

COLLINSVILLE OPEN CUT

GLENCORE

11 September 2026

Department of the Environment, Tourism, Science and Innovation
Dr. Alison Cummings
Manager, Assessment | Delegate of the administering authority
Business Centre Coal
PO Box 3028, Emerald QLD 4720

Dear Alison,

We refer to the Department of the Environment, Tourism, Science and Innovation (DETSI) Information Request (IR) dated 22 July 2026 for the Environmental Authority (EPML00332013) (EA) amendment application in relation to the Kerale Area Domain. The EA is for the Collinsville Open Cut (COL), owned and operated by NC Coal Company Pty Ltd (NC Coal).

The purpose of the EA amendment application is to:

- Appropriately address the risk of environmental impact associated with the Kerale Area Domain whilst mining activities are being carried out; and
- Nominate a final land outcome for the Kerale Area Domain following the cessation of mining activities.

This response letter and the following attachments comprise NC Coal's response to the IR items:

- Attachment A – Spatial data package;
- Attachment B – Monitoring locations relevant to Kerale Area Domain figure;
- Attachment C – KCB 2025a, Initial Source Terms Provisional;
- Attachment D – RGS 2025, Spoil Geochemistry Review Assessment;
- Attachment E – Supporting information data pack;
- Attachment F – Kerale Dam engineering site plan; and
- Attachment G – Kerale Area non-dam ecology survey photos.

This IR response supplements the 'Collinsville Kerale EA amendment application supporting information' report (Glencore, 12 June 2026) and is set out by IR Item number. This IR response (with the exception of Attachment A – Spatial data package) is also hosted on the Glencore COL website.

Terms used in this IR response as consistent with the EA amendment application documentation are provided in Table 1. Table 2 provides a roadmap to this response outlining each of DETSI's IRs and the location of NC Coal's response. Table 3 provides a reference list of technical documents referred to in this IR and previously provided to DETSI with the EA amendment application. Any documents referenced in this IR response which are not included in Table 3 have been provided as attachments to this IR response.

Yours sincerely,

NC Coal Company Pty Ltd
Collinsville Coal Mine

TABLE 1 TERMS RELEVANT TO THE EA AMENDMENT APPLICATION

Term	Description
Lime dosing facility	The facility used to neutralise Acid Mine Drainage (AMD) water. The facility was commissioned in the early-mid 1990s and was decommissioned in the early 2000s. The facility comprised a pond to temporarily hold AMD water prior to neutralisation, a dry lime dosing system and a mixing pond.
Kerale Area	The area generally comprising the western portion of ML1064 and the south-western portion of ML1037 centred around Kerale Dam, incorporating the location of the former lime dosing facility and the area downgradient of the dam embankment incorporating the alluvial system and surrounds associated with the tributary of Pelican Creek.
Kerale Area Domain	The Kerale Area Domain follows the inside (eastern) toe of the western diversion landform, encompasses the location of the former lime dosing facility, specifically the mixing pond, follows the lower portion of the adjacent (eastern) spoil dump final landform slope, transitioning between the lower slope segment and the approximate toe of the spoil dump, and encompasses the inferred extent of the alluvial system associated with the tributary of Pelican Creek, to a point approximately 750 metres (m) downstream of the Kerale Dam embankment.
Kerale Dam	The area comprising land that is inundated at the full supply level of Kerale Dam (141.5 m Australian Height Datum (AHD)) and the footprint of the dam embankment extending to where the embankment on the downstream face meets natural surface.
Kerale Area non-dam	The area inside the Kerale Area Domain that is not the Kerale Dam.

TABLE 2 INFORMATION RESPONSE (IR) ROADMAP

IR Item	Matter	IR	IR Response location
1	Spatial data	The spatial information should be submitted in the prescribed format outlined in the department's Spatial Information Submission Guideline (ESR/2018/4337), including appropriate projection information and metadata where applicable. Provide coordinates (in Lat/Long. [GDA2020] format) of all monitoring locations. Provide a figure depicting all monitoring locations (surface water, groundwater, sediment, and soil).	Section 1 Section 6 Attachment A Attachment B
2	Source of contamination	Provide an assessment of all possible sources of contamination to the Kerale Area Domain.	Section 3
3	Source of contamination	Provide information on the potential for seepage from the rehabilitated spoil to the Kerale Dam through the diversion drains.	Section 3
4	Source of contamination	Provide an assessment of the potential for seepage from the open cut areas and mine affected waters draining into clean catchments in relation to the Kerale Area.	Section 4
5	Source of contamination	Provide information on the relationship between the lime dosing pond, surface water, groundwater, and soil.	Section 5
6	Data	Provide an assessment and interpretation of integrated data that includes surface water, groundwater, sediment, soil and seepage. Provide an assessment and interpretation of the ionic composition between surface water, groundwater, seepage, and pits in the vicinity of the Kerale Area Domain.	Section 6
7	Diversion landforms	Provide the date of construction of the western and eastern diversion landforms.	Section 7

8	Conceptual site model	Provide information on the mechanisms incorporated into the conceptual site model. Provide an updated conceptual site model that incorporates all relevant mechanisms, including, but not limited to, ion exchange, ion adsorption, precipitation, dissolution, dilution, microbial uptake, plant root uptake, desorption, mass loading.	Section 8
9	Conceptual site model	Propose an additional surface water quality monitoring location downstream of the Kerale Dam, prior to the drainage feature leaving the mining tenure.	Section 9
10	Groundwater	Propose additional groundwater quality monitoring locations downstream of the Kerale Dam embankment.	Section 10
11	Groundwater	Provide all groundwater data for all groundwater bores associated with the Kerale Area.	Section 11
12	Groundwater	Provide information on the additional drilling or monitoring of groundwater that has occurred in the tributary alluvium downstream of K02 to determine the extent of existing contamination. If no additional drilling or monitoring of groundwater has occurred in the tributary alluvium downstream of K02, provide justification to why it has not occurred.	Section 12
13	Groundwater	Provide historical water level and water quality data (hydrographs) for all monitoring bores downstream of the Kerale Dam and adjacent the Kerale Dam. Provide advice as to whether tests have been carried out on monitoring bores K01, K02 and RN182866 to determine hydraulic conductivity.	Section 13
14	Groundwater	Provide additional information in relation to the VVPs mentioned.	Section 14
15	Groundwater	Provide information on what conditions have been occurring in the tributary downstream of the Kerale Dam historically.	Section 15
16	Groundwater	Provide information on how the limitations described in section 4.4 of Appendix A, including the lack of a water quality profile for stored water in Kerale Dam and the apparent limited understanding of historical downstream conditions in the ephemeral tributary below the dam, impact the predictions that are made in Appendix A.	Section 16
17	Ecology	Provide justification that the Kerale Area non-dam area requires to be managed as a non-use management area (NUMA). Alternatively, submit a written request to change the EA amendment application currently under assessment to remove the Kerale Area nondam area from the proposed NUMA footprint.	Section 17
18	Ecology	Provide photographs of the Kerale Area non-dam area, including the remnant vegetation that is proposed to be included in the Kerale Area Domain.	Section 18
19	Management strategy	Detail the management strategy that will be implemented to ensure there is no impact to the environment beyond the Kerale Area Domain and no movement of contaminants offsite post-closure. If vegetation is included within the management strategy to be implemented, provide information in relation to the following: (a) What species have been identified that are tolerant of the extreme/adverse soil conditions? (b) How will vegetation success and recruitment be demonstrated? (c) What impact will vegetation and/or microbial activity have on the contaminant availability and transport, and how will this be managed and demonstrated to be successful?	Section 19

20	Alternative approach	Provide an assessment of alternative approaches considered in relation to the management of the contaminated area/material. Alternatively, provide an assessment of approaches for the management of the Kerale Area Domain, including, but not limited to, remediation and disposal in pit. The assessment should include an analysis of the reaction chemistry expected to occur if the contaminated material is disposed in pit, including dissolution/precipitation reactions, redox, pH, geochemical speciation, and salinity; the relationship to surface water and groundwater flow paths and water chemistry; and the potential for contaminated water to move beyond the pit and/or offsite. Provide justification for the selection of the proposed approach of managing the Kerale Area Domain as a NUMA.	Section 20
21	Alternative	Provide all data (surface water, groundwater (quality and level), sediment, and soil quality) for all monitoring locations in excel format.	Section 21

TABLE 3 TECHNICAL DOCUMENTS REFERENCED IN THIS IR RESPONSE

IR Response in-text document reference	Document title	Document number and version	Document author	Document date	Associated appendix number to EA amendment application supporting information (dated 12 June 2026)
Engeny, 2026	Kerale Dam Hydraulic Assessment to Support EA Amendment Application and PRCP Submission	BNE00236_0208-LET-001-0	Engeny	05 June 2026	Appendix C
ERM, 2026a	Geochemical Investigation of Kerale Area Factual Report	0771288.01.2	Environmental Resources Management Australia Pty Ltd	09 June 2026	Appendix D
ERM 2026b	Geochemical Investigation of Kerale Area Interpretive Report	0771288.01.1	Environmental Resources Management Australia Pty Ltd	09 June 2026	Appendix E
ERM 2026c	Kerale Study Area – Ecology, Sediment and Water Quality Assessment	0771228 Collinsville EA/NP	Environmental Resources Management Australia Pty Ltd	08 June 2026	Appendix F
Glencore, 2026	Collinsville Kerale EA amendment application supporting information	1.0	Collinsville Open Cut – Glencore	12 June 2026	-
KCB, 2026	Kerale Dam Seepage Assessment – Final. Technical Memorandum to Glencore Collinsville Open Cut (COL)	14D10289A14	Klohn Crippen Berger	30 April 2026	Appendix A

1. IR ITEM 1: SPATIAL DATA

DETSI Request:

The spatial information should be submitted in the prescribed format outlined in the department's Spatial Information Submission Guideline (ESR/2018/4337), including appropriate projection information and metadata where applicable.

Provide coordinates (in Lat/Long. [GDA2020] format) of all monitoring locations.

Provide a figure depicting all monitoring locations (surface water, groundwater, sediment, and soil).

NC Coal Response:

Spatial data utilised to generate the figures included in the EA amendment application supporting information (Glencore 2026), has been exported in accordance with the DETSI 'Spatial Information Submission Guideline' (ESR/2018/4337), including appropriate projection information and metadata where applicable. The data package is provided as Attachment A.

Monitoring locations relevant to the Kerale Area Domain are provided in Table 4 (below). Monitoring locations provided include geochemical test pits, and existing groundwater and surface water monitoring locations. Please refer to the response provided to IR Items 9 and 10 (Sections 9 and 10) for further information in relation to proposed groundwater and surface water monitoring points.

Please refer to Attachment B for a figure depicting the monitoring locations as per Table 4.

TABLE 4 MONITORING LOCATION LATITUDE AND LONGITUDE RELEVANT TO THE KERALE AREA DOMAIN (GDA2020)

Monitoring Location	Type	Latitude	Longitude
K01	Groundwater	-20.590719	147.723576
K02		-20.591408	147.723022
K03		-20.581054	147.725775
GLE01		-20.597519	147.720750
GLE02		-20.597928	147.739051
GLE03		-20.597742	147.73913
DEN01		-20.591732	147.737545
TK01		-20.588632	147.721594
Confluence of Corduroy Creek and Pelican Creek	Surface water	-20.555700	147.801700
Confluence of drainage line from ramp 11C and Pelican Creek (CCP330522)		-20.594135	147.703417
Downstream from the confluence of Three Mile Creek and Pelican Creek (CCP330521)		-20.604574	147.743797
Kerale Dam		-20.589285	147.724094
Kerale Dam Seepage		-20.590229	147.72401
Kerale Dam Seepage @ Valve		-20.589047	147.722299
Kerale Dam Seepage Bore		-20.590794	147.723802
PC3M		-20.597094	147.752695

Monitoring Location	Type	Latitude	Longitude
Pelican Ck Myuna Rd Crossing		-20.598106	147.756731
Kerale Dam – at outflow	Water storage	-20.590158	147.725145
KTP01	Test pits	-20.57846512	147.7284496
KTP02		-20.57895475	147.7278535
KTP03		-20.5796475	147.728696
KTP04		-20.57930159	147.7280834
KTP06		-20.58025367	147.7283049
KTP07		-20.58071898	147.7258494
KTP10		-20.58155339	147.725012
KTP11		-20.58192719	147.7257216
KTP12		-20.5818932	147.7271638
KTP14		-20.58160356	147.727803
KTP15		-20.58296288	147.7243755
KTP16		-20.58382786	147.7260756
KTP17		-20.58379125	147.727343
KTP18		-20.58419412	147.7252323
KTP19		-20.58488134	147.7240204
KTP20		-20.58566811	147.725773
KTP21		-20.5851936	147.7224761
KTP22		-20.58621206	147.7246187
KTP23		-20.58714608	147.7265808
KTP24		-20.58669521	147.7226664
KTP25		-20.58731229	147.7252535
KTP26		-20.58858512	147.7248009
KPT27		-20.58781654	147.7211171
KPT30		-20.58812934	147.7205226
KTP31		-20.58918283	147.7219199
KTP32		-20.59047186	147.7236337
KTP33		-20.58887315	147.7206572
KTP34		-20.59013614	147.7225265
KTP35		-20.59156542	147.7229405
KTP36		-20.57765229	147.7286855
Pit11_01	Spoil testing	-20.582104	147.730278
Pit11_02		-20.585128	147.73082
Pit11_03		-20.592147	147.724916
Pit11_04		-20.59199	147.726103
Pit11_05		-20.594539	147.724508
Pit11_06		-20.595383	147.722922
Pit7_01		-20.590266	147.746975
Pit7_02		-20.591358	147.746376

2. IR ITEM 2: ASSESSMENT OF POTENTIAL CONTRIBUTORY SOURCES OF CONTAMINATION

DETSI Request:

Provide an assessment of all possible sources of contamination to the Kerale Area Domain.

NC Coal Response:

The Conceptual Site Model (CSM) presented by ERM 2026b has been updated in response to IR item 8 and is provided in Figure 2-1. The CSM incorporates information on the principal geochemical, hydrological and biological mechanisms influencing the mobilisation, transport, attenuation and fate of Contaminants of Potential Concern (COPC) within the Kerale Area Domain including as relates to potential receptors such as creeks and groundwater dependant ecosystems (GDEs).

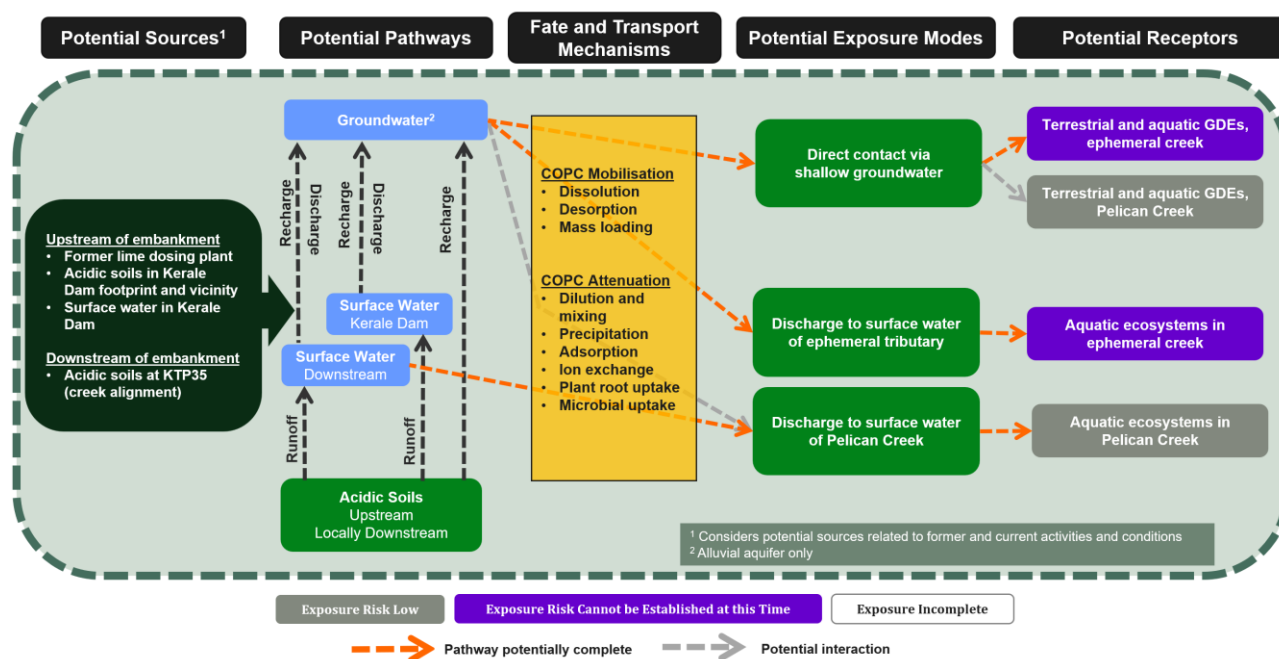


FIGURE 2-1 CONCEPTUAL SITE MODEL DIAGRAM FOR THE KERALE AREA DOMAIN

The CSM identifies four potential sources of contamination to the Kerale Area Domain. The basis for inclusion of these sources is detailed in Table 5.

TABLE 5 POTENTIAL CONTAMINATION SOURCES INCLUDED IN CSM

Potential Source	Rational for inclusion in CSM	Reference
Former lime dosing plant	Contemporary geochemical data indicates that acidity within the Kerale Dam surface water is largely derived from stored acidity in secondary sulfate minerals at the location of the lime dosing pond in the northern zone. These materials represent a potentially persistent source of acidity and dissolved metals that may be mobilised under leaching conditions.	ERM 2026a ERM 2026b
Acidic soils in Kerale Dam footprint and vicinity	Kerale Dam acts as an accumulation zone for acidity and dissolved constituents and provide a secondary (indirect) source of contamination. It is also plausible there may be naturally occurring acid sulfate soils in this area.	ERM 2026b

Potential Source	Rational for inclusion in CSM	Reference
Surface water in Kerale Dam	Kerale Dam acts as an accumulation zone for acidity and dissolved constituents. Stored water within Kerale Dam acts as a receptor and secondary (indirect) source following accumulation of acidic runoff and seepage from upgradient soils.	KCB 2026; ERM 2026b
Acidic soils at KPT35 (downstream of embankment)	Elevated sulfate, salinity and dissolved metals have been observed immediately downstream of the embankment which now present as a secondary source of contamination. The geochemical and hydrological assessments suggest this secondary source is derived through seepage from Kerale Dam. It is also plausible there may be naturally occurring acid sulfate soils in this area.	KCB 2026; ERM 2026b

The primary source of contamination within the Kerale Area Domain is the historical lime dosing facility located in the upper catchment of Kerale Dam. Several secondary sources of contamination have also been identified. Secondary sources do not generate contaminants directly; rather, they act as media that store, accumulate, transport, or redistribute contaminants originating from primary sources. Within the Kerale Area Domain, these include the water and sediments within Kerale Dam, as well as the seepage zone immediately downstream of the dam, which have been impacted by contaminants released from the historical lime dosing facility.

As part of the CSM development, a comprehensive review was undertaken to identify all potential sources of contamination within the Kerale Area Domain. In addition to the sources described above, three other potential contamination sources were considered. However, these were ultimately excluded from the CSM because they were either not considered credible sources of contamination or were not plausible. The potential sources that were assessed and subsequently discounted are summarised in Table 6.

TABLE 6 POTENTIAL CONTAMINATION SOURCES DISCOUNTED FROM CSM

Potential Source	Rational for exclusion from CSM	Reference
Undisturbed catchments	Surface water runoff from undisturbed catchments is diverted around Kerale Dam and enters the Kerale Area Domain downstream of the Kerale Dam embankment. Since these catchments are undisturbed by mining activities it is likely that contaminant contributions would be negligible.	N/A
Rehabilitated spoil landforms	KCB 2025b predicts seepage from a small portion of the spoil landform, with groundwater particle tracking and contaminant transport modelling indicating potential migration pathways beyond the spoil footprint. Geochemical investigations identified potential acid forming (PAF) materials (~26%) within the spoil mass, indicating a potential source of AMD, although there is surplus neutralising capacity (KCB 2026). Due to the surplus neutralising capacity, the contribution of acidity to the Kerale Area Domain is not likely to be significant.	KCB 2025b, KCB 2026, RGS 2025 (Attachment D)
Void water	No hydraulic connectivity exists between water stored within voids and the Kerale Area Domain, with all voids predicted to be long term sinks.	N/A

3. IR ITEM 3: POTENTIAL SEEPAGE FROM REHABILITATED SPOIL

DETSI Request:

Provide information on the potential for seepage from the rehabilitated spoil to the Kerale Dam through the diversion drains.

NC Coal Response:

The eastern and western diversion landforms have been designed to prevent surface water runoff from external catchments entering Kerale Dam, however, seepage from a small portion of the spoil landform (external to the pit shell) may report to the Kerale Area Domain below the diversion drains. Groundwater particle tracking and contaminant transport modelling indicate a potential migration pathway beyond the spoil footprint.

While the spoil landforms have been capped and revegetated, the rehabilitation profile does not eliminate the potential for water and solute movement within the spoil profile. Infiltration of rainfall through the cover system may result in interaction with underlying spoil materials and mobilisation of dissolved constituents via seepage pathways.

Geochemical investigations of the adjacent spoil landform identified PAF materials (~26%) within the spoil mass, indicating a potential source of AMD, although there is surplus neutralising capacity (KCB 2026). Due to the surplus neutralising capacity, the quality of seepage from the toe of the adjacent spoil landform is not anticipated to be a significant contributing source of acidity to the Kerale Area Domain. Consequently, seepage from the rehabilitated spoil landform has been excluded from the CSM as it is not considered a credible source of contamination to the Kerale Area Domain.

4. IR ITEM 4: POTENTIAL OF SEEPAGE FROM OPEN CUT AREAS AND MINE AFFECTED WATERS DRAINING TO CLEAN CATCHMENTS

DETSI Request:

Provide an assessment of the potential for seepage from the open cut areas and mine affected waters draining into clean catchments in relation to the Kerale Area.

NC Coal Response:

The eastern and western diversion landforms prevent clean surface water runoff from entering Kerale Dam. The COL Water Management Plan, developed and maintained in accordance with conditions F1, F2 and F3 of the EA, ensures separation of mine affected and clean water with only clean water being channeled through the eastern and western diversion landforms.

The adjacent open cut areas containing mine affected waters are terminal sinks as determined by groundwater particle tracking and contaminant transport modelling (KCB 2025b). No hydraulic connectivity exists between mine affected water stored within voids and adjacent areas, with all voids predicted to be long term sinks.

As there is no hydraulic connectivity between the mine affected water stored within voids and adjacent areas, seepage from open cut areas and mine affected waters has been excluded from the CSM as it is not considered a credible source of contamination to the Kerale Area Domain. As detailed in response to Item 3, the seepage from adjacent landforms is limited to a small portion of the spoil landform (external to the pit shell), however, due to the surplus neutralising capacity within the spoil landform, seepage from adjacent landforms is not anticipated to be a significant contributing source of acidity to the Kerale Area Domain.

5. IR ITEM 5: RELATIONSHIP BETWEEN THE FORMER LIME DOSING POND, SURFACE WATER, GROUNDWATER AND SOIL

DETSI Request:

Provide information on the relationship between the lime dosing pond, surface water, groundwater and soil.

NC Coal Response:

The former lime dosing pond is a primary source of stored acidity within the Kerale Area Domain based upon available information provide in ERM 2026b.

Investigations into the location of the former lime dosing facility identified elevated stored acidity, sulfate concentrations and secondary sulfate minerals within soils and sediments. Elevated values were present within the former lime dosing facility footprint and adjacent drainage pathway, indicating that historical lime dosing activities have influenced the geochemical conditions of these materials (ERM 2026b).

Surface water and groundwater data indicate that acidity and dissolved constituents are mobilised from affected soils and sediments associated with the former lime dosing facility and transported through the local hydrological system. Surface runoff and shallow seepage from the former lime dosing facility area report to Kerale Dam, which acts as an accumulation zone for acidity and dissolved constituents derived from the dam catchment.

Groundwater monitoring data indicates a potential hydraulic connection between Kerale Dam and the shallow alluvial groundwater system downgradient of the dam embankment. Elevated sulfate concentrations and acidic conditions observed in groundwater monitoring bores (K01 and K02) immediately downgradient of Kerale Dam are consistent with the conceptual pathway of mobilisation from source soils and sediment accumulation within Kerale Dam, and subsequent migration via shallow groundwater pathways.

Collectively, the available soil, sediment, surface water and groundwater data support a conceptual model in which the historical lime dosing facility is the primary source of acidity, and several secondary sources of contamination also exist. Within the Kerale Area Domain, these comprise the water, soils and sediments within Kerale Dam, as well as the seepage zone immediately downstream of the dam, which have been impacted by contaminants released from the historical lime dosing facility. The updated CSM diagram is provided in Figure 2-1.

6. IR ITEM 6: INTERPRETATION OF INTEGRATED DATA

DETSI Request:

Provide an assessment and interpretation of integrated data that includes surface water, groundwater, sediment, soil and seepage.

Provide an assessment and interpretation of the ionic composition between surface water, groundwater, seepage, and pits in the vicinity of the Kerale Area Domain.

NC Coal Response:

The available surface water, groundwater, sediment, soil and seepage data is provided in Attachment E, and assessment of this data is provided below.

The available data supports a conceptual pathway whereby acidity and dissolved constituents are mobilised from source soils and sediments, accumulate within Kerale Dam, and may migrate via seepage into shallow groundwater (Figure 2-1). The combination of low groundwater velocities, long transport distances, decreasing COPC concentrations between K01 and K02, and the ephemeral nature of the downstream drainage system indicates limited potential for transport of COPCs beyond the Kerale Area Domain.

Geochemical assessment provided in ERM 2026a and 2026b involved evaluation of multiple lines of data to identify potential contaminant sources, transport pathways and receptors within and in the vicinity of the Kerale Area Domain. The outcome of this assessment indicates that soils and sediments associated with the former lime dosing facility footprint and adjacent drainage line (draining southward from the former lime dosing facility footprint towards the Kerale Dam embankment) are the primary source of stored acidity within the Kerale Dam. The basis for this conclusion is supported by the investigation detailed in ERM 2026a. ERM 2026b identified stored acidity associated with secondary sulfate minerals, particularly within the former lime dosing facility footprint (KTP04), where elevated sulfate concentrations, stored acidity and secondary sulfate minerals were identified.

Surface water within Kerale Dam acts as an accumulation zone for acidity and dissolved constituents mobilised from the former lime dosing footprint. Kerale Dam surface water has remained consistently acidic since 2011, with a median pH of 4.17, mean sulfate concentration of 946 mg/L and a mean dissolved aluminium concentration of 7.16 mg/L.

Seepage assessment and groundwater monitoring data (Attachment E) indicate a potential hydraulic connection between Kerale Dam and the shallow alluvial groundwater system downgradient of the Kerale Dam embankment. Monitoring locations K01 and K02 are located approximately 80 m and 175 m respectively downgradient of the Kerale Dam embankment (refer to Table 4). The groundwater quality data shows elevated sulfate concentrations in both K01 and K02 (median 2,420 mg/L and 2,320 mg/L, respectively), with K01 exhibiting more acidic conditions (median pH 4.20) and higher dissolved aluminium concentrations (median 13.7 mg/L) than K02 (median pH 5.39; median dissolved aluminium 0.055 mg/L). The reduction in acidity and dissolved aluminium concentrations between the two monitoring locations is consistent with attenuation occurring along the identified groundwater flow path.

Hydrogeological assessment indicates that groundwater migration occurs primarily through shallow alluvial sediments and weathered materials beneath and downstream of Kerale Dam, with groundwater velocities estimated to be in the order of a few metres per year. Seepage from Kerale Dam is therefore expected to migrate slowly through the shallow alluvial system and be subject to dilution, mixing, episodic recharge and other attenuation processes over a relatively long transport pathway.

Collectively, the integrated dataset supports a conceptual pathway whereby acidity and dissolved constituents are mobilised from source soils and sediments, accumulate within Kerale Dam, and may migrate via seepage in shallow groundwater. However, the combination of low groundwater velocities, long transport distances, decreasing COPC concentrations between K01 and K02, and the ephemeral nature of the downstream drainage system indicates low potential for transport of COPC beyond the Kerale Area Domain.

Assessment and interpretation of ionic compositions

The available data indicates variation in ionic composition between the sampled surface water, groundwater, soil leachate and spoil leachate media.

Kerale Dam surface waters adjacent to the Kerale Dam embankment were monitored between 2003 and 2025 (n = 68 (pH); n = 63 (EC); n = 103 (sulfate)). Surface water quality from within the Kerale Dam is characterised by acidic conditions (median pH 4.17), elevated sulfate concentrations (median 540 mg/L; mean 946 mg/L), elevated dissolved aluminium concentrations (mean 7.16 mg/L) and elevated dissolved manganese concentrations (mean 5.72 mg/L).

Surface water from the location of the former lime dosing facility pond was monitored on six occasions between April 2012 and August 2013. Surface water from the location of the former lime dosing facility was strongly acidic (pH 2.83-3.00) and sulfate-rich, with sulfate concentrations ranging from 1,560 to 3,140 mg/L (median 1,915 mg/L). Chloride concentrations ranged from 193 to 550 mg/L (median 272 mg/L) and sodium concentrations ranged from 36 to 115 mg/L (median 60 mg/L). Dissolved aluminium concentrations ranged from 3.34 to 68 mg/L (median 4.39 mg/L), indicating substantially higher acidity and dissolved metal concentrations than those observed in Kerale Dam surface water.

Seepage south of the Kerale Dam embankment was monitored between August 2011 and June 2025 at two locations identified as *Kerale Dam Seepage* and *Kerale Dam Seepage @ Valve* in the surface water monitoring dataset (Attachment E) (Figure 6-1). The monitoring data indicate substantial variability in ionic composition between the two seepage locations. Samples collected at Kerale Dam Seepage @ Valve were generally more acidic and sulfate-rich (pH 2.8-5.9; sulfate 525-2,850 mg/L) than samples collected at Kerale Dam Seepage (pH 5.3-8.0; sulfate 8-371 mg/L).

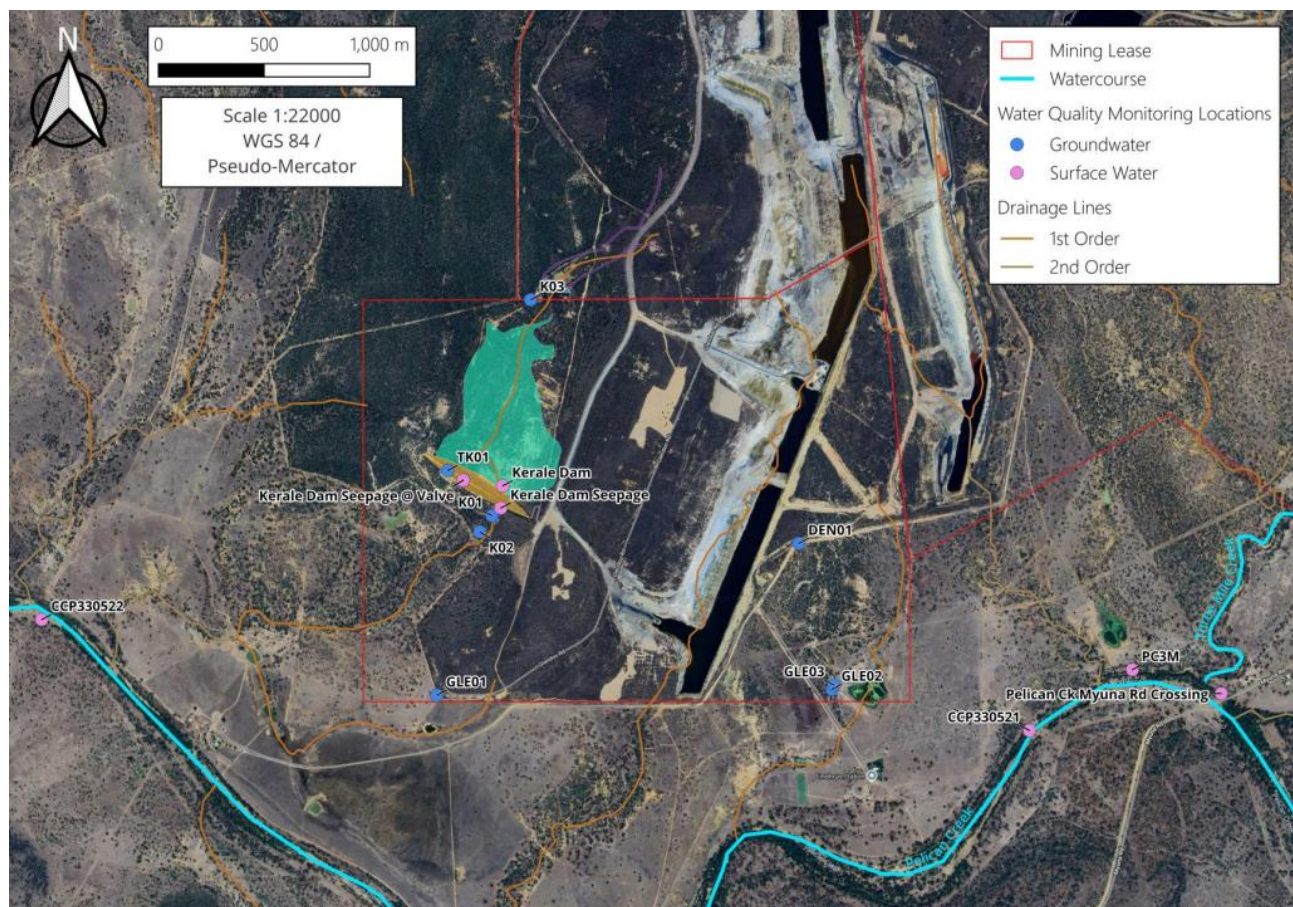


FIGURE 6-1 WATER QUALITY MONITORING LOCATIONS NEAR THE KERALE AREA DOMAIN

Shallow alluvial groundwater downgradient of the Keral Dam Wall at K01 was monitored on 25 occasions between May 2020 and June 2025. Groundwater is acidic (median pH 4.20), sulfate-rich (median sulfate 2,420 mg/L) and characterised by elevated dissolved aluminium (median 13.7 mg/L), iron (median 30.4 mg/L) and manganese (median 3.34 mg/L) concentrations. Shallow alluvial groundwater at K02 was monitored on 23 occasions between May 2020 and June 2025. Groundwater at K02 was found to be moderately acidic (median pH 5.39) and sulfate-rich (median sulfate 2,320 mg/L). Dissolved iron (median 26.0 mg/L) and manganese (median 3.12 mg/L) concentrations remain elevated, while dissolved aluminium concentrations are lower than at K01 (median 0.055 mg/L).

Groundwater at GLE01 (refer to Attachment B for monitoring locations), located at the southern boundary of ML1064, was monitored on eight occasions between May 2012 and June 2016. Groundwater was characterised by lower sulfate concentrations (median 961 mg/L), and higher chloride (median 2,220 mg/L) and sodium concentrations (median 1,680 mg/L) than K01 and K02.

Kerale Area Domain soil leachates (ASLP; n = 104) (ERM 2026a) were generally sulfate-rich and acidic to moderately acidic. The highest sulfate concentrations occurred within the former lime dosing pond area (up to approximately 1,500 mg/L), while elevated dissolved aluminium and iron concentrations were identified at several locations along the drainage pathway toward Kerale Dam.

Pit 11 spoil landform leachates (KCB 2026) were characterised by elevated sulfate and salinity under predominantly circum-neutral conditions. KCB estimated sulfate concentrations of 5,000 to 12,000 mg/L and TDS concentrations of 6,500 to 15,000 mg/L within spoil porewater.

The available ionic composition data indicates the former lime dosing facility, Kerale Dam surface water, acidic seepage location and shallow groundwater immediately downgradient of the embankment form a sulfate-rich and acidic geochemical system. The decrease in acidity and dissolved aluminium from K01 to K02 indicates attenuation along the shallow groundwater flow path. Groundwater at GLE01, located at the southern boundary of ML1064 and Pit 11 spoil porewater has a different ionic composition when compared to K01 and K02 distinguishing these locations from the acidic waters associated with the former lime dosing facility and Kerale Dam.

Collectively, the currently available data indicate that, among the areas assessed, the former lime dosing facility and associated drainage pathway are the primary source of acidity affecting Kerale Area Domain.

7. IR ITEM 7: DIVERSION LANDFORMS

DETSI Request:

Provide the date of construction of the western and eastern diversion landforms.

NC Coal Response:

There are two diversion landforms relevant to the Keralé Area Domain, with the location of these diversion landforms is provided in Figure 2-2 (Glencore 2026). The diversion landforms' purpose is to divert clean surface water from external catchments and prevent it from entering the Keralé Dam. The diversion landforms have been considered in the determination of the Keralé Area Domain and modelling has shown they are effective in diverting flows around Keralé Dam for all design flood events assessed (up to and including the 0.1 % annual exceedance probability) (Engeny 2026).

The construction of the diversion landforms predates NC Coal's ownership of COL, therefore, exact dates in relation to the construction of the diversion landforms are not available, however an approximate construction date can be inferred utilising historical imagery obtained from the Queensland Government's historical imagery database, and available engineering plans associated with the construction of Keralé Dam.

Figure 7-1 demonstrates that the diversion landforms were constructed between 1985 and 1997. Maintenance of the diversion landforms has continued through time with their location being as per original construction.

Design plans for the Keralé Dam prepared in 1991 by Blain Johnson Pty Ltd, drawing number 1358-05-2 (Attachment F) confirms that the diversion landforms were part of the original Keralé Dam engineering design.

Therefore, more specifically, it is estimated that the diversion landforms were constructed at some point between 1991 and 1997. This timeframe coincides with the approximate construction of the lime dosing facility in the early-mid 1990s.

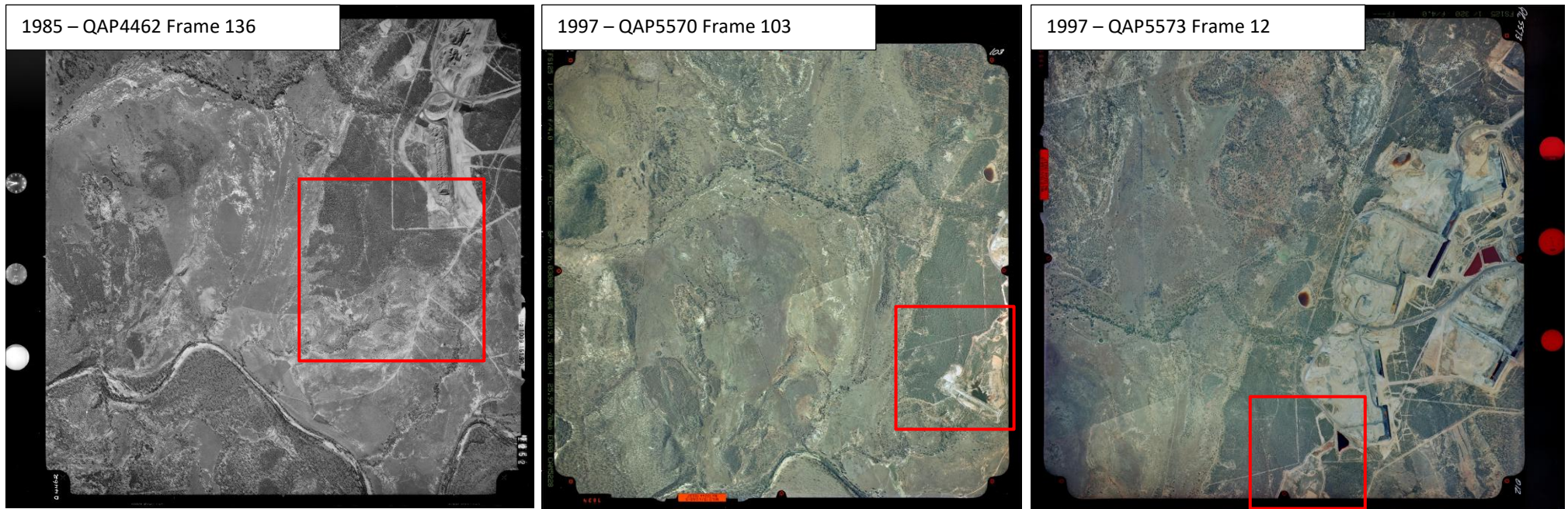


FIGURE 7-1 HISTORICAL IMAGERY OF THE KERAL AREA DOMAIN.

8. IR ITEM 8: CONCEPTUAL SITE MODEL

DETSI Request:

Provide information on the mechanisms incorporated into the conceptual site model.

Provide an updated conceptual site model that incorporates all relevant mechanisms, including, but not limited to, ion exchange, ion adsorption, precipitation, dissolution, dilution, microbial uptake, plant root uptake, desorption, mass loading.

NC Coal Response:

The original CSM presented by ERM 2026b has been updated as shown in Figure 2-1. It incorporates information on the principal geochemical, hydrological and biological mechanisms influencing the mobilisation, transport, attenuation and fate of COPCs within the Kerale Area Domain.

The CSM identifies dissolution of secondary sulfate minerals within soils and sediments associated with the former lime dosing facility footprint and drainage line as a primary mechanism driving the release of acidity, sulfate and dissolved metals to surface water and shallow groundwater systems. Information has also been incorporated on precipitation of secondary mineral phases, which may temporarily attenuate dissolved constituent concentrations, and ion adsorption, desorption and ion exchange processes within soils, sediments and alluvial materials that may either attenuate or remobilise dissolved constituents under changing geochemical conditions.

The updated CSM also incorporates information on hydrological mechanisms controlling COPC transport, including:

- mobilisation and mass loading during rainfall events;
- runoff within the Kerale Dam catchment;
- accumulation of acidic runoff; and
- migration from within Kerale Dam via shallow groundwater seepage through alluvial sediments downgradient of the Kerale Dam embankment.

Information on dilution and mixing with runoff (from catchments external to the Kerale Area Domain), recharge and surface water inputs has been included, together with the influence of episodic hydrological conditions, evaporation and evapoconcentration processes on geochemical behaviour.

Biological attenuation mechanisms have been incorporated, including plant root uptake and microbial uptake within soils, sediments and shallow groundwater systems. These mechanisms are recognised as processes that may reduce, delay or redistribute COPC mass during transport; however, they are not considered sufficient to completely eliminate chemical loading from source areas. Consequently, potential receptors and exposure modes remain consistent with the previous conceptual model provided in ERM 2026b.

9. IR ITEM 9: SURFACE WATER MONITORING LOCATIONS

DETSI Request:

Propose an additional surface water quality monitoring location downstream of the Keral Dam, prior to the drainage feature leaving the mining tenure.

NC Coal Response:

As detailed in Section 2.3.3 of Glencore 2026, the natural surface water features downstream of the Keral Dam embankment are limited to an ephemeral tributary of Pelican Creek. The existing surface water monitoring locations within this catchment and relevant to the Keral Area Domain as per the Environmental Authority (EPML00332013) (the EA) conditions are provided in Table 4. These locations are monitored in accordance with the conditions of the EA.

Establishment of additional surface water monitoring points will be required to ensure any migration of contamination associated with the Keral Area Domain is detected. Two additional surface water monitoring locations are proposed within the ephemeral tributary of Pelican Creek within the boundary of the Mining Lease (ML) 1064.

The location of the two additional surface water monitoring points will be informed by further investigation to ensure access is available during wet periods, which is the only time this system experiences surface water flows. The first monitoring location will be located to detect seepage to surface waters from the Keral Dam (nominally 180-200 m downgradient of the Keral Dam embankment). A second location at/near the boundary of ML1064 will be adopted to capture data prior to surface water migration off lease. Monitoring at these two locations will form part of the management strategy for the Keral Area Domain within the Progressive Rehabilitation and Closure Plan (PRCP).

Surface water monitoring objectives and monitoring frequency will remain consistent with Table F4 of the EA (refer to Table 7). Should exceedances be detected, investigation will be undertaken in accordance with condition F27 of the EA.

TABLE 7 SURFACE WATER MONITORING OBJECTIVES AND MONITORING FREQUENCY AS PER TABLE F4 OF THE EA

Parameter	Objectives	Monitoring Frequency
pH (pH units)	4-9	Daily in situ
Electrical conductivity (EC) ($\mu\text{S}/\text{cm}$)	3,000	Daily in situ
Sulfate (mg/L)	1,000	Daily when EC >3,000 $\mu\text{S}/\text{cm}$

10. IR ITEM 10: GROUNDWATER MONITORING LOCATIONS

DETSI Request:

Propose additional groundwater quality monitoring locations downstream of the Kerale Dam embankment.

NC Coal Response:

New groundwater monitoring locations are proposed downgradient of the Kerale Dam embankment within the alluvial system of the ephemeral tributary.

One new groundwater monitoring location is proposed near K02 but is within the tributary to target seepage within the tributary and shallow alluvials to target the preferential seepage pathway identified in the hydrogeological conceptual model (KCB 2026, Sections 3.3 and 3.5).

A second additional location is proposed approximately 200-300 m downgradient from K02 along the tributary alignment. The purpose of this location will be to characterise groundwater in the alluvial zone (understood to be a potential pathway for contaminant migration) at the approximate mid-point between the Kerale Dam embankment and the boundary of ML1064. This location is approximately 500 m downgradient of the Kerale Dam embankment.). Monitoring at this location will assess whether seepage is migrating along the shallow alluvial pathway.

A third new on-lease groundwater monitoring location is proposed near where the tributary intersects the boundary of ML1064. It will characterise shallow groundwater quality at the ML1064 boundary and validate the predictions of no off lease migration of contaminants via groundwater.

The specific locations of the three new proposed groundwater monitoring sites will be dependent on several factors such as access, ecological constraints and geomorphological characteristics. Indicative locations of the three new groundwater monitoring sites are shown in Figure 16-1.

Groundwater characteristics to be monitored will be as per Table E1 of the EA.

11. IR ITEM 11: PROVISION OF GROUNDWATER DATA

DETSI Request:

Provide all groundwater data for all groundwater bores associated with the Kerale Area.

NC Coal Response:

Groundwater data for the groundwater bores associated with the Kerale Area Domain is provided in Attachment E.

12. IR ITEM 12: DRILLING AND MONITORING INFORMATION

DETSI Request:

Provide information on the additional drilling or monitoring of groundwater that has occurred in the tributary alluvium downstream of K02 to determine the extent of existing contamination.

If no additional drilling or monitoring of groundwater has occurred in the tributary alluvium downstream of K02, provide justification to why it has not occurred.

NC Coal Response:

All drilling information relevant to the tributary alluvium downgradient of K02 has been provided in Glencore 2026 and its appendices, submitted to DETSI on 12 June 2026.

Seepage from the Kerale Dam into the tributary alluvium has been identified as an emerging legacy matter and as such, investigation will include groundwater monitoring at new locations. A data package has been collated which contains all data referred to in Glencore 2026 and its appendices, is provided as Attachment E.

13. IR ITEM 13: HISTORICAL WATER LEVELS

DETSI Request:

Provide historical water level and water quality data (hydrographs) for all monitoring bores downstream of the Keral Dam and adjacent the Keral Dam.

Provide advice as to whether tests have been carried out on monitoring bores K01, K02 and RN182866 to determine hydraulic conductivity.

NC Coal Response:

Historical water level and water quality data for monitoring bores relevant to the Keral Area Domain is provided in Attachment E.

Hydraulic conductivity has been inferred from the characterisation data available for monitoring bores K01, K02 and RN182866 (Attachment E).

14. IR ITEM 14: VWPS

DETSI Request:

Provide additional information in relation to the VWPs mentioned.

NC Coal Response:

The two VWPs mentioned in Glencore 2026 and its appendices were installed for geotechnical monitoring of embankment stability. The data collected at these VWPs are not material to understanding of the Kerale Area Domain seepage characteristics.

15. IR ITEM 15: HISTORICAL CONDITIONS OF KERALE DAM TRIBUTARY

DETSI Request:

Provide information on what conditions have been occurring in the tributary downstream of the Kerale Dam historically.

NC Coal Response:

Apart from the ecological, soils and water-related assessments undertaken for this EA amendment application and preparation of the Progressive Rehabilitation and Closure Plan (PRCP), the tributary downstream of the Kerale Dam has historically not been monitored, other than for groundwater at K01 and K02. As such there is limited data on historical conditions of the downstream tributary. The proposed collection of additional data (see Item 9 and Item 10) will provide an improved understanding of conditions in the tributary over time.

16. IR ITEM 16: LIMITATION OF APPENDIX A

DETSI Request:

Provide information on how the limitations described in section 4.4 of Appendix A, including the lack of a water quality profile for stored water in Keral Dam and the apparent limited understanding of historical downstream conditions in the ephemeral tributary below the dam, impact the predictions that are made in Appendix A.

NC Coal Response:

Groundwater modelling and assessment has been undertaken as described in Glencore 2026. Impacts on groundwater have been identified and considered in Section 7 of Glencore 2026.

The limitations referenced from Section 4.4 of KCB 2026 refer to there being no predictive modelling or assessment of the quality of stored water held within Keral Dam, however, data is available on surface water quality and seepage chemistry, as presented in Attachment E. The contaminant transport predictions represent a conservative solute and do not consider solubility constraints, sorption, biodegradation or other transformation processes. Thus, the predictions that are made in KCB 2026 likely overestimate concentrations for reactive contaminants.

. Additional data to be collected as part of a proposed monitoring program (see Item 10) will be used to improve the understanding of conditions in the ephemeral tributary downgradient of the Keral Dam embankment. This additional data will be used to validate the predictions made in KCB 2026 and to inform a revised contaminant transport assessment as required.

17. IR ITEM 17: NUMA EXTENT JUSTIFICATION

DETSI Request:

Provide justification that the Kerale Area non-dam area requires to be managed as a non-use management area (NUMA). Alternatively, submit a written request to change the EA amendment application currently under assessment to remove the Kerale Area non-dam area from the proposed NUMA footprint.

NC Coal Response:

The Kerale Area non-dam is the extent of the predicted contamination impact footprint, based on the current understanding and modelling completed for groundwater, surface water, sediment and soils provided in KCB 2026, Engeny 2026, ERM 2026a and ERM 2026b.

Ecological surveys of the Kerale Area Domain and the surrounding environment within and outside of ML1064 were conducted in 2025 as discussed in Sections 6.2.3 and 7.2.2 of Glencore 2026. Further detail in relation to ecology, sediment and water quality analysis of the Kerale Area Domain is provided in ERM 2026c. Whilst the extent of the Kerale Area Domain is not consistently inundated and the majority of the area is currently vegetated; soil, groundwater and surface water data shows that the site is impacted by acidic conditions.

The modelling provided in KCB 2026, Engeny 2026, ERM 2026a and ERM 2026b predicts that the migration of acidic conditions through time is anticipated to continue, with impact potentially extending to 500 m from the Kerale Dam embankment (over several hundred years). At this point the dilution factor is anticipated to be sufficient to negate environmental impact.

To support a Post Mining Land Use (PMLU), a suite of criteria regarding soil quality, groundwater quality and surface water quality, in addition to the establishment of vegetation, must be achieved. Due to the acidic conditions within the Kerale Area Domain, PLMU criteria is not able to be achieved, as a result the Kerale Area Domain is proposed to be managed as a NUMA.

18. IR ITEM 18: PHOTOGRAPHS OF THE KERALE AREA NON-DAM AREA

DETSI Request:

Provide photographs of the Keralé Area non-dam area, including the remnant vegetation that is proposed to be included in the Keralé Area Domain.

NC Coal Response:

A photograph package of the Keralé Area non-dam is provided in Attachment G. Photos provided were taken during the ecological survey in 2025 (refer to Sections 6.2.3 and 7.2.2 of Glencore 2026).

The majority of the remnant vegetation within the Keralé Dam non-dam is dominated by *Acacia rhodoxylon* woodland (RE 11.11.1), with smaller areas of remnant RE 11.11.9 (*Eucalyptus populnea* or *E. brownii* woodland on deformed and metamorphosed sediments and interbedded volcanics) also occurring. Non-remnant vegetation to the south of the Keralé Area non-dam is generally consistent with RE 11.11.9, typically consisting of open eucalypt forest and cleared pasture, particularly on the undulating hills and level terrain.

19. IR ITEM 19: MANAGEMENT STRATEGY

DETSI Request:

Detail the management strategy that will be implemented to ensure there is no impact to the environment beyond the Kerale Area Domain and no movement of contaminants offsite post-closure.

If vegetation is included within the management strategy to be implemented, provide information in relation to the following:

- a) What species have been identified that are tolerant of the extreme/adverse soil conditions?*
- b) How will vegetation success and recruitment be demonstrated?*
- c) What impact will vegetation and/or microbial activity have on the contaminant availability and transport, and how will this be managed and demonstrated to be successful?*

NC Coal Response:

The proposed management strategy employed to prevent adverse impact on the environment beyond the Kerale Area Domain comprises:

- Installation of monitoring bores downstream in the alluvial system, as referred to in Section 8 of Glencore, 2026, to validate predicted impact zones;
- Data collected from the monitoring network will be used to update the Kerale Area Domain groundwater model prior to closure as required, to confirm the predicted impact zones remain within the Kerale Area Domain;
- Investigations will be undertaken to evaluate the potential for different vegetation and microbial communities to attenuate contaminant availability and transport. Objectives may include:
 - Qualitative or quantitative evaluation of the ability of the current ecological community to attenuate contaminant availability and transport; and
 - Identification of alternative ecological communities or specific species that are known, or have potential, to attenuate contaminant availability and transport and evaluate their use within the Kerale Area Domain.

The management strategy above and associated management milestones will be addressed in the PRCP as this is the appropriate document to regulate the Kerale Area Domain as a NUMA final landform. To this end, the management strategy for the Kerale Area Domain will be incorporated into the PRCP planning part with management milestones documented in the PRCP Schedule. The PRCP is the appropriate document to regulate post closure outcomes including NUMAs, whereas the EA primarily regulates operational environmental impacts.

20. IR ITEM 20: ALTERNATIVE APPROACHES

DETSI Request:

Provide an assessment of alternative approaches considered in relation to the management of the contaminated area/material.

Alternatively, provide an assessment of approaches for the management of the Kerale Area Domain, including, but not limited to, remediation and disposal in pit. The assessment should include an analysis of the reaction chemistry expected to occur if the contaminated material is disposed in pit, including dissolution/precipitation reactions, redox, pH, geochemical speciation, and salinity; the relationship to surface water and groundwater flow paths and water chemistry; and the potential for contaminated water to move beyond the pit and/or offsite.

Provide justification for the selection of the proposed approach of managing the Kerale Area Domain as a NUMA.

NC Coal Response:

Alternative management solutions for the Kerale Area Domain have been considered, however due to the Kerale Area Domain's known acidic waters, the source/s of which is likely to be mineralised sulfate in the soil, 'stable condition' as defined in s111A *Environmental Protection Act 1994* cannot be met. As detailed in Section 4.1.2, Glencore 2026, acidic surface waters within the Kerale Dam mean that the stock water drinking guidelines (ANZG 2023) cannot be met. Acidic conditions in the soil mean that Kerale Area Domain is unable to achieve a PMLU and conditions in the shallow aquifer near the embankment do not meet the ANZG water quality objectives for aquatic ecosystem protection (ANZG 2023), meaning that the aquatic ecosystem environmental values would not be supported.

To inform the assessment of potential alternative approaches for the management of the Kerale Area Domain additional characterisation of the extent, depth and temporal behaviour of the contaminants is required. Such assessments will further delineate the primary source of acidity within the Kerale Area Domain, characterise the shallow groundwater, benchmark soil chemistry of impacted locations against reference sites, validate analytical seepage assessment and provide additional geochemical modelling of observed data.

In the event that the additional technical information alters understanding in relation to the contamination within the Kerale Area Domain, alternative options available for management may be considered prior to closure. However, based on the current understanding of the contamination extent and potential ongoing reactivity within a widespread area of the Kerale Area Domain it is not currently possible to support a PMLU due to the soil, sediment and water quality. Consequently, Kerale Area Domain is required to be managed as a NUMA until such time that information becomes available to demonstrate the potential to support alternative land uses. Accordingly, this EA amendment application seeks to nominate a final land outcome of NUMA for part of the land located on ML1064 and ML1037, referred to as the Kerale Area Domain.

21. IR ITEM 21: DATA REQUEST

DETSI Request:

Provide all data (surface water, groundwater (quality and level), sediment, and soil quality) for all monitoring locations in excel format.

NC Coal Response:

A data package has been collated which contains all data referred to in the Glencore, 2026 and its appendices. Please refer to Attachment E.

Information provided comprises:

- Surface water quality:
 - Keralé Dam; and
 - Pelican Creek ;
- Groundwater quality and levels:
 - Bores K01-K03, TK01 and GLE01;
- Soil, sediment, spoil quality:
 - Keralé Dam, sampling events:
 - Aug 2025 (sediment, soil, water,); and
 - March 2026 (test pitting);
 - Pit 7 and 11 spoil (by KCB, with drilling and sampling undertaken during May 2025).

Complete and raw data has been provided. The interpretation and use of provided data in each of the technical assessment provided with Glencore 2026 is subject to the methodologies detailed in the respective report.

ATTACHMENT A SPATIAL DATA

ATTACHMENT B

MONITORING LOCATIONS RELEVANT TO KERALE
AREA DOMAIN

ATTACHMENT C

KCB 2025A – INITIAL SOURCE TERM PROVISIONAL
– 24 SEPTEMBER 2025

ATTACHMENT D RGS 2025- SPOIL GEOCHEMISTRY REVIEW
ASSESSMENT – 28 NOVEMBER 2025

ATTACHMENT E SUPPORTING INFORMATION DATA PACK

ATTACHMENT F

KERALE DAM ENGINEERING SITE PLAN

ATTACHMENT G

KERALE AREA NON-DAM ECOLOGY SURVEY
PHOTOS