GDEs; c. Monitoring streamflow; d. Monitoring soil moisture levels using leaf water potentials as a surrogate; and e. Monitoring climatic conditions (rainfall, temperature). 2. Monitoring the condition of GDEs, their sensitivity to hydro(geo)logical change, and other influencing factors including background influences (which informs the consequence element of the risk assessment), by: a. Monitoring the condition of GDEs by: i. Leaf water potential monitoring; to identify likely depth of water use by the vegetation, this can be related to the existing depth of the water table at each site; ii. Remote sensing; Using high resolution temporal data develop a time series of NDVI response to climate to observe any trends that may be related to changes in groundwater levels; and

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				iii. Vegetation surveys; to assess the condition of the vegetation and assess any trends against changes in groundwater levels. b. Monitoring other threats to GDEs (e.g. weeds and pests, grazing pressure, soil erosion, storms, fire) by vegetation surveys. As part of the SEIS, groundwater and water balance modelling have been revised. The revised modelling indicates that groundwater seepage into the open pits is the most significant contributor to the water balance as it amounts for about 77% of all inflows. Figure 1 below shows the groundwater seepage from the combined Rustlers Roost pits (Rustlers Roost pit, Annie Oakley pit, Annie Dam pit), and Figure 2 below shows groundwater seepage from the combined Quest 29 pits (Zamu pit, Southern Koolpin pit, North Koolpin pit, Taipan pit and BHS pit). The groundwater seepage is expected to increase as the pits deepen during mining operation. At the Rustlers Roost mine site there are three pits with deepening works happening at different times; Rustlers Roost pit begins operation in March 2023 and is active for the rest of the operation period whereas deepening of Annie Oakley pit and Annie Dam pit only occurs for 4 months and 10 months respectively, in 2023 and 2024. At the end of the mining operations, groundwater inflow into the Rustlers Roost pits would be 100 L/s. However, uncertainty analysis suggests that this inflow could vary between 30 L/s and 270 L/s. For the Quest 29 pits operations start in July 2025 at Zamu pit which is mined until end of June 2030, followed by operations in South Koolpin, North Koolpin and Taipan pits from July 2030 and BHS pit from August 2032. This means that the maximum groundwater seepage rate occurs around April 2031 where an estimated inflows of 200 L/s for all Q29 pits is expected, although with an uncertainty range from 60 L/s to 370 L/s. Total combined pit inflows are expected to be at their maximum in April 2031 at 290 L/s, with an uncertainty range from 90 L/s to 360 L/s. Monitoring of pit seepage during the initial phase of mining operation would greatly reduce the uncertainty. Figure 3 below illustrates the cumulative groundwater seepage volume into the pits. According to the model, at the end of the mining operations (in October 2031) about 46 GL of water is estimated to have seeped into the open pits. Based on the uncertainty analysis, this amount ranges from 23 GL (for a lower end hydraulic conductivity range) to 95 GL (for a higher end hydraulic conductivity range). Figure 1 Predicted Total Amount of Groundwater Seepage from the Rustlers Roost Pits combined over Time

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				Figure 2 Predicted Total Amount of Groundwater Seepage from the Quest 29 Pits Combined over Time Figure 3 Cumulative Groundwater Seepage Volume into all Pits over Time While certain areas such as the existing drainage lines and Annes Dam are likely to contain soil conditions that are more permeable and susceptible to higher infiltration rates, a low-permeability composite liner of HDPE and CSL will be constructed over the entire TSF basin area, comprising either reworked in-situ material or imported low permeability material for the CSL component. The TSF design incorporates a 300 mm thickness imported (or 200 mm thickness in situ) CSL across the TSF basin. The design feasibility report for the TSF (Appendix G) quantifies the volume of in-situ material available for the CSL (1,338,000 m3) and the additional volume of external low permeability material required to supplement this (182,000 m3). Based on the geotechnical analysis, sufficient in-situ material for the embankment exists onsite and it is anticipated that further material is not required to be imported from offsite.

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51	Appendix J-Mine Closure Plan	Information gap	A substantial amount of material of suitable quality will be required to cap the expanded TSF footprint (~240ha) and WRD (~92ha) footprints which will exceed the expected volume of non-acid forming (NAF) material to be removed from the pits. This presents a risk of water infiltration and potential acid metalliferous drainage (AMD) issues. It is not clear from the information provided whether these risks can be appropriately managed to avoid impacts to the environment. It is recommended that Primary Gold be required to demonstrate that sufficient suitable material is available or/ alternatively, present other methods for the rehabilitation of high risk structures.	As per the response to Item 2, a waste block model has been developed using the geotechnical model and importing geochemical results, to provide a more refined estimate of the PAF and NAF material. In the designed pit the PAF waste tonnes with a S% above 0.2% amounts to 19.34 Mt at an average percentage of 1.46% sulfur. There is approximately 0.29 Mt of sulfur in the PAF pit waste. With a total waste volume of 56.4 Mt (inclusive of all three pits at Rustlers Roost), this provides 37.06 Mt of waste material below the 0.2% sulfur content cutoff (NAF) (with 31.56 Mt coming from the main Rustlers Roost pit). Thus, roughly 31.56 Mt from the main pit will be available for TSF and WRD capping purposes. The WRD design accounts for the following encapsulation and capping layers: ▪ Oxide NAF material will used to build the base of the WRD from ground level; ▪ A 5 m thick oxide layer will be placed on top of the WRD compacted in 1 m lifts; and ▪ A 0.2 m final topsoil layer. As per the assessment detailed in Appendix J, as estimated 1,978,820 m² of topsoil will be stripped and available for capping and rehabilitation purposes (based on a nominal topsoil depth of 0.5 m). The topsoil stripping areas are identified in Appendix G and have been calculated to match the quantity required for rehabilitation purposes. The quantity required per key infrastructure component in Mlcm is: ▪ TSF – 1.18; ▪ North WRD – 0.08; ▪ South WRD – 0.08; ▪ Administration and Operations Area – 0.01; and ▪ Misc. Disturbed Areas – 0.62. The geochemical testing of a combined tailings sample derived from the different ore bodies was conducted by CDM Smith during the study. Knight Piesold conducted an independent review of the report for the TSF feasibility design report. Based on the results it was determined that a low permeability capping layer is necessary to reduce long-term infiltration and oxidation. A composite store and release cover system is considered appropriate. The TSF design parameters include the following capping estimates: ▪ 0.5 m capillary break, comprising mine waste rockfill material (910,000 m³). ▪ 0.3 m thick low permeability layer (550,000 m³); and ▪ 0.2 m thick topsoil as growth medium (445,000 m³). The capping thickness values are considered conservative. The construction material volumes for the WRDs and TSF at Rustlers Roost are presented in the table below (also refer to Appendix B). <table><tr><th rowspan="2">Material Source</th><th rowspan="2">Quantity (Mlcm)</th><th colspan="4">Destination</th><th rowspan="2">Total (Mlcm)</th></tr><tr><th>North WRD¹</th><th>South WRD¹</th><th>TSF Walls</th><th>TSF Top Capping</th></tr><tr><td>Historic Leach Pad</td><td>3.40</td><td>0</td><td>0</td><td>1.50</td><td>1.90</td><td>3.40</td></tr><tr><td>Historic WRD</td><td>1.75</td><td>0.17</td><td>0.17</td><td>1.41</td><td>0</td><td>1.75</td></tr><tr><td>Main Pit</td><td>10.30</td><td>6.50</td><td>3.80</td><td>0</td><td>0</td><td>10.30</td></tr><tr><td>TSF Floor</td><td>2.99</td><td>0</td><td>0</td><td>2.99</td><td>0</td><td>2.44</td></tr><tr><td>Total</td><td>18.44</td><td>6.67</td><td>3.97</td><td>5.90</td><td>1.9</td><td>18.44</td></tr></table> 1 – Including for base and capping The waste block model identifies 31.56 Mt of waste material coming from the Rustlers Roost main pit, below the 0.2% sulfur content cut off (NAF). This refined NAF estimate is higher than the initial estimate presented in the Draft EIS of 25.9 Mt. Based on a conservative conversion of million lcm to tonnes the Rustlers Roost construction will require 37.06 Mt (18.44 Mlcm) of waste material. Of this, only 20.70 Mt (10.30 Mlcm) is required to be sourced from the main pit, thus providing 10.86 Mt excess of NAF oxide material that is a buffer for construction requirements. The excess is from the stripping of the TSF footprint, the Leach pad and some off the top the old WRD.	Material Source	Quantity (Mlcm)	Destination				Total (Mlcm)	North WRD¹	South WRD¹	TSF Walls	TSF Top Capping	Historic Leach Pad	3.40	0	0	1.50	1.90	3.40	Historic WRD	1.75	0.17	0.17	1.41	0	1.75	Main Pit	10.30	6.50	3.80	0	0	10.30	TSF Floor	2.99	0	0	2.99	0	2.44	Total	18.44	6.67	3.97	5.90	1.9	18.44
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52	Appendix L – Erosion and Sediment Control Plan	Erosion and sediment controls	It appears that some structures e.g. erosion and sediment controls/ Annie Oakley pit/ northern WRD and TSF walls are very close to, or outside/ the current mining lease boundaries. This	In accordance with the Feasibility Design Report for the Rustlers Roost TSF (Appendix G), the TSF footprint has been limited to provide a 50 m corridor between the downstream toe of the embankment and the site boundary (ML boundary). The 50 m clearance is considered sufficient for erosion and sediment controls, drainage management																																														

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			present a risk for impacts to areas outside of the mining lease. This is not permitted under the <i>Mining Management Act 2001</i>. DITT recommends that Primary Gold re-design the site to ensure sufficient room to manage infrastructure within the mining lease/ or apply for additional mining leases to cover the affected areas.	infrastructure and service track. It should be noted that the TSF toe will only reach this outer extent near completion of the embankments. Therefore, for the majority of the mine operational life the setback will be greater than 50 m. The Annie Oakley pit and northern WRD were setback from the boundary approximately 20 m and 30 m, respectively. As a means of preventing encroachment beyond the ML boundary during operation, Primary Gold will increase the boundary setback for this infrastructure to maintain a consistent 50 m buffer. Should during operation Primary Gold identify a need to encroach upon the ML boundary for any of the above referenced infrastructure or mine service infrastructure (e.g. vehicle service track or drainage controls) Primary Gold will liaise directly with DITT and seek an additional ML adjoining the current, prior to proceeding with increase in the designed footprint. Primary Gold would also liaise directly with the NT EPA to consider potential impact and obligations under the EP Act at such time. However, while Primary Gold commits to this arrangement, based on the current engineering such an approach is not proposed and Primary Gold will be seeking to maintain all mining infrastructure and disturbance within the ML and nominate development envelope for Rustlers Roost. Additional Commitment – The outer extents of the TSF, Annie Oakley pit and northern WRD will be limited to a 50 m setback from ML boundary.
53	Appendix U – Commitments Register	Information gap	There are a number of consultant recommendations, proposed research, trials, and studies described in the EIS that Primary Gold have not committed to undertaking in the commitments register, or provided reasons for actions not being required. This presents a risk that Primary Gold may not have an adequate understanding of the site for the appropriate long-term management of potentially significant environmental impacts. It is recommended that Primary Gold be required to commit to undertaking these studies, or demonstrate that they are not required.	Primary Gold have reviewed the surveys, reports and management plans appended to the Draft EIS and have updated the Commitment Register for the Project to include recommendations and commitments that have been made through out these documents. Furthermore, Primary Gold have commissioned additional surveys and studies since the submission of the Draft EIS and the recommendation and proposed mitigation strategies that have been stated within these documents have now been included in the updated Commitment Register. A list of new commitments is provided in Section 5 and Appendix L provides a complete Commitment Register for the Project, including new commitments identified in Section 5. Primary Gold consider the commitment register to be a dynamic document and will continually be updated with new actions as they arise, and provide a framework for internal audit and compliance to achieve environmental outcomes.
Department of Infrastructure, Planning and Logistics (DIPL)				
Transport and Civil Services Division				
54	Appendix G	Theme: People Factor: Community and economy Objective: Enhance communities and the economy for the welfare, amenity and benefit of current and future generations of Territorians. Factor: Human health Objective: Protect the health of the Northern Territory population.	▪ The Department considers the draft EIS inadequately assesses the risk associated with an unsealed entrance to Arnhem Highway. There is a significant risk from loose material being tracked onto the Arnhem Highway regardless of past operations history. This directly increases the risk for accident. ▪ It is recommended that the following additional mitigation measure be considered: – the Proponent commits to providing treatment to Toms Gully Road entrance to Arnhem Highway. The Proponent is encouraged to discuss suitable treatment options with the Transport Civil Services Division	Representatives for Primary Gold contacted the Transport and Civil Services Division of DIPL in July 2022 to discuss suitable treatment options for the Toms Gully Mine and Arnhem Highway intersection. A response is still pending; however, Primary Gold commits to upgrading the intersection. The following provides the basis for the upgrade: ▪ The current Toms Gully Road maintains an average width of 8 m up to the intersection, splaying to 38 m for the crossover; ▪ The distance between the edge of the sealed Arnhem Highway formation and the road corridor fencing is 15 m, 25 m to the entrance gate and 70 m to the boundary of parcel 4937; ▪ During the construction phase there is estimated to be three trucks and ten light vehicles per day during daylight with peak times 5 am to 10 am and 3 pm to 7 pm (26 two way movements); ▪ During operations the Project traffic flow on and off-site is estimated at an average of 42 delivery trucks per week, up to ten light vehicles daily. Operating during daylight hours with peak times 5 am to 10 am and 3 pm to 7 pm; ▪ With exception of a gate and sign there are no other relevant infrastructure; ▪ The Toms Gully Mine Road intersection with the Arnhem Highway is located in a non-urban (rural) area as per the Standard Specifications for Roadworks (DIPL 2022); ▪ The NTG civil standard drawings for roadworks provide typical cross sections for the rural environment with indications of applicability based on vehicle movements per day (refer to Typical Cross Sections for Urban and Rural Environments, drawing No. CS-3003 (3)); ▪ Based on the NTG standard drawings a Type B cross section with a carriage way width of 9 m, with 8 m of sealed extent and 3.0 m lanes is considered appropriate (refer to extract below); ▪ Sealing is proposed to extend from the current Arnhem Road formation to 25 m west to the existing access fence; Extract from NTG Typical Cross Sections for Urban and Rural Environments (CS-3003)

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				RURAL ENVIRONMENT TYPICAL CROSS SECTIONS - RURAL ENVIRONMENT <table><thead><tr><th rowspan="2">ROAD CLASSIFICATION</th><th rowspan="2">AUSTROAD CLASS</th><th rowspan="2">TYPE CROSS SECTION</th><th rowspan="2">A CARRIAGE WAY WIDTH (m) (INCLUDING MEDIAN)</th><th colspan="2">C TRAFFIC LANES</th><th rowspan="2">B SEAL/ GRAVEL WIDTH (m)</th><th rowspan="2">COMMENTS</th></tr><tr><th>WIDTH (m)</th><th>SURFACE</th></tr></thead><tbody><tr><td>RURAL SECONDARY ROADS</td><td>CLASS 4</td><td>TYPE B</td><td>9.0</td><td>2 x 3.0</td><td>SEALED</td><td>8.0</td><td>< 500 VPD - 20 YEAR PROJECTED VOLUMES, SEE NOTE 1</td></tr></tbody></table> NOTE: PAVEMENT AND SEAL TO EXTEND A MINIMUM OF 1.0m IN TO THE MEDIAN. SHOULDERS TO BE SEALED, MINIMUM 1.0m. CROSS SECTION TYPE B RURAL SEALED ROADS *REFER NOTE 3 For the cross over design, reference is made to Type 2 of the Rural Residential Property Access standard drawings (CS-3005), based on the road width and design in CS-3003. Extract from NTG Typical Cross Sections for Rural Residential Property Access (CS-3005) PROPERTY BOUNDARY OR EXTENT OF WORK TRANSITION TABLE DRAIN OVER 10m (MIN) CULVERT Xm LONG AS SPECIFIED IN PROJECT DRAWING HEADWALL TO BE LOCATED AT LEAST 300mm AWAY FROM THE EDGE OF THE SEAL, REFER TO PROJECT SPECIFIC DRAWING FOR CONSTRUCTION DETAILS PROVIDE ROUNDED TURNING BASE OF TABLE DRAIN TOE OF BATTER EDGE OF SHOULDER EDGE OF SEAL EDGE LINE INTERSECTION POINT 7.00m TYPICALLY GUIDE POST R2.0m R4.0m REFER TO PROJECT SPECIFIC DRAWING FOR LINE MARKING OF THE ACCESS CLEAR ZONE REFER TO SPECIFICATION Additional Commitment – Primary Gold will formalise a site-specific upgrade design for the Toms Gully Mine Road and Arnhem Highway intersection based on the NTG standard drawings (CS-3003 and CS-3005). This design will be submitted with a request for Road Agency Approval to DIPL in accordance with the Development Guidelines for Northern Territory Government Controlled Roads. Primary Gold has adopted the above intersection upgrade commitment into the formal Project Commitments Register (Appendix L).	ROAD CLASSIFICATION	AUSTROAD CLASS	TYPE CROSS SECTION	A CARRIAGE WAY WIDTH (m) (INCLUDING MEDIAN)	C TRAFFIC LANES		B SEAL/ GRAVEL WIDTH (m)	COMMENTS	WIDTH (m)	SURFACE	RURAL SECONDARY ROADS	CLASS 4	TYPE B	9.0	2 x 3.0	SEALED	8.0	< 500 VPD - 20 YEAR PROJECTED VOLUMES, SEE NOTE 1
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55		Impact on groundwater dependent ecosystems	The risk of adverse impacts to Groundwater dependent ecosystems (GDEs) has been identified as high: <i>Reduced water table elevation due to dewatering has the potential to reduce access to groundwater by riparian vegetation (including GDEs). Impact to any GDEs including aquatic ecosystems that are dependent on groundwater to provide dry season refugee. Potential change to surface water quality due to dewatering activity.</i>	Noted																		

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56		Impact on groundwater dependent ecosystems	Risk mitigation strategies are limited solely to the observation that “No documented drawdown impacts from previous operations” exist and that “Groundwater monitoring” will occur. ECNT believes this to be insufficient as there is no credible contingency planning outlined for this risk. A reliance on the fact of no previous drawdown impacts being documented is inadequate due to the significant expansion and changes involved with the updated Project. Furthermore, monitoring of groundwater is only effective insofar as it is attached to concrete risk mitigation strategies that can be implemented if the monitoring reveals that adverse impacts are occurring. ECNT submits that the Proponent should be required to describe what action they commit to take if monitoring shows drawdown impact, and to outline concrete levels or thresholds that groundwater monitoring would use as a rubric to identify this impact.	As required in submission n° 7 above, the groundwater model has been revised and updated since the Draft EIS to refine and improve the characterisation of the surrounding environment through further defining model parameters with due consideration to receptors and risk. The revised model scope included: ▪ Literature review to collect additional hydrogeological data and review/revise/update conceptualisation with new datasets where available; ▪ Rebuild and recalibration of the model with a move to transient model to improve estimate of drawdown impacts and reflect short period of mine operation. A Scaled Residual Mass Statistic (SRMS) of 0.9% is noted for the original model. The updated model has a SRMS of 4.2%. GoldSim flux estimates were used as a calibration tool; ▪ Model uncertainty outcomes have been assessed by running numerical groundwater model through PESTPP-IES (White 2018) and AWS cloud computing. Different from traditional PEST (Doherty 1994), PESTPP-IES can generate multiple calibrated models that better address the issue of non-uniqueness and enable a more robust uncertainty analysis. A pilot point calibration technique is therefore possible where parameter values are estimated at the pilot point locations and then interpolated to other model cells (Doherty et al., 2010). This technique enables spatial heterogeneity to be better captured in the model, which is critical for this work due to the scale of modelling; and ▪ Revised reporting has been prepared to collate a model uncertainty table defining all lines of uncertainty and their impact on the model. The intent of this table is to demonstrate significance of uncertainties relative to each other and is intended to provide a weighing of concern for each uncertainty so that all stakeholders have a clear appreciation of the relative risk relating to the uncertainties identified. Numerical model limitations regarding the revised model conditions have been detailed. An assessment of what model Class has been achieved as well as a summary of how the model class should be applied considering the risk profile of the project. Understanding of the surrounding environment has been improved through additional field surveys of potential GDEs, spatial analysis of mapped GDE areas and downstream extents with groundwater depth and NDVI data. Appendix O provides detailed results of the recent groundwater modelling undertaken. An assessment has been undertaken to assess potential impact of the Project on GDEs and provide an ongoing approach to actively manage the potential risks to GDEs from the Project activities. A summary of the results and recommendations is provided below and Appendix P provides the GDEs assessment report with detailed information on the assessment scope, results and recommendation to mitigate any potential impact on GDEs. The GDE assessment has concluded the following: Aquifer and Cave Ecosystems (Subterranean GDEs) There is no data available on subterranean GDEs for the area. Given the regional nature of the groundwater system, species present are likely to be ubiquitous across the Project area, with no particular species occurring within isolation to other species with geographic boundaries. Ecosystems Dependent on the Surface Expression of Groundwater (Aquatic GDEs) It is unlikely aquatic GDEs exist within the area of predicted drawdown. While no future work is recommended regarding aquatic GDEs, additional monitoring with respect to Terrestrial GDEs will provide confirmation of this conclusion (see below). Ecosystems Dependent on the Subsurface Presence of Groundwater (Terrestrial GDEs) Additional mapping of terrestrial GDEs has identified that there is a likelihood that riparian vegetation within the areas of drawdown exist. These are likely restricted to narrow zones of riparian vegetation, dominated by the presence of medium sized trees <i>Eucalyptus bigalerita</i>, and <i>Lophostemon grandifloras</i>. These areas are considered likely to be using groundwater due to their persistent high NDVI trend and the presence of shallow water tables. However, it is largely unknown at this stage if these trees, present across the study area have the root structure to access deeper soil moisture from the capillary fringe above the water table, and if indeed they require groundwater as part of their annual water requirements. Irrespective of the uncertainty regarding their groundwater use patterns, a conservative risk assessment has been conducted. The risk assessment has identified areas of potential high risk is associated with areas of initial depth to water table of less than 5 metres and a change to that water depth due to mining of greater than 5 meters. As a result of the risk assessment the development of a Groundwater Dependent Ecosystem Monitoring Program (GDEMP) is proposed. The objective of the monitoring program is to protect the ecological condition of the Type 3 GDEs in the Project area;

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				- Data collected will be used to monitor the degree of hydro(geo)logical change and influencing factors (informing the likelihood component of the risk assessment); - Data collected will be used to monitor the condition of the GDEs and their sensitivity to changes and influencing factors (informing the consequence component of the risk assessment); and - A key component of this summary is the acknowledgment there remains uncertainty within the current system – and with this consideration a future works program has been developed. The proposed monitoring program is driven by the GDEMP objective that aims to protect the ecological condition of the Type 3 GDEs in the Project area. The monitoring data provides the backbone of the GDEMP and will occur as an array of monitoring components that will track the conditions during the construction, operational and post-operational phases of the Project. The data collected will be used to address a series of monitoring objectives which are aligned with the risk assessment methodology, as detailed below. - Monitor the degree of hydro(geo)logical change and influencing factors, including background influences (which informs the likelihood element of the risk assessment), by: - Monitoring groundwater levels in the alluvial aquifer in areas of probable drawdown and in areas outside of the predicted zone of influence; - Monitoring groundwater levels in regional aquifers to monitor the predicted drawdown at depth, its propagation towards the surface and the relationship / hydraulic gradient to groundwater levels within the alluvial aquifer supporting the GDEs; - Monitoring streamflow; - Monitoring soil moisture levels using leaf water potentials as a surrogate; and - Monitoring climatic conditions (rainfall, temperature). - Monitoring the condition of GDEs, their sensitivity to hydro(geo)logical change, and other influencing factors including background influences (which informs the consequence element of the risk assessment), by: - Monitoring the condition of GDEs by: - Leaf water potential monitoring; to identify likely depth of water use by the vegetation, this can be related to the existing depth of the water table at each site; - Remote sensing; Using high resolution temporal data develop a time series of NDVI response to climate to observe any trends that may be related to changes in groundwater levels; and - Vegetation surveys; to assess the condition of the vegetation and assess any trends against changes in groundwater levels. - Monitoring other threats to GDEs (e.g. weeds and pests, grazing pressure, soil erosion, storms, fire) by vegetation surveys.
57		Tailings Storage and Waste Rock Management	There is vagueness and lack of concrete detail in the contingency plans for residual risk associated with Acid Mine Draining (AMD), tailings storage, and waste rock. Ideally contingency plans would already be developed at this stage of Assessment, rather than referred to as future undertakings.	In accordance with Chapter 9.2.7 of the International Network for Acid Prevention Guideline (INAP 2014), <i>“contingency plans are developed for those failure modes where a significant residual risk remains after the application of ARD prevention and control approaches.”</i> Significant risk and contingency planning have been completed in the EIS, with specific management and control measures identified in the project-wide risk assessment. In accordance with the AMD risk assessment detailed in Section 6 of the AMDMP, and the project-wide risk assessment in Appendix K, there were no failure modes with a residual risk (post application of controls) that would constitute ‘significant’ (i.e. rated high or extreme). There are however several failure modes with a residual risk rating of ‘moderate’. These ‘moderate’ rating failure modes are now identified in an updated version of the AMDMP (Section 8). Additional sampling will be undertaken for in-pit identification and differentiation of waste rock during construction and operation. This will include waste rock geochemistry testing and acid base accounting including sulphide sulfur, NAG and ANC and metals content in waste for mining planning, mapping, and marking out on ground and for operational phase management and closure planning. This information and further sampling for in-situ capping material will inform simulation modelling to confirm the thickness of cover needed to limit infiltration during a defined design-storm events. The current quantity estimates for oxide and topsoil capping material conservatively

No.	EIS Section	Theme or Issue	Comment / Requested Additional Information	Required Action / Response
				assume a 5 m thick compacted barrier with 0.2 m of topsoil. In many places of the WRDs, the compacted capping thickness will exceed the 5 m minimum. The AMDMP will be continually updated as additional data becomes available to inform the most appropriate contingency measures. This will include establishing trigger actions that are consistent with the Project WMP and define the actions to be taken when conditions change from normality and have the potential to trigger an event. Specific contingency measures that could be employed for source control and treatment are included in the updated AMDMP (Section 8.2). The AMDMP will be continually updated as additional data becomes available from sampling during operation to inform the most appropriate contingency measures. Additional Commitment – The AMDMP will be continuously updated as sampling is undertaken during operation. The operational testing and acid base accounting including sulphide sulfur, NAG and ANC and metals content in waste will inform the selection of most appropriate contingency measures where water monitoring or visual indicators identify deteriorating conditions. This will include establishing trigger actions that are consistent with the Project WMP and define the actions to be taken when conditions change from normality and have the potential to trigger an event. Additional Commitment – During operations waste rock sampling and Acid base accounting will continue, including sulphide sulfur, NAG and metals content in waste for mining planning, mapping, and marking out on ground and for closure planning.
58		Tailings Storage and Waste Rock Management	The Acid and Metalliferous Drainage Manage Plan (AMDMP) contains a single sentence outlining the “specific measures” for tailings management: “Contingency measures for tailings management include the use of flocculants to enhance settlement.” This is an inadequate amount of detail.	Specific contingency measures that could be employed for source control and treatment are included in the updated AMDMP (Section 8.2) (Appendix H of the Supplement to the EIS). The AMDMP will be continually updated as additional data becomes available during operation to inform the most appropriate contingency measures.
59		Tailings Storage and Waste Rock Management	There is a lack of certainty in the AMDMP regarding the covering of AMD generating waste rock. It is proposed that: “Temporary low permeability plastic covers (e.g., low-density polyethylene) can implemented to inhibit water contact with reactive waste rock during the rainy season and/or placed over areas of the WRDs that achieved final grade until such time that final covers can be installed.” It is later stated that “alternative cover materials may also be considered such as evapotranspiration or store and release type covers”. It is necessary that detailed study into the appropriateness of different kinds of covering is undertaken early in order to ascertain the most effective option. Due to the potential severity of the risk of AMD, this modelling should already be conducted and should inform reasoning presented in the Draft EIS concerning which covering will be used. It is unacceptable that at this stage of the Draft EIS there remains a lack of clarity around the covering of the WRD. The Australian Government in their Preventing Acid and Metalliferous Drainage: Leading Practice Sustainable Development Program for the Mining Industry recommends that Proponents should undertake “optimisation of cover design via modelling and monitoring of trial cover systems and future waste rock dumping strategies to minimise the overall risk of AMD.” ECNT believes that this benchmark for best practice has not been met by the Proponent.	The AMDMP section referred to in this comment is related to contingency planning not the committed control measures. When considering contingency measures to implement during Project operation, there needs to be a balance between applying prescriptive measures that may be inappropriate at the site and for the scenario, and detailing measures that are performance based and achieve the desired outcomes. There can be various different contingency measures that could be applied to address a potential failure mode; however, each scenario will be different and contingency measures need to be reassessed for appropriateness when a scenario occurs. Specific contingency measures that could be employed for source control and treatment are included in the updated AMDMP (Section 8.2). The AMDMP will be continually updated as additional data becomes available during operation to inform the most appropriate contingency measures. This will include establishing trigger actions that are consistent with the Project WMP and define the actions to be taken when conditions change from normality and have the potential to trigger an event. It is important to note that sufficient source material for the encapsulation and capping of the WRDs has been identified onsite. The source and type of material for encapsulating and capping the WRDs is provided in Appendix J of the Supplement to the EIS. An estimated 1,978,820 m² (1.98 Mlcm) of topsoil will be stripped and available for capping and rehabilitation purposes (based on a nominal topsoil depth of 0.5 m). The topsoil stripping areas are identified in Appendix G and have been calculated to match the quantity required for rehabilitation purposes. The quantity required per key infrastructure component in Mlcm is: ▪ TSF – 1.18; ▪ North WRD – 0.08; ▪ South WRD – 0.08; ▪ Administration and Operations Area – 0.01; and ▪ Misc. Disturbed Areas – 0.62. The geochemical testing of a combined tailings sample derived from the different ore bodies was conducted by CDM Smith during the study. Knight Piesold conducted an independent review of the report for the TSF feasibility design report. Based on the results it was determined that a low permeability capping layer is necessary to reduce long-term infiltration and oxidation. A composite store and release cover system is considered appropriate. The TSF design parameters include the following capping estimates: ▪ 0.5 m capillary break, comprising mine waste rockfill material (910,000 m³); ▪ 0.3 m thick low permeability layer (550,000 m³); and ▪ 0.2 m thick topsoil as growth medium (445,000 m³). A low-permeability composite liner of HDPE and CSL will be constructed over the entire TSF basin area, comprising either reworked in-situ material or imported low permeability material for the CSL component. The TSF design incorporates a 300 mm thickness imported (or 200 mm thickness in situ) CSL across the TSF basin. The design feasibility report for the TSF (Appendix G) quantifies the volume of in-situ material available for the CSL (1,338,000 m³) and the additional volume of external low permeability material required to supplement this (182,000 m³).

No.	EIS Section	Theme or Issue	Comment / Requested Additional Information	Required Action / Response
				Based on the geotechnical analysis, sufficient in-situ material for the embankment exists onsite and it is anticipated that further material is not required to be imported from offsite. Additional sampling will be undertaken for in-pit identification and differentiation of waste rock during construction and operation. The geochemical analysis and geotechnical assessments thus far have informed the management and control mechanisms. These include commitment to the following: ▪ Material classified as NAF will be placed at the outer annulus of the WRD; ▪ NAF material with sufficient ANC will be placed on the natural surface, lining the drainage lines; ▪ Temporary and/or final cover systems over waste rock will be designed to limit infiltration to the extent needed based on the propensity for the material to generate AMD; ▪ PAF material will be encapsulated with the central areas of the WRD, not near the outer slopes or toe areas and covered with NAF waste material from the outer perimeter; ▪ The Annie Oakley and Annie’s Dam pits will be backfilled as part of closure. These pits will be entirely mined within NAF oxide material. Where possible, fresh waste from the Rustlers Roost Pit will be placed in the bottom of these backfilled pits; ▪ Construction will commence with the placement of NAF material for the base and outer annulus; ▪ PAF material encountered will be placed onto the NAF base, and encapsulated within the centre of the WRD; ▪ Temporary and/or final cover systems over waste rock will be designed to limit infiltration to the extent needed based on the propensity for the material to generate AMD; ▪ No PAF material will be placed on outer perimeter, slopes, toe, surface or base of the dump; ▪ To provide geotechnical stability and water shedding on WRDs, final landform designs for all surface WRDs will have a maximum of 17-degree slope (approximately 3:1 horizontal to vertical); ▪ To limit potential for failure of Annies dam embankment or other structural embankments regular inspections will be implemented to ensure structural stability; ▪ To reduce the site water storage and accommodate for stormwater containment during the rainy season, pit dewatering will be implemented at the start of mining (where water is present) and during mining using in-pit pumps. Dewatering will be implemented during mining as needed in response to direct precipitation events. This approach limits water contact with PAF material and reduces AMD generation potential, while also providing added storage for potential AMD that may be generated during peak water periods. Pumped water will be reused in the mining process circuit or discharged to the surface water catchments under approved permits; and ▪ To update the site water balance and manage water, rainfall conditions and water levels across the site will be monitored (flow and volume) to manage peak water periods to maintain constant water volumes across site. To minimise erosion and offsite discharges of AMD, ESCPs will be implemented: ▪ Perimeter drains, bunds, and sediment basins constructed at the down-gradient base of each of the surface WRDs (toe drain) to manage sediment and monitor surface water quality runoff and seepage; ▪ Check dams within diversion channels to provide velocity control where needed based on engineering estimates of maximum stormwater velocity; ▪ Sediment will be cleaned out of the sediment basins as required and in anticipation of the wet season to provide greater runoff capacity; ▪ Water volume will be measured within basins to manage the site water balance and maintain capacity needed for peak water periods; ▪ The sediment basins will remain post rehabilitation until the landform is stable; ▪ To minimise contact of clean water with WRDs, minimise AMD generation volume, and reduce clean water inflows into open pits and ponds, clean water run-on diversions will be installed to route clean unimpacted water away from the disturbed mine area and directly into area catchments. Further details are provided in the ESCP provided in Appendix L of the Draft EIS; ▪ These approaches will be implemented, inspected, and maintained in accordance with the associated plans for the mine operation (e.g., WMP, ESCP); ▪ Engineering details of ESC measures are provided in the ESCP ; ▪ Water will be managed in accordance with the WMP and the water balance provided in the Water Balance and Groundwater Modelling Report ; and ▪ Water captured within stormwater ponds will be sampled and assessed through the established network of surface water monitoring sites in accordance with the WMP. For ore material, the following controls are proposed: ▪ Ore will only be stored for extended periods on the ROM Pad;

No.	EIS Section	Theme or Issue	Comment / Requested Additional Information	Required Action / Response
				- Similar to that described above for WRDs, ROM pad or other areas which stockpile or process ore material will be bunded and surface water run-on and runoff controls implemented to manage stormwater and erosion; - Drainage from the ROM pad shall be directed to a stormwater sump which shall be managed to prevent overflow. Collected water from the ROM pad will be used in the mine process circuit; and - Ore will not be used for construction purposes other than extraction of gold. The AMDMP established the framework for preventing AMD and managing risks associated with its generation. The source and type of material for encapsulating and capping the WRDs is provided in Appendix J of the Supplement to the EIS. In accordance with prudent practice, testing will be undertaken for in-pit identification and differentiation of waste rock during construction and operation.
60		Tailings Storage and Waste Rock Management	An extreme risk of “Unplanned pit overtopping or release to surface water features during extreme rainfall and flooding events” has been identified in the Draft EIS table of risks. Due to the increased frequency and extremity of extra-ordinary weather events associated with climate change, ECNT believes this is a particularly concerning risk going into the future. However, the Proponent’s strategy for mitigating this risk is vague; it is stated that “A range of management measures will be employed to prepare the sites for the wet season and prevent unplanned discharges” and the development of a “Monitoring Plan / Operational Manual which includes weekly inspections of the Pits” but there is a lack of detail about either the “management measures” or what course of action would be undertaken should the weekly inspection of the pits reveal unplanned overtopping.	The Project risk assessment has considered the consequence and likelihood of unplanned pit overtopping or releases during extreme rainfall and flooding events. This has been considered with regard to Hydrological Processes (HP-10), Inland Water Environmental Quality (IWEQ-11) and Aquatic Ecosystems (AE-9). The risk assessment process assigns an unmitigated and mitigated risk level to the potential source of impact and resultant consequence. The ‘extreme’ rating applied to this event is the unmitigated risk should Primary Gold not implement mitigation and management measures. The unmitigated risk level is largely controlled by the allocation of an ‘almost certain’ likelihood of occurrence should no controls be implemented, not the consequence of such release which is rated as ‘moderate’ (refer to Table 2-4 for the classification of consequence under each NT EPA Theme and Factor). In all cases the residual risk for this event is calculated as ‘low’ with the implementation of the management and mitigations measures. Primary Gold has included the full TSF design report detailing the construction criteria, applicable guidelines and water balance modelling. This includes the design storm events to which the TSF will be constructed to retain sufficient storage (refer to Appendix G). The TSF is designed to hold the tailings plus the design rainfall conditions presented in the TSF design report (Appendix G), and thus has sufficient storm water storage capacity for all design storm events and rainfall sequences. The supernatant pond volume peaks in March each year (at the end of the wet season), before returning to the minimum operating pond volume during the subsequent dry season. The TSF Design Report states: <i>“...A monitoring programme for the TSF will be developed to monitor for any potential issues which may arise during operations. The monitoring will include:</i> <i>Monitoring bores and surface water sampling stations downstream of the TSF embankment.</i> <i>Standpipe piezometers in the TSF embankment to monitor the phreatic surface.</i> <i>Vibrating Wire piezometers in the TSF embankment to monitor the phreatic surface.</i> <i>Survey pins to check for embankment movement.</i> <i>The piezometers and monitoring bores will be checked monthly for water levels and quarterly for water quality.</i> <i>If the monitoring programme indicates that potential problems are developing, an increase in monitoring frequency will be implemented and a response plan developed.</i> Furthermore, it is outlined in the risk assessment (Draft EIS App U, and SEIS App L) the TSF will be planned, designed constructed and operated in accordance with the DISR guidelines <i>Leading Practice Handbook: Tailings Management</i> (Australian Government 2016). Leading practice of tailings management requires the management of risks to be developed to the level of “as low as reasonably practicable, (ALARP). Primary Gold has referenced adherence to the ANCOLD standard, including <i>Guidelines on tailings dams: planning, design, construction, operation and closure</i> (2019), which provides a sound foundation for the risk-based design of tailings management systems including the development of a framework of management principles, management policies and checklists for implementing the framework throughout the life cycle of a TSF. Applying the risk based approach will allow Primary Gold to adapt to changing circumstances to ensure effective management of operations and management including the TSF. A management strategy for the TSF will be developed and provided to Department of Industry, Tourism and Trade (DITT) for review and approval prior to modification and use. This has been stated in the updated MCP (SEIS App I). As outlined in Water Management Plan (WMP) - Appendix Q, Section 4.2.1, the project will contain key site water management features such as the NTSF WSD – with a capacity of 6,998 ML, the Turkeys nest storage facility – with 50 ML capacity, the process water dam – with a capacity of 100 ML; and a decant dam. Water can be shifted to available storage areas to prevent accidental discharge as demonstrated in the water balance model. The results of the site water balance model indicated that the median inflows to be managed amounts to about 5,100 ML/yr for the 11 years of operations. About 4,000 ML/yr are predicted to be generated from groundwater seepage into the open pits (i.e. 77% of all inflow into the water management system). The second largest contributor to the pit inflows is runoff with an average of 610 ML/yr (i.e. 12% of all inflow). Direct rainfall into the pits’ lake and

No.	EIS Section	Theme or Issue	Comment / Requested Additional Information	Required Action / Response
				the water storage facilities (Turkey's nest, processed water dam and the NTSFD WSD) accounts for 4% (185 ML/yr) and the bore field production accounts for about 7% (365 ML/yr). In relation to the predicted outflow of water from the Project around 3,400 ML/yr (or 69%) of the water produced on site is expected to be released into the Mount Bunday Creek or creeks/surface water drainages at Quest 29. A total of 19% of the water produced (or 905 ML/yr) is expected to be consumed by the TSF (portion that is not recovered by the decant dam). The production of potable water (treated by reverse osmosis) represents 7.5% of the outflows (370 ML/yr), and water used for dust suppression amount to 175 ML/yr (3.5%). The evaporation of surface water within pit lakes and water storage facilities are predicted to be 70 ML/yr or 1.5% of all outflows. The minor imbalance between the total inflows and total outflows can be attributed to two reasons. The first reason is that the median values of the water balance components within the Monte Carlo approach are not from the same simulation but the median value for each component across all simulations. The second reason is due to the change of storage in the water balances features (mainly the pits' lake). Considering the current uncertainties in the model controlling parameters, the sum of all inflows is anticipated to range somewhere between 5,000 ML/yr to 10,000 ML/yr. Most of the uncertainty arises from range of hydraulic conductivity assigned for the aquifer, which given the heterogeneity implicit in fractured rock aquifers, is difficult to constrain. At closure a geotechnical audit will be commissioned for the open cut pits, the TSF, and the WRDs. Findings from the audit will be incorporated into the Rehabilitation/Compliance Audit. If required, a final Geotechnical Audit will be conducted at the end of closure to confirm that remediation work has effectively been completed.
61		Climate Impacts	The proponent has identified that a GHG abatement plan is necessary due to the NTG's Policy on Greenhouse Gas Emissions for New and Expanding Large Emitters. ECNT welcomes various mitigation measures proposed for the Project. However, it appears the proponent misunderstands the nature of carbon offsets, with the proponent stating that "it is considered unlikely that the Project will generate any offsets". Such a statement implies that offsets are an opportunity produced by the Project, rather than what they actually are, i.e., a mechanism used by the Project to mitigate their carbon emissions. The Greenhouse Gas Abatement Plan (GGAP) referred to by the project should already be developed and made public, and the question of offsets for the not insignificant carbon emissions of the project should already be investigated at this stage of the Assessment.	The NTG has released a draft <i>Greenhouse Gas Emissions Offsets Policy and Technical Guidance</i> (NTG 2021) for public consultation in September 2021. The policy establishes how and when to use offsets in the Northern Territory to compensate for emissions. The policy applies to offsets in relation to emissions only and biodiversity offsets are subject to a separate biodiversity offset policy and technical guidelines. Where an emissions offset is considered appropriate, the decision maker for the approval may require residual emissions to be offset as a condition of the approval (an emissions offset approval condition). This may require proponents to deliver on their offset proposal or may apply different offset requirements than those proposed by the proponent. The NTG's 'Greenhouse Gas Emissions Management for New and Expanding Large Emitters' policy (DEPWS 2021b) identifies the minimum requirements for the management of GHGs from new or expanding industrial and land use development projects. It has been established in recognition of the NT's target of net zero GHGs by 2050. PGO has applied the NT Government's Policy for Greenhouse Gas Emissions Management for New and Expanding Large Emitters (Large Emitters Policy) (DEPWS 2021c) in the preparation of a Greenhouse Gas Abatement Plan (GHGAP) for the Project and will continue to engage with the NTG as the framework and policies for the NT become ratified. Please refer to Appendix D of the SEIS for the GHGAP. Currently, the Northern Territory has not released the emissions reduction strategy (ERS) for the territory. The ERS is anticipated to have interim targets between now and 2050. According to the Northern Territory's website, the target to complete the ERS is mid-2022; however, no ERS was available at the time of preparing this SEIS. As a result, the GHGAP sets interim and long-term targets that align with the Northern Territory's overall strategy to minimize greenhouse gas emissions and reaching net zero by 2050. The Rustlers Roost and Quest 29 Open-Cut Mine Redevelopment project will only be operational for 10 years. As a result, the long-term emissions target was set to be achieved in Year 10 (2032) and interim targets have been set in the GHGAP for Year 5 (2027) and Year 8 (2030). In the event that is unreasonable or impracticable for the project to meet the proposed interim targets, carbon offsets may be used in accordance with the guidance provided in the Northern Territory's <i>Greenhouse Gas Emissions Offsets Policy and Technical Guidelines</i> (NTG 2021), following consultation with the appropriate agencies.
62		Endangered species	ECNT has some overall concerns with the approach taken towards endangered flora and fauna species by the proponent. It was found that "During the field surveys, five fauna species classified under the TPWC Act as threatened, near threatened and data deficient were recorded during the 2016 and 2017 field surveys." The Flora and Fauna Report, on which basis a decision was made not to refer the project under the EPBC Act, was released in May of 2017. However, as the Draft EIS states, the NT EPA was notified of "significant variation" to the project in August 2021, a variation which involves "an increase to the development envelope, vegetation clearing extent, life-of-mine (LOM), processing throughput and waste volume outputs". A change in each of these factors will undoubtedly influence the conclusions drawn by the Flora and Fauna Report about the impacts of the Project to threatened species, particularly vegetation clearing extent. This renders the conclusions drawn in the Flora and Fauna Report substantially out of date.	An additional threatened fauna survey has been completed during April to May 2022 (Appendix C). The threatened fauna survey and assessment of potential impacts to threatened fauna species builds upon the significant body of work completed during previous survey events. While the Low Ecological Report was completed in 2017, the survey extent for both Rustlers Roost and Quest 29 was more expansive than the current Project area. Furthermore, the assessment of likelihood of occurrence and potential significant impact to threatened fauna species, included in Section 9 of the Draft EIS, accounted for the Project layout and inclusions as varied in August 2021. The additional threatened fauna survey was undertaken from April to May 2022 at three locations; Rustlers Roost, Quest 29 and Toms Gully (accommodation camp). The approach was based on relevant guidelines, consideration of each species ecology and the efforts of previous surveys within the survey area. The survey included: - Vegetation survey; - Nest searches; - Call playback (including spotlighting); - Camera trapping (34 deployed for total cumulative 915 nights of recording); - Active searches (including along key habitat features – e.g. watercourses);

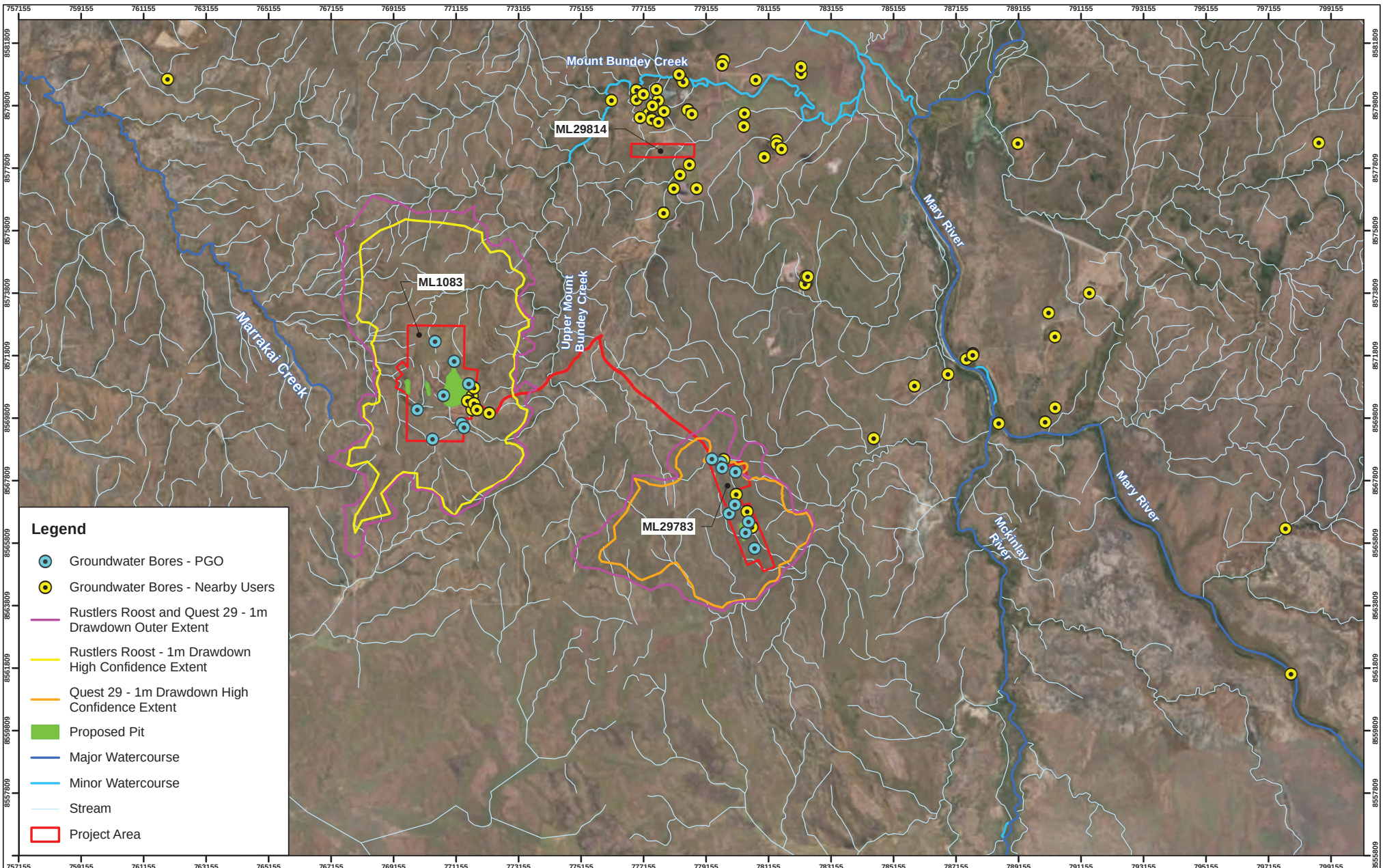
Section 4 Response to Submissions

No.	EIS Section	Theme or Issue	Comment / Requested Additional Information	Required Action / Response
				▪ Bat echolocation recorders; and ▪ Nocturnal searches. The survey objective was to determine whether the following threatened species are present or absent in the three survey areas (species as listed in the DEPWS letter dated 15 April 2021 (ref: DEPWS2021/0051) with two additional species included due to their potential to occur in the Project area (last two in the list below)): ▪ Gouldian Finch (<i>Erythrura gouldiae</i>); ▪ Red Goshawk (<i>Erythrotriorchis radiatus</i>); ▪ Northern Quoll (<i>Dasyurus hallucatus</i>); ▪ Partridge Pigeon (<i>Geophaps smithii smithii</i>); ▪ Pale Field-rat (<i>Rattus tunneyi</i>); ▪ Yellow-spotted Monitor (<i>Varanus panoptes</i>); ▪ Merten’s Water Monitor (<i>Varanus mertensi</i>); ▪ Mitchell’s Water Monitor (<i>Varanus mitchelli</i>); ▪ Yellow-snouted Gecko (<i>Lucasium occultum</i>); ▪ Bare-rumped Sheathtail Bat (<i>Saccolaimus saccolaimus</i>); and ▪ Masked Owl (<i>Tyto novaehollandiae kimberli</i>). In addition to the fauna species survey, land unit and/or vegetation mapping was also undertaken in areas of altered footprint (as described in the significant variation) where not previously investigated as part of previous surveys. Appendix C provides the full ecological report where detailed information on the methodology adopted, survey results and conclusion and recommendations can be found. A summary of the survey results is provided below. No threatened species were detected within the Quest 29 survey area; however, although habitat in this portion of the Project is heavily degraded from historic mining and cattle grazing, it may support some species to a limited extent. It is possible that these species occur in other areas, however the survey methodology was designed to reduce the risk of ‘false negative’ results. Four threatened fauna species were detected; all four species in Rustlers Roost and one in the Toms Gully accommodation camp area. The detected threatened fauna species are: ▪ Partridge Pigeon - Partridge Pigeons were detected at only one location approximately 250 m south of Annie’s Dam in the Rustlers Roost portion of the Project area. Habitat within the detection area was comprised of a Corymbia and Eucalyptus woodland with dominant species being Bloodwood (<i>Corymbia bleeseri</i>), Ironwood (<i>Erythrophleum chlorostachys</i>), Darwin Woollybutt (<i>Eucalyptus miniata</i>), Grevillea decurrens and Sand Palm (<i>Livistona humilis</i>); ▪ Black-footed Tree-rat - Black-footed Tree-rats were detected on six occasions, of which five were within the Rustlers Roost portion of the Project area and one while driving along the haul road. Habitat description at each of the detection sites is provided in Table 14 within Appendix C; ▪ Northern Brushtail Possum - Northern Brushtail Possums were detected at three locations, of which two were in the Rustlers Roost portion of the Project area and one was within the Toms Gully portion of the Project area. Habitat descriptions at each of the detection sites are provided in Table 16 within Appendix C; and ▪ Merten’s Water Monitor - Merten’s Water Monitor was detected at eight locations, of which six were within the Rustlers Roost survey area, one along the Haul Road and one adjacent to the south-east corner (outside) of the Rustlers Roost survey area. Habitat descriptions and a photo at each of detection points is provided in Table 18 within Appendix C. Each target species that was not detected during the surveys has been assessed for its likelihood of being present in the survey areas, though was simply not detected or was not present at the time of the surveys. The assessment is based on the suitability of habitats observed within each survey area and the number and age of other records of each species in the region. Table 21 in Appendix C provides a detailed assessment of their likelihood of occurrence and a summary is provided below. None of the undetectable target species are likely to be present on both Quest 29 and Toms Gully (accommodation camp) portions of the Project area. The species that were assessed as being possibly occurring at Rustlers Roost are: ▪ Gouldian Finch - Wooded hills with Salmon Gums (<i>E. tintinnans</i>) were present in the mid-western parts of the Rustler’s Roost survey area though they were not a dominant tree species like at a well-known breeding site 50 km north of Katherine (the Yinberrie Hills). Further, the area has a recent history of frequent fires (2000-2020) and pastoralism, which have contributed to the marked decline of the species; ▪ Red Goshawk - Overall, given the history of mining and pastoralism and the tendency of Red Goshawks to avoid areas of fragmented native vegetation, individuals of the species are probably unlikely to nest across much of the Rustler’s Roost project area, particularly in the southern half where Bloodwoods (<i>Corymbia bleeseri</i>) were more prominent in the landscape and pastoral and mining activities were more obvious. However, the northern

No.	EIS Section	Theme or Issue	Comment / Requested Additional Information	Required Action / Response
				half (within the proposed Process Plant and North WRD) appeared less disturbed and more aligned to known nesting habitat features; ▪ Yellow-spotted Monitor - Given the species was not detected during three rounds of surveys (November 2016 and May 2017 by Low Ecological Services, and May 2022 by Connect Environmental), the species does not appear to be present, at least in high numbers; and ▪ Mitchell’s Water Monitor - Despite not being detected during three surveys (November 2016 and May 2017 by Low Ecological Services, and May 2022 by Connect Environmental), the species may occur at low densities, is thought to be difficult to detect and therefore it is possible that it was simply not detected. However, all creeks within the survey areas appeared ephemeral and standing water seemed to be restricted to mining infrastructure (pits, dams) and possibly Annie’s Dam. In that regard, the area is likely not important for the species. Based on the additional and previous survey results, extent of the current Project and proposed activities, an impact assessment was completed based on the Australian Government’s <i>Significant Impact Guidelines</i> (DoE, 2013). The assessment aligns with previous determinations that concludes that none of the four detected species are expected to be significantly impacted by the proposed Project. Similarly, four additional threatened fauna species that were not detected though may occur are unlikely to be significantly impacted. A detailed impact assessment is provided in Section 6 of Appendix C and recommendations to reduce the level of impact are provided in Table 38 of Appendix C. Primary Gold has adopted all recommended mitigation measures in the updated Commitments Register (Appendix L).
63		Endangered species	The decision not to refer under the EPBC Act was made with continual reference to the fact that “the proposed operations are not likely to have a significant impact on a population” of various identified threatened species. Thus, a change in the proposed operations of the Project should necessitate a re-assessment of this conclusion. ECNT submits that an EPBC Act referral is essential for this Project, especially as regards the threatened species Merten’s water monitor (<i>Varanus mertensi</i>) which was detected during fauna surveys in 2017, and the Gouldian Finch, which was been recorded 1.5kms south-east of the Project area and is known to be mobile.	An additional threatened fauna survey has been completed during April to May 2022 (Appendix C). The threatened fauna survey and assessment of potential impacts to threatened fauna species builds upon the significant body of work completed during previous survey events. While the Low Ecological Report was completed in 2017, the survey extent for both Rustlers Roost and Quest 29 was more expansive that the current Project area. Furthermore, the assessment of likelihood of occurrence and potential significant impact to threatened fauna species, included in Section 9 of the Draft EIS, accounted for the Project layout and inclusions as varied in August 2021. The additional threatened fauna survey was undertaken from April to May 2022 at three locations; Rustlers Roost, Quest 29 and Toms Gully (accommodation camp). The approach was based on relevant guidelines, consideration of each species ecology and the efforts of previous surveys within the survey area. The survey included: ▪ Vegetation survey; ▪ Nest searches; ▪ Call playback (including spotlighting); ▪ Camera trapping (34 deployed for total cumulative 915 nights of recording); ▪ Active searches (including along key habitat features – e.g. watercourses); ▪ Bat echolocation recorders; and ▪ Nocturnal searches. The survey objective was to determine whether the following threatened species are present or absent in the three survey areas (species as listed in the DEPWS letter dated 15 April 2021 (ref: DEPWS2021/0051) with two additional species included due to their potential to occur in the Project area (last two in the list below)): ▪ Gouldian Finch (<i>Erythrura gouldiae</i>); ▪ Red Goshawk (<i>Erythrotriorchis radiatus</i>); ▪ Northern Quoll (<i>Dasyurus hallucatus</i>); ▪ Partridge Pigeon (<i>Geophaps smithii smithi</i>); ▪ Pale Field-rat (<i>Rattus tunneyi</i>); ▪ Yellow-spotted Monitor (<i>Varanus panoptes</i>); ▪ Merten’s Water Monitor (<i>Varanus mertensi</i>); ▪ Mitchell’s Water Monitor (<i>Varanus mitchelli</i>); ▪ Yellow-snouted Gecko (<i>Lucasium occultum</i>); ▪ Bare-rumped Sheathtail Bat (<i>Saccolaimus saccolaimus</i>); and ▪ Masked Owl (<i>Tyto novaehollandiae kimberli</i>). In addition to the fauna species survey, land unit and/or vegetation mapping was also undertaken in areas of altered footprint (as described in the significant variation) where not previously investigated as part of previous surveys. Appendix C provides the full ecological report where detailed information on the methodology adopted, survey results and conclusion and recommendations can be found. A summary of the survey results is provided below. No threatened species were detected within the Quest 29 survey area; however, although habitat in this portion of the Project is heavily degraded from historic mining and cattle grazing, it may support some species to a limited

No.	EIS Section	Theme or Issue	Comment / Requested Additional Information	Required Action / Response
				extent. It is possible that these species occur in other areas, however the survey methodology was designed to reduce the risk of ‘false negative’ results. Four threatened fauna species were detected; all four species in Rustlers Roost and one in the Toms Gully accommodation camp area. The detected threatened fauna species are: ▪ Partridge Pigeon - Partridge Pigeons were detected at only one location approximately 250 m south of Annie’s Dam in the Rustlers Roost portion of the Project area. Habitat within the detection area was comprised of a Corymbia and Eucalyptus woodland with dominant species being Bloodwood (<i>Corymbia bleeseri</i>), Ironwood (<i>Erythrophleum chlorostachys</i>), Darwin Woollybutt (<i>Eucalyptus miniata</i>), Grevillea decurrens and Sand Palm (<i>Livistona humilis</i>); ▪ Black-footed Tree-rat - Black-footed Tree-rats were detected on six occasions, of which five were within the Rustlers Roost portion of the Project area and one while driving along the haul road. Habitat description at each of the detection sites is provided in Table 14 within Appendix C; ▪ Northern Brushtail Possum - Northern Brushtail Possums were detected at three locations, of which two were in the Rustlers Roost portion of the Project area and one was within the Toms Gully portion of the Project area. Habitat descriptions at each of the detection sites are provided in Table 16 within Appendix C; and ▪ Merten’s Water Monitor - Merten’s Water Monitor was detected at eight locations, of which six were within the Rustlers Roost survey area, one along the Haul Road and one adjacent to the south-east corner (outside) of the Rustlers Roost survey area. Habitat descriptions and a photo at each of detection points is provided in Table 18 within Appendix C. Each target species that was not detected during the surveys has been assessed for its likelihood of being present in the survey areas, though was simply not detected or was not present at the time of the surveys. The assessment is based on the suitability of habitats observed within each survey area and the number and age of other records of each species in the region. Table 21 in Appendix C provides a detailed assessment of their likelihood of occurrence and a summary is provided below. None of the undetectable target species are likely to be present on both Quest 29 and Toms Gully (accommodation camp) portions of the Project area. The species that were assessed as being possibly occurring at Rustlers Roost are: ▪ Gouldian Finch - Wooded hills with Salmon Gums (<i>E. tintinnans</i>) were present in the mid-western parts of the Rustler’s Roost survey area though they were not a dominant tree species like at a well-known breeding site 50 km north of Katherine (the Yinberrie Hills). Further, the area has a recent history of frequent fires (2000-2020) and pastoralism, which have contributed to the marked decline of the species; ▪ Red Goshawk - Overall, given the history of mining and pastoralism and the tendency of Red Goshawks to avoid areas of fragmented native vegetation, individuals of the species are probably unlikely to nest across much of the Rustler’s Roost project area, particularly in the southern half where Bloodwoods (<i>Corymbia bleeseri</i>) were more prominent in the landscape and pastoral and mining activities were more obvious. However, the northern half (within the proposed Process Plant and North WRD) appeared less disturbed and more aligned to known nesting habitat features; ▪ Yellow-spotted Monitor - Given the species was not detected during three rounds of surveys (November 2016 and May 2017 by Low Ecological Services, and May 2022 by Connect Environmental), the species does not appear to be present, at least in high numbers; and ▪ Mitchell’s Water Monitor - Despite not being detected during three surveys (November 2016 and May 2017 by Low Ecological Services, and May 2022 by Connect Environmental), the species may occur at low densities, is thought to be difficult to detect and therefore it is possible that it was simply not detected. However, all creeks within the survey areas appeared ephemeral and standing water seemed to be restricted to mining infrastructure (pits, dams) and possibly Annie’s Dam. In that regard, the area is likely not important for the species. Based on the additional and previous survey results, extent of the current Project and proposed activities, an impact assessment was completed based on the Australian Government’s <i>Significant Impact Guidelines</i> (DoE, 2013). The assessment aligns with previous determinations that concludes that none of the four detected species are expected to be significantly impacted by the proposed Project. Similarly, four additional threatened fauna species that were not detected though may occur are unlikely to be significantly impacted. Regarding the Merten’s Water Monitor and Gouldian Finch species the Project is not expected to have a significant impact on these species and it was concluded that: ▪ Merten’s Water Monitor (low risk) - Overall, the habitats within the survey areas are substantially impacted by existing mining or pastoral activities. Many areas are ephemeral, lack complex riparian vegetation, and are weed-infested. However, Annie’s Dam apparently provides habitat of reasonable quality for the species. Cane Toads are present throughout the area; and There is no clear reason to suggest that the habitats within the survey areas are necessary to maintain the species in the long term. Better quality, and more natural, habitat is expected to occur within the surrounding landscape.

No.	EIS Section	Theme or Issue	Comment / Requested Additional Information	Required Action / Response
				▪ Gouldian Finch (low risk) - Potentially suitable breeding habitat was identified in the mid-western and mid-eastern sections of Rustler’s Roost, measuring approximately 35 and 5 ha respectively. The mid-eastern area is nestled within disturbed areas from previous mining activities and is probably only marginal in terms of habitat suitability. Both areas were wooded and undulating with Salmon Gums (<i>E. tintinnans</i>) forming a minor component of the vegetation communities. Several other Eucalyptus and Corymbia species were also present. However, several factors suggest that the general area may not be utilised substantially by the species and, consequently, may not be habitat critical to its survival: –The species was not detected during any of the three surveys conducted in 2016 and 2017 by Low Ecological Services or in 2022 by Connect Environmental. –There is a moderate frequency of fires which is thought to reduce the availability of tree hollows (DEPWS, 2021d). –The altered fire regime and pastoralism evident in the local area may have altered food availability (DEPWS, 2021d). A detailed impact assessment is provided in section 6 of Appendix C and recommendations to reduce the level of impact are provided in Table 38 of Appendix C. Primary Gold has adopted all recommended mitigation measures in the updated Commitments Register (Appendix L).
NT Police, Fire and Emergency Services				
64			The remote location of the operation is outside the NT Fire, Rescue Services (NTFRS) Emergency Response Area (ERA), which limits the ability to respond to an emergency in a timely manner.	Noted – no further action required
65			With regards to road crash/response, the NTFRS crews will respond as required within existing capacity as with any other crash. If the timeliness of that response does not adequately mitigate the risk for Primary Gold then self-funded measures should be implemented.	Noted – no further action required
66			The NTFRS is happy to advise Primary Gold on current capabilities in the vicinity of their operations to inform their risk assessment.	Noted – no further action required
67			The NTPFES are not in a position to provide comment around environmental impacts within this request for comment.	Noted – no further action required



Legend

Groundwater Bores - PGO

Groundwater Bores - Nearby Users

Rustlers Roost and Quest 29 - 1m Drawdown Outer Extent

Rustlers Roost - 1m Drawdown High Confidence Extent

Quest 29 - 1m Drawdown High Confidence Extent

Proposed Pit

Major Watercourse

Minor Watercourse

Stream

Project Area

R	Details	Date
1	First Draft	07/09/21
2	Second Draft	16/05/22
3	Third Draft	08/07/22
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-

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DESIGNED	SS	CHECKED	TK
DRAWN	SS	CHECKED	TK
APPROVED	TK	DATE	08/07/22

Notes:

0 1,200 2,400 4,800
Meters
1 cm = 1,099 meters
GCS GDA 1994 MGA Zone 52

DISCLAIMER
CDM Smith has endeavoured to ensure accuracy and completeness of the data. CDM Smith assumes no legal liability or responsibility for any decisions or actions resulting from the information contained within this map.

DATA SOURCE
QLD Government Open Source Data

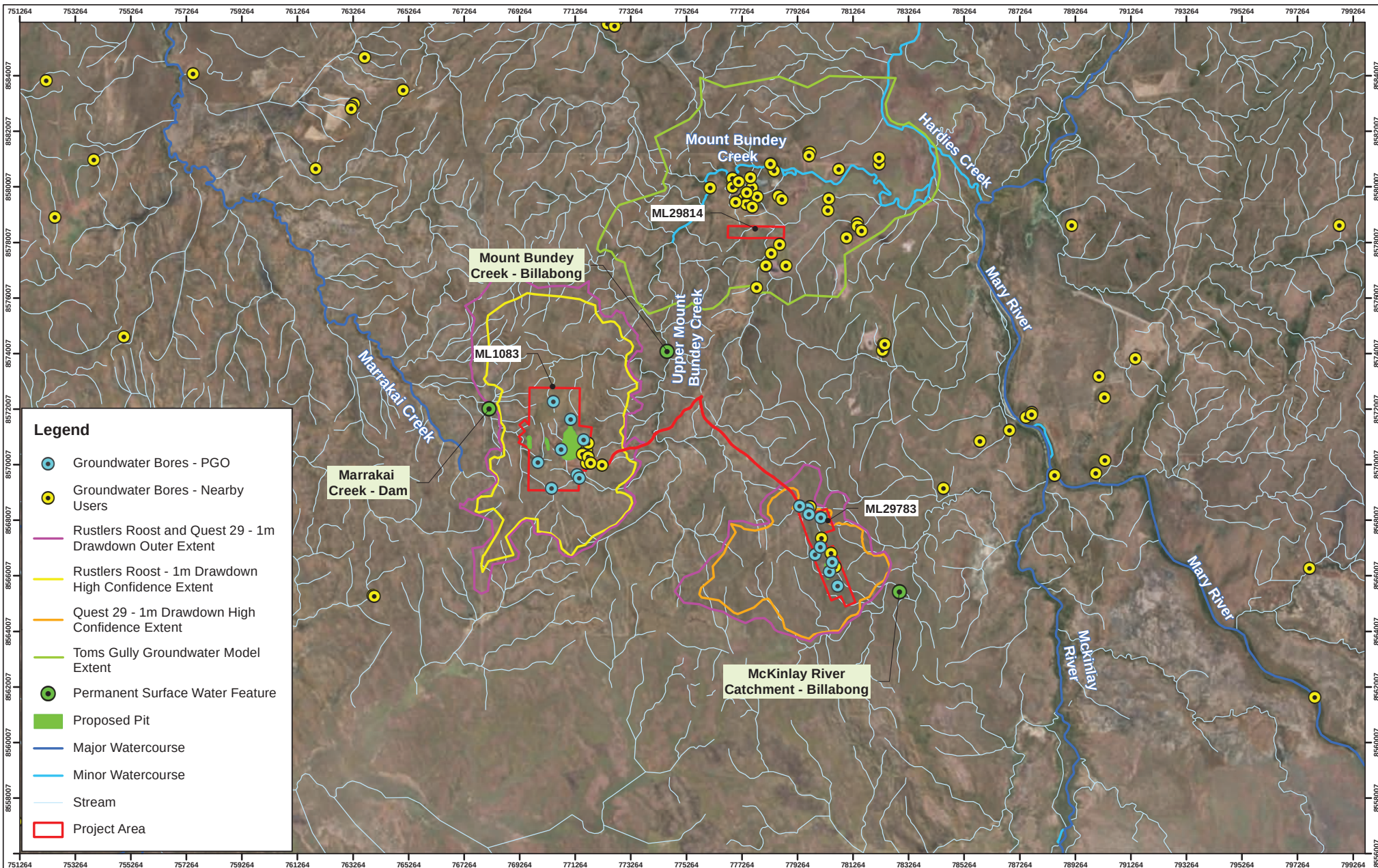
DESIGNER

CLIENT

FIGURE 4-1

Groundwater Model Predicted Extents

DRG Ref: 1001087-SEIS-1.1



R		Details		Date		©COPYRIGHT CDM SMITH This drawing is confidential and shall only be used for the purpose of this project.				DISCLAIMER CDM Smith has endeavoured to ensure accuracy and completeness of the data. CDM Smith assumes no legal liability or responsibility for any decisions or actions resulting from the information contained within this map. DATA SOURCE QLD Government Open Source Data		DESIGNER		CLIENT		FIGURE 4-2	
1		First Draft		07/09/21		DESIGNED	SS	CHECKED	TK			CDM Smith		PRIMARY GOLD		Cumulative Groundwater Drawdown Extents	
2		Second Draft		16/05/22		DRAWN	SS	CHECKED	TK	0 1,350 2,700 5,400 Meters 1 cm = 1,236 meters GCS GDA 1994 MGA Zone 52		DRG Ref: 1001087-SEIS-1.2					
3		Third Draft		08/07/22		APPROVED	TK	DATE	08/07/22					Notes:			

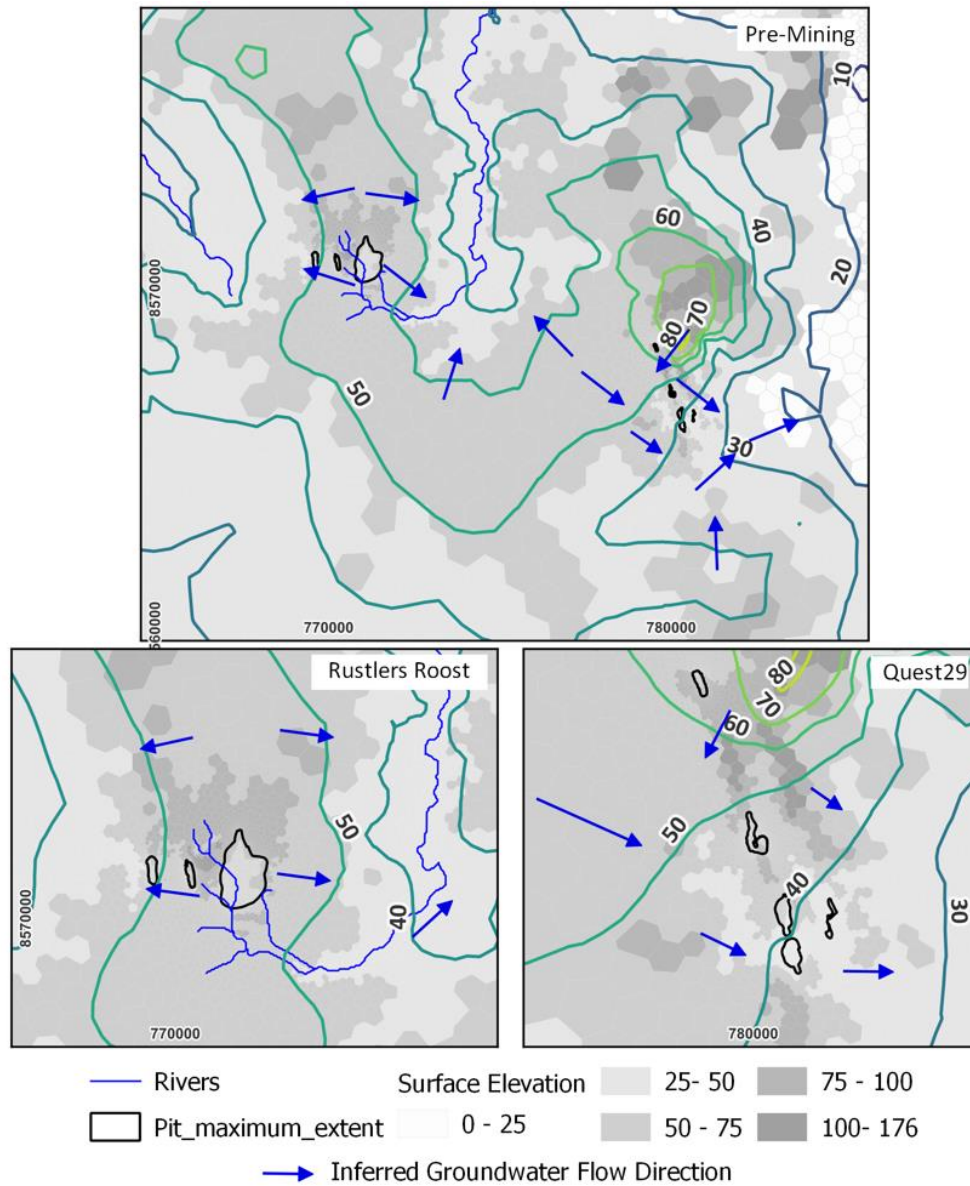


Figure 4-3 Modelled Groundwater Levels (m AHD) for the Pre-Proposed Mining Conditions (geometric mean across the 100 model realisations)

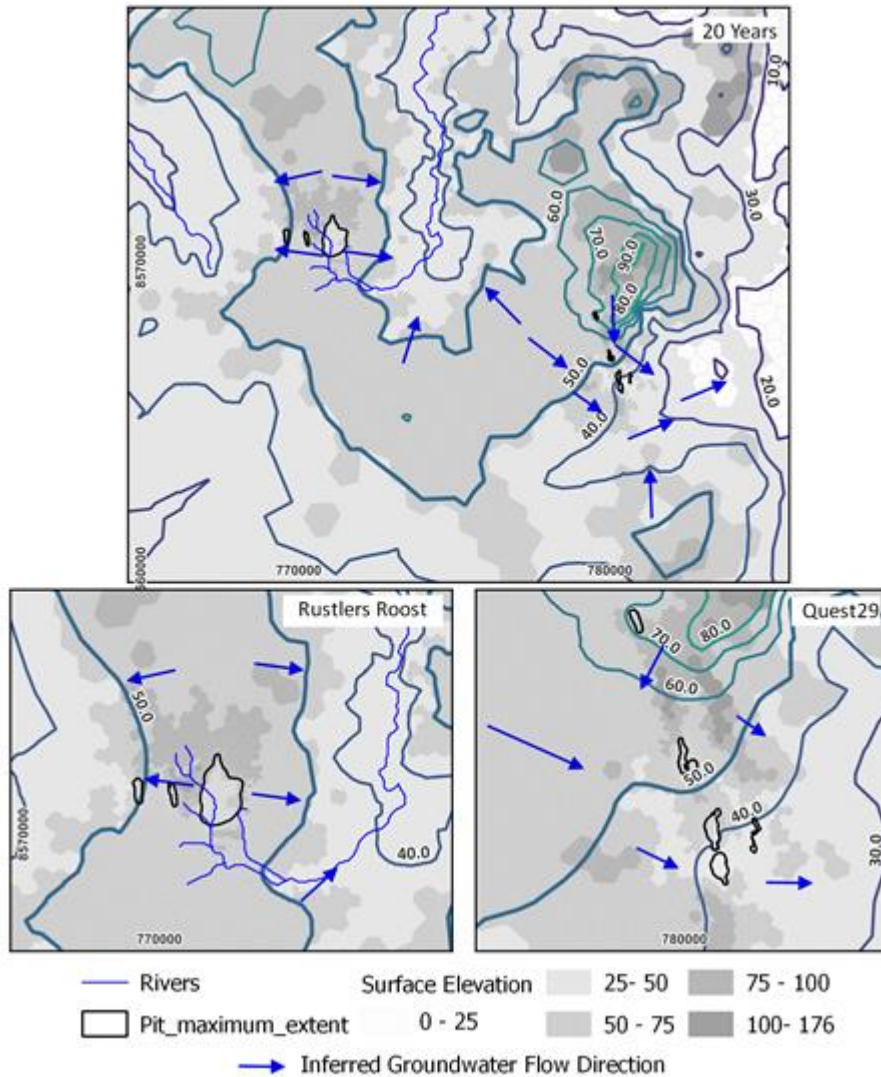
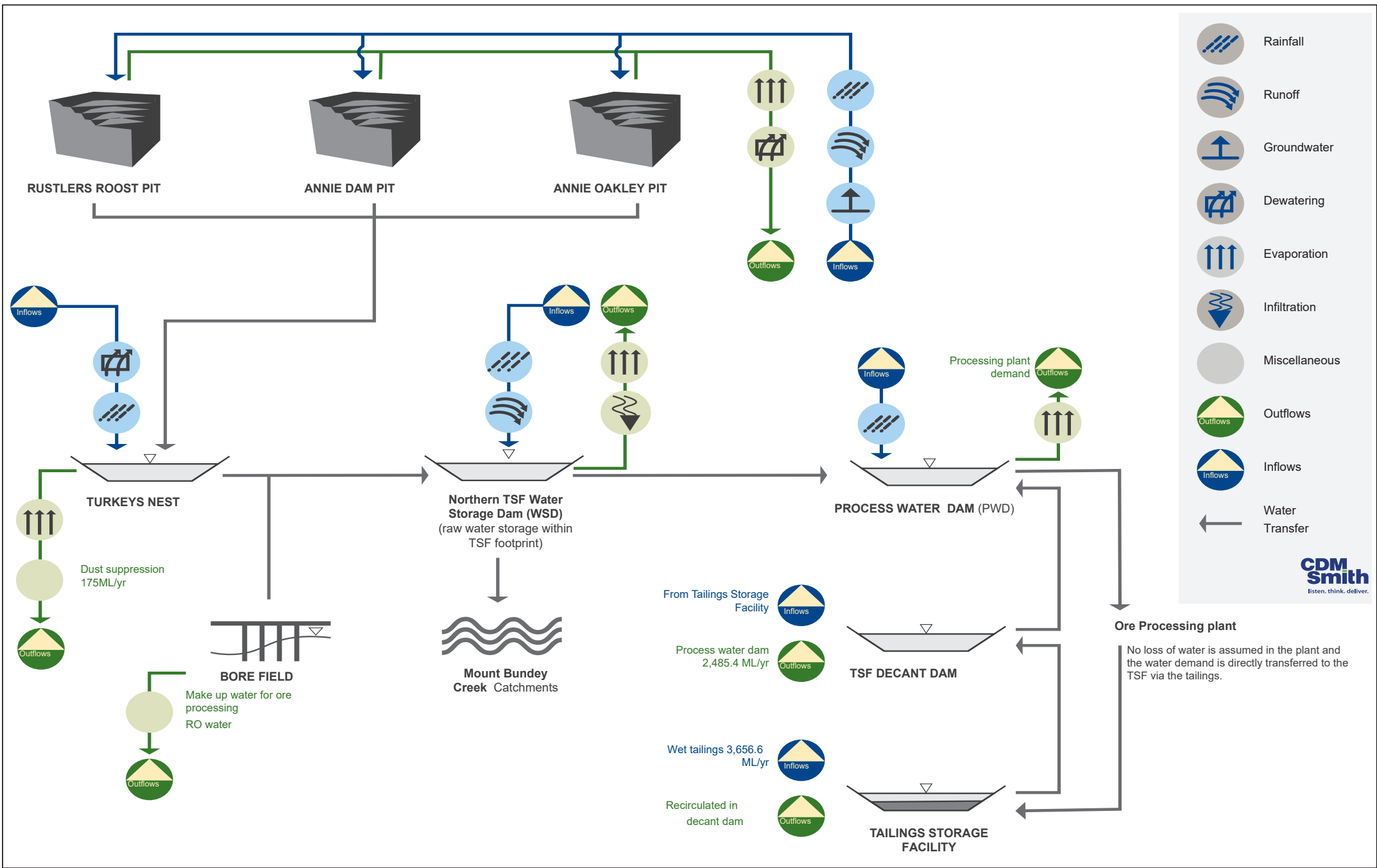


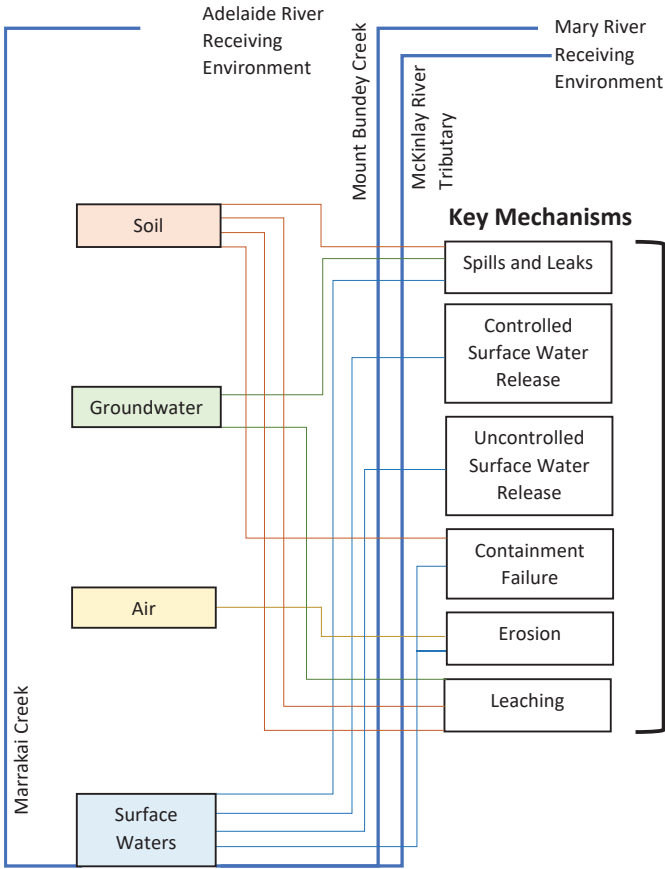
Figure 4-4 Modelled Groundwater Levels (m AHD) 20 years post mining (geometric mean across the 100 model realisations)



R	Details	Date	©COPYRIGHT CDM SMITH This drawing is confidential and shall only be used for the purpose of this project.				 0 700 1,400 2,800 Meters 1 cm = 644 meters GCS GDA 1994 MGA Zone 56	DISCLAIMER CDM Smith has endeavoured to ensure accuracy and completeness of the data. CDM Smith assumes no legal liability or responsibility for any decisions or actions resulting from the information contained within this map. DATA SOURCE NT Government Open Source Data	DESIGNER cdmsmith.com	CLIENT	FIGURE 4-5
1	Final	24/08/21	DESIGNED	VP	CHECKED	JM					Rustlers Roost Water Management Schematic
-	-		DRAWN	MM	CHECKED	VP					
-	-		APPROVED	TK	DATE	24/08/21					
-	-		Notes:								
-	-										
-	-						DRG Ref: 1001087-EIS-04-4.14				

Relevant Factor
Terrestrial Environmental Quality
Terrestrial Ecosystem
Hydrological Processes
Inland Water Environmental Quality
Aquatic Ecosystems
Community and Economy

Key Pathways



Key Mechanisms

- Spills and Leaks
- Controlled Surface Water Release
- Uncontrolled Surface Water Release
- Containment Failure
- Erosion
- Leaching

Rustlers Roost and Quest 29 Open-cut Mine Redevelopment

Key Potential Impacts

- Loss of soil productivity
- Habitat loss and fragmentation
- Waterway contamination
- Alteration of Hydrological Regime
- Increased Weeds Infestation and Densities
- Alteration of Aquatic Ecosystem from Runoff
- Contamination of downstream environments resulting in human health
- Increased demand on for local employment
- Increased regional and local traffic and thus inherent risks
- Diminished complexity and biological integrity of the wider area (soils)
- Accumulation and bioaccumulation of contaminants in receiving environment
- Mobilisation of historic contaminants (e.g. AMD) and offsite transport

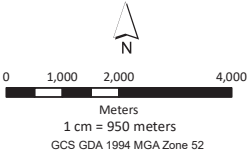
Interactions with Key Surrounding Projects and Activities

- Surrounding Pastoral Activities
- Toms Gully Mine
- Boral Quarry and HB Quarry
- Ostojic Quarry and McKinlay Quarry
- Mount Bunday Military Training

Degree of Interaction

- Moderate
- High
- High
- Moderate
- Moderate

R	Details	Date	©COPYRIGHT CDM SMITH This drawing is confidential and shall only be used for the purpose of this project.			
1	Final	25/08/21	DESIGNED	SS	CHECKED	TK
2	Final	14/05/22	DRAWN	SS	CHECKED	TK
-	-	-	APPROVED	TK	DATE	14/05/22
-	-	-	Notes:			



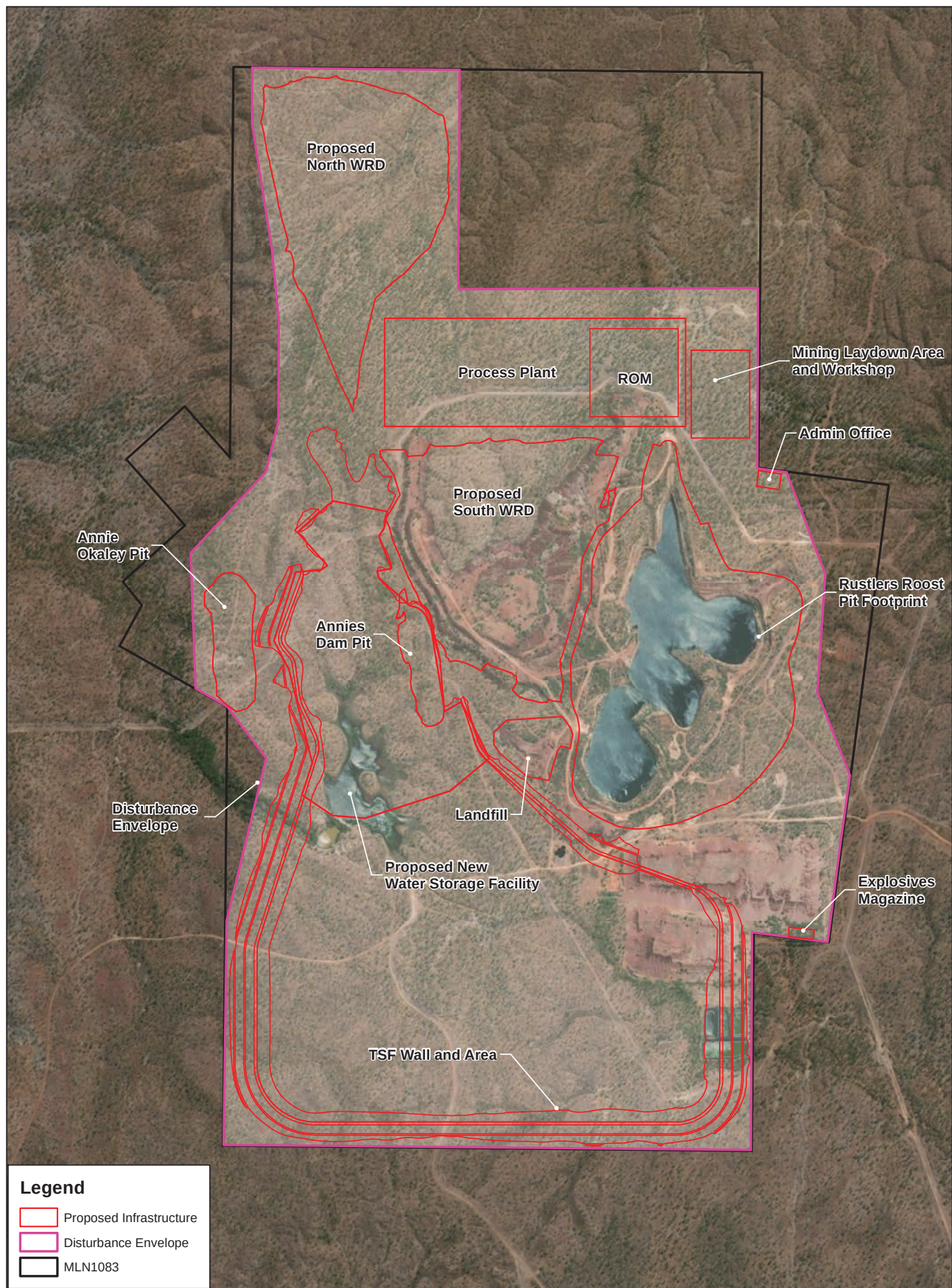
DISCLAIMER
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FIGURE 4-6

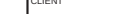
Potential Indirect and Cumulative Interactions with Surrounding Projects and Activities

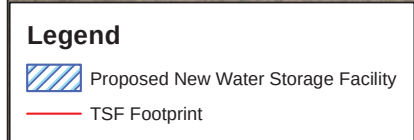
DRG Ref: 1001087-SEIS-1.5



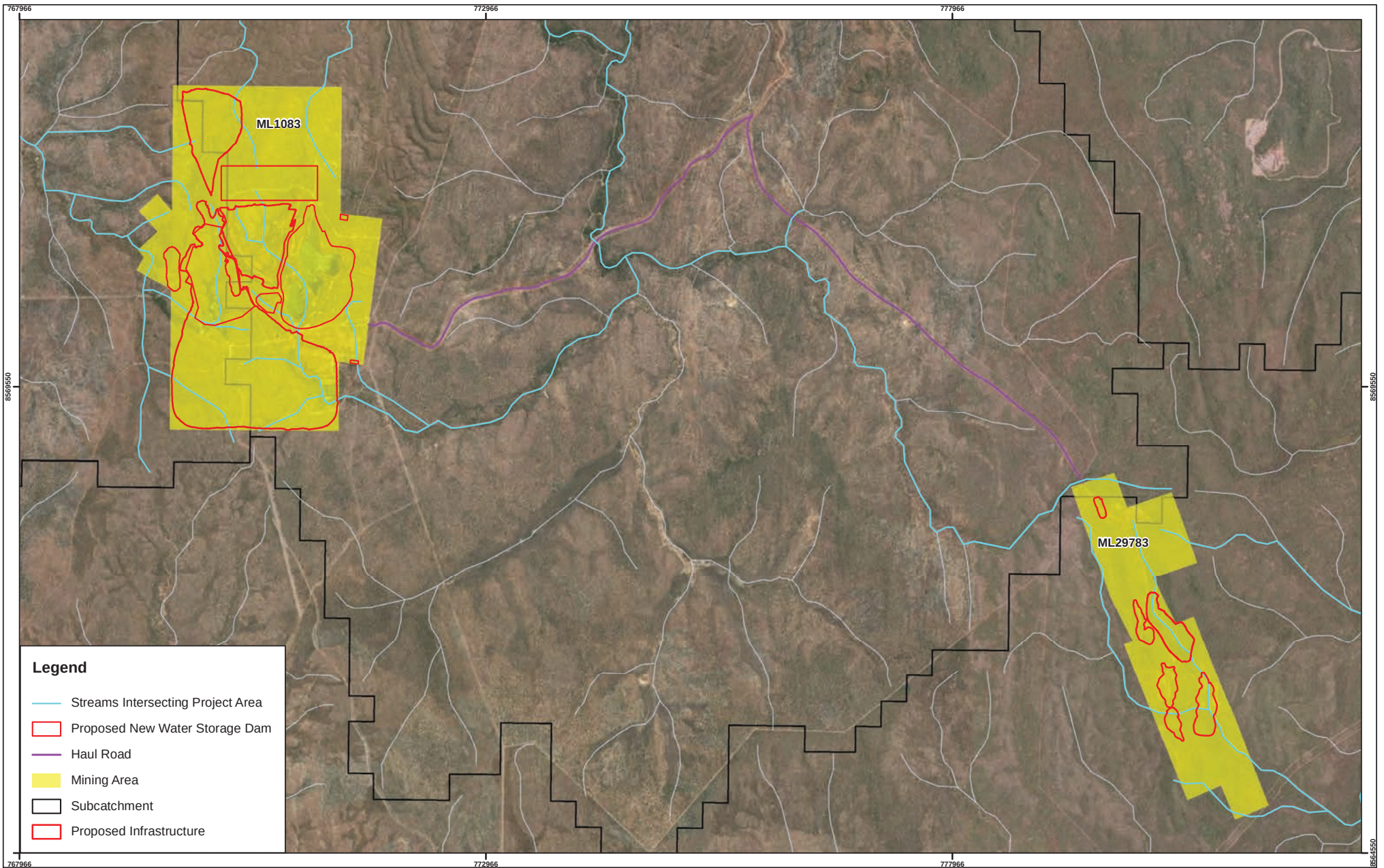
Legend

- Proposed Infrastructure
- Disturbance Envelope
- MLN1083

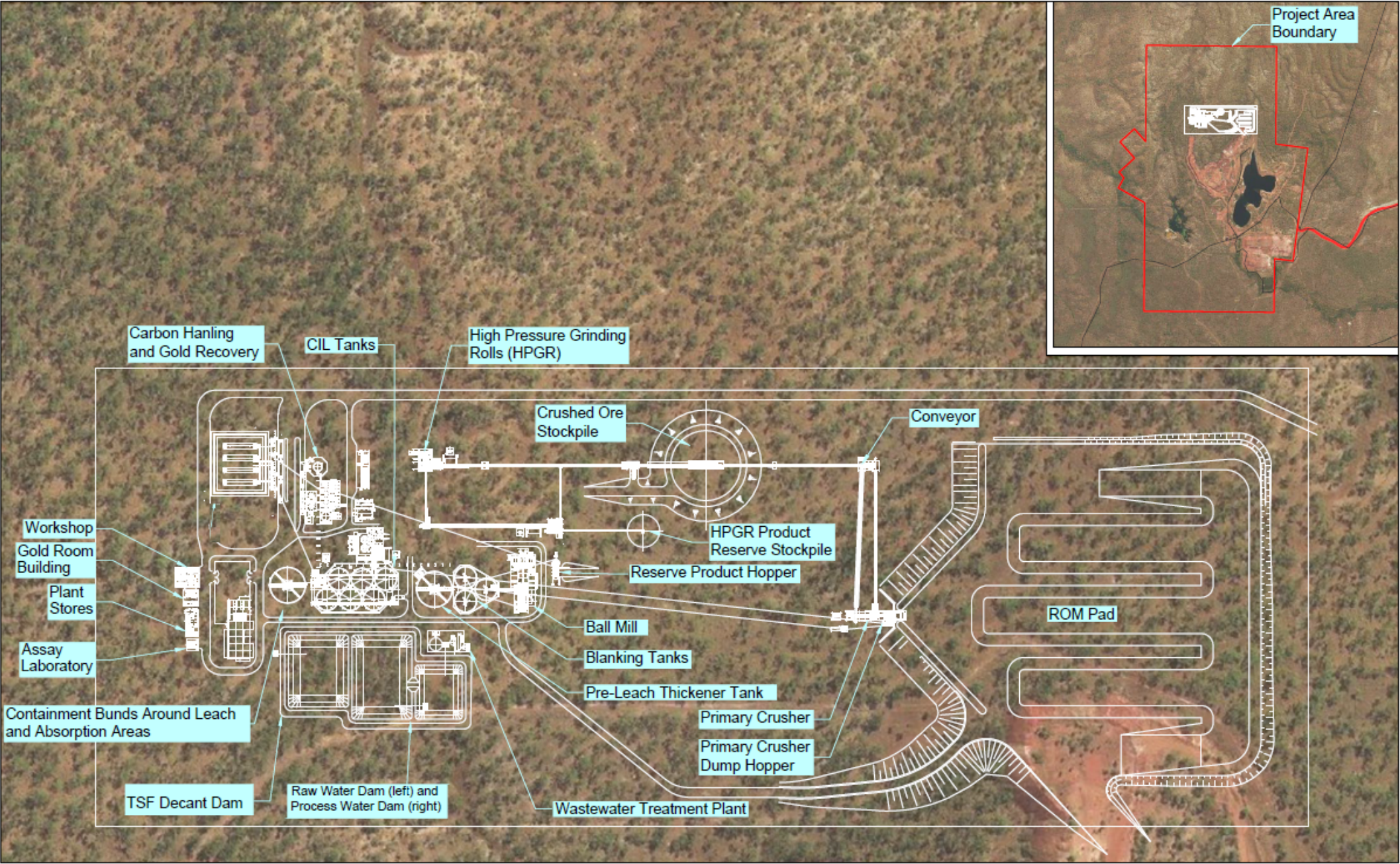
Details		Date	©COPYRIGHT CDM SMITH					DISCLAIMER CDM Smith has endeavoured to ensure accuracy and completeness of the data. CDM Smith assumes no legal liability or responsibility for any decisions or actions resulting from the information contained within this map.	DESIGNER 	CLIENT 	FIGURE 4-7 Rustlers Roost Proposed Site Layout
1	First Draft	30/06/21	This drawing is confidential and shall only be used for the purpose of this project.								
2	Second Draft	27/07/21	DESIGNED	SS	CHECKED	JM		DATA SOURCE QLD Government Open Source Data			
3	Third Draft	30/06/22	DRAWN	SS	CHECKED	JM					
			APPROVED	-	DATE	30/06/22					
Notes:							1 cm = 119 meters GCS GDA 1994 MGA Zone 52				



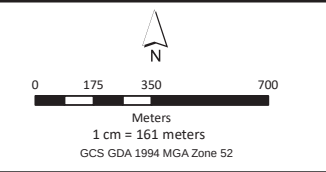
R Details		Date	COPYRIGHT CDM SMITH				080160320 Meters 1 cm = 102 meters GCS GOA 1994 MGA Zone 52		DISCLAIMER		DESIGNER		CLIENT		FIGURE 4-8	
1	First Draft	30/06/22	This drawing is confidential and shall only be used for the purpose of this project.						CDM Smith has endeavoured to ensure accuracy and completeness of the data. CDM Smith assumes no legal liability or responsibility for any decisions or actions resulting from the information contained within this map. DATA SOURCE QLD Government Open Source Data		CDM Smith PRIMARY GOLD		Proposed New Water Storage Facility			
			DESIGNED	SS	CHECKED	JM										
			DRAWN	SS	CHECKED	JM										
			APPROVED	-	DATE	30/06/22										
			Notes:										DRG Ref: 1001087-SEIS-XX-X.X			



R	Details	Date	©COPYRIGHT CDM SMITH This drawing is confidential and shall only be used for the purpose of this project.				 0 400 800 1,600 Meters 1 cm = 367 meters GCS GDA 1994 MGA Zone 52	DISCLAIMER CDM Smith has endeavoured to ensure accuracy and completeness of the data. CDM Smith assumes no legal liability or responsibility for any decisions or actions resulting from the information contained within this map. DATA SOURCE QLD Government Open Source Data	DESIGNER		CLIENT		FIGURE 4-9
1	First Draft	04/08/21	DESIGNED	SS	CHECKED	TK							Regional Overview of Aquatic Features
2	Second Draft	01/07/22	DRAWN	SS	CHECKED	TK							
-	-		APPROVED	TK	DATE	01/07/22							
-	-		Notes:										
-	-												
-	-												



R	Details	Date	©COPYRIGHT CDM SMITH This drawing is confidential and shall only be used for the purpose of this project.			
1	First Draft	13/08/21	DESIGNED	SS	CHECKED	TK
2	Final - Updated to Correct Decant Dam	25/08/22	DRAWN	SS	CHECKED	TK
-	-	-	APPROVED	TK	DATE	25/08/22
-	-	-	Notes:			
-	-	-				



DISCLAIMER
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DATA SOURCE
NT Government Open Source Data



FIGURE 4-10

Processing Plant Layout

DRG Ref: 1001087-EIS-04.4.15

Section 5 Updated Commitments Register

This section outlines all PGO's new commitments to the Project during the preparation of this SEIS, including additional technical studies carried out after the submission of the Draft EIS, and new commitments as a result of thorough review of all technical studies submitted within the Draft EIS (as requested in submission number 53). Appendix L provides a full list of PGO's commitments to this Project, including all new commitments included below in Table 5-1.

PGO consider the commitment register to be a dynamic document and will continually be updated with new actions as they arise, and provide a framework for internal audit and compliance to achieve excellent environmental outcomes.

Table 5-1 List of PGO's New Commitments to the Project

Aspect	Primary Gold Commitments	Timeline
Land, Water, People and Ecology	Measures to manage both acidic leachate and radioactivity should be put in place for the ore transported from Quest 29 to Rustlers Roost.	Operation
Land, Water, People and Ecology	As information is obtained about the site materials, site-specific criteria for classifying PAF waste rock can be generated and incorporated into a block model to estimate the quantities of materials that have the potential to generate acid or mobilise metals at each stage of mining.	Operation
Land, Water, People and Ecology	The information from the block model will be used to update the site conceptual model, perform more detailed risk assessment, design and implement control and management strategies for both operations and post-closure phase.	Operation and closure
Land, Water, People and Ecology	Encapsulation of PAF will consider not only the acid generation potential of the waste but also the radioactivity requirements given the results gathered for the ore.	Operation and closure
Land, Water, People and Ecology	Dam break assessment will be reviewed and updated following finalisation of Project design.	Pre-construction
Land, Water, People and Ecology	A detailed LIDAR survey will be conducted within the drainage corridor to the east and west of the TSF, and hydraulically accurate Digital Terrain Model provided to model accurate inundation mapping.	Pre-construction
People	All drivers shall have the appropriate driving licences in place.	Construction, Operation and Closure
People	All drivers on site shall have their competency confirmed through competency based training or verification of competence.	Construction, Operation and Closure
People	All drivers on site shall undertake the Project site induction which shall contain a section on driving requirements.	Construction, Operation and Closure
People	Road signage shall be installed on the Northern and Southern approaches of Arnhem Highway warning of the mine entrance and the potential for entering and exiting vehicles. This signage shall be in accordance with Austroad requirements and to the satisfaction of the Northern Territory Department of Transport.	Pre-construction

Section 5 Updated Commitments Register

Aspect	Primary Gold Commitments	Timeline
People	Signage shall be installed along the site entrance road warning of the upcoming intersection with the Arnhem Highway. A stop sign shall also be installed on the entrance road at the intersection point.	Pre-construction
People	The site access road shall be regularly maintained and sprayed with water to minimise dust generation.	Construction, Operation and Closure
People	On site demarcation of heavy equipment, light vehicles and pedestrians shall be implemented where appropriate and practicable.	Construction, Operation and Closure
People	All vehicles shall be regularly serviced and maintained.	Construction, Operation and Closure
People	All loads shall be safely secured prior to departure and regularly checked.	Construction, Operation and Closure
People	Traffic incidents for the Project related traffic shall be managed in accordance with the Project Incident Reporting and Management System.	Construction, Operation and Closure
People	The TMP shall be reviewed if a number of traffic near misses and/or incidents are recorded. Upon review, the document shall be revised where appropriate and consultation undertaken with the Northern Territory Department of Transport where required.	Construction, Operation and Closure
Water	PGO will complete the detailed design for the relevant Water Storage Infrastructure and provide it to DITT for review and approval prior to construction.	Pre-construction
Water	The tailings management strategy (including TSF expansion) will be completed and provided to DITT for review and approval prior to modification and use.	Construction
Water	Review of the groundwater monitoring network will be undertaken to inform locations of additional monitoring bores to provide effective coverage throughout the life of mine and beyond closure.	Construction, Operation and Closure
Water	Installation of flow meters and water storage gauges to validate the water balance model. Weekly readings will be collected on all transfers across site and storage levels.	Construction, Operation and Closure

Section 5 Updated Commitments Register

Aspect	Primary Gold Commitments	Timeline
Water	A water treatment plan will be established and provided for review as part of the Waste Discharge Licence Application and Mining Management Plan.	Pre-construction
Ecology	PGO will conduct a late wet season survey to determine if any threatened flora or fauna species are present in the survey area seasonally.	Pre-construction
Ecology	Further survey effort targeted for the bare-rumped sheath-tail bat will consider setting up mistnets over isolated waterholes and creeklines, and in woodland or forest as high as possible (preferably >8 m above the ground) near the tree canopy.	Pre-construction and Construction
Soil	Entrance/exit grids are required at the entrances and exits to RR and Q29. If deemed practicable, only 1 entrance/exit be used at each site.	Construction and Operation
Soil, Water	Road drainage will be provided by table drains and mitre drains directing road runoff to stable outlets (i.e., vegetated or rock protected areas).	Construction and Operation
Soil, Water	Drainage will incorporate check dam controls (e.g., rock check dam, filter bag/tube, coir logs) to provide flow energy dissipation in addition to providing sediment control.	Construction and Operation
Soil, Water	Culverts and bridges will be installed and upgraded to traverse watercourses.	Construction and Operation
Soil	Specific Progressive ESCPs will be prepared to guide implementation of specific engineering plans for these structures.	Construction and Operation
Vegetation	Vegetation clearing shall be kept to the minimum amount necessary.	Construction and Operation
Vegetation	Protected vegetation and significant areas of vegetation are to be retained, and clearly identified prior to the commencement of clearing.	Construction and Operation
Vegetation	Approved areas for native vegetation clearing to be clearly marked.	Construction and Operation
Vegetation	Disturbance to natural watercourses and associated riparian zones must be limited to the minimum practicable.	Construction and Operation
Soil	The depth of topsoil stripping is dependent upon soil type; however, ideally the top 50 - 100 mm is to be retained separately from other material.	Construction and Operation
Soil	Topsoil is to be stored within topsoil berms or designated stockpile areas.	Construction and Operation
Soil	Stockpiles are not to be located within protected areas of vegetation, driplines of trees, or within 10 m of retained trees, drainage lines, flood zones or any area otherwise likely to be inundated with water.	Construction and Operation

Section 5 Updated Commitments Register

Aspect	Primary Gold Commitments	Timeline
Soil	Avoid placement of stockpiles within 50 m of any drains, drainage lines or other waterways. Where not practicable, specific erosion and sedimentation controls to be implemented.	Construction and Operation
Soil	Topsoil stockpiles/berms to be < 1.5 m in height as far as practical (to enhance preservation of biological activity).	Construction and Operation
Soil	Spoil stockpiles are to be protected upslope by earth diversion banks to divert run-on water, and downslope by an appropriate Type 2/3 sediment control measure (e.g., mulch berm, rock berm).	Construction and Operation
Soil	Long term (> 10 days) stockpiles, batters and other erosion sensitive areas shall be adequately stabilised through velocity reduction, covering, grassing, vegetation, soil binding, water diversion or other as appropriate.	Construction and Operation
Soil	Topsoil berms are to be protected from erosion by: • Amelioration of topsoil layer for plant growth; • Light ripping of final topsoil layer; • Application of hydromulch at 4 t/ha complete with 40 kg/ha grass seed; and • Placement and pinning of jute matting over hydromulched surface on external batter.	Construction and Operation
Soil, Water	Watercourse crossings along the main haul road and internal access roads are to be constructed in accordance with relevant engineering plans	Construction and Operation
Soil	Temporary stockpiling of soil, equipment, and materials within watercourses, or on adjacent banks and floodplains, is to be avoided (unless integral to drainage control requirements).	Construction and Operation
Soil	Crossings constructed at right angles in locations where the stream is straight.	Construction and Operation
Soil, Water	Site runoff from exposed surfaces is to be prevented from directly entering watercourses.	Construction and Operation
Soil, Water	Where culvert pipes are to be utilised, the following guidelines are to be considered: • The long-term stability of the bed and bank of the waterway are not compromised; • Culverts are to have sufficient capacity to ensure minimal disturbance to stream flow for the design discharge; • Culvert cells are aligned with the channel; • Culvert cells extend well beyond the fill embankment; • Rock (or similar) is to be used to protect fill abutments; and • Energy dissipation is provided downstream of culvert.	Construction and Operation

Section 5 Updated Commitments Register

Aspect	Primary Gold Commitments	Timeline
Soil, Water	Additional contingencies are required in the event of wet conditions, which will include diversion of flows around active work areas, protection of disturbed areas, and restricting vehicular access as far as practicable.	Construction and Operation
Soil	The WRD will be bordered by a flow diversion berm (topsoil) to divert external clean water runoff, including exclusion of the watercourse to the west of the WRD.	Construction and Operation
Soil	Site runoff will be diverted to a sediment basin(s) for containment and treatment prior to reuse or discharge via internal drainage.	Construction and Operation
Soil	The minimisation of sediment delivered to the sediment basins from the WRD will be achieved through: • A clean water channel running north south to the east of the pits between the pits and the East Koolpin WRD; • Incorporation of diversion channels will be placed along the toe of East Koolpin WRD batters to enable diversion of runoff to rock check dam discharge points, prior to entering the sediment basin drainage network. The catchments main clean water channel to the west of the Taipan pit will be diverted to the north of the Taipan pit and south of the south Koolpin pit; • Construction of slope breaks to reduce slope length and promote infiltration; • Application of soil binders to batters for dust suppression and temporary erosion control; and • Composition of the WRD will include a significant proportion of low erodibility material (i.e., rock), reducing sediment generation.	Construction and Operation
Soil	No water courses will be diverted at RR.	Construction and Operation
Soil	Where the proposed expansion of mining activities requires the diversion of watercourses at Q29, preparation of specific ESCPs prior to commencement of works, reflecting the specific engineering design requirements and construction sequence, will be developed.	Pre-construction
Soil	A clean water channel along the left bank of the North and South Koolpin pit is proposed to convey water from upstream to downstream without mixing with dirty water.	Construction and Operation
Soil	The expansion of the Taipan pit will be undertaken to exclude disturbance to the current flow path of this previously altered watercourse, or construction of a stabilised creek diversion.	Construction and Operation
Soil	The expansion of the Zamu pit will be undertaken to maintain this existing natural watercourse in an undisturbed condition to allow for clean water bypass through mining areas.	Construction and Operation
Soil	Diversion channels to be constructed as per applicable engineering designs, including rock erosion control protection to bed and banks. Upstream and downstream ends to remain blocked (e.g., earth bund or rock wrapped in geofabric) from clean water flows until works are completed, and stabilisation is achieved.	Construction and Operation
Soil	Active earthworks areas to be isolated and protected to maintain clean water separation from site runoff (e.g., perimeter berms, rock berm) during construction.	Construction and Operation

Section 5 Updated Commitments Register

Aspect	Primary Gold Commitments	Timeline
Soil	Topsoil to be stripped and temporarily stockpiled separately for reuse on batters of excavated diversion channels.	Construction and Operation
Soil	Spoil and topsoil stockpiles to be in a protected area > 50 m from creek channels.	Construction and Operation
Soil	Upper batters to have topsoil respread and vegetation sown. Jute mesh or mulch is recommended to assist with providing temporary groundcover until vegetation becomes established.	Construction and Operation
Soil	Cleared vegetation to be placed on the upper banks to provide channel roughness, habitat and encourage natural regeneration.	Construction and Operation
Soil	Channel blocks to be removed during periods of low / nil flow (dry season). Downstream channel block to be removed prior to upstream channel block.	Construction and Operation
Soil	Structural stability and vegetation establishment of diversion channel to be monitored.	Construction and Operation
Soil	Permanent erosion control measures will include a combination of vegetative, hardstand and structural erosion control techniques, implemented progressively.	Construction, Operation and Closure
Soil	Sediment control measures will continue to be managed and maintained until the site is assessed as being adequately stabilised.	Construction, Operation and Closure
Soil	The installation and maintenance of all ESC measures is to be overseen by a suitably qualified person.	Construction, Operation and Closure
Soil	Installation is to be consistent with the ESCP and any associated Progressive ESCPs.	Construction, Operation and Closure
Soil	All required temporary erosion and sediment control measures must be fully operational and maintained in proper working order until permanent stabilisation is achieved.	Construction, Operation and Closure
Soil	The ESC measures are to be inspected at least weekly during operation, within 24 hrs of expected rainfall and as soon as reasonably practical after receiving significant rainfall events.	Construction and Operation

Section 5 Updated Commitments Register

Aspect	Primary Gold Commitments	Timeline
Soil	Visual assessment of ESC measures will be carried out of surface water runoff structures, drainage structures and erosion control structures to ensure they are operating efficiently.	Construction and Operation
People, Ecology	The Project will be fenced to reduce any risk to livestock i.e. cattle.	Construction and Operation
Water	In accordance with the waste discharge licence, water quality monitoring will be undertaken during dewatering to confirm complying metal and nutrient concentrations or to allow for adjustments of the dilution rates in order to achieve compliance.	Construction and Operation
Water	If considered a potentially significant contaminant pathway, and once long-term pit lake water quality is well understood, human ingestion risk should be considered in future pit lake assessments.	Operation and Closure
Ecology	Sediment and macroinvertebrate sampling will be undertaken annually for the duration of discharge operations and the life of the mine as per the Sediment and Macroinvertebrate Monitoring Plan Rustlers Roost.	Construction, Operation and Closure
Ecology	PGO will conduct targeted sampling for aquatic monitoring, taking into account safety concerns regarding crocodiles. Suggested sampling site are discussed in Table 15 of Appendix S of the Draft EIS.	Construction and Operation
Ecology	During aquatic ecology surveys, surface water and sediment sampling should continue at MBC01A to monitor influence of TSF2 over time, with SWTG2 providing a sufficient location for downstream biological monitoring.	Construction and Operation
Ecology	Sediment sampling should continue at all sites to monitor any potential accumulation of metals in sediments over time.	Construction and Operation
Ecology	Monitoring of macroinvertebrates will continue at all sites retained for the sampling program.	Construction and Operation
Ecology	Remote camera monitoring will continue to assist with detecting any changes in species accessing waterways and to gather information on animals potentially causing impacts to the watercourse that are unrelated to mining operations.	Construction and Operation
Soil	Typical management considerations for PAF where the avoidance of disturbance is not an option include: • Segregation and selective placement; • Encapsulation with NAF material of sufficient thickness to limit infiltration and/or use of low permeability cover systems; • Submergence withing aqueous environment (e.g., pit lakes); • Backfilling of hydrogeologically contained voids with minimal re-handling of materials; • Erosion and sediment control measures such as bunding, run-on/runoff diversions, and stormwater ponds; and • Water treatment and discharge.	Construction, Operation and Closure

Section 5 Updated Commitments Register

Aspect	Primary Gold Commitments	Timeline
Soil	The block model will be updated with regular sampling, will provide updated estimates of anticipated volumes of PAF and NAF material as mining continues, which will be used to develop management strategies for that material within the WRD and/or backfilled within the pits.	Pre-construction, Construction and Operation
Soil	To limit air and water contact with PAF material that causes AMD generation for the Rustlers Roost WRDs: - Material classified as NAF will be placed at the outer annulus of the WRD; - NAF material with sufficient ANC will be placed on the natural surface, lining the drainage lines; - Temporary and/or final cover systems over waste rock will be designed to limit infiltration to the extent needed based on the propensity for the material to generate AMD; and - PAF material will be encapsulated with the central areas of the dump, not near the outer slopes or toe areas and covered with NAF waste material from the outer perimeter.	Construction and Operation
Soil	The Annie Oakley and Annie's Dam pits will be backfilled as part of closure.	Closure
Soil	To limit air and water contact with PAF material that causes AMD generation for the Quest 29 WRDs: - Construction will commence with the placement of NAF material for the base and outer annulus; - PAF material encountered will be placed onto the NAF base, and encapsulated within the centre of the WRD; - Temporary and/or final cover systems over waste rock will be designed to limit infiltration to the extent needed based on the propensity for the material to generate AMD; and - No PAF material will be placed on outer perimeter, slopes, toe, surface or base of the dump.	Construction, Operation and Closure
Soil	The material from the BHS (Quest29) will be used for beneficial mine closure purposes, such as use in rehabilitation (capping) of the decommissioned heap leach facility in the Project area.	Construction, Operation and Closure
Soil	NAF oxide material from other pits will also be used for mine closure and AMD controls, such as encapsulation of PAF material within WRDs.	Construction, Operation and Closure
Soil	To limit potential for failure of Annie's dam embankment or other structural embankments regular inspections will be implemented to ensure structural stability.	Construction, Operation and Closure
Water	To reduce the site water storage and accommodate for stormwater containment during the rainy season, pit dewatering will be implemented at the start of mining (where water is present) and during mining using in-pit pumps.	Construction and Operation
Water	Dewatering will be implemented during mining as needed in response to direct precipitation events.	Construction and Operation

Section 5 Updated Commitments Register

Aspect	Primary Gold Commitments	Timeline
Water	Pumped water will be reused in the mining process circuit or discharged to the surface water catchments under approved permits.	Construction and Operation
Water	Rainfall conditions and water levels across the site will be monitored (flow and volume) to manage peak water periods to maintain constant water volumes across site and used to update site water balance.	Construction and Operation
Water	To minimise erosion and offsite discharges of AMD, ESCPs will be implemented.	Construction and Operation
Water	ESCPs will include the following: • Perimeter drains, bunds, and sediment basins constructed at the down-gradient base of each of the surface WRDs (toe drain) to manage sediment and monitor surface water quality runoff and seepage; • Check dams within diversion channels to provide velocity control where needed based on engineering estimates of maximum stormwater velocity; • Sediment will be cleaned out of the sediment basins as required and in anticipation of the wet season to provide greater runoff capacity; • Water volume will be measured within basins to manage the site water balance and maintain capacity needed for peak water periods; • The sediment basins will remain post rehabilitation until the landform is stable; • To minimise contact of clean water with WRDs, minimise AMD generation volume, and reduce clean water inflows into open pits and ponds, clean water run-on diversions will be installed to route clean unimpacted water away from the disturbed mine area and directly into area catchments; • These approaches will be implemented, inspected, and maintained in accordance with the associated plans for the mine operation (e.g., WMP, ESCP); • Engineering details of ESC measures are provided in the ESCP; • Water will be managed in accordance with the WMP and the water balance provided in the Water Balance and Groundwater Modelling Report; and • Water captured within stormwater ponds will be sampled and assessed through the established network of surface water monitoring sites in accordance with the WMP (Appendix I of the Draft EIS).	Construction, Operation and Closure
Water	Ore will only be stored for extended periods on the ROM Pad.	Construction and Operation
Water	ROM pad or other areas which stockpile or process ore material will be bunded and surface water run-on and runoff controls implemented to manage stormwater and erosion.	Construction and Operation
Water	Drainage from the ROM pad shall be directed to a stormwater sump which shall be managed to prevent overflow.	Construction and Operation
Water	Collected water from the ROM pad will be used in the mine process circuit.	Operation
Soil and Water	Ore will not be used for construction purposes other than extraction of gold.	Construction and Operation

Section 5 Updated Commitments Register

Aspect	Primary Gold Commitments	Timeline
Water	A design review is to be completed with each annual Mine Management Plan (MMP) that verifies the AMD standards are being implemented for the MMP term.	Construction and Operation
Land and Water	Installation of stable TSF embankment slopes in accordance with seismic and slope stability design requirements.	Construction, Operation and Closure
Land, soil, Water, People	To limit potential for failure of the TSF embankments regular inspections will be implemented to ensure structural stability.	Construction, Operation and Closure
Land, Water	The TSF will be designed to contain a range of design storm and rainfall sequences up to and greater the required design criteria.	Pre-construction
Soil and Water	An engineered spillway will be constructed as part of each embankment raise. After the initial year of operation, embankments will be constructed to accommodate 16 months of deposition and elevations raised on an annual basis	Construction and Operation
Water	A decant system will be operated to abstract water from the supernatant ponds to use as return water in the process plant.	Construction and Operation
Water	Seepage control will be designed that includes: • Low-permeability composite liner of HDPE and CSL over the entire base of the TSF to inhibit infiltration into underlying soils/groundwater; • Cut-off key trenches along the embankment perimeter to reduce seepage along the interface between original ground and the new embankment; • Underdrainage collection system designed to reduce the phreatic surface within the tailings and embankments, reduce seepage potential, improves embankment stability, increases tailings density and maximises storage capacity, and increases geotechnical stability of the tailings mass adjacent to the embankment; • Embankment toe drains designed to reduce the phreatic surface within the tailings adjacent to the embankments and improve geotechnical stability of the tailings; and • Underdrainage collection sump installed at the lowest point in the TSF underdrainage collection system. The sump will be designed to route water back to the supernatant pond and ultimately into the process water circuit.	Construction, Operation and Closure
Water	As part of water management and site water balance goals, the volume of stored water, changes in water storage, and volume of collected and recirculated underdrain water will be measured regularly to 1) update the water balance with current information and 2) confirm operations are in compliance with the planned volume freeboards that can accommodate peak water periods.	Construction and Operation
Soil and Land	PAF material encountered will be placed onto of the NAF base, encapsulated within the centre of the WRD. No PAF material will be placed on outer perimeter, slopes, toe, surface or base of the dump.	Construction and Operation
Soil and Land	Both the Rustlers Roost and Quest 29 WRDs will be constructed with a compacted oxide (NAF) material base prior to placement of sulfide material.	Construction

Section 5 Updated Commitments Register

Aspect	Primary Gold Commitments	Timeline
Soil, Land and Water	The top cladding of the WRDs will be slightly domed to prevent water collecting , facilitate runoff and limit seepage.	Construction
Soil, Land and Water	Rock lined drainage trenches will be the initial receiving structure for WRD runoff.	Construction
Water	The drainage trenches will capture the WRD runoff and slow the velocity of water running down the 17 degree slope to prevent erosion.	Construction and Operation
Water	Basin design will be revised prior to implementation of mine development to ensure the most efficient basin configuration is adopted. Final basin location will be subject to final site layout; however, the following criteria will apply: ▪ Located to maximise collection of sediment-laden runoff generated within the site; ▪ Not located within waterways or drainage channels; ▪ Located above the 1 in 5-year ARI; ▪ Have suitable access for maintenance; and ▪ Placed near site perimeter for ease of dewatering.	Pre-construction and Construction
Land and Water	Basin construction will incorporate the following elements: ▪ Earth embankments to be certified as structurally sound by geotechnical engineer/specialist; ▪ Stable inflow system (e.g., rock chute); ▪ Minimum 3:1 length to width ratio (may require internal baffles); ▪ Primary outlet (e.g., siphon, perforated riser) for controlled release; ▪ Emergency spillway (minimum design storm 1 in 50-year ARI); and ▪ Marker to identify the sediment storage zone depth.	Pre-construction and Construction

Section 5 Updated Commitments Register

Aspect	Primary Gold Commitments	Timeline
Soil and Water	Basins are to be managed as follows: - Discharged within 5 days of cessation of rainfall (min 25 mm); - Controlled sediment basin discharge to be in accordance with the MMP and project approvals; - Prior to discharge, water quality to meet project discharge criteria specified in site Water Management Plan (flocculant or coagulant may be required); - Designed to ensure easy and safe access to dose retained water with flocculants as required; - Marker peg to be installed to indicate sediment storage capacity; - Removal of sediment where sediment storage capacity exceeds 50% and disposal/management of sediment so as not to create an erosion or pollution hazard; and - Be regularly monitored to ensure structural integrity is maintained, including inlets and outlets.	Pre-construction and Construction
People	PGP commit to comply with all closure guideline and standard as identified below and within the approved MCP.	Closure
Soil and Land	Implement AMDMP.	Construction and Operation
Soil	The AMDMP will be continuously updated as testing is undertaken during operation. The operational testing and acid base accounting including sulphide sulfur, NAG and ANC and metals content in waste will inform the selection of most appropriate contingency measures where water monitoring or visual indicators identify deteriorating conditions. This will include establishing trigger actions that are consistent with the Project WMP and define the actions to be taken when conditions change from normality and have the potential to trigger an event.	Construction and Operation
Soil	Additional sampling will be undertaken for in-pit identification and differentiation of waste rock during construction and operation. This information will inform simulation modelling to confirm the thickness of cover needed to limit infiltration during a defined design-storm events.	Pre-construction and Construction
Air	PGO will continue to engage with the NTG as the framework and polices for GHG become ratified.	Pre-construction, Construction, Operation and Closure
Land, Soil and Water	A more technically rigorous model of the project area will be developed incorporating geological and structural data and information.	Construction and Operation
Water	A comprehensive hydrogeological site investigation will be undertaken to characterise aquifers in the project area. This investigation will consider production and monitoring bores targeting deeper geological structures and features in the area, using available geophysical and geological data.	Pre-construction
Water	Long term aquifer testing of the successful bores will be undertaken to determine hydraulic properties of the weathered and fractured rock aquifer.	Pre-construction, Construction, Operation and Closure

Section 5 Updated Commitments Register

Aspect	Primary Gold Commitments	Timeline
Water	A numerical model will be constructed using existing data and information, as well as new data and information gained from a thorough groundwater investigation.	Construction, Operation and Closure
Water	Incorporate the mine schedule with bench progression into the model to simulate changes in pit inflows with time.	Operation and Closure
Land and Soil	Waste rock generated in the extraction and production process will be deposited in surface waste rock dumps (WRDs) and will be used to backfill several pits where mine scheduling permits.	Operation and Closure
Soil	Material classified as Non-acid forming (NAF) will be placed at the outer annulus of the South WRD.	Operation and Closure
Land and Soil	NAF material with sufficient acid neutralising capacity (ANC) will be placed on the natural surface, lining the drainage lines of the South WRD.	Operation and Closure
Land and Soil	Potentially- acid forming (PAF) material will be encapsulated with the central areas of the dump, not near the outer slopes or toe areas and covered with NAF waste material from the outer perimeter of the existing South WRD.	Operation and Closure
Land and Soil	Final landform of the South WRD design will have a continuous 17° slope and a height of 50 m over 62.7 ha.	Closure
Land and Soil	Approximately 24 Mt will be placed within the existing South WRD expansion, and 21.64 Mt will be placed in the North WRD and 5.4 Mt of the fresh waste will be backfilled into the Annie's Dam pit and Annie Oakley pit.	Closure
Land and Soil	Final landform of the North WRD design will have a continuous 17° slope and a height of 50 m.	Closure
Land and Soil	Material classified as No-acid forming (NAF) will be placed at the outer annulus of the North WRD.	Operation and Closure
Land and Soil	NAF material with sufficient acid neutralising capacity (ANC) will be placed on the natural surface, lining the drainage lines of the North WRD.	Operation and Closure
Land and Soil	A small amount of potentially-acid forming (PAF) material will be encapsulated with the central areas of the dump, not near the outer slopes or toe areas and covered with NAF waste material from the outer perimeter of the existing North WRD.	Operation and Closure
Land and Soil	The East Koolpin WRD construction will commence with the placement of NAF material for the base and outer annulus.	Operation and Closure
Land and Soil	PAF material encountered at the East Koolpin will be placed onto of the NAF base, encapsulated within the centre of the WRD.	Operation and Closure
Land and Soil	No PAF material will be placed on outer perimeter, slopes, toe, surface, or base of the East Koolpin dump.	Operation and Closure

Section 5 Updated Commitments Register

Aspect	Primary Gold Commitments	Timeline
Land and Soil	Final landform of the East Koolpin WRD design will have a continuous 17° slope and a maximum height of 40 m in total from the initial surface.	Closure
Land and Soil	A total of 5.44 Mt of waste rock from Zamu pit will be placed on the east Koolpin WRD.	Closure
Soil	Sediment will be cleaned out of the sediment basin as required.	Operation
Land and Soil	The sediment basin at east Koolpin will remain post rehabilitation until the landform is stable.	Closure
Land and Soil	On completion of mining Zamu pit, the pit will be backfilled with waste material from mining of the remaining pits.	Closure
Land and Soil	The embankment of the TSF will be constructed in staged raises, with the upstream low permeability zone and any transitional material zones being constructed by a specialised earthworks contractor.	Operation
Soil	The downstream structural fill zones will be progressively constructed by the mining fleet as part of mining operations.	Operation
Soil	TSF construction will commence during dry season months sourcing material from within the TSF basin as well as pre-stripped areas of the main pit redevelopment.	Operation
Land, Soil and Water	Suitable (geochemically benign and structurally apt) mine waste material (waste rock and existing heap leach dump) will be used for the TSF construction.	Operation
Land, Soil and Water	Tailings will be discharged by sub-aerial deposition methods, using banks of spigots at regular intervals from the main embankments for supernatant pond location control.	Operation
Land and Soil	The active tailings beach will be rotated around the facility to maximise tailings density and control the supernatant pond.	Operation
Land and Soil	Later stages of operation will involve deposition to the head of the northern valley to push the supernatant pond further south towards the closure spillway location.	Operation
Water	Seepage will drain to a collection sump situated at the basins lowest point and then pumped to the process plant for re-use.	Operation
Water	A decant turret system will recycle water from the TSF supernatant pond for use in the process.	Operation
Land and Water	The TSF will be designed to contain a range of design storm and rainfall sequences events up to and greater than the required design criteria.	Operation
Land and Water	The TSF design criteria will be governed by the ANCOLD consequence category, to be determined during the subsequent design phase based on a TSF dam break assessment.	Pre-construction
Land, Soil and Water	If a storm event greater than the TSF design criteria occurs, rainfall and supernatant water which cannot be stored will discharge from the TSF in a controlled manner via an engineered spillway.	Operation
Soil and Water	The operational emergency spillway will be constructed as part of each embankment raise.	Construction
Land and Water	The tailings pipeline will be located on the upstream crest of the embankment, which will have a minimum cross fall to the tailing's beaches of 2%. Any leakage from the pipeline will flow towards the TSF.	Construction and Operation

Section 5 Updated Commitments Register

Aspect	Primary Gold Commitments	Timeline
Soil and Water	The facility is protected by a spillway so that in the unlikely event of an overflow, water will be discharged, and the embankment will not be overtopped.	Construction and Operation
Water	Between the plant site and TSF, the tailings pipeline, and water return lines will be contained within a bunded corridor.	Construction and Operation
Land and Soil	The TSF embankment will have a final downstream slope of 3H:1V with 5 m benches at 10 m intervals for erosion and drainage control and profile for re-vegetation.	Closure
Soil and Water	The TSF closure spillway will be excavated from this valley, running around the waste dump, and discharging into the open pit.	Closure
Ecology, Soil and Land	Rehabilitation of the tailings surface will commence upon termination of tailings deposition.	Closure
Ecology	Suitable vegetation covers for rehabilitation will be determined throughout operations.	Closure
Land	Annie Oakley pit will be completely backfilled.	Closure
Water	Fresh waste from the Main pit will be placed in the Annie Oakley pit base and covered with oxide waste overburden from the Main pit.	Closure
Soil and Ecology	An estimated 0.4 Mt of only oxide waste rock will be produced from the BHS Pit and either be used for beneficial mine closure purposes, such as use in rehabilitation (capping) of the decommissioned heap leach facility in the Project area.	Closure
Land and Soil	On completion of mining Zamu Pit, the pit will be backfilled with waste material from mining of the remaining pits.	Closure
Land and Soil	Waste rock from North Koolpin Pit will be backfilled into Zamu Pit.	Closure
Land and Soil	Waste rock from South Koolpin Pit will be backfilled into Zamu Pit.	Closure
Land and Soil	Waste rock from Taipan Pit will be backfilled into Zamu Pit.	Closure
Water	Dewatering of the pits will be undertaken through diesel powered in-pit sumps.	Pre-construction, Construction, Operation
Water	Dewatering will occur as required.	Pre-construction, Construction, Operation
Water	Once approval for operations is granted Rustlers Roost pit, Annie's Dam pit and Annie Oakley pit dewatering will be to the tailings dam where it will be pumped back and reused in the Process plant.	Operation
Water	Pit dewatering will be implemented at the start of mining (where water is present) and during mining using in-pit pumps.	Operation

Section 5 Updated Commitments Register

Aspect	Primary Gold Commitments	Timeline
Water	Dewatering will be implemented during mining as needed in response to direct precipitation events.	Operation
Water	Pumped water will be reused in the mining process circuit or discharged to the surface water catchments under approved permits.	Operation
Water and Soil	Tailings from the CIL circuit will be screened to recover activated carbon and then detoxification as required to maintain residual cyanide below 50 mg/L CN _{WAD} prior to being pumped to the TSF for disposal.	Operation
Water	Two process water ponds will be constructed to supply process water as either clean water (cyanide free) or process water (cyanide traces).	Operation
Water	The clean process water pond will have a capacity of 40,000 m ³ and will be lined.	Operation
Water	The process water pond will be lined and have a capacity of 20,000 m ³ .	Operation
Water	A camp water supply bore will be drilled and constructed within proximity to the accommodation village.	Operation
Water	The bore at the camp will supply fresh water and will be treated by reverse osmosis (RO) water treatment plant.	Operation
Water	Raw water supply will be sourced from surface water catchment sources including Annie's Dam, existing main pit, raw water, process water, turkeys' nest and TSF decant pond catchments, and stormwater runoff captured in the processing facility runoff pond.	Operation
Water	Water management systems at Rustlers Roost will comprise of an existing pit lake and dam, legacy heap leach ponds, raw water, process water, stormwater ponds and TSF decant water ponds.	Operation
Water	Water from the tailings dam will be recycled back to the mill using a decant turret system to extract the surface water without tailings and pump the water back to the process plant via tailings return pipeline.	Operation
Water	Active management of pit water during mining operations will involve the pumping of water from one pit into another in accordance with mine scheduling.	Operation
Water	Water will continue to be pumped from the heap leach stormwater pond into BHS pit to prevent the stormwater pond overflowing until the heap leach ponds are rehabilitated.	Operation
Soil	Non PAF oxide waste will be used to build the ROM.	Construction
Land and Soil	The ROM will be construct to a nominal height of 11 m and approximately 250 m by 360 m.	Construction
Land and Soil	The ROM will be battered down to 17° at the end of the mine life and topsoil spread over surface.	Construction
Soil and People	Chemical stores will include storage of the following chemical: Cyanide, Hydrochloric acid (HCL), Sodium Hydroxide (NaOH), Copper Sulphate CuSO ₄ , Hydrogen Peroxide (H ₂ O ₂), Blanking agent, Quicklime, Flocculent.	Construction, Operation
People	A small compound will be constructed to store explosives materials and components for blasting.	Operation
People	The magazines will hold packaged explosives and detonators.	Operation

Section 5 Updated Commitments Register

Aspect	Primary Gold Commitments	Timeline
People	The magazine will be placed just south of the existing heap leach pad.	Construction, Operation
People	The explosives compound will be approximately 27 m (w) x 86 m (l), within which there will be an explosives magazine, a detonator magazine, a 65,000 kg bulk emulsion tank and two cubed freight containers for storage of ammonium nitrate.	Operation
People	The compound will be constructed to comply with Australian Standard AS2187 Explosives – Storage, transport, and use.	Operation
Land and Waste	The landfill will be constructed over 4 Ha to a depth of 5 metres and will be utilised throughout LOM.	Construction, Operation
Land and Waste	The landfill will be designed and constructed in accordance with the NT EPA Guidelines for the Siting, Design and Management of Solid Waste Disposal Sites in the Northern Territory.	Construction
People	The area for the Bulk Fuel Storage Facility will be dirt bunded.	Construction, Operation
People	The hazardous materials storage will be located within the designated processing facility area.	Construction, Operation
People	The haul road alignment from Q29 to Rustlers Roost will follow the existing access track alignment which includes three drainage features.	Construction, Operation
People	The old bridge and crossing near Rustlers Roost will be upgraded to the appropriate design criteria to support ore haul trucks and other HV's.	Construction, Operation
People	On tenement, tracks will remain as light vehicle (LV) tracks created as part of operations.	Construction, Operation
People	Off tenement, the existing access roads located between Quest 29 and Rustlers Roost (Haul Road alignment) and the accommodation camp area and Arnhem highway which will be used for LV access.	Construction, Operation
People	The Legal Obligations Register will be regularly reviewed and updated to ensure that all closure and rehabilitation requirements are identified, assessed for ongoing applicability, and completed within appropriate timeframes.	Pre-construction, Construction, Operation, Closure
People	Stakeholder identification and analysis will continue throughout the life of the Project to ensure engagement continues to achieve the key consultation objectives of the Project, including those concerned with rehabilitation, closure, and relinquishment.	Pre-construction, Construction, Operation, Closure
People	The need to utilise other social media tools will be reviewed and assessed as the Project progresses.	Pre-construction, Construction, Operation, Closure

Section 5 Updated Commitments Register

Aspect	Primary Gold Commitments	Timeline
People	Following the initial stakeholder feedback of the MCP, confirmation will be provided on the proposed postmining land use, closure objectives and completion criteria.	Pre-construction
People	A record of all stakeholder engagement throughout the Projects LOM will be maintained in a Stakeholder Engagement Register (SER).	Pre-construction, Construction, Operation, Closure
People	The SEP will be regularly reviewed which will form part of the Projects Environmental Management System.	Pre-construction, Construction, Operation, Closure
People	PGO will ensure summary of this engagement in publicly available documentation and will also nominate a company representative to oversee the implementation, regular review, and continuous improvement of the SEP.	Pre-construction, Construction, Operation, Closure
People	The SER will document all engagement, communications and action feedback, meetings and workshop minutes, stakeholder discussions and comments, so that PGO can accurately monitor and report on potential issues and risks and plan for further consultation.	Pre-construction, Construction, Operation, Closure
People	Engagement and communication with stakeholders undertaken in confidence and will be identified as such in the SER.	Pre-construction, Construction, Operation, Closure
Land, soil and Ecology	Fencing will be placed around rehabilitated features to prevent cattle access until the sites have been revegetated, established, and been demonstrated through monitoring that the landforms are stable.	Closure
Water	Further studies will be completed to determine pit water quality suitable for stock drinking.	Closure
People	Formal agreements with post-mining land users will be established confirming that they assume on-going responsibility for any remaining infrastructure.	Closure
People	Closure objectives and closure criteria will be refined following ongoing stakeholder consultation throughout LOM and as more information is made available regarding the Project and its environment.	Pre-construction, Construction, Operation, Closure
People	PGO will ensure adequate financial provision is in place for all closure liabilities which maximise benefits and minimise costs.	Closure
People	PGO will relinquish the site with no outstanding legal or social liability.	Closure
People	PGO will formalised ownership, responsibility, and ongoing management agreements at closure for the agreed post-mining land use.	Closure
Land	PGO will ensure all Project Domains are decommissioned and rehabilitated in an ecologically sustainable manner.	Closure

Section 5 Updated Commitments Register

Aspect	Primary Gold Commitments	Timeline
Soil and Water	PGO will ensure that contaminated soil/waters are treated, remediated and or disposed of appropriately throughout LOM and in accordance with applicable legislation and guidelines.	Pre-construction, Construction, Operation, Closure
Land, Soil and Water	PGO will ensure landforms are geotechnically safe, stable, non-polluting, erosion resistant functioning landform that does not present an unacceptable risk to environmental values and/or human receptors.	Closure
Ecology and People	PGO will rehabilitate disturbed areas to support a self-sustaining vegetation and habitats similar to surrounding areas and the agreed post-mining land use.	Closure
Ecology	PGO will protect fauna through LOM and leave the site free of hazards after closure.	Construction, Operation, Closure
Water	PGO will ensure that surface drainage patterns are reinstated or managed where practicable to be consistent with the regional drainage function.	Closure
Water and People	PGO will ensure that post-mining surface water quality does not adversely impact the surrounding catchments beneficial uses and land uses.	Closure
Water and People	PGO will ensure that groundwater hydrological processes and water quality are not adversely affected resulting in adverse impact to regional groundwater uses.	Closure
Water and People	PGO will ensure that post-mining groundwater quality does not adversely impact the surrounding groundwater area beneficial uses.	Closure
People	The proposed completion criteria in the MCP will continue to be refined during future revisions of the MCP in consultation with stakeholders and will consider the ongoing performance and the findings of any technical assessments or audits.	Pre-construction, Construction, Operation, Closure
Water	To mitigate overflow of the leach ponds a pump is installed for the duration of the wet season which will pump into the BHS Pit if required to prevent the ponds from overtopping.	Operation
Water	The groundwater model will be reviewed and refined as field data and further information becomes available.	ALL
Water and Soil	Perimeter drains, bunds, and sediment basins constructed at the down-gradient base of each of the surface WRDs (toe drain) to manage sediment and monitor surface water quality runoff and seepage.	Construction, Operation
Water	Check dams within diversion channels to provide velocity control where needed based on engineering estimates of maximum stormwater velocity.	Construction, Operation
Water and Soil	Sediment will be cleaned out of the sediment basins as required and in anticipation of the wet season to provide greater runoff capacity.	Construction, Operation

Section 5 Updated Commitments Register

Aspect	Primary Gold Commitments	Timeline
Water	Water volume will be measured within basins to manage the site water balance and maintain capacity needed for peak water periods.	Construction, Operation
Water, Soil and Land	The sediment basins will remain post rehabilitation until the landform is stable.	Construction, Operation
Water	To minimise contact of clean water with WRDs, minimise AMD generation volume, and reduce clean water inflows into open pits and ponds, clean water run-on diversions will be installed to route clean unimpacted water away from the disturbed mine area and directly into area catchments.	Construction, Operation
Water	Water will be managed in accordance with the WMP and the water balance provided in the Water Balance and Groundwater Modelling Report.	Construction, Operation
Water	Water captured within stormwater ponds will be sampled and assessed through the established network of surface water monitoring sites in accordance with the WMP.	Construction, Operation
Water	The water balance results that predict groundwater inflows to the various pits will be used to estimate the volume of AMD produced.	Construction, Operation
Soil	A detailed characterisation of lithologies present will be carried out to assess the acid generation potential and distribution of metals such as lead, zinc, cadmium, antimony, nickel and cobalt and metalloids such as arsenic and molybdenum.	Pre-construction, Construction
Soil	Further assessment of the project will include more sampling with greater descriptions of the rock type, weathering, and mineralogy.	Pre-construction, Construction
Land and Soil	A single TSF will be constructed to store tailings from the mine processing circuit and will operate continuously producing 4 Mt/year of tailings for 12 years (48 Mt).	Operation
Land and Soil	PGO have committed to determination of physical stability of overburden waste material and its suitability for construction.	Pre-construction, Construction, Operation, Closure
Soil	PGO have committed to determination of material volume and geochemistry requirements for rehabilitation and sources of material (structural, physical, and chemical and microbiological properties and suitable minimum requirements for plant root zone development).	Pre-construction, Construction, Operation, Closure
Ecology and Soil	PGO have committed to conduct ongoing rehabilitation trials and investigations throughout operations and subsequent performance monitoring to inform closure design.	Pre-construction, Construction, Operation, Closure
Land and Soil	PGO have committed to confirm capping and cover thickness and material suitability as capping and cover (growth medium) for WRD rehabilitation. And the optimum land form profile and cover design for maximum stability and vegetation establishment success.	Pre-construction, Construction, Operation, Closure

Section 5 Updated Commitments Register

Aspect	Primary Gold Commitments	Timeline
Soil and Ecology	PGO have committed to develop specific, quantitative performance indicators for the measurements of success that are based on research and monitoring outcomes.	Pre-construction, Construction, Operation, Closure
Soil	Sampling will be completed during operation to increase knowledge of in-situ CSL material for the TSF base. Should there be insufficient in-situ material onsite to establish a 200 mm CSL across the entire TSF base, additional material will be imported from an established external borrow (for a compacted thickness of 300 mm).	Pre-construction, Construction, Operation, Closure
Water	PGO have committed to calibration of pit groundwater seepage by monitoring pit dewatering during early stages of operations to increase certainty of hydraulic conductivity of the regional aquifer and plan for site water balance and closure.	Pre-construction, Construction, Operation, Closure
Soil	PGO have committed to investigate options for PAF waste rock placement in pit and whether liming is required prior to backfilling.	Pre-construction, Construction, Operation, Closure
Soil	TSF cover and capping quantities to be confirmed in the subsequent design phase.	Pre-construction
Land, Soil and Ecology	All mining related landforms and disturbances must be rehabilitated, in a progressive manner where practicable, to ensure they are safe, stable, non-polluting, integrated with the surrounding landscape and support self-sustaining, functional ecosystems or alternative agreed outcome.	Closure
Land and Soil	All excavations will be backfilled and/or closed to ensure they are stable and safe.	Closure
Land and Soil	Placement of waste material must be such that the final footprint after rehabilitation will not be impacted upon by pit wall subsidence or be within the zone of pit instability.	Closure
Land and Soil	All waste materials, rubbish, plastic sample bags, abandoned equipment and temporary buildings to be removed from the mining prior to or at the termination of the operation.	Closure
Water	Any watercourses that are disturbed by mining operations will be restored, as far as practicable, to the pre- disturbance conditions.	Closure
Soil and Waste	All chemicals and hydrocarbons will be removed from site prior to or at the termination of the operation.	Closure

Section 5 Updated Commitments Register

Aspect	Primary Gold Commitments	Timeline
People, Soil, Ecology, Water	Under a suspension of operations, the care and maintenance plan would include , but not limited to, the following: ▪ PGO Project area is safe; ▪ Notify key stakeholders (DITT, DEPWS, Pastoral Lease holders); ▪ Install signage and security functions; ▪ Maintain the structure and function of all sediment and water management controls; ▪ Stabilize all landforms particularly the WRD's and TSF; ▪ Install additional bunding and/or fencing to prevent public access to site and TSF, Pits/ponds; ▪ Remove all ore stockpiles from ROM pad; ▪ All infrastructure will be shut down and made secure; and ▪ A contingency of staff who are experienced and understand the Project and sites functions and management, process plant maintenance (electrical, water management) and environmental and safety.	Closure
Water, Soil and Ecology	Once final rehabilitation and closure works have been completed, a post-closure monitoring programme will commence.	Closure
People, Soil, Ecology, Water	Closure and post-closure monitoring will include: ▪ Rehabilitation compliance audit: Confirm that rehabilitated areas are in line with the legal obligations and closure designs; ▪ Landform Construction Audit: Confirm the WRD's, TSF , open cut pits and backfilled pits have been rehabilitated in accordance with approved design parameters and identify if any remediation as required; ▪ Geotechnical Audit: – Geotechnical stability: Confirm that earthworks have been completed as per design, and there is no significant subsidence or slumping – Physical stability: Confirm that no significant erosion is occurring and no undermining of material by wind or water. ▪ Water quality/sediment and aquatic ecology: Confirm that water quality and sediments are consistent with ANZG (2018) values/SSTV's, aquatic ecology – macro invertebrate and fish health; ▪ Rehabilitation (EFA): Confirm that rehabilitated areas are likely to become comparable to similar areas that have not been disturbed by mining; ▪ Landforms management and remediation programmes/inspections soil, and landforms): confirm that landforms and soils are structurally and geotechnical safe, stable, non-polluting erosion(resistant landforms; ▪ Landforms management programmes (weed/pests/grazing and fire): confirm key threats to rehabilitation success and resilience is managed; and ▪ Public safety/security: Confirm that vehicle access to mine landforms has been effectively prevented.	Closure
Ecology	A Rehabilitation/Compliance Audit will be conducted annually.	Closure

Section 5 Updated Commitments Register

Aspect	Primary Gold Commitments	Timeline
Soil, Ecology and Water	All areas of disturbance will be inspected, and the following will be recorded: ▪ Description and total area of each disturbance; ▪ Review of the status and applicability of legal obligations/commitments; ▪ Total area rehabilitated and a description of rehabilitation progress; ▪ Remaining rehabilitation/closure tasks required; and ▪ Any required remediation works.	Closure
People and Ecology	Rehabilitation/Compliance Audits will continue until Completion Criteria are met including: ▪ All requirements in the Legal Obligations Register are 100% completed; ▪ Closure Outcomes and Completion Criteria and post-mining land use are agreed with stakeholders at least 6 months prior to commencing planned closure; ▪ No mine infrastructure remaining on site (unless formally agreed) with all disturbed areas scarified, seeded, and natural drainage patterns reinstated; ▪ Post-mining land use achieved in accordance with the MCP Closure Outcomes and Completion Criteria and to the written satisfaction of the post-mining landholder and DITT; ▪ All waste removed and disposed of post- rehabilitation in accordance with legal obligations; ▪ No evidence of significant erosion, settling or water ponding in rehabilitation areas for ten consecutive post closure monitoring periods; and ▪ No visible increase in sediment or salinity in the drainage channel downstream of the Rustlers Roost site and Q29 for ten consecutive post closure monitoring periods.	Closure
People and Ecology	Details of any non-compliance or areas requiring remedial work identified during the Audit will be reported and appropriate management measures identified and implemented.	Closure
People and Ecology	A final Rehabilitation/Compliance Audit will be prepared and submitted to the DITT as part of the Application for a Certificate of Closure.	Closure
Land and People	A Landform Construction Audit will be commissioned post closure.	Closure
Land and People	A Geotechnical Audit will be commissioned post closure at the following domains: ▪ Open Cut Pits (Rustlers Roost main pit, North Koolpin Pit, South Koolpin Pit, Taipan Pit); ▪ Tailings Storage Facility (TSF); and ▪ Waste rock Dumps (North WRD, South WRD, East Koolpin WRD). Findings from the Audit will be incorporated into the Rehabilitation/Compliance Audit. If required, a final Geotechnical Audit will be conducted at the end of closure to confirm that remediation work has effectively been completed.	Closure

Section 5 Updated Commitments Register

Aspect	Primary Gold Commitments	Timeline
Land and Ecology	Landscape/Vegetation Monitoring using Ecosystem Function Analysis (EFA) will be conducted on an annual/bi-annual basis.	Closure
Land and Ecology	Landscape/Vegetation Monitoring will be established at permanent sites on the: - Constructed landforms including WRD's, and TSF, open cut pits perimeter (outside abandonment bund); - Existing landforms cleared for mining including ROM pad, haul road, and general areas (mining camp, process plant, workshops, and auxiliary areas) post infrastructure removal; and - Analogue site(s) in the target ecosystems.	Closure
Land and Ecology	Monitoring will be conducted in accordance with methods developed by Tongway and Hindley (2003) to measure landscape stability and ecosystem function.	Closure
Land and Ecology	Should monitoring indicate that rehabilitation is not trending towards applicable Completion Criteria (for ten consecutive post closure monitoring periods), a Rehabilitation Assessment will be undertaken prior to the next monitoring period and will determine any required remedial work.	Closure
People and Ecology	Any identified action items and planned EFA management measures will be reported to the DITT in the MMP.	Closure
Water	Surface and groundwater monitoring will be conducted in accordance with the locations, schedule, and parameters in the approved MMP.	Closure
Water	Water monitoring will continue until Completion Criteria are met including: - Passively discharged surface water will meet the applicable 95% species protection GVs, SSTV and SWGs for ten consecutive years post closure (outside of seasonal or natural fluctuations); and - Groundwater and the pit lake will meet the applicable 80% ecosystem protection GVs, SSTV and SWGs for ten consecutive years post closure (outside of seasonal or natural fluctuations).	Closure
Water	Water monitoring results will be compared against the applicable Completion Criteria and reported annually in the MMP.	Closure
Water	Should monitoring identify that water quality is not trending towards the applicable Completion Criteria, a Hydrological Assessment will be undertaken. The findings of the Hydrological Assessment will be reported in the MMP and next MCP.	Closure
Soil	Prior to planned closure, a PSI will be undertaken to identify and investigate any residual potentially contaminated sites and determine whether further investigation or remediation is required in accordance with the Northern Territory Contaminated Land Guideline.	Closure
Soil	Contaminated Site Assessments will continue until Completion Criteria are met including: All confirmed contaminated sites are removed, remediated, or encapsulated and do not pose a long-term risk.	Closure
Soil	Results of the Contaminated Sites Assessment will be reported to the DITT in the Application for a Certificate of Closure to obtain approval for the final closure of the Project.	Closure

Section 5 Updated Commitments Register

Aspect	Primary Gold Commitments	Timeline
People and Ecology	PGO is committed to provisioning for closure to ensure adequate funds are available to rehabilitate the site, conduct post closure monitoring and fund any required remediation activities.	Closure
Ecology	The costing methodology will be based on the total area of disturbance for the Project.	Closure
Land, Soil, Ecology and People	The costing will consider the estimated volumes of material requiring earthworks, closure materials required (e.g., seeds for revegetation, fencing, drainage control, etc.), hours of equipment usage and man hours required to complete closure activities.	Closure
People and Ecology	The financial provision estimate for closure will be reviewed annually along using the authorized MMP Security Calculation.	Closure
Land and Ecology	The first calculation will be based on current information including the conceptual closure designs and modelling information presented in this MCP.	Closure
Land and Ecology	As new information/knowledge gaps/stakeholder feedback and new technical information is filled during operations and/or when there are significant changes to the MCP i.e., revised completion criteria, closure costing methodology will be updated.	Closure
Land, Soil and Ecology	PGO will capture the following information during both the operational phase and post-mining phase: - Results of any rehabilitation monitoring or trials; - The digital mapping of the area rehabilitated and status of rehabilitation; - Record keeping requirements for the mining and placement of AMD materials mined or processed by the Project as per the AMD Management Plan; - A survey of the open pits will be conducted to provide an accurate record of the mining extents for use by future operators with a copy to be provided to DITT; and - TSF survey information, construction details, cover material, design, monitoring instrumentation.	Operation, Closure
Air	Limit high dust generating activities (e.g., removal of topsoil/overburden and blasting) to periods of favourable weather conditions.	Construction, Operation
Air	Dampen down (approx. rate of >2 litres/m ² /hour) work areas, stockpiles, access roads and other hardstand areas by water spraying when visual surveillance indicates excessive dust generation.	Construction, Operation
Air	Restrict vehicle movements to designated routes to the extent practicable.	Construction, Operation
Air	Enforce speed limits on internal roads.	Construction, Operation
Air	Maintain road surfaces in good condition.	Construction, Operation

Section 5 Updated Commitments Register

Aspect	Primary Gold Commitments	Timeline
Air	Prevent and clean up any raw material / product spillages or dust accumulation on driveways or sealed roads.	Operation
Air	Use dust extraction systems on drill rigs where possible, or use fabric filters.	Construction, Operation
Air	The Processing Plant will use water sprays and/or dust collection systems as identified.	Operation
Air	The Processing Plant will use enclosed conveyors.	Operation
Air	The Processing Plant will have equipment maintained in accordance with the original equipment manufacturers' specifications.	Operation
Air	The Processing Plant will dampen materials prior to transport/handling.	Operation
Air	Limit the height of any stockpiles, where practicable.	Construction, Operation
Air	Regularly water stockpiles to keep down dust emissions.	Construction, Operation
Air	Apply additional water sprays to stockpiles during high wind conditions.	Construction, Operation
Air	Ensure that incoming and outgoing truckloads of materials are covered during transport.	Construction, Operation
Land and Soil	When the waste is excavated, the waste material will be mined in 2.5 m to 3 m thick mining levels (benches), which will average out the total sulphur percentage in each mining bench.	Operation
Land and Soil	During operations of Rustlers Roost and Quest29, waste rock geochemistry testing and Acid base accounting will continue including sulphide sulphur, Non-acid Forming (NAF) and metals content in waste for mining planning, mapping, and marking out on ground and for closure planning.	Operation
Land and Soil	Sub horizontal bands of sulphur bearing waste will be mixed by blasting, then further mixed and averaged out by mining in 2.5 m to 3 m thick benches.	Operation
Land and Soil	As mining is progressed, continuous total sulphur sampling will have to be conducted to regularly update the sulphur model.	Operation
Land and Soil	The fresh sulphide material from pits BHS and Koolpin will be backfilled into the Zamu pit.	Operation
Land and Soil	Given the limited oxidation, at a minimum we would recommend that for materials where acidic conditions are predicted, but have not yet eventuated, these columns should be continued, including: • Complete post kinetic static testing on the contents of terminated columns (4 out of 10 columns) to validate the sulfur depletion; • Continue kinetic leach program for 6 out of the 10 columns; and • Report findings of 12 month kinetic program.	Operation

Section 5 Updated Commitments Register

Aspect	Primary Gold Commitments	Timeline
Air	The landfill will be closed appropriately at the end of the project (10 years) to minimise methane emissions.	Closure
Air	PGO have set GHG emission reduction targets of the following: • 5% by year 5 (2027); • 8% by year 8 (2030); and • 10% by year 10.	Operation
Air	The long-term target for this project is to reduce the Scope 1 and 2 GHG emissions intensity by 10% compared to a Year 1 (2023) baseline.	Operation
Air	The interim targets (5-year and 8-year) will focus on minimising Scope 1 emissions from the two largest sources (i.e., the power plant and the onsite landfill), as well as, reducing and maintaining Scope 2 emissions to net zero.	Operation
Air	As part of this project and as construction of the landfill commences, more accurate calculations surrounding the release of methane to the atmosphere from the landfill will be performed.	Operation
Air	Scope 2 emissions resulting from the purchased electricity for the accommodation camp will be brought to net zero within the first five years of operation of the mine.	Operation
Air	PGO is committed to revise the GHGAP on a 2-year basis as a minimum, or where additional infrastructure with potential to significantly alter GHG emissions is incorporated into the Project activities, to ensure the management actions outlined within this Plan continue to support delivery of the interim emission reduction targets.	Operation
Air	Where the 2-year review cycle of the GHGAP or the additional infrastructure review cycle is triggered, the updated GHGAP will be submitted to the NT EPA for approval.	Operation
Air	As part of the review process of the GHGAP, PGO will prepare a summary plan and progress statement which will be made publicly available.	Operation
Air	This GHGAP summary plan will provide an overview of PGO's interim targets achievements and also the Project's successful contributions to meet NTG zero emission targets.	Operation
Air	The summary will include at least: • A graphical comparison of emission reduction commitments in the GHGAP with 'actual' emissions for compliance periods; • Project performance against benchmarking for comparable facilities emissions intensity; • A summary of emission reduction measures undertaken by the proponent; and • A clear statement as to whether interim targets have been achieved.	Operation
Air	Once approved, this GHGAP will be made publicly available on PGO's website.	Construction and Operation

Section 5 Updated Commitments Register

Aspect	Primary Gold Commitments	Timeline
Air	PGO is committed to undertake stakeholder consultation throughout the Project life and has promoted and encouraged stakeholder inputs and feedback.	Construction and Operation
Air	Any changes in relation to consultation processes (associated with GHG emissions) will be captured in subsequent revisions of this GHGAP.	Construction and Operation
Soil, Water, People	Installation of the process water storage facility within the footprint of the TSF to contain any potential for uncontrolled AMD releases.	Construction Operation
Soil, People	Temporary and/or final capping of the WRDs to reduce ongoing water infiltration and seepage.	Operation Closure
Water, People	Development of Monitoring Plan / Operational Manual which includes weekly inspections to check sufficient freeboard and structural integrity.	Construction Operation
Soil, Water, People	Capping and revegetating materials that generate AMD Implementation of AMDMP and WMP.	Operation Closure
Water	Implement clean water diversions in accordance with the ESCP.	Construction Operation
Soil, Land	ESCP to prevent mobilisation.	Construction Operation
Water, People	Hydrological studies to ensure WRDs are outside flood affected areas.	Pre-construction
Soil, People	Maximisation of placement of waste rock within pits.	Operation
Soil, Water, People	Upgrading of site drainage measures.	Construction Operation
Soil, Water, People	Close out structures to be water shedding to reduce water build up across site.	Construction Operation
Soil, Water, People	Reduce and minimise contact water contact with AMD forming material.	Construction Operation Closure
Soil, Water, People	The geochemical block model will continue to be updated during operation.	Construction Operation

Section 5 Updated Commitments Register

Aspect	Primary Gold Commitments	Timeline
Soil, Water, People	As part of the water balance maintenance and monitoring, regular (weekly) surveys of the tailings deposition (extent and volume) will be documented to assess the evenness of the deposition and provide estimate of stored water within the tailings pores.	Construction
Soil, Water, People	Tailings and waste rock (including ore) will be monitored to validate the existing geochemical classifications and to provide an historic inventory for site archives and legacy management.	Construction Operation
Soil, Land	Sources and use of construction materials will be monitored.	Construction
Water	PGO will utilise an adaptive management approach to meet the SSTVs to be developed for the site.	Construction Operation
Soil, Water, People	The AMD monitoring program is to be reviewed annually and modified to assure continued appropriateness.	Construction Operation
Soil, Water	Reviews of the AMD will consider the frequency and duration of monitoring and evaluate the ongoing need for individual programs.	Construction Operation
ALL	Records of all AMD monitoring activities will be retained for the life of the Project to facilitate auditing.	Construction Operation Closure
Soil, Water	The Site Manager or delegate will undertake weekly inspections of waste rock/ore management and water management structures to ensure their integrity.	Construction Operation
Soil, Water	The Site Manager or delegate will also inspect of waste rock/ore management and water management structures to ensure that no PAF material has been won from the engineered landforms for use in construction.	Construction Operation
Soil, Water	Records will be kept and photographic evidence of any management inconsistencies and structural integrity failing captured of waste rock/ore management and water management structures, with the Mine Manager notified for action.	Construction Operation
Soil, Water	On-site visual monitoring of waste rock/ore management and water management structures will be undertaken down-catchment of the toe of the WRDs, TSF and ROM Pad/Process area, in addition to downstream of the WRDs, ROM pad and TSF runoff dams.	Construction Operation
Soil, Water	Staff will be alert to the formation of secondary salts on waste rock surfaces and in drainage lines, particularly in dry season.	Construction Operation
Soil, Water	The sources of the salts will be investigated to assist in determining future amelioration strategies for the WRDs and site remediation for the ROM pad and TSFs.	Construction Operation

Section 5 Updated Commitments Register

Aspect	Primary Gold Commitments	Timeline
Soil, Water	The results of the visual inspections of waste rock/ore management and water management structures will be documented and communicated to the Site Manager.	Construction Operation
Soil, Water	Material removed from drainage lines or sumps that are cleaned at the end of dry season will be managed as PAF material and disposed accordingly with other PAF materials.	Construction Operation
Soil, Water	The supervising geologist will undertake visual inspection of development material (ore/waste) and construction material collected for sampling and note the presence of any visual sulfidic material (particularly pyrite and/or arsenopyrite).	Construction Operation
Soil, Water	This inspection of development material (ore/waste) and construction material will be documented with the laboratory results cross referenced to the visual sample for data quality control and inventory, and appropriate emplacement of the mineral waste material.	Construction Operation
Soil, Water	Following visual inspection of waste rock/ore management and water management structures, a subset of the development waste and tailings samples will be forwarded to a NATA accredited laboratory to be analysed for Acid base accounting; and Metals.	Construction Operation
Soil, Water	Waste rock and tailings will be sampled and analysed approximately every month.	Construction Operation
Soil, Water	The sampling frequency of waste rock and tailings will be reviewed upon the mine schedule and amended as required.	Construction Operation
Water, People	Any deterioration in surface water quality will be investigated to determine the source.	Construction Operation
Soil, Water, People	Should the geochemical, surface water and groundwater monitoring and surveillance indicate deteriorating conditions in runoff and leachate (e.g. decreasing alkalinity and pH) contingency measures will be implemented.	Construction Operation
Soil, Water, People	The AMDMP will be continually updated as additional data becomes available to inform the most appropriate contingency measures. This will include establishing trigger actions that are consistent with the Project WMP and define the actions to be taken when conditions change from normality and have the potential to trigger an event.	Construction Operation
Soil, Land	All senior geology, mining, processing and environmental personnel will understand AMD through a site induction.	Construction Operation
Soil, Land	All operational staff entering site, including contractors, will be made aware of the AMDMP and the WMP through a site induction, which would include PAF material management.	Construction Operation
Soil, Water, People	As mining progresses the existing Sulfur block model will be continuously updated to identify actual S% content of waste material and inform the handling and placement in accordance with the AMDMP.	Operation

Section 5 Updated Commitments Register

Aspect	Primary Gold Commitments	Timeline
Soil	The outer extents of the TSF, Annie Oakley pit and northern WRD will be limited to a 50 m setback from ML boundary.	Construction Operations
Ecology	A pre-clearance survey should be conducted to determine whether there is breeding activity and, if so, the area should be avoided until such time that no breeding activity is evident.	Construction
Ecology	A trapping program should be conducted immediately prior to any vegetation clearance activities to capture and relocate affected individuals.	Construction
Ecology	Spotting and catching of Black-footed Tree-rats and Northern Brush-tailed Possums (and individuals of any fauna species) should be conducted during vegetation clearing activities.	Construction
Ecology	Conduct a search for nests of Red Goshawk in the breeding season immediately prior to proposed vegetation clearing. Focus areas should include the tall <i>Eucalyptus miniata</i> or <i>E. tetradonta</i> forests in the northern sections of the Rustlers Roost area.	Construction
Land, Water, Ecology and People	Implementation of detailed mine closure plan and adherence to commitments.	Pre-construction
Land and Water	Development and implementation of a geochemical block model.	Pre-construction
Ecology	Additional monitoring of Terrestrial GDEs will provide confirmation that aquatic GDEs do not exist in the area of predicted drawdown.	Operation
Ecology	PGO will develop a Groundwater Dependent Ecosystem (GDE) monitoring program.	Operation
Ecology	Data collected from the GDE monitoring program will be used to monitor the degree of hydro(geo)logical change and influencing factors (informing the likelihood component of the risk assessment).	Operation
Ecology	Data collected from the GDE monitoring program will be used to monitor the condition of the GDEs and their sensitivity to changes and influencing factors (informing the consequence component of the risk assessment).	Operation

Section 5 Updated Commitments Register

Aspect	Primary Gold Commitments	Timeline
Ecology	The data collected from the GDE monitoring program will be used to address a series of monitoring objectives which are aligned with the risk assessment methodology, as detailed below: • Monitor the degree of hydro(geo)logical change and influencing factors, including background influences (which informs the likelihood element of the risk assessment), by: ○ Monitoring groundwater levels in the alluvial aquifer in areas of probable drawdown and in areas outside of the predicted zone of influence; ○ Monitoring groundwater levels in regional aquifers to monitor the predicted drawdown at depth, its propagation towards the surface and the relationship / hydraulic gradient to groundwater levels within the alluvial aquifer supporting the GDEs; ○ Monitoring streamflow; ○ Monitoring soil moisture levels using leaf water potentials as a surrogate; and • Monitoring climatic conditions (rainfall, temperature).	Operation
Ecology	The data collected from the GDE monitoring program will be used to address a series of monitoring objectives which are aligned with the risk assessment methodology, as detailed below: • Monitoring the condition of GDEs, their sensitivity to hydro(geo)logical change, and other influencing factors including background influences (which informs the consequence element of the risk assessment), by: ○ Monitoring the condition of GDEs by: ▪ Leaf water potential monitoring; to identify likely depth of water use by the vegetation, this can be related to the existing depth of the water table at each site. ▪ Remote sensing; Using high resolution temporal data develop a time series of NDVI response to climate to observe any trends that may be related to changes in groundwater levels. ▪ Vegetation surveys; to assess the condition of the vegetation and assess any trends against changes in groundwater levels. • Monitoring other threats to GDEs (e.g. weeds and pests, grazing pressure, soil erosion, storms, fire) by vegetation surveys.	Operation
Water	During the wet season the storages are emptied so that there is maximum storage capacity available at the beginning of each dry season.	Operation

Section 5 Updated Commitments Register

Aspect	Primary Gold Commitments	Timeline
Water, Land	PGO will monitor PAF through oxygen consumption tests on PAF rock to assess the following: • Annual rate of acidity generation (per kg, per m² and wt% FeS₂ – depending on material); • The reactive lifetime of the material; • Timing and magnitude of peak acidity; • Rate of ANC consumption; and • ‘Lag time’ or onset to acid conditions.	Construction, Operation
Water, Land	PGO will consider reactive transport modelling for cobalt, copper and nickel in pit water at year 30 post closure to provide additional level of redundancy in terms of understanding fate and transport of these CPEC to down hydraulic gradient receptors assuming predication are not as conservative as believed to be.	Closure
Water	Water (surface water and groundwater) will be monitored.	Construction, Operation
Soil, Water	Records will be maintained in accordance with PGO corporate policies and procedures, with all records maintained into perpetuity to inform future risk assessment.	Pre-construction, Construction, Operation, Closure
Water	All bores not required post-closure decommissioned as per the Minimum Construction Requirements of Water Bores in Australia.	Closure
Soil, Water	Kinetic column testing/monitoring should continue at Q29 columns where acidic conditions are predicted.	Construction, Operation
Soil, Water	Kinetic column testing/monitoring should continue at Rustlers Roost column 1.	Construction, Operation

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Appendix A - Air Quality Report

Appendix B - Construction Material

Appendix C - Ecological Assessment Memorandum

Appendix D - Greenhouse Gas Abatement Plan

Appendix E - Hydrology Analysis

Appendix F - Material Characterisation

Appendix G - TSF Design Documentation

Appendix H - Acid Mine Drainage Management Plan

Appendix I - Draft Mine Closure Plan

Appendix J - Waste Rock Dump Design

Appendix K - Risk Assessment Register

Appendix L - Commitment Register

Appendix M - Aquatic Ecology Memorandum

Appendix N - Post-Mining Water Quality Model

Appendix O - Updated Groundwater Modelling Report

Appendix P - Groundwater Dependent Ecosystem Assessment

Appendix Q - Water Management Plan

Appendix R - Water Quality Improvement Plan