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Geochemical & Hydrobiological Solutions Pty Ltd

ABN 72 077 518 784

*Underground Coal Gasification / Coal Seam Gas Investigations
Mineralogical, Geological, Petrographic and Soils Services
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Terrestrial and Aquatic Fauna and Flora Surveys
Climate History and Extreme Events Analysis
Contaminated Site and Mine Water Analysis
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Estuarine and Marine Water Assessments
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Surface and Groundwater Hydrology*

PO Box 1777
Thuringowa, Qld 4817, Australia

Tel: +61 (0) 7 4725 3751

info@candrconsulting.com.au
www.candrconsulting.com.au

5 September 2025

Chloe Annandale

Senior Environmental Scientist
Landroc Pty Ltd

Dear Ms Annandale,

C&R Consulting Pty Ltd (C&R) recently completed various environmental studies to support an environmental authority (EA) application for the recommencement of operations at Dianne Copper Mine (DCM), located within the Cook Shire on the Cape York Peninsula in north Queensland, about 130 km northwest of Cairns and 100 km southwest of Cooktown. It is noted that the existing EA (EPML00881213, dated 31 July 2023), covering six separate mining leases, has not undergone a significant amendment in several years, with the locations of approved, historical works not well defined under the EA.

The EA amendment application was submitted to the Department of Environment, Tourism, Science and Innovation (DETSI) on the 24 February 2025. Subsequently (27 June 2025), DETSI provided DCM with a request for further information regarding the proposed EA amendment and the associated progressive rehabilitation and closure plan (PRCP) schedule.

This brief aims to provide the administering authority with sufficient information to suitably address the information request regarding ecology and surface water matters relevant to previous works completed by C&R (and as specifically requested by Landroc). Table 1 details the relevant items and matters for which DETSI requested further information and provides a response to each request.

If you have any questions regarding any of the provided information, please do not hesitate to contact me.

Regards,

Matt Knott

Principal Scientist/Director
C&R Consulting Pty Ltd.

Table 1: Information requests and responses relating to the Environmental Authority.

Item	Reference	Matter	Information Request	Response
EA2	Appendix 4 Dianne Copper Mine Terrestrial Ecology Report	The report does not provide information or assessment of controls to demonstrate the following:	-	-
		iv) What is the definition of a “significant area” to avoid in the vegetation clearing, and species-specific method of identification of animal breeding places	iv) Provide a list of defining attributes and definition of significant areas to avoid when clearing, and a species-specific method of identification of animal breeding places.	The proponent commits to obtaining an approved Species Management Program (SMP) for tampering with animal breeding places under the <i>Nature Conservation Act 1992</i> (NC Act) and <i>Nature Conservation (Animals) Regulation 2020</i> (NC Regulation) prior to any clearing activities on site. The Impact Management Plan (IMP; supporting documentation to the SMP) will provide a list of defining attributes of significant areas and timing to avoid during clearing as well as species-specific methods of identification of animal breeding places. The SMP will cover high-risk species, including those threatened species identified in the Terrestrial Ecology Report (C&R, 2024¹) as having a moderate or higher likelihood of occurrence within the project site, and which have a habitual breeding place (in accordance with the requirements of the SMP).
		vi) Management plan for species-specific breeding places.	vi) Provide a species-specific management plan for tampering with animal breeding places.	An IMP, including a Fauna Salvage and Relocation Plan, will be prepared to support the high-risk SMP for tampering with animal breeding places prior to any clearing being undertaken. The IMP will provide species-specific management for tampering with breeding places. The high-risk SMP will include those threatened species identified in C&R (2024) as having a moderate or higher likelihood of occurrence within the project site, and

¹ C&R (2024). *Dianne Copper Mine: Terrestrial Ecology Report*. Prepared for Mineral Projects Pty Ltd.

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				which have a habitual breeding place, in accordance with the requirements of the Species Management Program.
		viii) Self-assessment of significant residual impact and supporting spatial data which complied with the department's Spatial Guideline.	viii) Provide the significant residual impact self-assessment test details including spatial data showing the calculation of remnant vegetation intersecting a watercourse.	The initial assessment of remnant vegetation intersecting a watercourse (in C&R, 2024) estimated a cleared area of approximately 1.042 ha. However, since the completion of C&R (2024), DCM have acquired a high resolution (30 cm) DEM for the project area. This has enabled an accurate delineation of the defining bank for the drainage feature that historically traversed the project site, which is designated as a watercourse under the <i>Vegetation Management Act (1999)</i> (VM Act) mapping. Using this updated spatial data, the area of remnant vegetation directly affected by the proposed operation is 1.700535 ha. The threshold for the clearing of remnant vegetation intersecting a VM Act watercourse, to be considered a significant residual impact (SRI), is 2 ha. Therefore, based on the calculations discussed above, a SRI will not occur from the proposed project activities. The discrepancies in the estimates of areas cleared from C&R (2024) to the current assessment, are associated with the updated DEM that better identifies the location of the banks and, therefore, the revised defined distance from the bank that incorporates the vegetation. In addition to the revised area of remnant vegetation intersecting a VM Act watercourse that will be cleared for the project, a further: • 0.142015 ha, of the designated distance from a defining bank, has been identified as remnant vegetation that is within the confines of existing water management infrastructure and will not be affected by the operation;

Item	Reference	Matter	Information Request	Response
				• 0.733082 ha, of the designated distance from a defining bank, has been delineated as water (i.e. not remnant vegetation that will be cleared); and • 0.335112 ha, of the designated distance from a defining bank, has been delineated as non-remnant. The spatial data used to develop these values is provided as an attachment to this response in the format requested by the DETSI. Refer to zip folder "EPML00881213_PRCP_PY_20082025.zip".
EA3/PRCP5	Appendix 2 Dianne Copper Mine Water Management Plan Appendix 3 Dianne Copper Mine Groundwater and Surface Water Impact Assessment Report	Receiving environment water quality data has been provided in Appendix A: Water Quality Data, however there are identified gaps in the data and a lack of analysis and interpretation in relation to consideration of potential surface and groundwater interactions for the proposed mining disturbances. Background surface water quality data is required for the checking and derivation of water quality limits, suitability of monitoring	i) Provide background/baseline receiving environment water quality monitoring data and upstream reference data for the Gum Creek Tributary for dissolved metals and metalloids, general parameters, and nutrients; and site water dissolved metals and metalloids for raw water dams and mine water dams, as well as release dam data for general parameters, all of which are more up to date, from at least 2024 and through 2025.	Provided in Excel file titled "Dianne Copper Mine_Surface Water Data".

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		locations to demonstrate an effective and appropriate monitoring network and compliance framework is established for the operations. The following data has been provided: Gum Creek Tributary – Dissolved Metals and Metalloids: Upstream / Reference site data has been provided for sites S7 and S13 up until April 2023, Downstream / Receiving sites S11 and S12 data have been provided up to April 2023. Gum Creek Tributary – General Parameters: Upstream / Reference site data has been provided for sites S7 and S13 up until April 2023, Downstream / Receiving sites S11 and S12 data have been provided up to April 2023. Gum Creek Tributary – Nutrients: Upstream / Reference site data has been provided for sites S7 and S13 up until April 2023, Downstream / Receiving sites S11 and S12 data	ii) Provide projection of potential changes in the water quality downstream of the receiving environment with consideration of the potential surface water - groundwater interaction and the proposed expansion features, including pit, WRD, heap leach pads and processing plant.	Reports indicate South Creek (also referred to as Gum Creek tributary) currently displays impacts from releases of mine-affected water (MAW) discharges. Under the proposed expansion, water management methodologies across the project site, as outlined in the Water Management Plan², will include: • Increase pH of acidic mine affected water to meet WQO to facilitate precipitation of dissolved metals. • Clean water diversion drains; • Mine water cut off drains to capture potentially contaminated water; • Flow through sediment basin to capture coarse sediment in runoff; • Additional clean water dams; • Dilution using clean runoff from the clean water dams; • Movement of water between storages at the onset of significant rainfall events to minimise volume of spills; and • Mechanical evaporators when required Additionally, with respect to the existing issues associated with seepage from the Settling Dam, the project will: • Remove all existing contaminated sediment; • Install a Geosynthetic Clay Liner (GCL) on the upstream face of the existing embankment/dam wall and buried at least 750 mm into firm founding material below the toe; • Place fine cohesive fill at 500 mm thickness against the GCL and out 10m from the toe of the existing embankment;

² Engeny (2024) *Dianne Copper Mine – Water management plan*. Report prepared for Mineral Projects Pty Ltd.

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		have been provided up to April 2023. Site Water – Dissolved Metals and Metalloids: Raw Water Dams (Clean Water) site data has been provided for S1 (RWD 1) up until July 2022, S3 (RWD2) until July 2022, and Mine Water Dams (Mine Affected Water) S4 (Pit) until July 2022. Release dam – General Parameters: site data has been provided for S6 up to April 2023.		- Remove saturated sections of fill from the downstream side of the embankment toe and replaced with coarse general/clean fill; and - Construct a buttress with coarse general fill on the downstream side of the embankment (to improve stability). These measures are expected to reduced contaminant loads and improve downstream water quality. Ongoing monitoring will be required to confirm improvements and detect any changes related to pit, overburden stockpile, heap leach pads and processing plant.
			iii) Provide the raw data (with no outlier removal) utilised to derive the water quality objectives proposed in Table 7 of Appendix 3 (section 6.2.6).	Provided in Excel file titled <i>“Dianne Copper Mine_Surface Water Data”</i> .
EA5	Dianne Copper Mine Recommencement Project Environmental Authority	Further to the above points, the application material states that the water quality objectives within the DCM EA will be updated to be site specific objectives	Provide all available water quality data for surface and groundwater, in support of, and as detailed above.	Provided in the Excel files titled <i>“Dianne Copper Mine_Surface Water Data”</i> and <i>“Dianne Copper Mine_Groundwater Data”</i> .

Item	Reference	Matter	Information Request	Response
	Amendment Application Environment Assessment Report	once sufficient data has been collected, which is expected to occur in 2024. The data from the first and second sampling events from 2024 have been included, but data points are insufficient to establish site-specific surface water trigger values.		
EA7	Appendix 3 Dianne Copper Mine Groundwater and Surface Water Impact Assessment Report	There are no groundwater dependent ecosystems identified through the standard mapping systems. However, the presence of regional riparian vegetation communities (with greater zones around Gum Creek) that rely on the ephemeral watercourses suggests that there may be indirect groundwater dependence. The deep-rooted Melaleuca and Eucalyptus would tap into shallow water tables and perched aquifers.	Provide an assessment of seasonal surface water persistence and potential baseflow contributions to the Regional Ecosystems within and surrounding the site.	The climate at Dianne Copper Mine is characterised by extended dry periods (May–October) with no stream flow, and wet seasons (November–April) with sustained rainfall and consistent flows. Waterways associated with the project site are either ephemeral or intermittent dependent on their connectivity to groundwater seeps. South Creek (also called Gum Creek tributary) flow data from the 2024–2025 wet season (and detailed in C&R (2025)³ shows short flows occurred throughout the wet season, with most events occurring between November and February (Figure 1, attached to this letter). These short peaks reflect rainfall events within the upper catchment area. The data suggests that the system is ephemeral, with flows quickly falling back to zero following the cessation of the corresponding rainfall event (Figure 1). However, due to the natural shifting of the low-flow channel within the creek bed caused by high seasonal flows, baseflows may often be missed by the gauge, suggesting the system should be considered intermittent. During the updates of the water management system for the project, including remediation of the Settling Dam, both the flow gauges will be reviewed and if necessary, repositioned for the project. In parallel, the

³ C&R (2025) *Dianne Copper Mine: REMP assessment report*. Report prepared for Mineral Projects by C&R Consulting Pty Ltd.

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				setting in the creek of the flow gauges will be investigated to see if they can be lowered in the channel. It should be noted that it is only low flow events that the existing flow gauge location in the creek does not pick up, and during these low flow events, a release from the Settling Dam (Release Dam) is extremely unlikely. Prior to the availability of flow data (pre-2024), photographic and visual evidence was utilised (Table 2) and indicated that the system was intermittent, with baseflows persisting in the system for extended periods (up to 1 month) following rainfall runoff flow events. These extended baseflows are expected to be related to groundwater seeps in the upper catchment area. Additionally, due to the presence of bedrock throughout South Creek's reaches pooled water can persist throughout much of the year (i.e. up to $\frac{3}{4}$ of the year) at various locations.
EA12/PRCP6	Dianne Copper Mine Recommencement Project Environmental Authority Amendment Application Environment Assessment Report	The application does not contain information on temporary/permanent watercourse diversions, however they are expected to be required based on this information provided in the application. For example, the Heap Leach Pads are proposed to be in a valley where there would surface water control issues and heightened risk to receiving environment. Watercourse diversions should comply with the Department of Natural Resources, Mines and	Provide information regarding the proposed watercourse diversions planned and required for the project. Include information on: i) Provide information and drawings outlining the design of the water diversion(s), both permanent and / or temporary; ii) How any permanent watercourse diversion is to be designed and operated to ensure that it is stable, self-sustaining and does not impact on the adjoining	The Water Act identifies watercourses and drainage features on the Watercourse Identification Map (WIM). All of the watercourses associated with the project are charted under the WIM as 'unmapped'. The closest defined watercourse is the Palmer River, located approximately 3.5 km north of the project (in a straight line). The Water Act defines a watercourse as follows: 1) 'A <i>watercourse is a river, creek or other stream, including a stream in the form of an anabranch or a tributary, in which water flows permanently or intermittently, regardless of the frequency of flow events—</i> a) <i>in a natural channel, whether artificially modified or not; or</i> b) <i>in an artificial channel that has changed the course of the stream.</i>

Item	Reference	Matter	Information Request	Response
		Energy Guideline: “Works that interfere with water in a watercourse for a resource activity— watercourse diversions authorised under the Water Act 2000”.	upstream and downstream reaches of the existing watercourse; and describe how it will meet the requirements for functional design, design plan and operation and monitoring plan of permanent watercourse diversions. iii) Any temporary watercourse diversion, and how it meets similar outcomes as required for permanent watercourse diversions, however, a temporary watercourse diversion is not expected to be self-sustaining or incorporate natural features typical of local watercourses. iv) Any interactions between surface water diversions, the Heap Leach Pads, and the watercourse bed within which the Heap Leach Pads are proposed to be located. Describe management controls and measures to ensure mine affected water is kept separate from clean runoff. v) Any authorisations required / lodged under the Water Act 2000, relevant approval of the diversion,	2) <i>A watercourse includes any of the following located in it—</i> <i>a) in-stream islands;</i> <i>b) benches;</i> <i>c) bars.</i> 3) <i>However, a watercourse does not include a drainage feature.</i> 4) <i>Further—</i> <i>a) unless there is a contrary intention, a reference to a watercourse in this Act, other than in this part or in the definitions in schedule 4 to the extent they support the operation of this part, is a reference to anywhere that is—</i> <i>i) upstream of the downstream limit of the watercourse; and</i> <i>ii) between the lateral limits of the watercourse; and</i> <i>b) a reference in this Act to, or to a circumstance that involves, land adjoining a watercourse, is a reference to, or to a circumstance that involves, land effectively adjoining a watercourse.’</i> The Water Act defines a drainage feature as follows: <i>a) ‘if a feature is identified on the watercourse identification map as a drainage feature—the feature identified on the map; or</i> <i>b) otherwise—a natural landscape feature, including a gully, drain, drainage depression or other erosion feature that—</i> <i>i) is formed by the concentration of, or operates to confine or concentrate, overland flow water during and immediately after rainfall events; and</i>

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			and long-term management requirements.	<i>ii) flows for only a short duration after a rainfall event, regardless of the frequency of flow events; and</i> <i>iii) commonly, does not have enough continuing flow to create a riverine environment.</i> <i>Example for paragraph (b)(iii) – There is commonly an absence of water favouring riparian vegetation.</i> There are three mapped waterways of relevance to the project (Figure 2): 1. South Creek; 2. North Creek; and 3. The unnamed tributary of South Creek that traverses the project site and has historically been dammed at various locations along its length for previous DCM operations. The reaches of South Creek assessed for the project and the lower reaches of North Creek are considered to be intermittent with extended flows experienced following rainfall induced runoff, suggesting they are seasonally groundwater fed for an extended period following the wet season but still dry out prior to the end of the dry season. Flows in the upper reaches of North Creek and the entirety of the unnamed tributary are considered ephemeral, only persisting while rainfall continues. Permanent water is present in both catchments within constructed mine dams. The ephemeral nature of these waterways suggests that they are not considered watercourses because they do not contain perennial or intermittent flows. Further, as discussed in C&R (2024), the riparian zone of the unnamed tributary is dominated (generally >85%) by 'terrestrial' species with true riparian species only

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				sparsely encountered within the drainage line in proximity to the historical farm dams (i.e. around the margins or immediately downstream of the dams), suggesting the artificial permanency of water at these locations is sustaining the only true 'riparian' species within the system. Therefore, the lack of natural continuing flows to create a riverine environment provides further evidence that the unnamed tributary is a drainage feature rather than a watercourse. Based on the Water Act definitions of a watercourse and drainage feature and the onsite observations discussed above and in C&R (2024), the unnamed tributary (and associated tributaries) meets the criteria for classification as a drainage feature. Therefore, no diversions are required for the recommencement of operations at Dianne Copper Mine.

Recipient: Landroc Pty Ltd
Subject: Dianne Copper Mine RFI
Date: 2 September 2025



Attachments

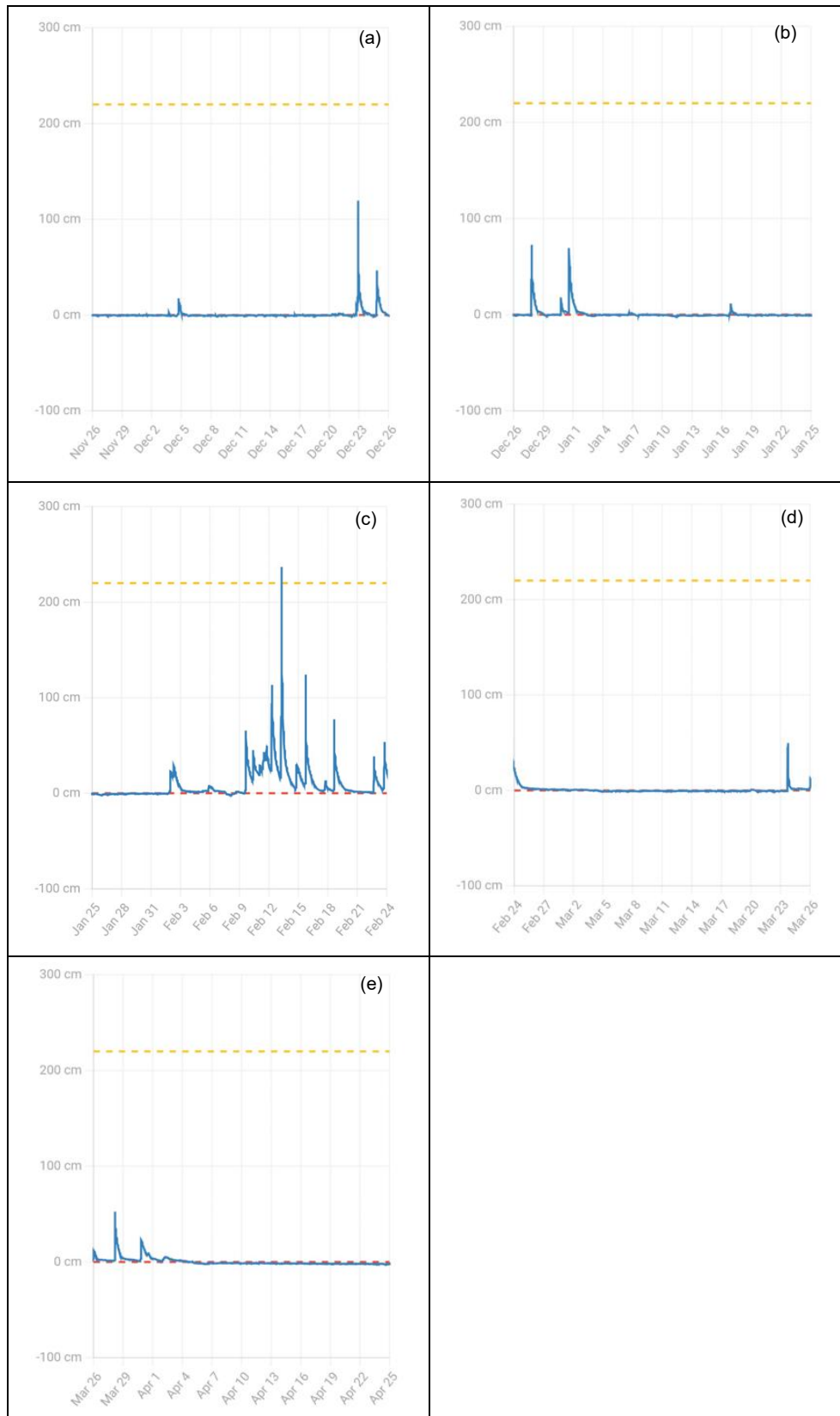
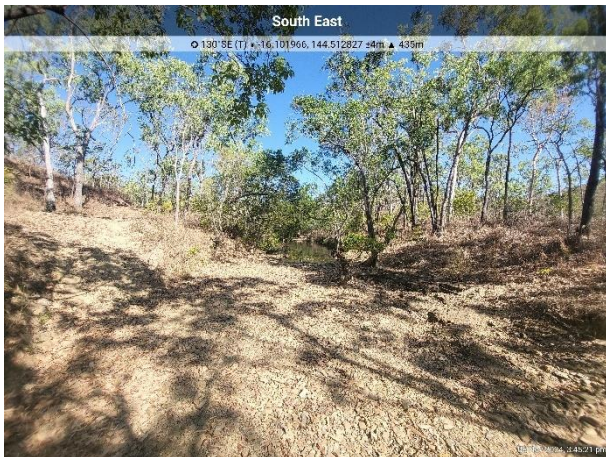
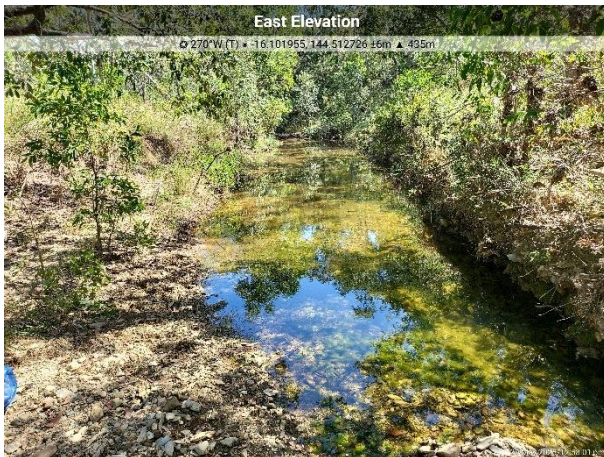
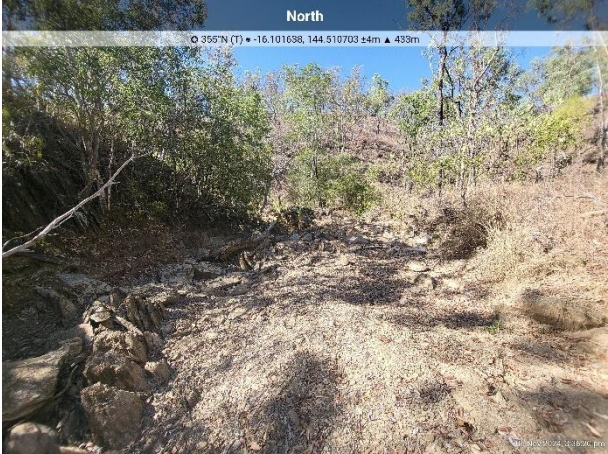
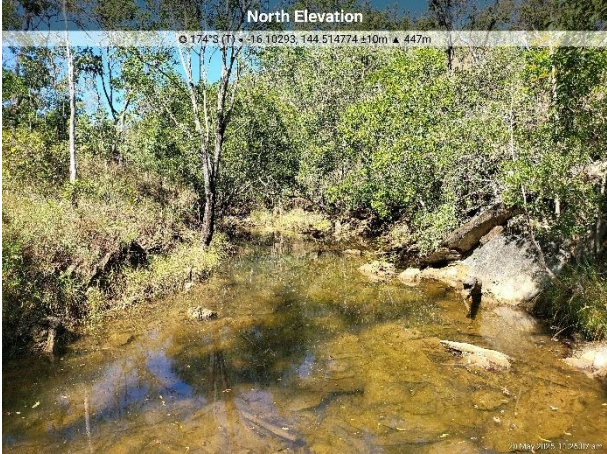
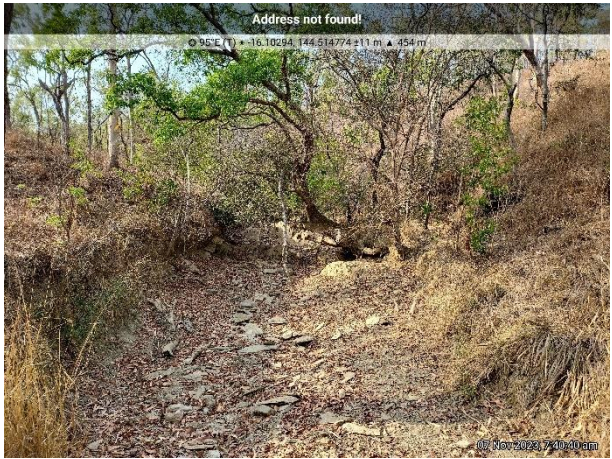
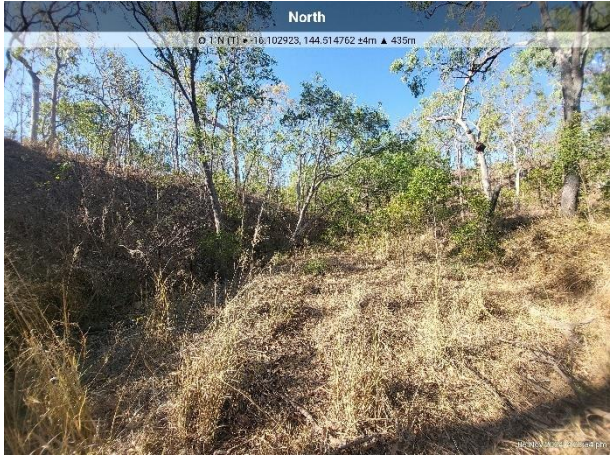
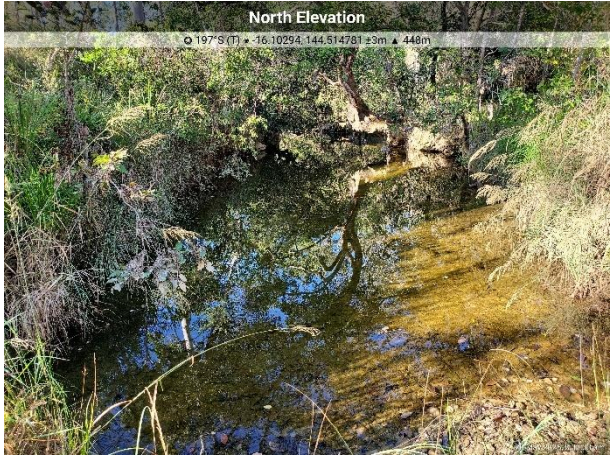


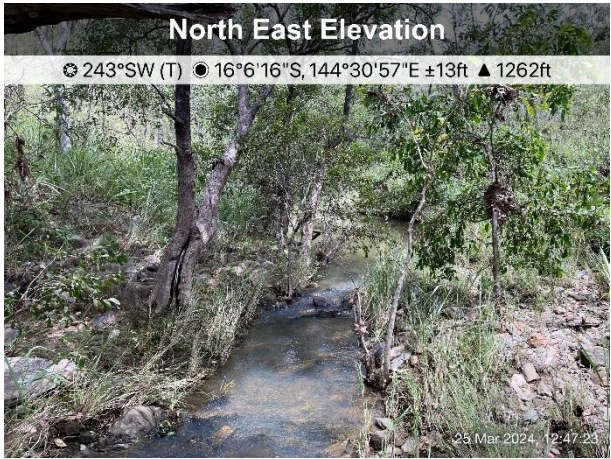
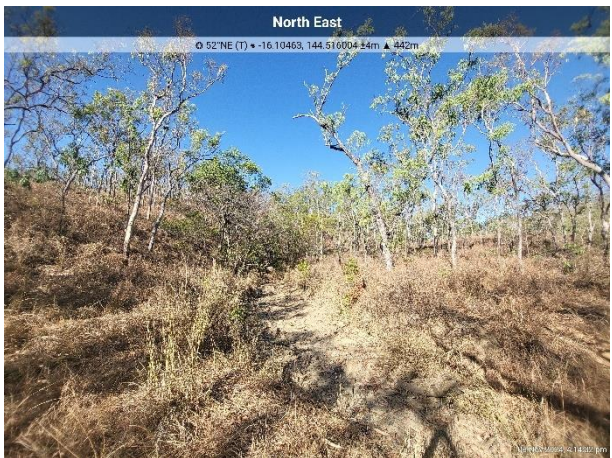
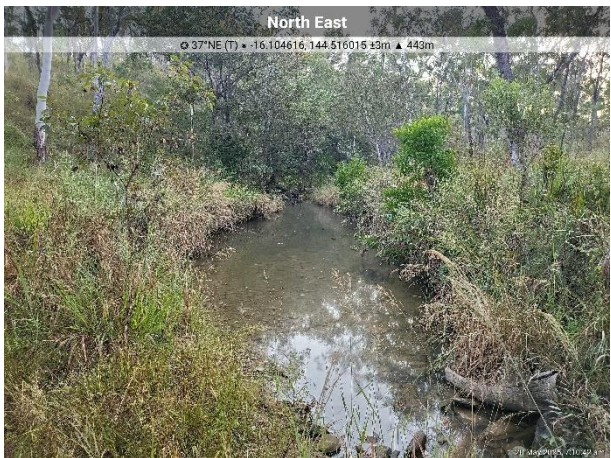
Figure 1: Flow depth recorded at downstream South Creek over the 2024-2025 wet season in (a) November to December (2024), (b) December (2024) to January (2025), (c) January to February (2025), (d) February to March (2025) and (e) March to April (2025).

Table 2: Comparison of creeks between dry season and wet season.

Location	Dry Season	Wet Season
South Creek – Approximately 100m downstream of release point.	 November 2023	 March 2024
	 November 2024	 May 2025

Location	Dry Season	Wet Season
South Creek – Approximately 400m downstream of release point.	 November 2023	 March 2024
	 November 2024	 May 2025

Location	Dry Season	Wet Season
South Creek – Approximately 50m upstream of release point.	 November 2023	 March 2024
	 November 2024	 May 2025

Location	Dry Season	Wet Season
South Creek – approximately 100m upstream of release point.	 November 2023	 March 2024
	 November 2024	 May 2025

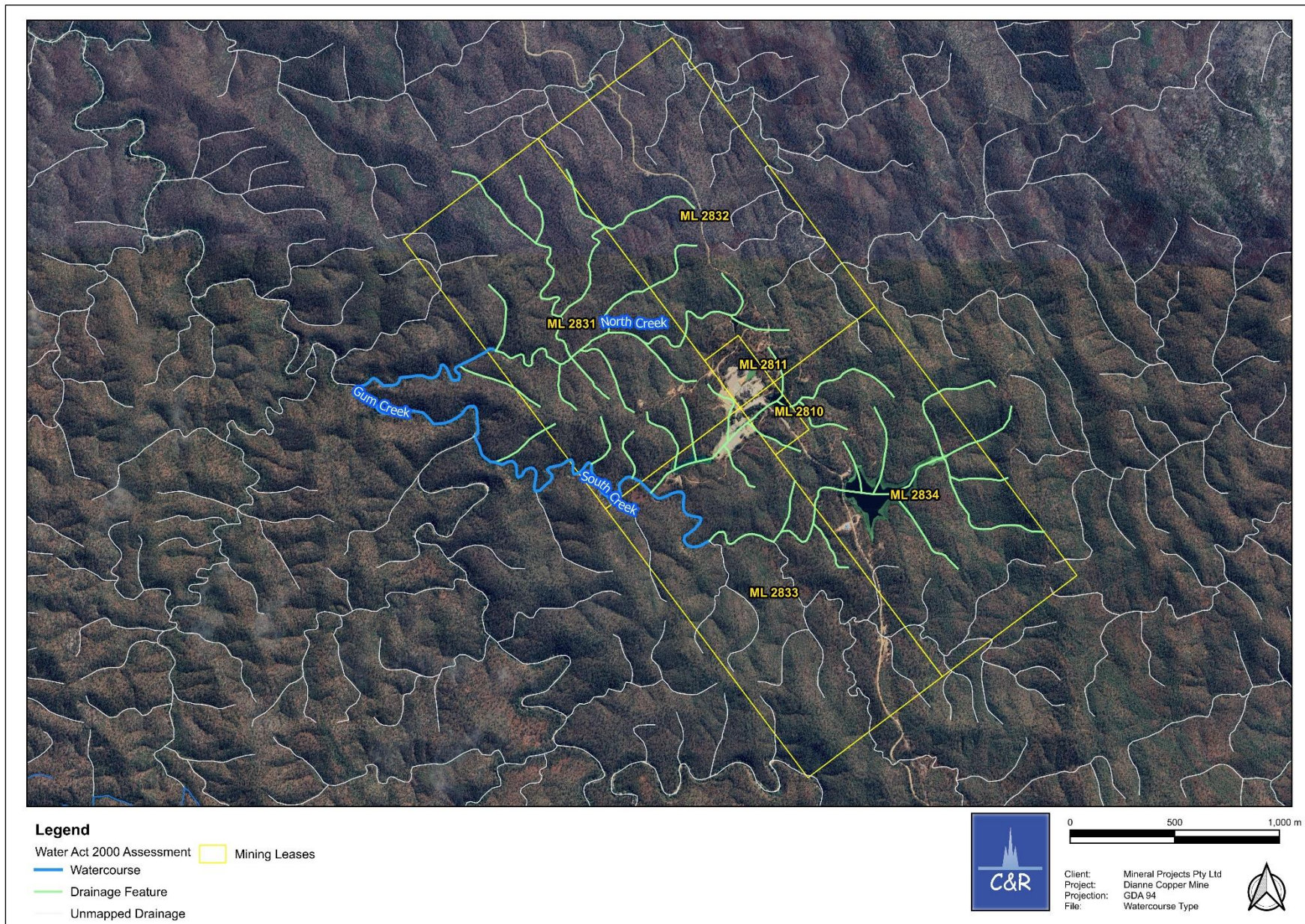


Figure 2: Map of watercourses and drainage features as assessed by on site ground truthing.