CLERMONT
OPEN CUT

GLENCORE

Rehabilitation Management Plan

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Acronyms and Abbreviations

Acronym	Meaning
ARD	Acid rock drainage, also known and Acid and Metalliferous Drainage (AMD)
AHD	Australian Height Datum
ARI	Average recurrence interval
ARCP	Annual Rehabilitation and Closure Plan
CHPP	Coal Handling Preparation Plant
CHV	Cement Hill Void
CCO	Clermont Coal Operations that includes the Clermont Coal Operations pit, the CHV, OLC and the TLO
DAWE	Queensland Department of Agriculture, Water and the Environment
DES	Queensland Department of Environment and Science
DOR	Queensland Department of Resources
EA	Environmental Authority (EA EPML00634113)
EC	Electrical conductivity
E&C	Environment and Community Department at CCO
EIS	Environmental Impact Statement
EPBC	Environment Protection and Biodiversity Conservation Act 1999 (Cwlth)
Framework spp.	Plant species identified as 'Framework spp.' within CCO's Rehabilitation Calculator (used to develop Rehabilitation Report Card in Accordance with 11.16 Development of the Annual Rehabilitation Report Card Manual (GCAA-625378177-11398))
GCAA	Glencore Coal Assets Australia
GCP	Glencore Corporate Practice reporting
IECA	International Erosion Control Association
KBR	Kellogg Brown & Root Pty Ltd
KPI	Key performance indicator
LOM	Life of mine
MIA	Mine Industrial Area

Acronym	Meaning
ML	Mining Lease
MOU	Memorandum of understanding
NAF	Non-acid forming
NUMA	Non-use management area
NWRD	North Waste Rock Dump, including 360 Dump top
OLC	Overland Conveyor
PAF	Potentially acid forming
PAF - LC	Potentially acid forming – low capacity
PMLU	Post-mining land use
RL	Reduced Level
RMP	This Rehabilitation Management Plan
RUSLE	Revised Universal Soil Loss Equation
SEWRD	South East Waste Rock Dump
SWWRD	South West Waste Rock Dump
RE	Regional Ecosystem (as classified under the Vegetation Management Act 1999 (Qld)
ROM	Run of Mine
RPEQ	Registered Professional Engineer Queensland
TEC	Threatened Ecological Community (as listed under the EPBC)
TLO	Train Loadout Facility (this is located at Blair Athol and includes infrastructure, rehabilitated, and water management areas)
TMR	Queensland Department of Transport and Main Roads
TSP	Total suspended particles
UQ	University of Queensland

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1. Purpose

The purpose of this Rehabilitation Management Plan (RMP) is to clearly state the rehabilitation strategy for progressive rehabilitation and rehabilitation outcomes adopted at Clermont Coal Operations (CCO) and outline the framework through which the strategy will be implemented to meet desired company, legal and stakeholder objectives for sustainable post-closure landscapes.

This RMP describes how CCO complies with the Land and Rehabilitation conditions (Conditions H1–H9) and, in particular, addresses Conditions H1 and H2 of the Environmental Authority (EA) EPML00634113. It also helps ensure compliance with the Commonwealth administered *Environment Protection and Biodiversity Conservation Act 1999* (EPBC) approval, the Glencore Coal Assets Australia (GCAA) Environmental Standard (CAA HSEC STD 0011) and all subsequent GCAA protocols, procedures and manuals.

2. Scope

This RMP applies to all CCO operations. CCO includes the Clermont Open Cut pit, the Cement Hill Void (CHV), the Overland Conveyor (OLC) and the Train Loadout Facility (TLO). The mining leases associated with each of these operational components are listed in Table 2-1. Figure 2-1 shows the location and layout of CCO. Where requirements or actions relate only to specific areas within CCO, these areas are referred to using the naming convention in Table 2-1.

Mining Lease	Purpose	Operational Component
ML1884	Mining and related purposes	Clermont Open Cut pit
ML70343		
ML700020		
ML70334	Conveyor Corridor	Overland Conveyor (OLC)
ML1787	Gold, water supply and related purposes	Cement Hill Void (CHV)
ML1788		
ML1995		
ML2355		
ML1881	Mining Infrastructure	Train Loadout Facility (TLO)

Table 2-1 – Mining Leases.

This RMP does not apply to other lands owned by CCO or offset properties which are not directly related to the mining process.

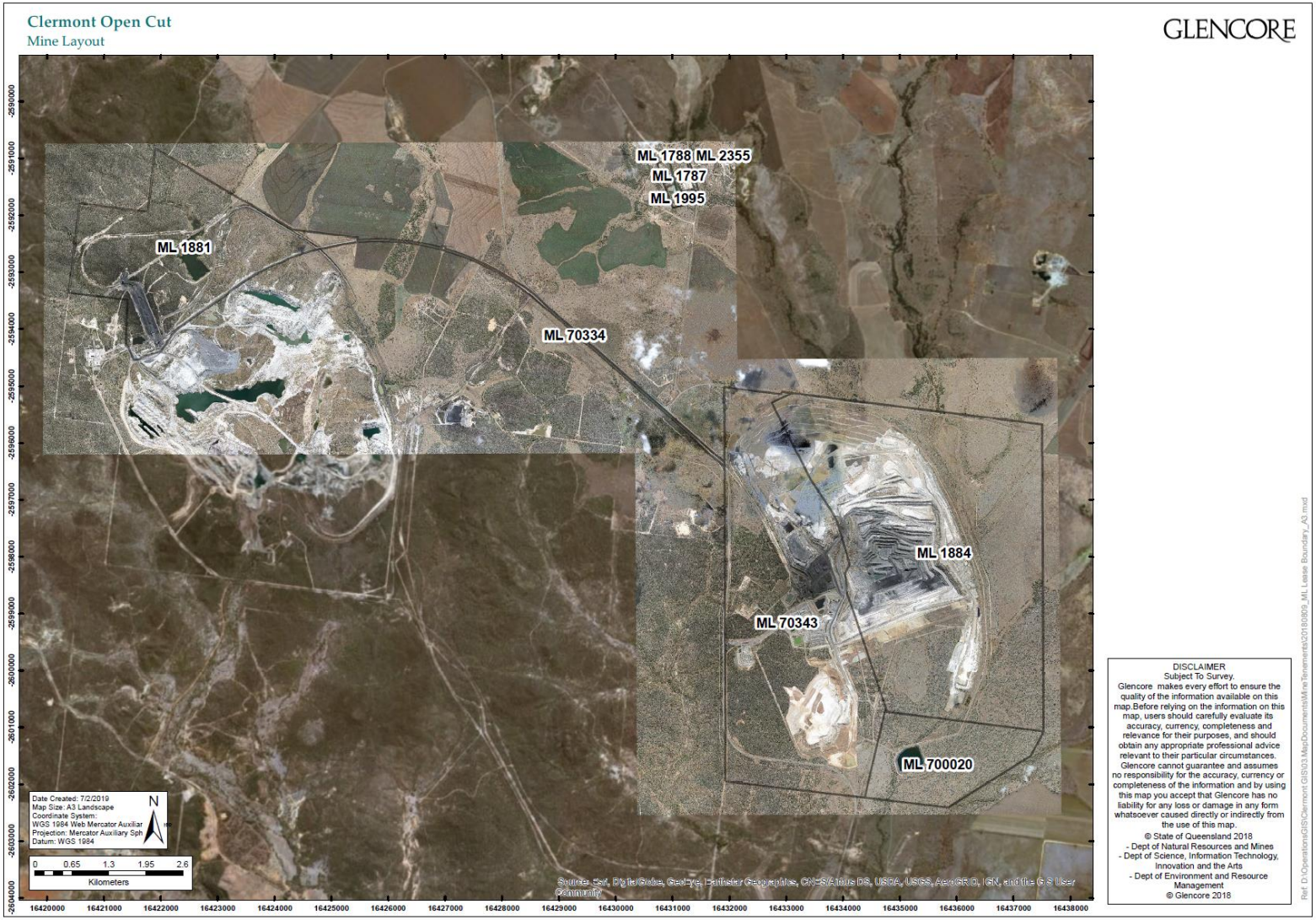

Figure 2-1 – Clermont Coal Operations Layout.

3. Statutory Approvals

Rehabilitation at CCO will be conducted in accordance with all relevant environmental approvals administered under either State or Federal legislation.

3.1 Environmental Authority

EA EPML00634113 approves and conditions CCO to undertake black coal mining and its associated activities within the approved mining leases. The mining leases to which EA EPML00634113 applies are described in Section 2.

The conditions specifically relevant to rehabilitation activities at CCO, and the location of information that addresses these conditions is outlined in Table 3-1.

Condition	Condition Details	RMP Section and Related Documents
H1	A Rehabilitation Management Plan must be a) Developed by an appropriately qualified person b) implemented for the duration of the mining activities, and c) Reviewed at intervals no greater than twenty-four (24) months.	This RMP
H2	The Rehabilitation Management Plan must include:	
	a) detail how all land disturbed by the mining activities will be rehabilitated to ensure that it is: i. safe for humans and wildlife; ii. non-polluting; iii. stable; and iv. able to sustain an agreed post mining land use (other than the residual void).	Section 4
	b) Develop final land use and landform design criteria and objectives for rehabilitation of all areas disturbed by mining activities for sustainable mine closure	Sections 6, 8 and 9
	c) Specify mining material characteristics for specific rehabilitation strategies	Section 8.2
	d) Identify a minimum of 3 reference and 3 rehabilitation sites to be used to develop rehabilitation acceptance criteria to allow valid comparison of self-sustaining rehabilitation vegetation communities to local reference sites	Section 11.4
	e) Provide a schematic representation of final landform inclusive:	Figure 7.1

Condition	Condition Details	RMP Section and Related Documents
	i. Drainage design and features ii. Slope designs iii. Cover design iv. Erosion control proposed on the reshaped land	Section 8.1 Section 8.1 Section 8.2.1 and 8.2.2 Section 8.1
	f) Investigate and describe integration of native vegetation rehabilitation area with buffer zones and wildlife corridors where required	Section 8.4
	g) Map and table the rehabilitation requirements applied to all mine domains with respect to rehabilitation goals, rehabilitation objectives, indicators and completion criteria	Figure 6.1 Section 6.1 (Rehabilitation Goals) Section 6.2 (Rehabilitation Objectives by Domain) Section 6.4 Rehabilitation Indicators and Completion Criteria) Appendices A.1 and A.2 (Tabulated rehabilitation objectives, indicators and completion criteria for each domain)
	h) A progressive rehabilitation schedule which stipulates annual program for rehabilitation milestones	Section 10
	i) Identification of specific rehabilitation completion criteria for each domain	Section 6.4.2 Appendix A.2
	j) Describe a program for monitoring and review of the effectiveness of the Rehabilitation Management Plan	Section 11
	k) A table a table that directs any reader of the plan to the relevant section/s which address all the relevant rehabilitation requirements of this environmental authority	This table
H3	Progressive rehabilitation must be carried out as per the progressive rehabilitation schedule, and to achieve the completion criteria, in the Rehabilitation Management Plan.	CCO Annual Rehabilitation Performance Report
H4	Land disturbed by mining must be rehabilitated in accordance with the Rehabilitation Requirements as detailed in the Rehabilitation Management Plan.	CCO Annual Rehabilitation Performance Report

Condition	Condition Details	RMP Section and Related Documents
H5	A topsoil inventory that identifies the topsoil requirements for the project and the availability of suitable topsoil on site must be detailed in the application for a decision on the Estimated Rehabilitation Cost.	Section 8.3 CCO Topsoil Management Guideline
H6	Topsoil must be stripped ahead of mining and stockpiled if not able to be used immediately.	Section 8.3
H7	Five (5) years prior to the cessation of mining within a final void on the Mining Lease the holder of the environmental authority must submit a Final Void Geotechnical Report prepared by a suitably qualified and experienced professional to the administering authority that includes: a) Proposed slope criteria for pit walls with competent and incompetent rock; and b) Proposed final surface area of the void.	Final Void Geotechnical Report
H8	Minimise the potential for contamination of land by hazardous contaminants.	CCO Mineral Waste Management Plan CCO Non-mineral Waste Management Plan
H9	Rehabilitation of any land disturbed by mining activities on tenure mining lease (ML) 1904 since the date that tenure was granted, 31 March 1983, remains the responsibility of this environmental authority holder and all rehabilitation must be conducted in accordance with the conditions of this environmental authority insofar as they apply to ML700020. c) Note: The administering authority acknowledges that ML1904 has been conditionally surrendered in favour of ML700020 under the provisions of the Mineral Resources Act 1989.	N/A

Table 3-1 – EA EPML00634113 Land and Rehabilitation Conditions.

3.1.1 PRCP Transition

CCO is currently in transition to the newly introduced requirements under the *Mineral and Energy Resources (Financial Provisioning) Act 2018* (Qld) (MERFP Act) to have a Progressive Rehabilitation Closure Plan (PRCP). A transitional notice issued to CCO required that a PRCP application be submitted to DES by 24 December 2021.

3.2 EPBC Approval

Two of the nine regional ecosystems identified within CCO mining leases are EPBC listed ecological communities; Bluegrass (*Dichanthium* spp.) dominant grasslands and Brigalow (*Acacia harpophylla*

dominant and co-dominant) ecological communities. Under the Clermont Coal Mine EPBC Approval 2003/1167 there are a number of conditions relating to conservation and management of these protected ecosystems. *A. harpophylla* is managed through the use of offset properties and their associated vegetation management plans are outside the scope of this plan. *Dichanthium* spp. dominant grasslands have been offset by a 120ha nature refuge to the east of the open cut area, which is subject to the Clermont Coal Mine Bluegrass Management Plan and Offset Strategy (CCMP-0000-PL-VE-0002) (2007).

3.3 Environmental Impact Statement

An Environmental Impact Statement (EIS), and a follow up Supplementary Report, was developed and submitted to the Coordinator General in 2004 (RTCA, 2004). The purpose of the EIS was to identify potential impacts (environmental, social, economic) resulting from the development and operation of CCO. The EIS provides concept level detail on proposed rehabilitation practices and desired outcomes by addressing the following elements of rehabilitation;

a) Post-mine land use;

b) Post-mine landform;

c) Progressive rehabilitation and an indicative rehabilitation schedule;

d) Revegetation methodologies;

e) Rehabilitation success criteria;

f) Rehabilitation monitoring and maintenance;

g) Final void management; and

h) Decommissioning.

4. RMP Authors

This RMP has been developed by the team members listed in Table 4-1.

Person	Company	Position	Qualifications
Morne van Zyl	Glencore	Environment & Community Manager, Clermont Coal Operations	M.Sc. (Geology), 1997 Site Senior Executive (BOE-SSE/16/004) Full Member: Environment Institute of Australia and New Zealand (MEIANZ) Registered Professional Environmental Scientist (Pr.Sci.Nat.). South African Council for Natural Scientific Professions (SACNASP) (Registration Number 400017/99) Integrated Management Systems Lead Auditor (RABQSA – AU, TL, QM, EM, OH)
Chloe Johnson	Glencore	Previously Environmental Coordinator, Clermont Coal Operations	Bachelor of Environmental Science, University of Central Queensland, 2010.
Clare Foley	Glencore	Environment and Community Advisor, Clermont Coal Operations	Bachelor of Applied Science, University of Southern Queensland, 1994.
Steve Fox	KBR	Principal Environmental Scientist and Ecologist	Bachelor of Applied Science (Hons, University Medal) Natural Systems & Wildlife Management, University of Queensland, 1995 Postgraduate Certificate, Urban and Regional Planning, University of New England, Armidale NSW 2003 Over 20 years' experience in environmental impact assessment studies, approvals, native vegetation identification and mapping, environmental offsets, ecological monitoring and land management and mine rehabilitation.
Jeremy Durbin	KBR	Asset & Mine Closure Manager	Bachelor of Natural Resources, University of New England, Armidale NSW 1996

Person	Company	Position	Qualifications
			Diploma of Business Management, Modal Training, 2008 Over 17 years' experience in mine closure, rehabilitation and revegetation management, environmental approvals and project management.

Table 4-1 – RMP authors.

5. Background Environment

Background information relating to the pre-mining environment for the CCO pit and OLC sites is readily available, with much of the available information documented in the EIS (RTCA, 2004). Owing to the longer operational histories of the TLO and CHV sites, documented background information for these areas is not as readily available. However, for the purposes of informing the rehabilitation objectives and strategies adopted by CCO, it can be assumed the background environmental information provided in the EIS is representative of the wider Clermont region including the TLO and CHV areas.

5.1 Land Uses

5.1.1 Historical Land Use

The CCO pit and OLC areas were developed as a Greenfield site. Prior land uses included dry land cropping, grazing and minor rosewood timber removal for fence posts. Land within the CCO mining leases was effectively trisected by the intersection of the original Gregory Highway, Gregory Development Road and Peak Downs Highway. Minor historical mining excavations are scattered in the western section of ML70343. This area has not been rehabilitated and contains some unfenced shafts that will need to be addressed during closure planning.

The pre-mining land uses within the OLC included grain cropping, grazing and roadways.

The CHV mining leases approved a former gold mining operation and include a final residual void and small areas used for gravel extraction. Limited rehabilitation has been completed at the CHV and the majority of the area is fenced off to prevent public access. Smaller areas on the edges of the CHV mining leases are sub-leased for grazing to an adjacent landholder. Water in the final residual void is used by the same adjacent landholder for irrigation and by CCO as required.

Prior to the TLO area becoming part of CCO, this facility and the surrounding land was owned and operated by Blair Athol Coal. Coal mining in various forms and intensities has occurred in and around this site for more than 100 years. Large scale open cut pit mining began in the early 1980s. Historical land use at the TLO is primarily a combination of state land, forest and mining infrastructure.

5.1.2 Surrounding Land Use

Surrounding land uses are primarily broad acre cropping and grazing enterprises. Other uses include coal mining, domestic coal distribution, forestry, an airport (south of the mining leases), and a rifle range.

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Figure 5-1 provides an indication of historic land use prior to the commencement of CCO. CCO's rehabilitation aims to incorporate connectivity with woodlands to the west of the open cut area and grasslands in the east. These adjoining communities are shown, along with relevant reference monitoring locations, in Figure 5-2. Current land parcels and landholders are presented in Figure 5-3.

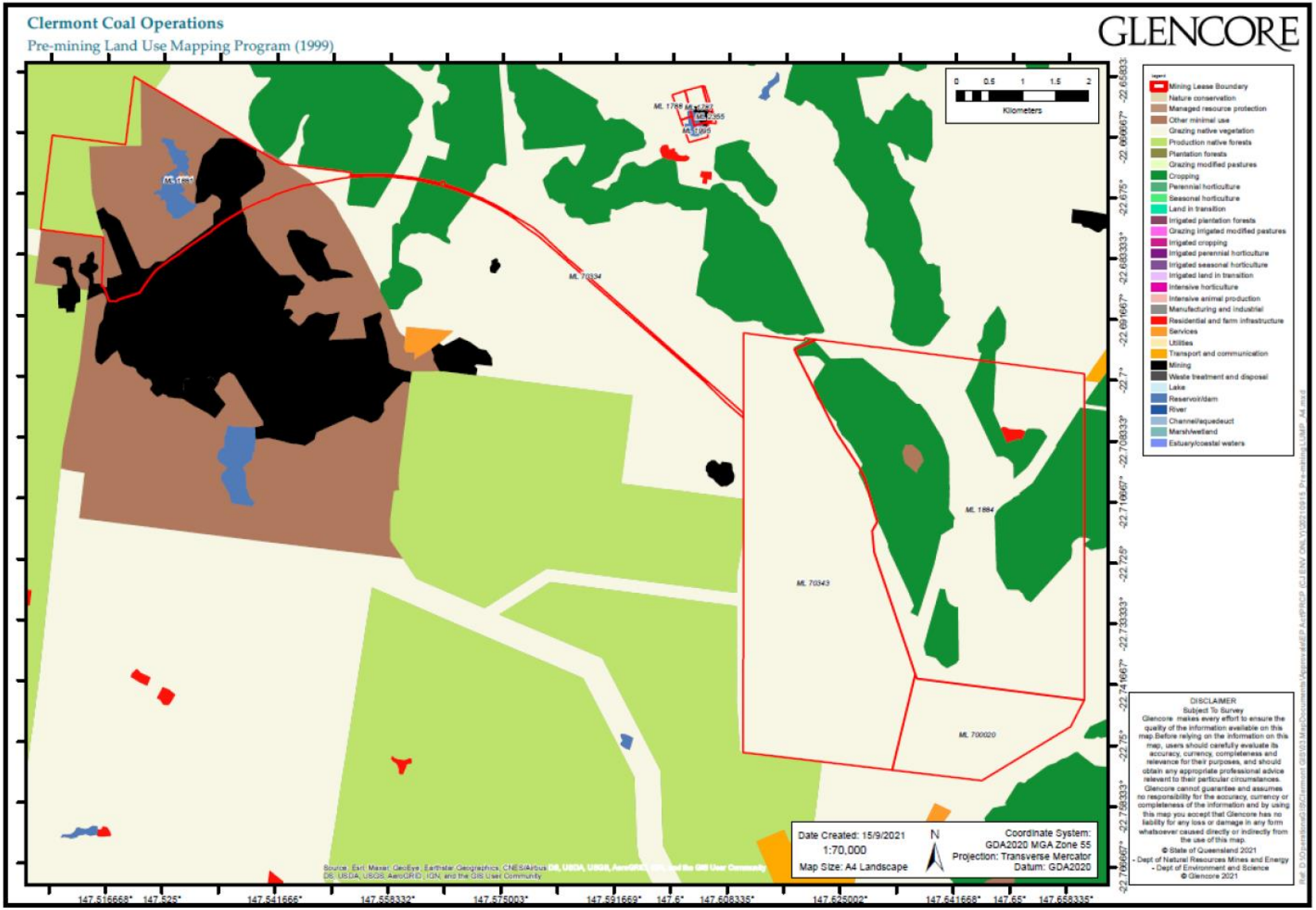

Figure 5-1 – Pre-mining Land Use in the Clermont Region.

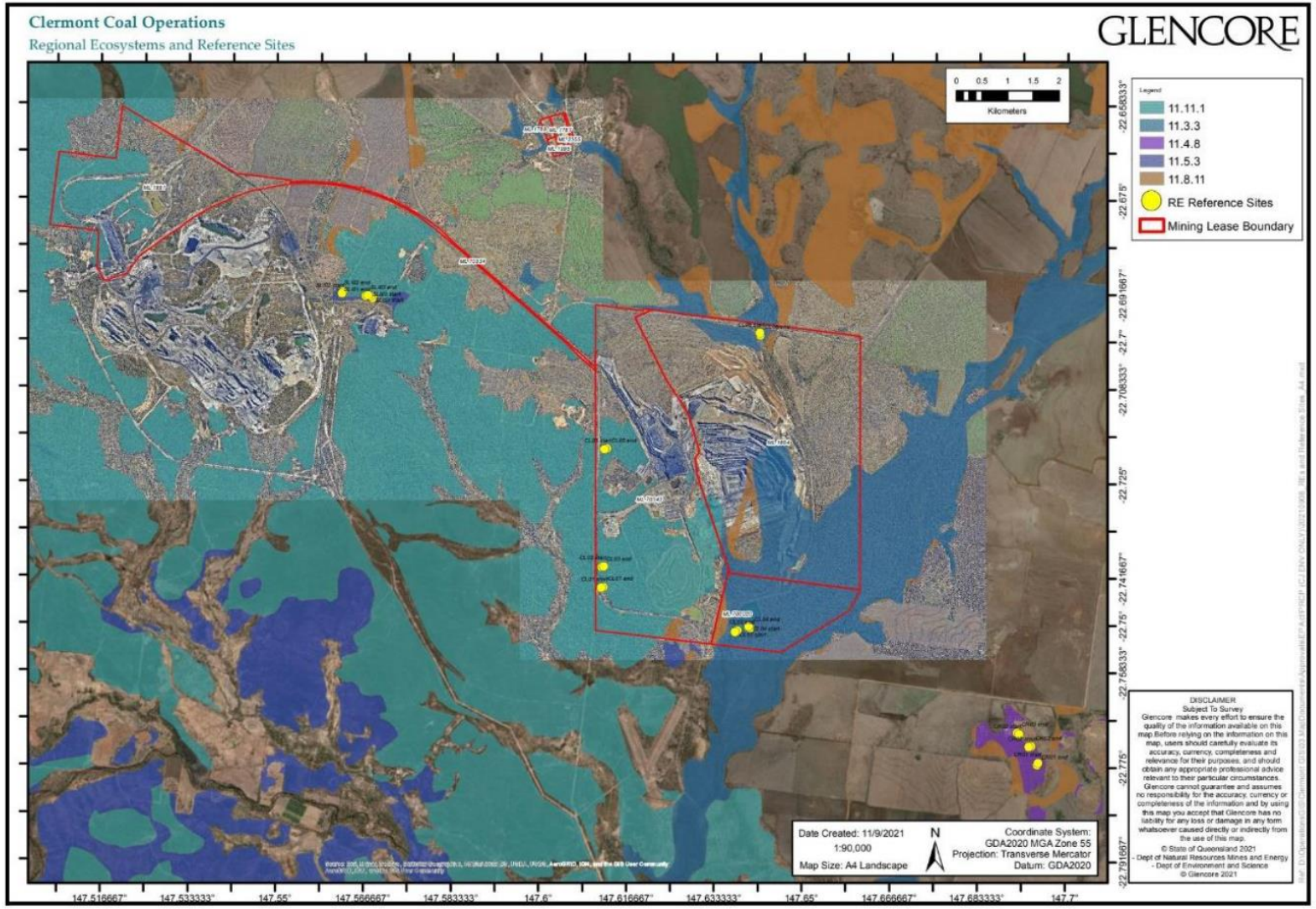

Figure 5-2 – Adjoining Vegetation Communities and CCO Reference Monitoring Site Locations.

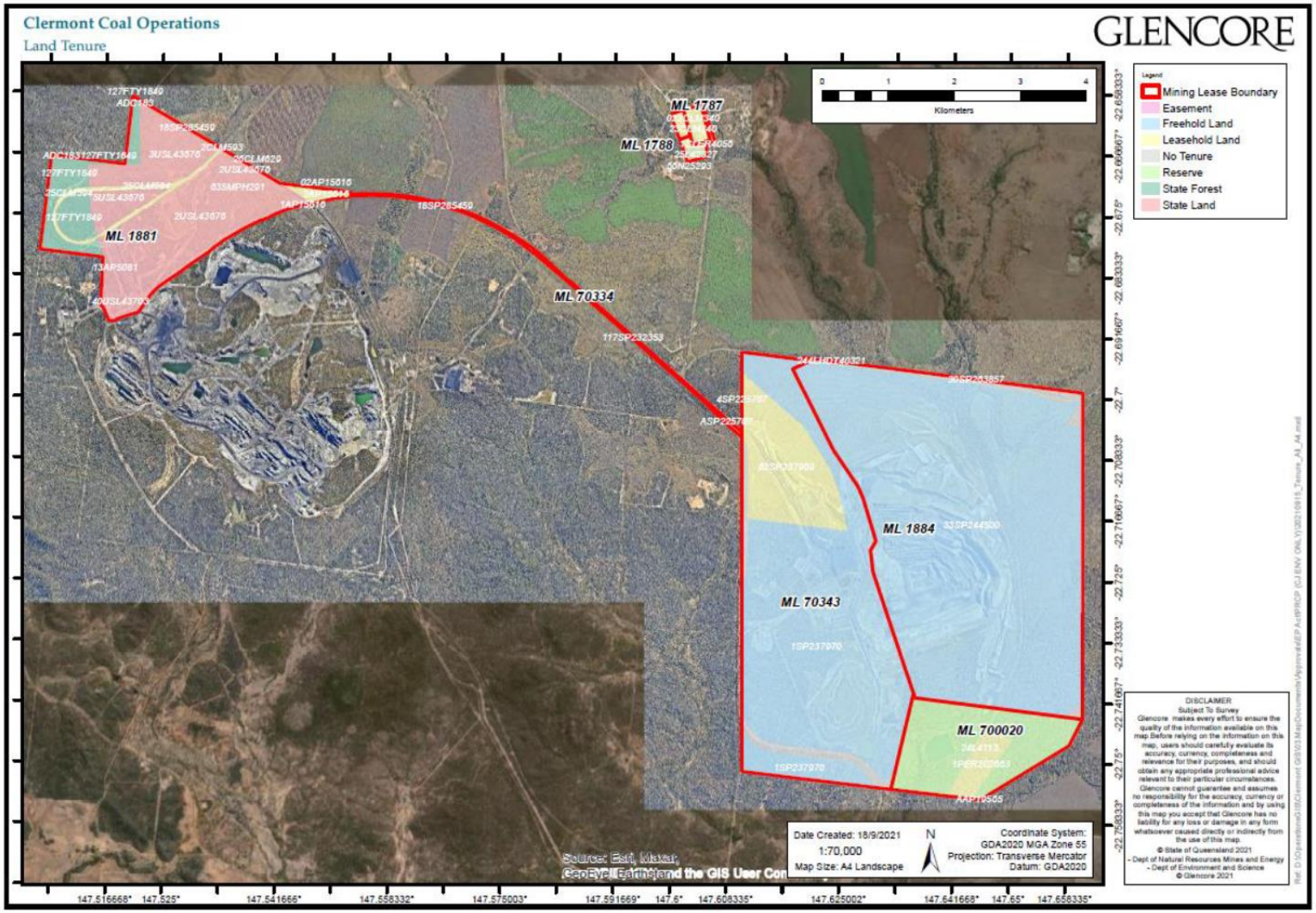

Figure 5-3 – Land tenures.

6. Rehabilitation Strategy

This RMP is the principal document detailing the long-term rehabilitation strategy adopted at CCO. The rehabilitation strategy is built from the following elements:

a) Rehabilitation goals;

b) Closure domains;

c) Rehabilitation objectives for each domain;

d) Proposed post-mining land uses;

e) Rehabilitation indicators; and

f) Completion criteria.

6.1 Rehabilitation Goals

The rehabilitation goals for CCO are to:

a) Create a site that is safe, stable, does not cause environmental harm, and is able to sustain an agreed post-mining land use;

b) Comply with all statutory requirements and attain regulatory consensus on the successful closure and rehabilitation of the site; and

c) Develop a concise and targeted rehabilitation dataset using scientifically robust and repeatable methods which demonstrate compliance with pre-determined completion criteria and support relinquishment of all environmental and social approvals.

6.2 Rehabilitation Objectives by Domain

Closure domains are defined by GCAA as "geographical areas of an asset that have similar physical and chemical attributes, allowing them to be managed in a particular way for rehabilitation and closure".

Closure domains have been developed for CCO during mine closure planning activities. Sub-domains have also been developed for the Active Mining Area, Infrastructure, TLO (including Blair Athol infrastructure, rehabilitated, and water management areas) and CHV closure domains as detailed in Table 6-1.

Closure domains, sub-domains, their rehabilitation objectives and post-mining land uses may change based on newly identified opportunities, new technologies, market forces and changes in CCO and stakeholder requirements.

Current rehabilitation objectives for each closure domain, or where applicable, sub-domain, have been developed and are detailed in Appendix A.1.

Domain	Description
Infrastructure	Majority of infrastructure associated with CCO operations including Clermont accommodation village, administration buildings, workshops, change house, warehouse, CHPP, dump station, IPCC, water treatment plant, chemical storage, explosives magazine, fuel farm, water fill points, go-lines, exploration disturbance, hardstands, tanks, pumps and communications towers

Domain	Description
Active Mining Area	Open cut pit and void, out-of-pit dumps, tailings Mega Cells 1 and 2, exploration areas and pre-strip clearance, laydown/hardstand areas, ROM pads, original Gregory Development Road and Peak Downs Highway (redundant)
Water Management	Western and Eastern Diversion drains, Gowrie Creek Diversion and levee, Rail Loop Diversion, West Dam, Stockpile Dam, Industrial Dam, Raw Water Dam, Brine Pond, Process Water Dam, sediment dams and Mine Water Dam
Other Lands	Undisturbed areas, on lease nature refuges, roads, tracks, power lines, pipes, fences, monitoring stations, abandoned mining area (legacy), rehabilitation areas and Wolfang Homestead
Overland Conveyor (OLC)	Overland Conveyor, Stabilised Roadway and Water Transfer Pipes
Train Loadout Facility	CHPP, stores and ancillary infrastructure, rail loop and infrastructure, hardstands, rail loadout bin, train loadout and stockpile facility
Cement Hill Void	Hardstand/parking area, out of pit dumps and batter slopes, access road – including fencing and gates and water management areas

Table 6-1 – Closure Domains.

6.3 Post-mining Land Uses

Identifying the most appropriate post-mining land uses is a dynamic process open to new opportunities as they present themselves during the rehabilitation and closure planning process. By achieving the targeted post-mining land uses, it is anticipated successful relinquishment of environmental approvals will follow.

The initial and current post-mining land use concept has been developed for the Clermont Open Cut pit area and proposes post-mining land uses based on a simple set of physical and regulatory constraints. The next phase in developing agreed post-mining land uses will be to incorporate the areas of CCO that exist outside of the Open Cut pit area to ensure connectivity to off-lease areas surrounding the mine, and further develop and formalise the set of non-negotiable constraints. By identifying and understanding what is negotiable, CCO can clearly communicate and provide information about what decisions have already been made and cannot be influenced, and what decisions can be discussed openly. It is important that CCO establishes what is negotiable and non-negotiable, so that non-negotiable aspects may be clearly defined and communicated to avoid unrealistic expectations from stakeholders.

CCO will consider the views of external stakeholders where alternative post-mining land use options are suggested which may provide added value to the community. The current post-mining land use concept for the Clermont Open Cut pit is shown in Figure 6-1. The predominant post-mining land use for disturbed areas on the mining leases will be woodland & light grazing (open woodland / bushland) providing for a combination of habitat and low-level grazing. Similar to any central QLD property or landholding, there will be areas with higher and areas with lower productive capacity, and resultant future use. In addition to the predominant use, there may be a range of additional uses and / or land use constraints, which may include, but are not necessarily limited to:

a) Infrastructure (roads, dams, services, firebreaks, buildings),

b) Water management areas or systems such as dams, creek lines, diversions or similar,

c) Vegetation buffer areas, habitat corridors.

It is also anticipated, in line with the conditions of the EA, that some areas on the mining leases will have land use constraints. A final residual void will be left post rehabilitation at CCO, which will not be able to support a productive post-mining land use after the mining lease relinquishment. Despite this, CCO endeavour to minimise environmental harm, refer to Section 9 for further details.

Current post-mining land uses for closure domains, or where applicable, sub-domain, have been developed and are detailed in Appendix A.1.

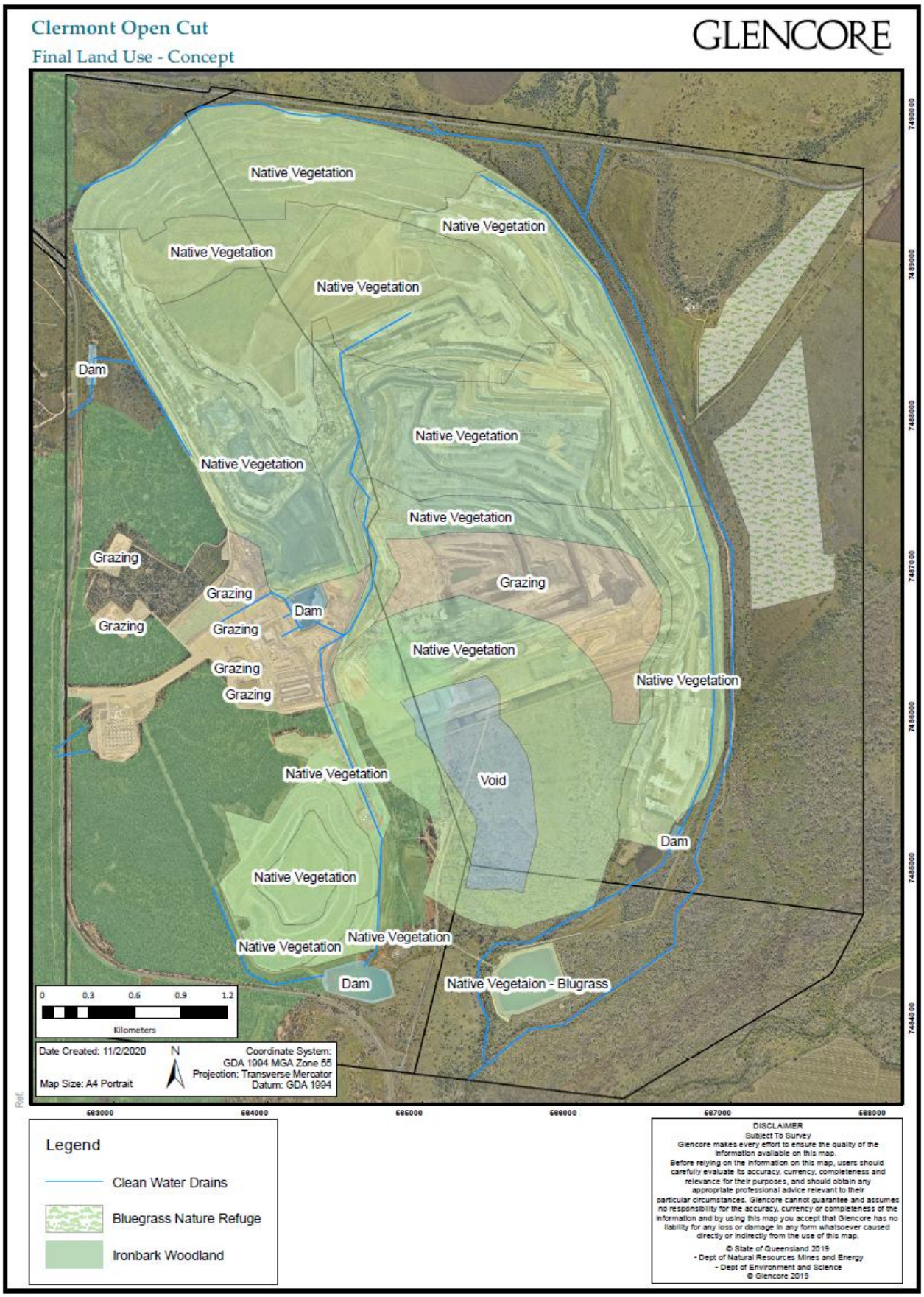

Figure 6-1 – Post-Mining Land Use Concept.

6.4 Rehabilitation Indicators and Completion Criteria

6.4.1 Rehabilitation Indicators

Rehabilitation indicators, as defined by GCAA, are "attributes of the biophysical environment (e.g. pH, slope, topsoil depth) that can be used to approximate the progression of a biophysical process and can be measured to demonstrate (and track) the progress of an aspect of rehabilitation towards a desired completion criteria (defined endpoint)". Indicators can be thought of as what is measured, while completion criteria are selected values of indicators which can be used to measure the success of rehabilitation. GCAA has selected a set of rehabilitation indicators deemed appropriate for CCO (Appendix A.2).

6.4.2 Completion Criteria

Rehabilitation completion criteria are defined by GCAA as "target levels or values that can be objectively and quantitatively measured to demonstrate progress and ultimate success of a biophysical process, or the stage of any area or infrastructure left when rehabilitation is deemed successful". Completion criteria have been developed by GCAA for CCO's proposed post-mining domains and land uses (Appendix A.2). The completion criteria were developed with consideration for:

a) The conditions of EA EPML00634113, Approval conditions, EIS commitments and other regulatory requirements;

b) Existing ecological and environmental monitoring data;

c) Relevant government or industry guidelines, standards and scientific literature;

d) Surrounding environment and land uses;

e) Outcomes of stakeholder consultation and stakeholder expectations; and

f) Any specific risks that may apply to the operation.

7. Rehabilitation Planning

Rehabilitation Planning at CCO is a complex, integrated and iterative process involving numerous steps, decisions and hold points. Area footprints, bulk material push, topsoil, materials balance, vegetation, water management, erosion control structures and annual rehabilitation budgets must all be planned and approved by CCO. CCO have developed internal rehabilitation planning and execution processes which guide the process.

Rehabilitation planning occurs over a number of planning horizons: Life of Mine (LOM) Rehabilitation Planning; the Annual Rehabilitation and Closure Plan (ARCP) and Annual Rehabilitation Program planning. Summaries of these three planning mechanisms are presented in the following sub-sections.

7.1 LOM Rehabilitation Planning

The primary tool guiding LOM Rehabilitation Planning is this RMP. This RMP identifies the post mining land use (Section 6.3); the rehabilitation domains (Section 6.2); the rehabilitation objectives for each domain (Appendix A.1); and the rehabilitation indicators (Section 6.4.1 and Appendix A.2), the specific parameters, which are assessed against completion criteria (Section 6.4.2 and Appendix A.2) in order to demonstrate achievement of the rehabilitation objectives (Appendix A.1) and ultimately support an application for relinquishment.

LOM Rehabilitation Planning is an ongoing process which is updated at least annually following the overarching LOM planning process. The current final landform concept is provided as Figure 7-1. Once the LOM has been finalised, the rehabilitation schedule should be updated to accommodate any changes in dump scheduling. The current rehabilitation schedule is provided in Section 10.

7.2 Annual Rehabilitation and Closure Plan

An internal Annual Rehabilitation and Closure Plan (ARCP) is developed every calendar year as part of GCAA internal operational processes. Preparation of the ARCP commences as part of the annual budget cycle and a draft submission of the plan including budget information is generally due for GCAA corporate review and approval during October of the year before.

The ARCP will be consistent with this RMP and LOM objectives and will address any specific approvals or other requirements. Tracking of performance against the ARCP is regularly reported against annual targets.

7.3 Annual Rehabilitation Program Planning

Progressing concept final landforms and their associated water management through to detailed design occurs during the Annual Rehabilitation Program planning phase. Annual Rehabilitation Programs are identified by the year in which the rehabilitation works are completed and reported through the Glencore Corporate Practice reporting (GCP) process as 'Seeded' (see Section 10 for the rehabilitation schedule). The actual program of works, from concept planning through to seeding, generally runs for two calendar years. For example, the 2018 Annual Rehabilitation Program is scheduled for completion, and once rehabilitation works were completed it was reported as 'Seeded', at the end of 2018. However, concept design work commenced early 2017. Likewise, the 2019 Annual Rehabilitation Program will be completed by the end of 2019 but design work commenced in early 2018.

This two year cycle is detailed in the Rehabilitation Process Procedure (CLEOC-520960306-2664) with the signoff and handover process captured with the Annual Rehabilitation Signoff and Handover Form

(CLEOC-520960306-2665). An Annual Rehabilitation Signoff and Handover form will be completed for every Annual Rehabilitation Program. This signoff and handover form outlines key details and hold points for the specific program. Hold points require signoff by nominated site personal before the program can proceed to the next stage.

Figure 7-1 – Final Landform Concept.

8. Rehabilitation Design Principles

Rehabilitation design at CCO occurs throughout the rehabilitation planning processes (Section 7). Concept design is high level design intended to address whole landforms such as the NWRD, the SWRD, the SEWRD and the In-pit Dump and is largely aligned with LOM Rehabilitation Planning. Within these landforms, Annual Rehabilitation Programs (Section 7-3) are defined and detailed design is completed at a higher resolution.

For example; the 2015 NWRD, the 2016 NWRD and the 2017 360 Dump Annual Rehabilitation Programs are all components of the larger NWRD landform. Development of landform level concept designs allows for integration of water management across the whole landform and provides operations with the ability to dump waste as close to final landform levels as possible and in turn reduce bulk push and reshaping costs.

Landform design principles adopted at CCO, and which will be used in future rehabilitation areas, are summarised in Table 8-1 and described in the following sub-sections. However, these general principles may be modified with appropriate justification during the detailed design phase of Annual Programs to ensure the most appropriate outcome is achieved and water management structures can be accommodated.

CCO manage rehabilitation planning, design and execution using internal resources, including resources available across the larger GCAA group. External technical specialists are engaged if and when required.

This RMP will be updated, if required, on an annual basis in accordance with the rehabilitation planning process detailed in Section 7.

Rehabilitation Element	Design Principles
Landform Design	External dump slopes to use the approved tri-linear concave: a) Vertical elevation per section = 15m; b) Horizontal slope length = 75m; c) Top slope = 25m @ 30%; d) Mid slope = 25m @ 20%; e) Lower slope = 25m @ 10%; f) Invert of bench drain = toe of lower slope; g) ~1% longitudinal grade – free draining, no pooling water; h) Crest of bench drain = flow capacity + freeboard for a 1 in 20 ARI critical duration event @ 10% and i) Crest protection rock 1m wide by ≥0.3 m thick on all bench crests. Alternative slope designs: a) <17%; and b) Bench spacing as per IECA Best Practice Erosion and Sediment Control guideline Table 4.3.4 (Appendix A3). Sediment dam designs: a) Containment of a 1 in 20 ARI, 24hr duration event; and

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Rehabilitation Element	Design Principles
	b) No sedimentation volume required. Stormwater Chutes: a) Flow capacity + freeboard for a 1 in 20 ARI critical duration event; b) ~5% – 6% longitudinal grade – free draining, no pooling; and c) Appropriate geofabric, rock armouring and scour protection must be provided. Avoid pooling or standing water unless risks of such structures are adequately assessed and designed. Consideration to be given to the receiving waterway for the catchment.
Waste Materials	Mega Cells: a) The rehabilitated surface of landforms in areas containing encapsulated PAF material are not to encroach within 10m of the external NAC encapsulation material layer. Tyre and Conveyor Dumps: a) The rehabilitated surface of landforms above tyre and conveyor dumps are not to encroach within 20m of the dumped materials. Decant Ponds: a) All PAF materials are to be excavated/ removed regularly.
Topsoil Resources	Topsoil Thickness a) Topsoil spread at a thickness no less than 0.1 m; and b) Ripped on contour to a depth of approximately 0.5 m. The required topsoil thickness for each area (ranging from 0.1 m – 0.3 m) is to be determined by the Rehabilitation Superintendent, with reference to the Topsoil Management Guideline. All topsoil may be subjected to a growth medium suitability assessment, where required, to determine amelioration and fertiliser requirements.
Vegetation	Woodland & Light Grazing: a) NWRD Batter Slopes; b) 360 Dump Tops; c) SWRD Batters, Tops and Natural Surface; d) SEWRD Batter Slopes; e) Cement Hill Void Batter Slopes and Dump Tops; f) Blair Athol; g) Embankment Dump Batter Slopes; h) Conveyor Dump Batter Slopes; i) In-pit Batter Slopes; and

Rehabilitation Element	Design Principles
	j) Final Void Batter Slopes. k) Active Mine Area – Natural Surface; l) Infrastructure – Natural Surface; and m) Water Management – Decommission. Water Management Riparian Areas: a) Infrastructure Decommission.
Final Residual Voids	Clermont Coal Operations: a) Final Residual Void that is not able to support a productive post-mining land use. Cement Hill Void – Residual Void: a) Water Management Area
Gowrie Creek Diversion	Managed through the Gowrie Creek Diversion Monitoring and Evaluation Program.

Table 8-1 – General Rehabilitation Design Principles.

8.1 Landform Design

The unique characteristics of CCO has led to the operation adopting a rehabilitation landform design that is uncommon in typical Bowen Basin coal mines. Unlike a typical strip mine where overburden is removed from the highwall and placed in the previously mined low wall area, the mining method at CCO more resembles that of a hard rock mine requiring a significant volume of material be dumped ex-pit (out of pit) prior to dump space becoming available in-pit. This method has resulted in three large ex-pit dumps, with the highest being in the order of 100 meters above natural surface and at angle of repose. Adding to the challenges is the comparatively small mining lease footprint and a number of existing constraints on the NWRD, namely the Peak Downs Highway to the north and the Gowrie Creek Diversion to the east.

In response to these constraints, GCAA proposed CCO adopt a concave landform for external slopes. Modelling work to optimise the concave slope concept was completed and a tri-linear design was selected. A typical cross section of the optimised tri-linear design is provided in Figure 8-1.

The anticipated benefits of the tri-linear design are:

a) A potential reduction in erosion when compared to the slope design proposed in the EIS (see Section 8.1.1 below);

b) The dump toe remains within the mining lease boundary; and

c) A potential for reduced material movement during reshaping.

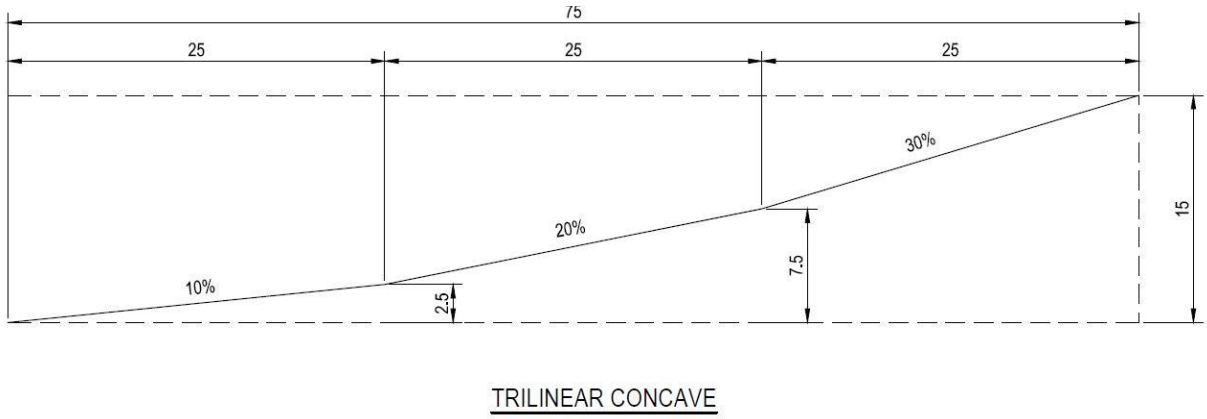

Figure 8-1 – Tri-linear Concave – general design principle for external slopes.

This design is currently being used, and is to be implemented into the future where possible, on all external dump slopes. However, there will be areas where, for various reasons, a tri-linear concave is not the most appropriate landform and in these situations an alternative design will be developed. Any alternative designs will aim to not exceed 17% with horizontal and vertical distances between contour benches complying with International Erosion Control Association's (IECA) Best Practice Erosion and Sediment Control guidelines.

At the time of writing there are currently four areas of external slope that have required deviation from the general design principle for external slopes. These deviations are provided as Appendix A.3.

Design principles for internal slopes on the NWRD will be developed alongside the conceptual designs for this landform. The suitability of the current tri-linear design and other variations of the concave slope will be considered and investigated during this process. Refer to Appendix A.4 for further LOM concept landform and water management designs.

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8.1.1 Erosivity Assessment of Tri-linear Concave Landform

Prior to CCO adopting the tri-linear concave slope design as a general design principle for external dump slopes, an erosivity assessment was completed by GCAA. The concave slope design was proposed based on findings in the rehabilitation literature indicating many natural landforms in semi-arid areas developed a concave slope and their investigations reporting the shape tended to counteract the erosion potential downslope (Carson and Kirkby 1972, Pritchard 1979 and Gerrard 1981).

The erosivity assessment considered two landforms; the first being that prescribed in the original EA (maximum 17% slopes with contour benches for every 15 metres of elevation) and the second being the tri-linear concave of Figure 8-1. The RUSLE (Revised Universal Soil Loss Equation) erosion model was selected as the tool to complete the assessment. The assessment concluded a tri-linear slope would generate less erosion measured as tonnes/hectare/year (t/ha/y) than the 17% linear profile.

In addition to the potential for improved erosion performance, the tri-linear design results in a horizontal slope length 13 metres shorter than the original 17% linear design. The shorter horizontal slope length assists CCO in creating a suitable landform within the boundary constraints and reduces the volume of bulk material required to be moved.

8.1.2 Landform Water Management

Rehabilitated landforms are to be treated like any other disturbed catchment at CCO until water quality monitoring demonstrates compliance with the relevant completion criteria (Appendix A.2). The primary contaminant from newly rehabilitated landforms is expected to be sediment and as such all runoff from rehabilitation areas will have sediment controls in place. Depending on the physical location, existing sediment dams may be utilised or new structures will be incorporated during detailed design. Sediment basin design for rehabilitated areas is to be sized to contain the expected runoff volumes, after losses, from a 1 in 20 ARI, 24 hour duration storm event. No allowance for sedimentation volume is to be included due to the expectation that vegetation establishment will result in completion criteria being met before dam capacity is materially compromised.

Bench drains and stormwater chutes, designed by suitably qualified third party engineers are to be sized to convey surface runoff for storm events up to and including the 1 in 20 ARI critical duration event and must include a freeboard volume considered adequate for the specific location. Geo-fabric, rock armouring and scour protection appropriate for the expected velocities must be considered and implemented as per detailed designs.

Large ponding or standing water bodies are to be avoided on all rehabilitated dumps. Any proposed designs incorporating a body of water within a spoil dump must be thoroughly investigated before being adopted to ensure the risks of seepage from buried geochemically adverse materials, local contamination and tunnel erosion are adequately addressed. Consideration must also be given to the natural waterway in which rehabilitation runoff will report and any potential issues that may arise when this occurs.

Concept level landform designs (see Section 8.1) will include concept water management designs. These designs are to indicate general drainage directions and indicative chute locations for the primary purpose of informing integrated water management during dump design and construction and the bulk push phase of landform construction. Design of bench drain, stormwater chute and sediment dam sizing is undertaken at an Annual Program level and will involve the development of detailed designs to a standard suitable to support the preparation of a tender package for execution by expert external consultants.

8.2 Waste Materials

The CCO Mineral Waste Management Plan (CLEOC-520960306-514) provides details on the management strategies and practices implemented to manage risks associated with mineral wastes and Acid Rock Drainage (ARD). The CCO Non-mineral Waste Management Plan (CLEOC-520960306-1629) describes how non-mineral waste is managed onsite.

The following sub-sections summarise the elements of the Mineral Waste Management Plan and Non-mineral Waste Management Plan relevant to rehabilitation planning and execution.

8.2.1 Material Categorisation and Placement

There are five distinct coal seams mined at CCO - the Gowrie, Prospect, Wolfang Upper, Wolfang and Wolfang Lower seams. The Wolfang seam is the largest with the other seams being relatively small in thickness. The stratigraphic sequence of the mine is illustrated in Figure 8-2. The Gowrie coal seam is overlain by Quaternary clay and weathered basalt, Tertiary basalt and Tertiary and Permian sediments. Permian sediments occur as interlayers between the five coal seams. The Wolfang Lower seam is underlain by Permian conglomerate and a metamorphic sequence of Cambrian-Ordovician age.

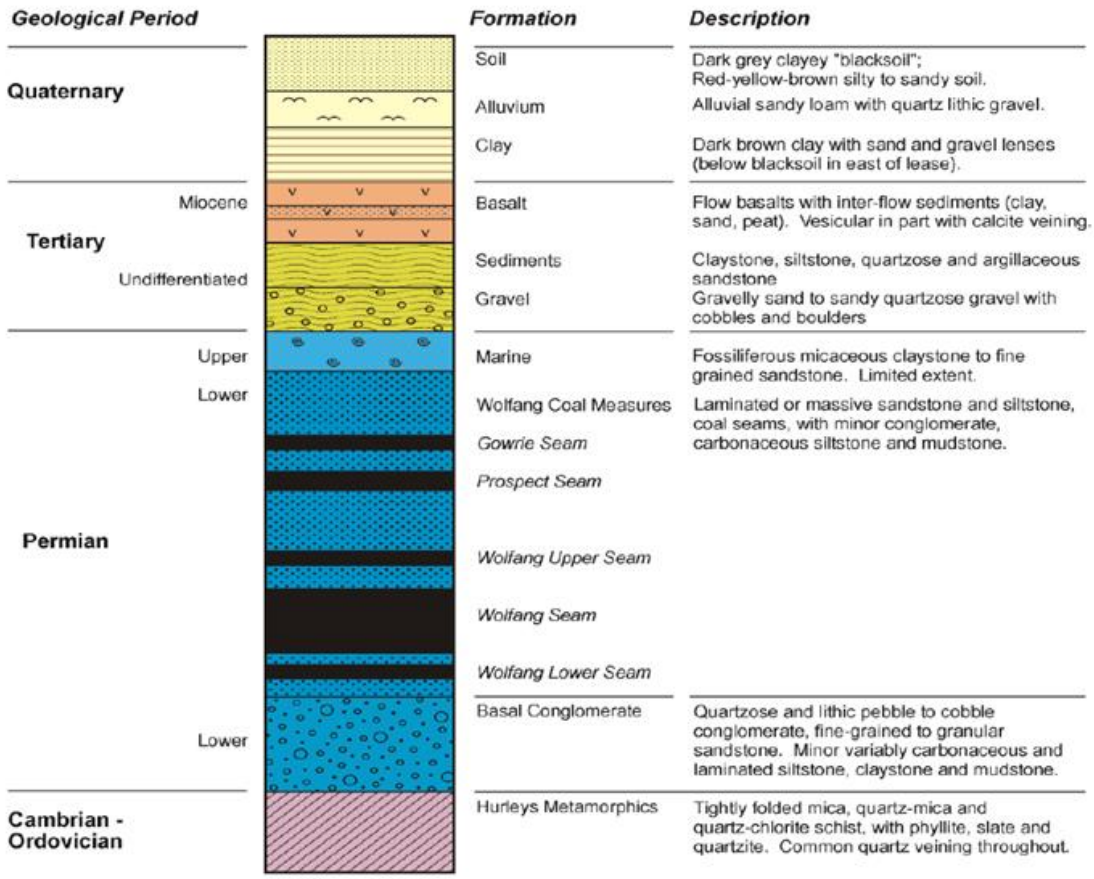

Figure 8-2 – Typical Stratigraphic Sequence at CCO.

Geochemical categorisation of waste material at CCO has occurred regularly since 1997 and has identified a number of potential geochemical hazards. The prevalence of ARD potential, classed into NAF (clean), PAF-LC and PAF (reactive) materials for the various rock types at CCO, are summarized in Table 8-2.

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		NAF	PAF-LC	PAF
Quaternary Sediments		100%	0%	0%
Tertiary Overburden	Basalts	80%	16%	4%
	Sedimentary	61%	27%	12%
	Combined	70%	22%	8%
Permian Overburden		65%	18%	17%
Permian Coal		15%	27%	58%

Table 8-2 – Relative proportion of different ARD classes by rock type at CCO (KCB 2018).

Previous geochemical characterisation programs have indicated the bulk of overburden material is non-acid forming (NAF). However, potentially acid forming (PAF) and PAF low capacity (PAF-LC) horizons have been identified within Tertiary and Permian sediments. Coal materials tested were dominantly reactive / PAF, although some were classified PAF-LC. In addition, the coal stockpiles, processing wastes, coal wash wastes and coal reject wastes are potential sources of ARD. Coal reject wastes are also susceptible to spontaneous combustion, in addition to reactive / PAF.

Section 6 of the Mineral Waste Management Plan sets out the requirements for waste placement and handling. To assist with the differential treatment, ex-pit dumps are those where the footprint is outside of the current or final pit shell and includes the northern waste rock dump, south west waste rock dump and south east waste rock dump. Further to this the terms: ”clean” and ”reactive” are synonymous with the terms ”NAF” and “PAF”. Of particular relevance to rehabilitation are the following requirements:

a) Material above the 222 RL is confirmed as generally clean / NAF or low reactivity. Unless identified during routine testing as reactive / PAF, any material above the 222 RL will be considered to be clean / NAF and may be placed anywhere on site. Noting this clean / NAF waste may also be required for blending /capping of reactive / PAF material;

b) Materials from the Permian units will be regarded as reactive / PAF unless testing confirms material as clean / NAF;

c) All carbonaceous materials with total sulphur content greater than 0.5% must be managed as reactive / PAF, and classified as potentially spontaneously combustible. ;

d) Reactive / PAF waste should only be placed in dumps located inside the pit, below an elevation of 90 RL;

e) When placing reactive / PAF waste in-pit, preference will be given to disposal areas that are wholly below the post-mining water table where they will become permanently submerged and their oxidation thereby inhibited which will ensure the control of pyrite oxidation and acid release. This will require placement below 90 RL as per the post-closure pit void modelling;

f) Reactive / PAF waste stored in-pit should be placed in adequately constructed waste rock dumps. These must aim not to contain more than 10% of reactive / PAF waste. Should the mining sequence result in a dump containing more than 10% of reactive / PAF material, the dump must be encapsulated as per Figure 8-3. Encapsulation measures must be applied whether the dump in question is located inside or outside the pit.

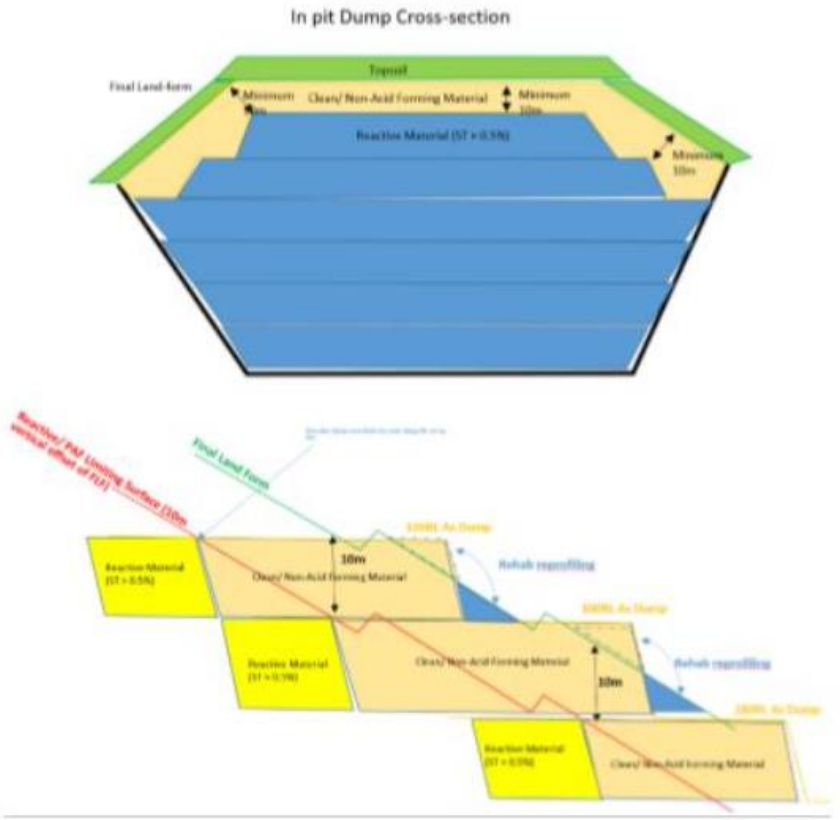

Figure 8-3 –Schematic section through an in-pit dump containing reactive / PAF materials.

g) If reactive / PAF material cannot be placed in-pit, it must be encapsulated by net acid consuming material as per Figure 8-4.

The following criteria must be applied to ex-pit dumps encapsulating reactive / PAF materials:

h) If available, a 2m thick basal layer of basalt (or other net acid consuming material) must be placed on the original land surface.

i) Net acid consuming material must be free dumped such that no reactive / PAF waste is located within 10m of the final dump surface after the slope has been re-contoured to ensure the encapsulated (reactive / PAF) material is not exposed.

j) Lifts of reactive / PAF or unclassified wastes should not exceed 5m thickness as far as practically possible.

k) Ex-pit dumps should preferably contain only clean / NAF waste. Where reactive material must be placed ex-pit for operational or Health and Safety reasons, these facilities should be constructed in a manner consistent with Figure 8-4 and ex-pit waste dump should contain less than 5% reactive / PAF material;

If there is potential for spontaneous combustion, inert or net neutralising material is required between lifts. Clean / NAF waste or basalt should be mixed into reactive / PAF waste if convenient to do so.

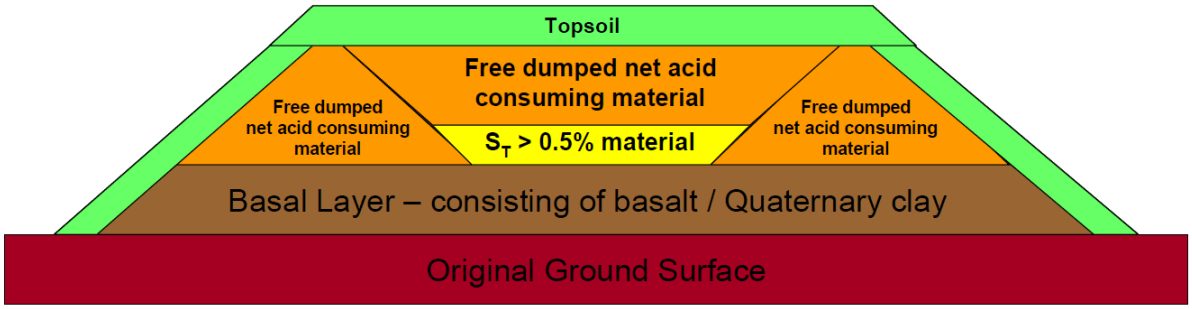

Figure 8-4 –Schematic section through an ex-pit dump containing reactive / PAF materials. The different waste types are coded by colour.

8.2.2 Potentially Spontaneous Combustible Wastes

All carbonaceous materials with total sulphur content greater than 0.5% will be managed as reactive / PAF and classified as potentially spontaneously combustible. Management controls must focus on minimising the time period during which these rock types are allowed to oxidize. The methodology for managing such materials is via encapsulation as per Figure 8-5.

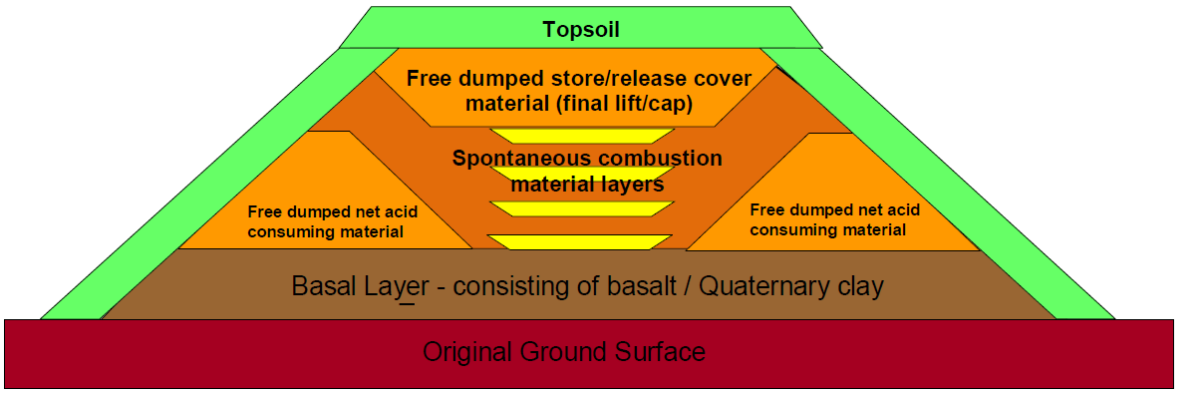

Figure 8-5 –Encapsulation Schematic for Potentially Spontaneous Combustible Wastes

8.2.3 Coarse Rejects and Tailings / Processing Wastes

Coal tailings and processing wastes are considered to be PAF and heated material may also have a propensity to spontaneously combust. Therefore these materials are to be rehabilitated in accordance with the requirements summarised in Sections 8.2.1 and 8.2.2.

A co-disposal system of coarse rejects and tailings is used at CCO, whereby rejects and tailings are to be disposed of in-pit and will be progressively encapsulated once the cells reach capacity. Over the life of the operation, coal tailings, processing wastes and contaminated mineral wastes are stored in the encapsulation areas referred to onsite as Mega Cells. There is currently one filled and encapsulated Mega Cell (1) and one active Mega Cell (2). Mega Cell 2 is active but currently has limited storage capacity. CCO are utilising decant/ settling ponds, which temporarily hold tailings until they are dried and can be disposed of directly in-pit, as per the requirements outlined in Section 8.2.1.

Where coarse rejects are classified as clean / NAF, they can be truck dumped in-pit. If additional coarse rejects material is available and confirmed as clean / NAF, it can be used within the in-pit area to improve haul road conditions. Coarse reject waste should be confirmed as clean / NAF before use anywhere on site as construction material. Should the coarse reject be classified as reactive / PAF, it should be disposed of in a similar manner to run of mine reactive / PAF waste. Tailings should be trucked to an intermediary dump for eventual co-disposal with coarse rejects in-pit. Rejects should be

capped by being buried under net acid consuming material as per the methodology outlined above for reactive / PAF material (Figure 8-4).

8.2.3.1 Co-disposal - Mega Cell

The Mega Cells are located in the NWRD, north of the Coal Handling Preparation Plant (CHPP) and have a number of monitoring bores which are monitored during the routine environmental monitoring program undertaken on a quarterly basis. Current data and previously completed investigations indicate adequate buffering is occurring in-situ as monitoring bores show acid drainage is negligible and within acceptable ranges.

8.2.3.2 Dry Tailings – Decant Ponds

The decant/settling ponds have an internal bund on one end to decant water and allow water to pass through the structure to a 'Return Water' pond. The supernatant water is pumped back to the CHPP for reuse. Further drying of the tailings occurs, which is then excavated, transported and disposed of in in-pit. The shallow decant ponds can be rehabilitated by removing/ excavating tailings waste and backfilling the ponds with overburden.

8.2.4 Hazardous Wastes and Non-mineral Wastes

Non-mineral wastes are removed from site and disposed of or treated by appropriately licensed waste management service providers. The exceptions to this are waste tyres or conveyor belt and bulk contaminated mineral waste (i.e. from a spillage). Waste tyres and conveyor belt are buried within waste dumps in accordance with the CCO Tyre Disposal Procedure (CLEOC-520960306-13076).

Specifically, disposal of tyres and conveyor belt must be buried as deep into spoil as is reasonably practical, and a minimum of 20 metres of material must be dumped over all disposal areas. Tyre dumps must also be located more than 10 metres from any coal tailings emplacement areas. Furthermore, tyres must only be disposed of in areas where they will not impede saturated aquifers or compromise the stability of the consolidated landform. All disposal events are tracked using the CCO Tyre Disposal Notification Form which records details including a survey of the dump's location and the number and type of tyres disposed.

Bulk contaminated mineral waste are soils that have been contaminated, usually with hydrocarbons or fine sediment from traps and sumps servicing wash-bays, workshops or fuel bays, and are of a volume that cannot be disposed of to a regulated waste bin. These contaminated soils are disposed of in-pit and as such are treated in the same manner as PAF material and material with the potential to spontaneously combust as discussed in Sections 8.2.1 and 8.2.2 above.

8.3 Topsoil Resources

As at 2021, a total topsoil volume of 4,169,300 m^3 was required to service the total rehabilitation requirements across the LoM. This is based on the current application rate of no less than 0.1 m (between 0.1 m and 0.3 m). Topsoil Management is addressed in the Topsoil Management Guideline.

Work continues to optimise the topsoil stripping program with a view to recovering more topsoil from deeper, basaltic and non-drainage line alluvial soils where quality remains high and sacrificing the less productive metamorphic soils.

As per Condition H6 of the EA, topsoil will be stripped ahead of mining and stockpiled (if not able to be used immediately). Prior to using a topsoil resource, whether it be an existing stockpile or stripped topsoil that is direct placed at its final location, the resource may be subjected to a growth medium

suitability assessment, where required, to determine amelioration and fertiliser requirements. All topsoiled areas are to be deep ripped on contour to a depth of approximately 0.5 metres.

8.4 Vegetation

When targeting vegetation communities for rehabilitation at CCO, consideration is given to the regulatory constraints of the approvals discussed in Section 3, the surrounding and post-mining land use concept discussed in Sections 5.1 and 6.3 and the capacity of the topsoil resources allocated to that particular Annual Program to support the selected species. CCO target endemic / native vegetation in areas where attributes such as slope grade, access and water availability are not favourable for grazing. Low-level grazing is targeted only in those areas with favourable grazing attributes and a potential for the land to become adequately productive. Also, one of the aims is to incorporate connectivity with surrounding woodlands to the west of the open cut put area and grasslands in the east (as per Figure 6.1), with the koala corridor being established along the clean water Gowrie Creek Diversion (as described in the Gowrie Creek Diversion Monitoring and Evaluation Program (Engeny, 2015).

Areas targeting native vegetation do not attempt to recreate a specific, recognised regional ecosystem (RE) or Threatened Ecological Community (TEC). However, species mixes have been selected based on a number of REs from within the surrounding region, the TEC previously known as the Bluegrass Dominant Grasslands of the Brigalow Belt Bioregions and reference monitoring locations within these REs and TEC (as per Figure 5.2).

Details of the REs which have been used to inform the species list development for each post-mining land use (and the CCO reference sites used to assess performance against the relevant completion criteria (Section 6.4.2 and Appendix A.2) are described in Section 11. Cover crops may also be used in areas where rapid stabilisation is required. The cover crops selected are not of a persistent nature so as to avoid any potential to restrict development of the targeted vegetation types.

9. Final Voids & Gowrie Creek Diversion

CCO has developed separate site specific management plans for the Final Void (CCO Final Void Assessment (KBR, 2015), the Final Void Water Quality Management Plan (CLE-HSEC-PLN-0021) and the Gowrie Creek Diversion (Gowrie Creek Diversion Monitoring and Evaluation Program). These plans are required to allow feature specific (Final Void) and licence specific (Gowrie Creek Diversion) details to be addressed. These plans also include rehabilitation matters and the Gowrie Creek Diversion Monitoring and Evaluation Program details the specific monitoring and evaluation program for this diversion (as required under Condition I1 of the EA). Sections 9.1 and 9.2 provide a summary of the proposed approaches to rehabilitation at these locations based on the details specified within these more detailed management plans.

During mine closure planning activities CCO continues the development of closure domains and sub-domains specifically for Cement Hill Void (CHV) mining leases. Although no areas within the CHV area are considered rehabilitated at present, the residual void at CHV currently acts as a water storage feature and it is expected to do so post closure. In this current state, the residual void at CHV is used for stock watering and irrigation, receiving inflows from surface water and groundwater. Based on investigations undertaken to date, the water level within the CHV residual void varies based on climatic sequence, however contains water of a good quality. Whilst rehabilitation objectives and post-mining land uses may change based on newly identified opportunities and pending outcomes of investigation, it is intended, based on current knowledge that the residual void at CHV will remain in its current form as a water storage area.

9.1 Final Residual Void

The nature of the mining method employed at CCO necessitates the need to leave a final residual void, which will not be able to support a productive post-mining land use. This was determined during the EIS process for the Clermont project, where a final void was approved as a Non-Use Management Area without vegetation and with expectations of deteriorating water quality localised within the void. Final void design has been evolving since the EIS conceptual designs produced in 2004. The EIS estimated the final residual void remaining at the end of mine life will cover approximately 400 hectares, will be on average 120 metres deep and have a maximum depth of 175 metres. The EIS assumed runoff from all inward facing dump slopes will be directed into the final residual void. A bund or fence (or both) were proposed to be erected around the final residual void to restrict public access to the area.

Approval for a residual final void has been documented in Clermont Mine's previous Environmental Authorities (EA's) and the 2016 Rehabilitation Management Plan, and although specific conditions have changed over time, the legal right to have a final residual void remains valid and is in line with final landform concept designs as presented to stakeholders through reference group forums.

As per previous Environmental Authority condition requirements, in 2014/15, CCO completed a Final Void Assessment and developed a Final Void Water Quality Management Plan (CLE-HSEC-PLN-0021). This work created a conceptual final residual void model for CCO based on the best available data at the time to understand both the potential water level and quality under a number of scenarios relating to a flushing or non-flushing void configuration. The objective of the conceptual final residual void configuration adopted as the base case (preferred option) was to minimise the interaction between pit water and the environment. It involved minimising catchment inflows and lowering the pit lake water surface elevation, specifically:

a) Minimising local catchment run-off entering the final residual void either through contouring of the final landform or construction of a bund around the rim of the pit; and

b) Providing probable maximum flooding immunity of the final residual void from Gowrie Creek floods through the design of the final landform.

See Figure 9-1 for a schematic of the conceptual final residual void based on 2014 LOM plans. Key levels of interest are:

a) The lowest point where the void will interact with the tertiary gravel aquifer (~200mAHD);

b) The lowest point where the void will interact with the tertiary basalt, and most regionally significant, aquifer (~220mAHD); and

c) The point at which the void would spill to surface water systems (~260mAHD).

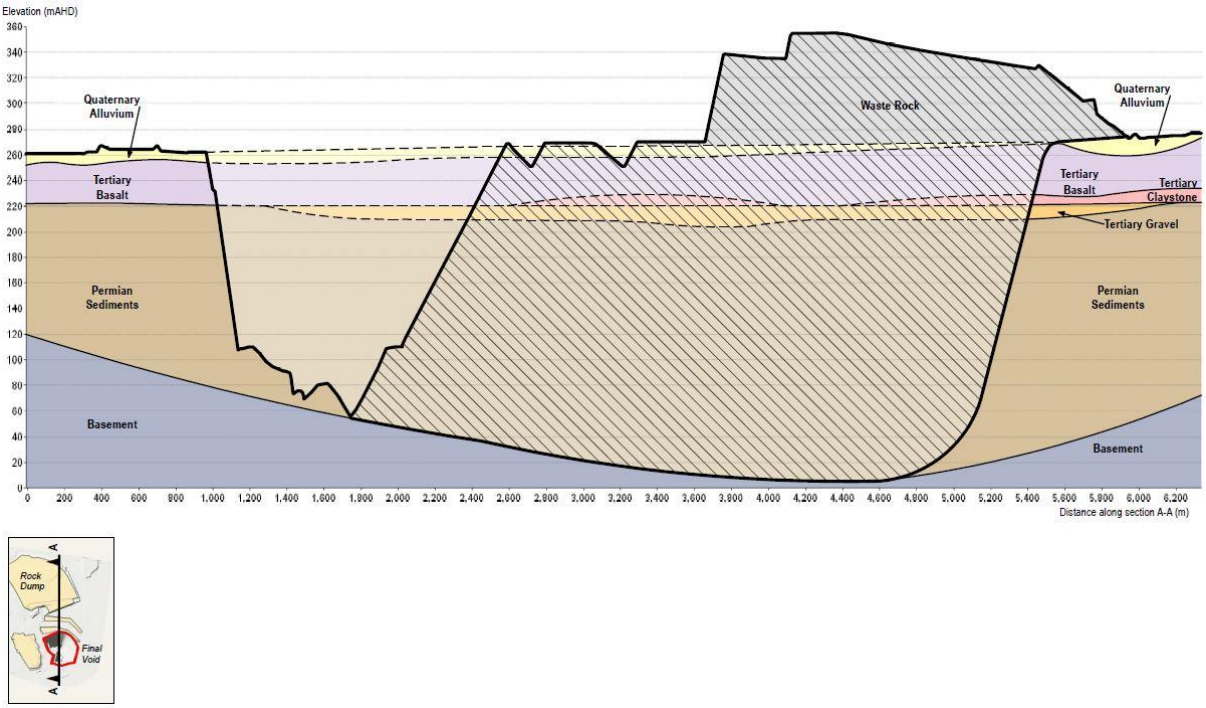

Figure 9-1 –CCO Conceptual Final Void - 2014 LOM (KBR 2015).

Under the base case scenario, the void water level is projected to stabilise after approximately 600 years at 98 mAHD. The 25th to 75th percentile ranges from approximately 95 mAHD to 105 mAHD. This narrow range suggests a high confidence that the water level will stabilise well below the pit rim and the regionally significant tertiary basalt aquifer.

Another significant finding with implications for rehabilitation of the final residual void, and water supply during operation, is the projection that due to the lowest point of the void being covered with a large volume of permeable spoil, as per the base case configuration, the formation of a permanent water body in the final residual void is not expected until around 130 years post-mining once the spoil in the lower areas is saturated.

As a result of evapo-concentration processes, salinity in the final residual void is expected to continue increasing beyond 1,000 years post-mining. Salinity is expected to range from 5,000 mg/L at the 25th percentile to 10,000 mg/L at the 75th percentile after 1,000 years. This finding is typical of other residual (final) mine voids in the region.

Table 9-1 summarises the projected evolution of the water level and quality of the pit lake within the final residual void under the base case scenario.

Pit Lake Stage	Projection
Lake Formation Stage	2 After an initial period of approximately 130 years a lake will begin to form in the base of the void. Prior to this, water accumulating in the void will be lost into the spoil via seepage; 3 Metal concentrations would be relatively low, but increase over time due to ongoing inputs and evapo-concentration; 4 Ferrihydrite is predicted to readily precipitate and form a coating over the bed of the pit lake, and would also influence (reduce) the concentration of a range of metals through adsorption; and 5 The lake may periodically stratify during summer, causing anoxic zones to form at depth, however the surface water inflows and increasing water levels should cause periodic mixing.
Lake Maturing Stage	▪ After 400 years the water level increases would begin to slow as surface area increases and evaporative losses begin to approach inflows; and ▪ Stratification is likely to be pronounced during summer, with the potential for mixing during winter.
Quasi-steady State	▪ Inflows and losses are similar and the water level is relative stable; and ▪ Water level fluctuations are expected to occur in response to climatic variation, but changes will not be significant.

Table 9-1 – Pit Lake (Final Residual Void) Evolution – Base Case Scenario (KBR 2015).

In addition to the base case, three alternative scenarios were considered during the assessment. The primary aim of investigating alternative configurations was to assess the potential for a flushing void. Under particular conditions and geometries, a flushing void has the potential to sustain a water quality more representative of that observed in regional systems and reduces the volume of water lost from the natural system. In the base case scenario, the final residual void acts as a water sink. The alternatives investigated were:

a) Alternative 1: Including local catchment inflows;

b) Alternative 2: Including regional catchment inflows; and

c) Alternative 3: Altering the final residual void geometry.

Creating a flushing void under the conditions of Alternative 1 was not achievable and under the conditions of Alternative 2 only when 50% of regional catchment flows from events at a frequency of less than a 1 year ARI were diverted in-pit. However, in this scenario where significant flows would be diverted away the natural system, the probability of the pit lake spilling remains low, with only around a 1% chance of this occurring between 600 and 800 years post-mining and a 5% chance it would occur by 1,000 years post mining.

The benefits of engineering a flushing void with a very low probability of spilling is unlikely to justify the impact of diverting a significant flow from Gowrie Creek unless a post-mining land use where water supply is identified as the major driver is desired. Under this scenario, water quality is projected to be much closer to that suitable for use in grazing or irrigation operations. If water supply does become a desired post-mining land use, more detailed modelling would need to be undertaken to improve the confidence of these water quality projections.

The third alternative investigated involved altering the final residual void geometry, specifically the surface area, by +/-30%. The results from this alternative suggest a +/-30% change to void surface area has little impact on pit lake evolution due to the pit lake be depressed well below the pit rim. This finding is informative from a rehabilitation perspective as confidence in the current final landform concept around the final residual void area is only at a 10% level. Should further refinement of the concept result in a surface area change of greater than +/-30%, this investigation should be revisited.

The findings from the Final Void Assessment and its consideration of alternative scenarios, reinforced the base case scenario of a final residual void at CCO, that will not necessarily be able to support a productive post-mining land use, as the most feasible option and will be used to inform further development of landform concepts around the final residual void area and the investigations will be revisited when a potential configuration with a higher confidence level is proposed.

9.2 Gowrie Creek Diversion

Construction of the Gowrie Creek Diversion and associated flood levee was completed in 2009. The diversion was required to allow access to the full coal reserves at CCO. In 2015, a northern section of the Levee was raised following damage to the crest from vehicle traffic. Key details for the Gowrie Creek Diversion and Levee are provided in the table below.

Creek Name	**Gowrie Creek (major) and Tea Tree Creek (minor)**
Water Licence No	189400
River catchment	Fitzroy River
Total Length	4.9 km – Upstream Diversion Reach 2.8 km – Downstream Diversion Reach
Catchment Area	85 km^2
Stream order	3
Date of construction	2008/9
Engineering Design	SKM, 2004
Levee Design Standard	1 in 500 year flood event
Diversion Channel Design Standard	1 in 20 year ARI flood event
Low Flow Design Standard	1 in 2 year ARI flood event
Local Ecosystem Description	Eucalyptus coolabah woodland on alluvial plains (11.3.3) Acacia harpophylla shrubby woodland with Terminalia oblongata on Cainozoic clay plains (11.4.9)
Diversion Risk Rating (Engeny 2015)	High – Upstream Diversion Reach Low – Downstream Diversion Reach
Historical Monitoring Record	2010-2021

Table 9-2 – Key Details for Gowrie Creek Diversion and Levee.

The operational success and rehabilitation objectives of the Gowrie Creek Diversion and Levee is managed by the CCO Gowrie Creek Diversion Monitoring and Evaluation Program (Engeny 2015). The monitoring program is an annual risk based program addressing:

a) Environmental Compliance Risk – risk of non-compliance with the model licence conditions;

b) Long-term Relinquishment Risk – risk of the diversion not trending towards equilibrium, nor likely to develop key features of a natural watercourse; and

c) Operational Risk – risk to mining operations, such as flood ingress to the pit and flooding damage to key infrastructure.

The Gowrie Creek Diversion will become a permanent waterway diversion and remain as post-mining land use. In order for the diversion to be considered permanent and the licence be relinquished, CCO will need to demonstrate the system has or is progressing towards:

a) Developing geomorphic and vegetation features similar to those in the local landscape;

b) Maintaining a sediment transport regime that does not directly impact on upstream and downstream reaches; and

c) Maintaining equilibrium and functionality and does not require ongoing maintenance.

Rehabilitation of the Gowrie Creek Diversion and Levee will be guided by the annual monitoring reports prepared in accordance with the Gowrie Creek Diversion Monitoring and Evaluation Program. Annual Rehabilitation Programs, as discussed in Section 7.3, for the eastern sides of the NWRD and SEWRD (see the rehabilitation schedule in Section 10) will need to integrate with the Levee, however the Gowrie Creek Diversion Monitoring and Evaluation Program will always remain the primary guidance for rehabilitation of the diversion.

In addition to the specific relinquishment requirements of the Gowrie Creek Diversion Water Licence, CCO has undertaken a number of tree planting exercises in this area as part of the Koala Venture initiative, a partnership agreement between the University of Queensland's (UQ) koala study program and CCO's previous owner. Under the advice and guidance of UQ, *Eucalyptus coolabah* seedlings were planted along the Gowrie Creek Diversion to provide a continuous vegetation corridor with the aim of supporting the growth and habitat of local koala populations. Future *Eucalyptus coolabah* seedling planting campaigns may be undertaken to enhance the koala corridor along the Gowrie Creek Diversion.

Findings from the 2016 monitoring report indicate progress towards rehabilitation of the Gowrie Creek Diversion and relinquishment of the water licence is positive. Most recommendations continue to focus on stabilising the high risk, upstream reach following the construction of a major bed control structure in 2015, whilst the downstream reach continues to be categorised as low risk. Further plantings of *E. coolabah* will also be considered to shade out and assist with the control of *Typha* spp. colonising the low flow channel in the downstream reach.

10. Rehabilitation Schedule

The rehabilitation schedule at CCO is largely influenced by the LOM plan and when spoil dumps become available for rehabilitation. The other major constraint on the availability of areas for rehabilitation are infrastructure areas required by the operation for the life of mine. These infrastructure areas include:

a) Workshops and maintenance facilities;

b) The CHPP and associated Run Of Mine (ROM) area;

c) The OLC;

d) The TLO;

e) Water storages; and

f) Administration facilities.

The indicative forecast rehabilitation schedule is provided in Table 10-1 and a schematic is presented in Figure 10-1. The next phase of rehabilitation scheduling is to incorporate rehabilitation works required at the TLO. See Section 11.5 for more detail regarding the rehabilitation status of the TLO and the CHV legacy areas.

The rehabilitation schedule is updated on an annual basis in accordance with internal GCAA requirements.

Annual Rehabilitation Program	Indicative Area (ha)	Sub-domains	Proposed Final Land Use
2021	54.8	NWRD – Batter Slopes; 360 Dump – Dump Top.	• Woodland and Light Grazing.
2022	66.3	360 Dump – Batter Slopes; Cement Hill Void – Batter Slopes and Dump Top; Cement Hill Void – Natural Surface; Cement Hill Void – Residual Void.	• Woodland and Light Grazing; • Water Management Area.
2023	81.7	360 Dump – Dump Top; In-pit Dump – Batter Slopes; Ex-pit Topsoil Stockpile Natural Surface.	• Woodland and Light Grazing • Native Vegetation (may include Bluegrass).
2024	88.5	In-pit Dump – Batter Slopes; Water Management – Decommission.	• Woodland and Light Grazing .
2025	40.7	In-pit Dump – Batter Slopes.	• Woodland and Light Grazing .
2026	218.15	OLC and other infrastructure areas as they become available	• Woodland and Light Grazing .
2028	602.8	Conveyor Dump – Batter Slopes; In-pit Dump – Batter Slopes; Final Void – Batter Slopes.	• Woodland and Light Grazing .
2029	497.4	Final Void – Batter Slopes; Infrastructure – Natural Surface; Infrastructure – Decommission; Water Management – Decommission.	• Woodland and Light Grazing • Native Vegetation (may include Bluegrass).
2029	14.7	CCO Final Residual Void.	• Residual Void – no use – as it will not be able to support a productive post-mining land use.

Table 10-1 – Forecast Life of Mine Rehabilitation Schedule – Indicative

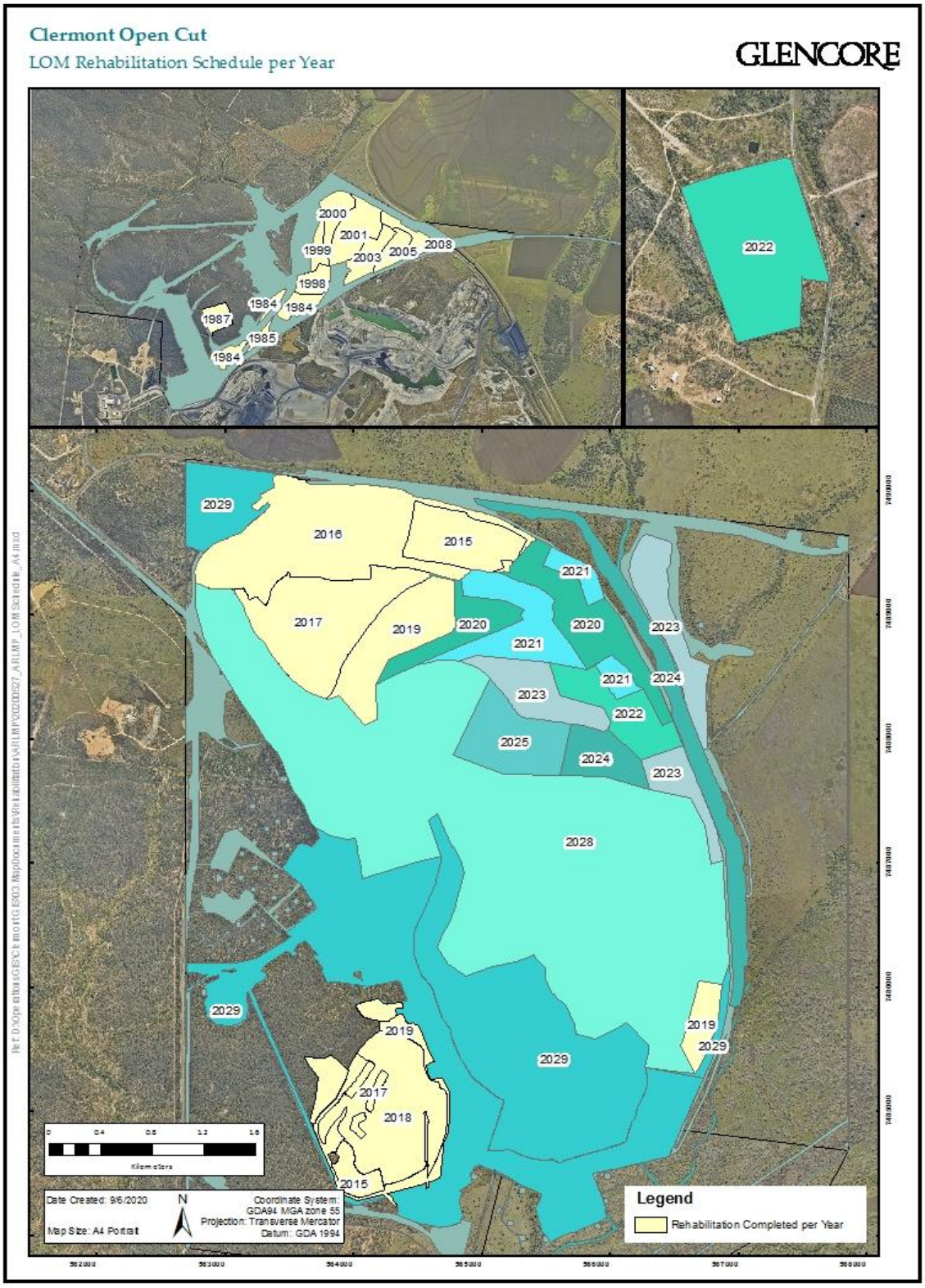

Figure 10-1 – Forecast Life of Mine Rehabilitation Schedule – Indicative

11. Rehabilitation Monitoring

Rehabilitation monitoring at CCO is completed for the primary purpose of producing a concise and targeted rehabilitation dataset using scientifically robust and repeatable methods which demonstrate compliance with pre-determined completion criteria and support relinquishment of all approvals (as per Section 6.1). Development of the CCO rehabilitation monitoring program has been guided by a number of GCAA documents, specifically the 11.16 Completion Criteria and Rehabilitation Monitoring Procedure (GCAA-625378177-10336) and the 11.16 Development of the Annual Rehabilitation Report Card Manual (GCAA-625378177-11398). The rehabilitation monitoring program at CCO involves the following elements:

a) The Annual Rehabilitation Report Card;

b) An Annual Rehabilitation Inspection (Walkover/Flyover);

c) An Annual Rehabilitation Implementation Self-Assessment; and

d) Baseline Monitoring.

11.1 Annual Rehabilitation Report Card

GCAA developed the Annual Rehabilitation Report Card process to support GCAA and its Operations in understanding the progression of rehabilitated areas towards a standard that meets regulatory rehabilitation success/completion criteria. The process attempts to identify early indicators for when corrective activities such as maintenance or rework are required. The Annual Rehabilitation Report Card process is a combination of spatial and GIS-based planning, scientifically robust field monitoring techniques and post-processing and analysis of results to generate a straightforward visual representation, consistent among GCAA operations, of rehabilitation progress and success.

The Annual Rehabilitation Report Card process generates a map assessing rehabilitation areas into one of the four categories described in Table 11-1. CCO maintain a monitoring schedule based on monitoring of representative monitoring transects when rehabilitation is at Year 1, Year 2, Year 5, Year 10 and five yearly thereafter until certified as complete by the regulatory agency.

Rehabilitation Status	Criteria
Rework	Does not meet rehabilitation success/completion criteria. Extensive rework required that would not typically form part of a rehabilitation maintenance program (e.g. slopes do not comply with approval requirements, bare areas >0.1 ha, large erosion gullies).
Maintenance	Does not meet rehabilitation success/completion criteria. Routine rehabilitation maintenance works required (e.g. weed control, infill seeding/plantings, repair of minor erosion, fertiliser application).
Monitor	Progressing towards meeting relevant completion criteria but does not meet all criteria. No intervention required but continue to monitor (e.g. ecologically young areas, variable results).
Acceptable	Meets all completion criteria and ready for sign off by stakeholders. Continue to manage and monitor to maintain status until relinquishment is sought.

Table 11-1 – Annual Rehabilitation Report Card Rehabilitation Status Criteria.

11.1.1 Adaptive Management

In the event a rehabilitation area receives a "Rework" result, CCO completes a thorough investigation to establish the root cause of the poor result and identify appropriate adaptive management techniques to rectify the failure. Key issues that are considered during the investigation include, but are not limited to:

a) Landform and drainage design aspects;

b) Mine spoil geochemistry (propensity for acid, metalliferous and/or saline drainage);

c) Growth medium physical and chemical properties;

d) Suitability of rehabilitation methods used (e.g. site preparation, sowing methods and times);

e) Suitability of the species mix and seed quality;

f) Weed competition;

g) Predation or excessive grazing by native herbivores or livestock; and

h) Climatic conditions pre and post sowing, including effects of drought and frost.

Following the investigation, a rehabilitation methodology and/or design for the Rework area is developed and the proposed works are documented in the next ARCP.

11.2 Annual Rehabilitation Inspection (Walkover/Flyover)

The purpose of the annual inspection is to provide a "rapid" style assessment (via a walkover or flyover) of all existing rehabilitation areas, including recently completed areas, across CCO. The inspection aims to identify all rehabilitation failures or maintenance issues that if left unchecked could hinder rehabilitation progress or result in expensive remediation.

The inspection includes but is not limited to identification of:

a) Erosion (rill, gully and tunnel);

b) Stability and functioning of erosion and sediment control and water management structures;

c) Visual assessment of vegetation cover, species diversity, vegetation health and growth rates;

d) Identified contamination / nutrient deficiencies; and

e) Presence of weeds and pests.

The annual rehabilitation inspection is completed by a suitably qualified and experienced specialist, preferably a third party, to provide independent appraisal of performance. At CCO, the outcome of this inspection is a completed Annual Rehabilitation Inspection (Walkover) Form (GCAA-625378177-10597) and a Maintenance and Aftercare Plan (M&A plan) in GIS geodatabase format. The M&A plan is a dynamic document which tracks progress on actions identified in the Annual Rehabilitation Inspection.

11.3 Annual Rehabilitation Implementation Self-Assessment

The Annual Rehabilitation Implementation Self-Assessment Criteria are used to assess completed rehabilitation works against planned and approved design standards. Uncontrolled variation from, or poor implementation of, rehabilitation designs can lead to increased maintenance or re-work and a potential to delay successful relinquishment.

The primary purpose of the self-assessment is to assess CCO's progress against annual Key Performance Indicators. However, the information captured is also of use as a 'lessons learnt' tool. Prior to commencing a new annual rehabilitation program, the self-assessments of similar areas are reviewed to ensure previous mistakes are not repeated and any identified improvements are adopted. The self-assessment is completed using the GCAA 11.16 Rehabilitation Implementation Self-Assessment Criteria form (GCAA-625378177-10534) and is available in Appendix A.5.

11.4 Baseline Monitoring

Reference sites have been established on and around CCO for the purpose of comparing with rehabilitated areas as per Figure 5.2. Six reference transects have been established to monitor baseline bluegrass dominant grasslands and twelve reference transects established to monitor vegetation communities as similar as possible to those being targeted for native vegetation at CCO. The selection of the reference sites aimed to enable sampling a combination of:

a) The range of natural vegetation present in the CCO mining lease and surrounding areas;

b) The current and planned landforms; and

c) Likely soil and geological formations.

However, it is noted that no reference sites are available that closely resemble CCO's batter slopes (i.e. black alluvial soils placed on slopes). Whilst use of alluvial soils is accepted as good practice for re-establishment of native vegetation on the batter slopes, these alluvial soils occur naturally in flat (alluvial) plains. As such all reference sites are located on flat plains. These are still useful for comparative purposes but the targeted proportions (in comparison to the reference sites) have been reduced to reflect the expected reduced height, biomass and cover characteristics of vegetation communities on slopes (principally due to reduced water availability).

The reference transects are monitored on a biennial basis unless there is a justified reason not to undertake monitoring. The methodology for monitoring reference sites is the same as that used for the Annual Rehabilitation Report Card, facilitating meaningful comparisons with rehabilitated areas. Table 11-2 lists CCO's current reference transects and their relevant REs/TEC. A map of reference transect locations is provided in Figure 5-2.

Reference Sites	REs/TEC	Post-mining Land Use	Domains
CL01, CL03, CL05	Narrow Leafed Ironbark Woodland (RE 11.11.1)	Native Vegetation	Batter Slopes
CR1, CR2, CR3	Dawson Gum Woodland (RE 11.4.8)	Native Vegetation	Dump Tops
SLI01, SLI02, SLI03	Silver Leafed Ironbark Woodland (RE11.5.3)		
CL02, CL04, CL06	Coolabah Woodland (RE 11.3.3)	Water Management	Riparian
T1-T6	*Dichanthium* and *Astrebla* Grasslands on Igneous Rocks (RE 11.8.11); and Natural Grasslands of the Central Queensland Highlands and the northern Fitzroy Basin (TEC)	Water Management	Bluegrass

Table 11-2 – CCO Reference Transects and RE/TEC.

11.5 Legacy Rehabilitation Area Assessment

Legacy areas are those areas of the TLO (including Blair Athol infrastructure, rehabilitated, and water management areas) and the CHV that are no longer active, or where rehabilitation has been carried out by previous owners. In 2016, CCO completed an assessment of these legacy areas. The assessment concluded a significant proportion of the areas within the TLO mining lease, where previous rehabilitation activities had been completed, should continue to be considered as completed rehabilitation (113 ha). This does not mean they have achieved an "Acceptable" rehabilitation status (see Table 11-1), but should be monitored in accordance with the Annual Rehabilitation Report Card process. No areas within the CHV mining leases (~36ha) were considered rehabilitated and therefore this entire area will be incorporated into the rehabilitation schedule discussed in Section 10.

12. Document Information

Relevant legislation, standards and other reference information must be regularly reviewed and monitored for updates and should be included in the site management system.

12.1 Related Documents

Related documents, listed in the table below, are *documents* directly related to or referenced from within this document.

Number	Title
EPML00634113	Environmental Authority (EA) – Clermont Open Cut Mine.
GCAA-625378177-9978	GCAA 11.0 Environmental Standard.
GCAA-625378177-10241	GCAA 11.16 – Rehabilitation Management
CLEOC-520960306-13348	Annual Rehabilitation and Land Management Plan
CLEOC-520960306-2664	Rehabilitation Process Procedure
CLEOC-520960306-2665	Annual Rehabilitation Signoff & Handover Form
CLEOC-520960306-514	Clermont Mine Mineral Waste Plan
CLEOC-520960306-1629	Non-mineral Waste Management Plan
TBD	Topsoil Management Guideline
CLEOC-520960306-13076	Tyre Disposal Procedure
CLEOC-520960306-1598	Final Void Water Quality Management Plan.
GCAA-625378177-10336	GCAA 11.16 Completion Criteria and Rehabilitation Monitoring Procedure.
GCAA-625378177-11398	GCAA 11.16 Development of the Annual Rehabilitation Report Card Manual.
GCAA-625378177-10597	GCAA Annual Rehabilitation Inspection (Walkover) Form.
GCAA-625378177-10534	GCAA 11.16 Rehabilitation Implementation Self-Assessment Criteria Form.
GCAA HSEC FRM 0053	GCAA 11.16 Rehabilitation Calculator Workbook – Clermont.
GCAA-625378177-10598	GCAA 11.16 Rehabilitation Establishment and Methodology Record Form.

Table 12-1 – Related documents

12.2 Reference Information

Reference information directly related to the development of this document or referenced from within this document is listed in Appendix A.6 and grouped according to the relevant document sections.

12.3 Change Information

CCO will review this RMP annually. Full details of the document history are recorded in the document control register, by version. A summary of the current change is provided in the table below.

Version	Date	Change Summary
1.0	13/03/2014	New document
2.0	22/042016	Updated to reflect new EA conditions.
3.0	26/07/2016	Re-published by migration script after conversion to Office 2013 format.
4.0	13/07/2017	Updated to reflect final/approved EA conditions.
5.0	22/11/2018	Updated headers & Footers due to corrupt macros
6.0	27/11/2018	Updated Footers again due to corrupt macros issue still occurring, updated change information table.
7.0	25/08/2020	Updated document to new GCAA template, updated document numbers/names in Section 13.1 Related Documents, general spelling, grammar and formatting, including updating of figures. Update for consistency of naming areas/domains and minor rewording. Update to reflect revised EA conditions and how each condition is met. New appendices created and others removed. RMP submitted to DES with confirmation on the 31st of July 2020 that this RMP is a land outcome document and addresses requirements of condition H2 of the EA.
8.0	24/06/2021	Update Section 3.1 to align with current Environmental Authority conditions and Section 8.2 to reflect Mineral Waste Management Plan requirements. Removed Accountabilities table as per change management 2021021197.0
9.0	10/11/2021	Updated Section 8 to include reference to the Topsoil Management Guideline and updated topsoil resources. Changed the document review period to 2 years as per EA requirement. Updated EIS mapping. Added section on PRCP transition.

Table 12-2 – Change information

Appendix A - Appendices

A.1 Objectives and Post-mining Land Use for Closure Domains and Sub-domains

Domains	Domain Objectives	Post-mining Land Use			
		Low density grazing	Native vegetation	Water Management Area	Residual Void – No Use
1. Infrastructure – Natural Surface	Infrastructure to remain and agreed transfer of ownership in specified condition	✓			
2. Infrastructure – Decommission	Infrastructure to be decommissioned and area left in a safe condition	✓			
3. Active Mining Area – Batter Slopes	Safe and stable slopes demonstrating acceptable levels of erosion Non-polluting and effective water management (transfer of water from high to low elevations)		✓		
4. Cement Hill Void – Batter Slopes			✓		
5. Active Mining Area – Mega Cell			✓		
6. Active Mining Area – Dump Tops	Access to area is safe for livestock with connectivity to larger grazing areas and water sources Non-polluting and effective water management		✓		
7. Cement Hill Void – Dump Top			✓		
8. Active Mining Area – Final Residual Void	Safe and stable slopes demonstrating acceptable levels of erosion Acceptable impacts on land and both surrounding surface and groundwater system				✓
9. Cement Hill Void –Residual Void				✓	
10. Active Mining Area – Natural Surface	Access to area is safe for livestock with connectivity to larger grazing areas and water sources	✓			

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Domains	Domain Objectives	Post-mining Land Use			
		Low density grazing	Native vegetation	Water Management Area	Residual Void – No Use
11. Water Management – Decommission		✓			
12. Water Management – Riparian	Flow regimes acceptable for external stakeholder		✓		
13. Water Management – Decommission (Bluegrass)	Infrastructure to be decommissioned and area left in a safe condition	✓			
14. Overland Conveyor (OLC)	Access to area is safe for livestock with connectivity to larger grazing areas and water sources		✓		
15. Cement Hill Void – Natural Surface	Infrastructure to be decommissioned and area left in a safe condition	✓			
16. Train Loadout Facility – Infrastructure	Retained Infrastructure to remain and agreed transfer of ownership in specified condition Other infrastructure to be decommissioned and area left in a safe condition		✓		

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A.2 Performance Indicators and Completion Criteria for Closure Domains and Sub-domains

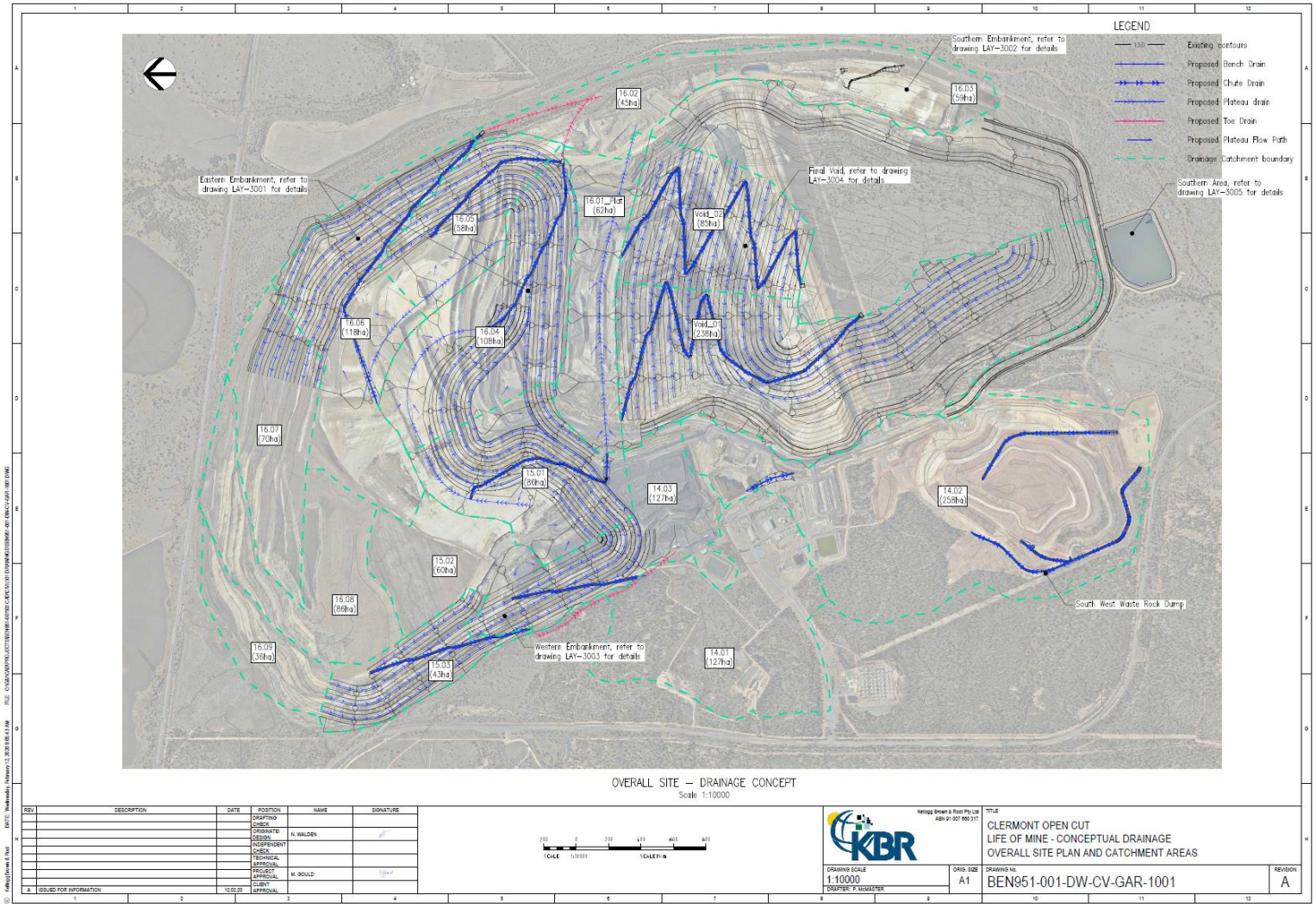
Rehabilitation indicators	Completion criteria	1. Infrastructure – Natural Surface	2. Infrastructure – Decommission	3. Active Mining Area – Batter Slopes	4. Cement Hill Void – Batter Slopes	5. Active Mining Area – Mega Cell	6. Active Mining Area – Dump Tops	7. Cement Hill Void – Dump Top	8. Active Mining Area – Final Residual Void	9. Cement Hill Void – Residual Void	10. Active Mining Area – Natural Surface	11. Water Management – Decommission	12. Water Management – Riparian	13. Water Management – Decommission (Bluegrass)	14. Overland Conveyor (OLC)	15. Cement Hill Void – Natural Surface	16. Train Loadout Facility - Infrastructure
Asbestos	Absence of asbestos	✓	✓											✓			✓
Structurally sound structures	High and confined spaces secured	✓	✓											✓			✓
Safe levels of pollutants such as hydrocarbons and sewage	Chemical pollutants removed	✓	✓											✓			✓
Key stakeholder consultation regarding post mining land use	Acceptance of post mining land use	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Equipment	Receiver can safely operate or take over remaining equipment	✓	✓											✓			✓
Knowledge of service (i.e. Sewage, electricity, phone etc.)	Identify user (MOU or in principle); A GIS map of services available	✓	✓											✓			✓
Weeds and pests	Weed and pest management plan completed	✓	✓	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓
Slope angle and length	As per Fig 8-1			✓													
Plant biodiversity	Native spp richness is at least 50% of reference sites (spp/ha based on ref sites)			✓	✓	✓	✓	✓			✓	✓		✓	✓	✓	✓
Structure	At least 30% height and 30% density of framework tree spp (based on ref sites)			✓	✓	✓		✓						✓	✓	✓	✓
	At least 50% height and 50% density of framework tree spp (based on ref sites)						✓				✓	✓	✓				
Framework species present	Presence of at least 2 Eucalypt/Corymbia spp., 2 Acacia spp., 2 native grass spp. and 1 additional legume			✓	✓	✓	✓	✓			✓	✓		✓		✓	
Framework species able to regenerate	Reproductive structures viable on framework species			✓	✓	✓	✓	✓			✓	✓		✓		✓	
Water runoff quality	Safe pH, EC, TSP, turbidity, metal levels in water samples based on local reference systems			✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓
Surface/ ground water	Safe pH, EC, TSP, turbidity, metal levels in water samples based on local reference systems								✓	✓							
Erosion	No erosion gullies >0.3 m deep.			✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓

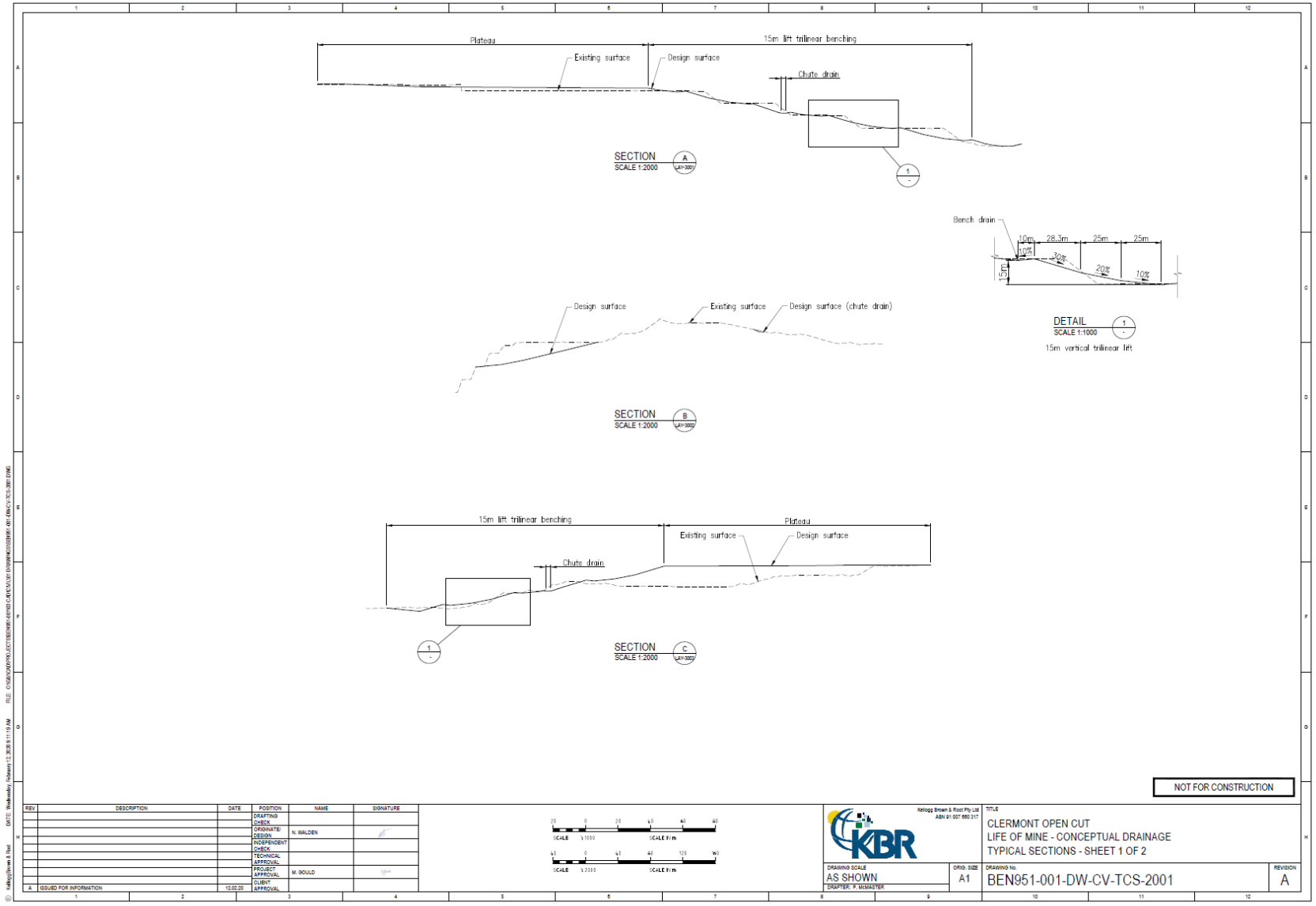
Rehabilitation indicators	Completion criteria	1. Infrastructure – Natural Surface	2. Infrastructure – Decommission	3. Active Mining Area – Batter Slopes	4. Cement Hill Void – Batter Slopes	5. Active Mining Area – Mega Cell	6. Active Mining Area – Dump Tops	7. Cement Hill Void – Dump Top	8. Active Mining Area – Final Residual Void	9. Cement Hill Void – Residual Void	10. Active Mining Area – Natural Surface	11. Water Management – Decommission	12. Water Management – Riparian	13. Water Management – Decommission (Bluegrass)	14. Overland Conveyor (OLC)	15. Cement Hill Void – Natural Surface	16. Train Loadout Facility - Infrastructure
	Slopes and erosion gullies stable and with vegetation cover >30% of reference sites																
Resilience to drought	Framework spp. remain following drought			✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓
Resilience to fire	Framework Eucalypt/Corymbia spp. remain following fire and other framework re-colonise within two years			✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓
Resilience – to grazing + fire	Recovery of yield following disturbance based on reference sites (50% of ref site recovery)						✓				✓	✓		✓		✓	
Cover	Grass cover over a five year period averages >70% of reference sites													✓			
Species types (based on pasture grazing reference site)	>50% of species from reference grazing site						✓				✓	✓		✓		✓	
Safe to fauna and humans	Access and egress to and from voids safe for humans and fauna								✓	✓							
Non-polluting to surrounding environment	Groundwater movement and quality modelled (does not impact sensitive environment or user)								✓	✓							
Surface/ ground water	Safe pH, EC, TSP, turbidity, metal levels in water samples based on local reference systems								✓	✓							
Stability measures	Geotech stability of final residual void assessed as acceptable								✓	✓							
Plant biodiversity	Native spp richness is at least 50% of reference sites (X spp/ha based on Coolabah woodland ref sites)												✓				
Water license relinquishment	Water license relinquished											✓	✓	✓			
Structural integrity	RPEQ Geotech stability assessed												✓				
Riparian plant spp.	Particular spp. from reference sites present												✓				

A.3 Deviations From Landform Design Principles

Area	Reason for Deviation
2015 NWRD (14.6ha)	Area reshaped in accordance with the original EA conditions and prior to the adoption of the tri-linear design.
Isolated areas around drainage chutes (<0.5ha)	Small areas where drainage chutes intersect slopes.
2016 NWRD Ridge (~20ha)	Tying in either side of the ridgeline along the top of the 2016 NWRD required an element of field fit where changes in compaction factors resulted in less material than anticipated. These areas are largely slopes of around 10%, much shallower than the maximum 17% alternative design (noting lower slope angles are better than steeper slopes).
2016 NWRD Toe (~10ha)	Blending the lowest bench into natural surface required an element of field fit where changes in compaction factors resulted in a net excess of material. These areas are a tri-linear landform with the 10% component of the slope increased to accommodate the excess material. This deviation effectively reduces the average slope angle and in turn is expected to generate less erosion.

A.4 LOM Concept Landform and Water Management Designs




Plateau
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Chute drain
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25m
15m
30%
20%
10%
DETAIL 1
SCALE 1:1000
15m vertical trilinear lift
Design surface
Existing surface
Design surface (chute drain)
SECTION B
SCALE 1:2000
15m lift trilinear benching
Plateau
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Design surface
Chute drain
SECTION C
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DRAFTING CHECK
ORIGINATOR/ DESIGN
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INDEPENDENT CHECK
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CLERMONT OPEN CUT
LIFE OF MINE - CONCEPTUAL DRAINAGE
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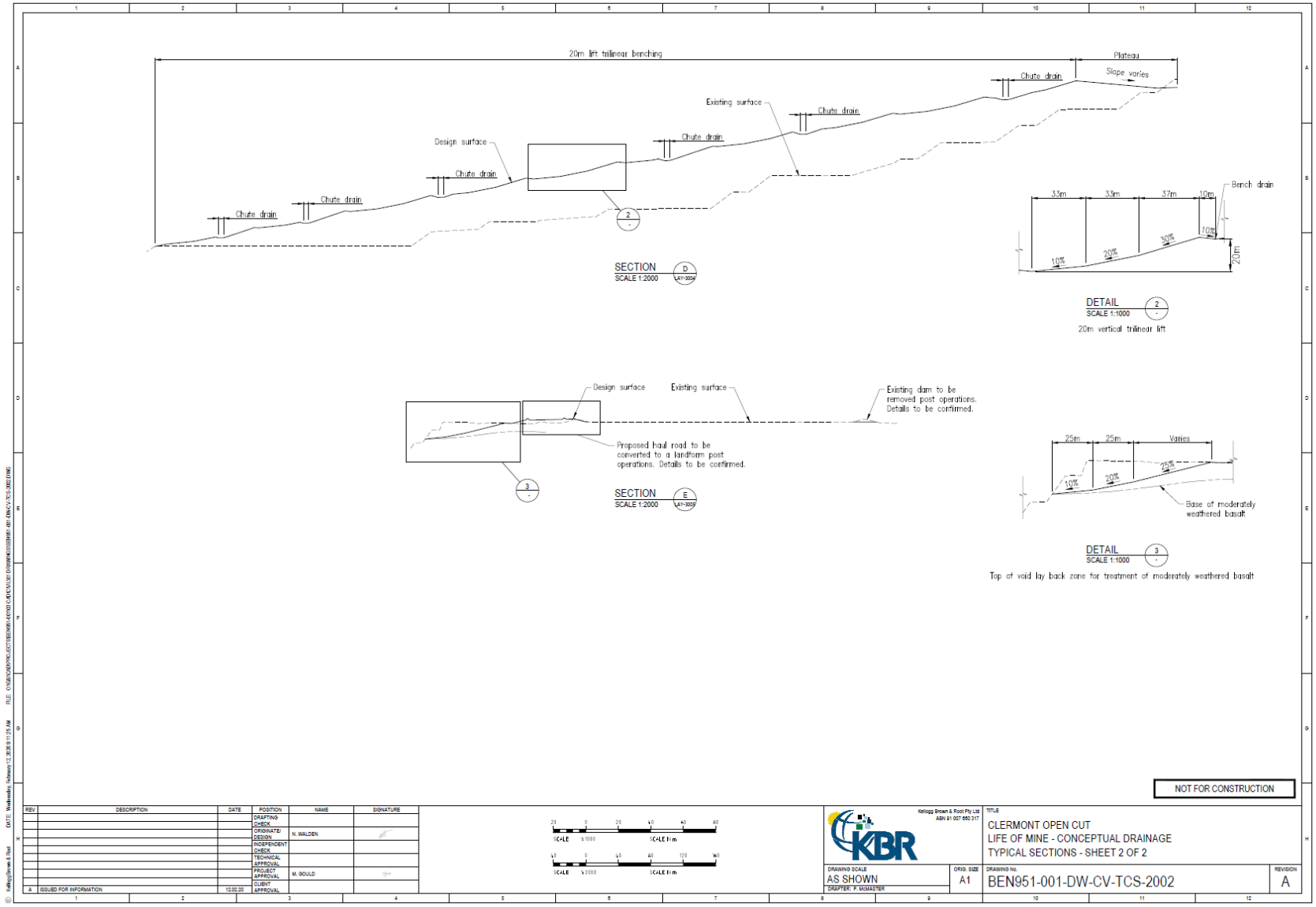

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A.5 Rehabilitation Self-Assessment Form

Annual Rehabilitation Implementation Self-Assessment for _____ on _____

Assessment completed by: _____ and _____ for the Operation

Rehab Success Area		Criteria	Ratings Guidance (Mark with X)				Notes (specifics identified relevant to the criteria on the area evaluated)
			N/A	Improvements required (Several areas for improvement identified)	Good (Minor or no areas for improvement identified)	Verification/Evidence (What information/process has the Operation used to rate performance for each criteria)	
1	General	1.1 Were the areas rehabilitated the areas identified and planned in the site's approved Annual Rehabilitation & Land Management Plan?					
		1.2 Rehabilitation has been undertaken in general accordance with all statutory commitments and no Rectification or Non-Compliance Notices have been received in relation to rehabilitation throughout the Budget Year. Note: Operations should compare completed disturbance and rehabilitation areas for the year against those areas outlined in regulatory plans and approvals to					

Rehab Success Area	Criteria	Ratings Guidance (Mark with X)				Notes (specifics identified relevant to the criteria on the area evaluated)
		N/A	Improvements required (Several areas for improvement identified)	Good (Minor or no areas for improvement identified)	Verification/Evidence (What information/process has the Operation used to rate performance for each criteria)	
	confirm that they generally conform.					
	1.3 Was the rehabilitated design implemented, or were on-the-ground changes made? If so, who approved the variations from the final approved designs?					
	1.4 Minimum rehabilitation area (ha) met as per annual target (KPI's)? (Survey verification required)					
	1.5 Where demolition works have taken place, where structures demolished to a depth to facilitate the targeted post-mining land use?					
	1.6 Where demolition works have taken place, were demolition wastes disposed in pre-determined locations suitable for its hazard categories?					

Rehab Success Area		Criteria	Ratings Guidance (Mark with X)				Notes (specifics identified relevant to the criteria on the area evaluated)
			N/A	Improvements required (Several areas for improvement identified)	Good (Minor or no areas for improvement identified)	Verification/Evidence (What information/process has the Operation used to rate performance for each criteria)	
2	Landform	2.1 Slopes angles have been checked / verified as being the same / lower than maximum design angle permitted by Approvals (Survey verification required)					
		2.2 Slopes lengths have been checked / verified as being same or shorter than maximum allowable length permitted by Approvals (Survey verification required)					
		2.3 Free-draining (no pro-longed ponding) in all areas unless part of approved rehabilitation design (voids, dams, siltation paddocks)?					
		2.4 No areas identified where rehabilitation works may cause unnecessary erosion and /or rehabilitation failure (concentrated flow, landform design, inappropriate material use etc.)					

Rehab Success Area		Criteria	Ratings Guidance (Mark with X)				Notes (specifics identified relevant to the criteria on the area evaluated)
			N/A	Improvements required (Several areas for improvement identified)	Good (Minor or no areas for improvement identified)	Verification/Evidence (What information/process has the Operation used to rate performance for each criteria)	
		2.5 No areas identified where storm water will overtop freely over an earthen slope crest onto the slope below (unless into stormwater system or with protection works, i.e. rock armouring)					
		2.6 Are all slopes convex-concave (s-shape) from top to bottom, or at least concave, but not ending in a convex form at the bottom of the slope?					
		2.7 The landform fits well with surrounding landforms and rehabilitated areas, i.e. the edges blend without a significant vertical difference, stormwater systems fit etc.?					
3	Cap / Cover Growth Medium	2.8 Was the spoil amelioration layer applied prior to placement of cap / cover (i.e. lime or capillary break)? Was this implemented and verified? (Only if required as per the design)					

Rehab Success Area		Criteria	Ratings Guidance (Mark with X)				Notes (specifics identified relevant to the criteria on the area evaluated)
			N/A	Improvements required (Several areas for improvement identified)	Good (Minor or no areas for improvement identified)	Verification/Evidence (What information/process has the Operation used to rate performance for each criteria)	
		2.9 Where required was the cap / cover layer constructed as per the design? Has this been verified? (I.e. layer minimum thickness, compaction, material properties etc.)					
		2.10 Was chemical / organic amelioration of the growth medium applied / implemented as per specifications? E.g. application rate, incorporation. Was this verified?					
		2.11 Was topsoil placed at the required depth? Was this verified?					
		2.12 Was ripping done prior to seeding, and on contour?					
4	Seed Mix	2.13 Was fertiliser applied? If so, was this based on analytical soil/spoil analysis?					

Rehab Success Area		Criteria	Ratings Guidance (Mark with X)				Notes (specifics identified relevant to the criteria on the area evaluated)
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		2.14 Was the seed mixture used as per the specifications in the rehabilitation plan?					
5	Stormwater Structures / Systems	2.15 Where any areas have been rock-armoured to assist with energy dissipation and reduce erosion potential, do the edges of the rock armouring blend in with surrounding soils to prevent water flow restrictions?					
		2.16 Where any stormwater control structures / systems were built, were these as per the designs (width/depth ratio, material grading, armouring thickness, use of geofabric as specified)					
		2.17 Where any water management structure will be a regulated structure under legislation and related guidelines; have a specifically qualified engineer been involved in phased construction supervision / works approvals?					

Rehab Success Area		Criteria	Ratings Guidance (Mark with X)				Notes (specifics identified relevant to the criteria on the area evaluated)
			N/A	Improvements required (Several areas for improvement identified)	Good (Minor or no areas for improvement identified)	Verification/Evidence (What information/process has the Operation used to rate performance for each criteria)	
		2.18 Where contour banks or berms have been constructed, has an "as built survey" been undertaken to ensure construction as per design e.g. Channel base and crest width, bank height and channel gradient?					
		2.19 Where stormwater is planned to discharge from rehabilitation areas into the natural environment, does the stormwater go through a sedimentation pond or de-silting system prior to release of stormwater into the environment?					
6	Monitoring	2.20 Was an Annual Rehabilitation Walkover/Flyover Inspection completed during the budget year in accordance with the *GCAA Completion Criteria and Rehabilitation Monitoring Procedure* and & any recommendations entered into CMO.					

Rehab Success Area		Criteria	Ratings Guidance (Mark with X)				Notes (specifics identified relevant to the criteria on the area evaluated)
			N/A	Improvements required (Several areas for improvement identified)	Good (Minor or no areas for improvement identified)	Verification/Evidence (What information/process has the Operation used to rate performance for each criteria)	
		2.21 Has a scientifically based long term rehabilitation monitoring program been developed in accordance with the *GCAA Completion Criteria and Rehabilitation Monitoring Procedure*					
		2.22 Was monitoring of rehabilitation areas undertaken in accordance with the Operation's long term rehabilitation monitoring program & any recommendations entered into CMO?					
7	Reporting	2.23 Details of each rehabilitation campaign during the budget year have been captured on *GCAA HSEC FRM 0596 Rehabilitation Establishment and Methodology Record Form* or alternatively required details shown on the Form have been directly input into the Operation's GIS system. All disturbance and rehabilitation records have been updated in GIS for the budget year.					

Rehab Success Area		Criteria	Ratings Guidance (Mark with X)				Notes (specifics identified relevant to the criteria on the area evaluated)
			N/A	Improvements required (Several areas for improvement identified)	Good (Minor or no areas for improvement identified)	Verification/Evidence (What information/process has the Operation used to rate performance for each criteria)	
		Note: the information from the Form should form the key attribute data for each Rehabilitation Polygon.					
		2.24 All rehabilitation reports to government departments or other external Stakeholders have been submitted by the due date					
		2.25 Rehabilitation data for the Operation has been input into GCP and verified by Operation's management as accurate					
8	Care & Maintenance	2.26 Commitments relating to Rehabilitation Care and Maintenance and any Legacy sites have been completed in accordance with the Operation's ARCP the GCAA Annual Rehabilitation Self-Assessment (Inspection) Form or any other Notices of Directions received from Govt.					

A.6 Reference Information

Reference	Title
Statutory and Regulatory Documents	
EPBC 2003-1167	CCO EBPC Act Approval.
RTCA, 2004	Clermont Coalmine Project – Environmental Impact Assessment.
RTCA, 2004	Clermont Coalmine Project – Environmental Impact Assessment, Supplementary Report.
EPML00634113	Environmental Authority (EA) – Clermont Open Cut Mine.
Landform Design	
Carson and Kirkby, 1972.	Hillslope Form and Process. Cambridge University, London.
Pritchard, 1979	Landform and Landscape in Africa. Edward Arnold, London.
Gerrard, 1981.	Soils and Landforms. An integration of geomorphology and pedology. University of Birmingham, London.
IECA, 2008	Best Practice Erosion and Sediment Control.
O'Kane Consultants, 2016	Glencore Clermont Coal Operations – 2015 Detailed Landform Rehabilitation – Design Report.
O'Kane Consultants, 2016	Glencore Clermont Coal Operations – 2016 Detailed Landform Rehabilitation – Design Report.
AECOM, 2017	Tri-Linear Slope Assessment 2017.
Landform Construction	
Ostwald Bros and Engeny, 2016	2015 SWRD and NWRD Rehabilitation – Construction Report.
Topsoil Resources	
GSS, 2007	Topsoil Management Strategy.
Burgess, J. 2010	Soil mapping and topsoil stripping recommendations for FY10/11 disturbance areas, Clermont Coal Project.
Burgess, J. 2011	Soil mapping and stripping recommendations for Clermont Coal Mine, Stage 2 – disturbance areas for 2011.
Burgess, J. 2012	Soil mapping and stripping recommendations for Clermont Coal Mine, Stage 3 – Pre-mining disturbance areas for 2012.
Landloch, 2015	Growth Media Assessment For the 2015 Rehabilitation Program.
Landloch, 2016	Growth Media Assessment For the 2016 Rehabilitation Program.
Landloch, 2016	Growth Media Suitability – Deeper Topsoil Recovery.
Landloch, 2016	PB16 Topsoil Sampling Program.

Reference	Title
Landloch, 2017	Soil Assessment for the 2017/2018 Pushback Program
Landloch, 2018	Characterisation of Materials for 2018 Rehabilitation Program
Vegetation	
URS, 2007	Clermont Coalmine Bluegrass Management Plan and Offset Strategy.
Ausecology, 2015	Clermont Coal Operations Rehabilitation Report – Natural Grasslands of the Queensland Central Highlands and the Northern Fitzroy Basin Ecological Community.
Landloch, 2015	Measurable Rehabilitation Success Criteria For Closure.
Landloch, 2016	Supply of Seed and Rehabilitation Trial Suggestions (Technical Advice).
Landloch, 2016	Rehabilitation Technical Advice.
Weeds and Pests	
CCO, 2017	Weed and Pest Management Plan
CCO, 2021	Weed and Pest Management Plan – Operational Manual
Final Void	
KBR, 2015	CCO Final Void Assessment.
Gowrie Creek Diversion	
Engeny, 2015	CCO Gowrie Creek Diversion Monitoring and Evaluation Program.
Engeny, 2021	Gowrie Creek Diversion Major Monitoring Assessment
Rehabilitation Monitoring	
UQ, 2014	Rehabilitation Monitoring Manual For Glencore Coal Operations, Queensland.
UQ, 2015	Reference Site Establishment For Clermont Coal Operations Mine.
AECOM, 2016	Clermont Rehabilitation Baseline Monitoring 2016.
AECOM, 2016	Historical Areas Rehabilitation Assessment Report.
AECOM, 2016	Rehabilitation Aftercare and Maintenance Plan.
AECOM, 2016	Clermont Rehabilitation Monitoring Program.
AECOM, 2016	Clermont Rehabilitation Monitoring Summary 2016.
AECOM, 2017	CCO Baseline Monitoring 2017
AECOM, 2017	Blair Athol TLO Rehabilitation Summary Report 2017.
AECOM, 2017	CCO Rehabilitation Summary Report 2017.
AECOM, 2017	CCO Rehabilitation Monitoring Program 2017.

Reference	Title
AECOM, 2017	CCO Rehabilitation Aftercare and Maintenance Plan.
Ausecology, 2018	Rehabilitation Aftercare and Maintenance Plan.
Cultural Heritage	
CHMP (2004, as amended 2014)	Clermont State Cultural Heritage Management Plan