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Our Ref: DLPE2026/0165

Dear Ms Fitzpatrick

Re: Invite to comment - GEMCO Excess Water Disposal Project - additional information

The additional information submitted for the above project has been assessed by the relevant divisions within the department and the following comments are provided:

Mining Division

The Mining Division has reviewed the additional information and provides comment in **Attachment 1**.

Flora and Fauna Division

The Flora and Fauna Division has reviewed the previous response to the request for further information and is satisfied that the proponent has addressed the information gaps. No further comments are required.

Should you have any further queries regarding these comments, please contact the Development Coordination Branch by email DevelopmentAssessment.DLPE@nt.gov.au or phone (08) 8999 4446.

Yours sincerely



Maria Wauchope
Executive Director Land Resources

Submission on Supplementary Environmental Report

Groote Eylandt Mining Company Pty Ltd – GEMCO Excess Water Disposal Project

This submission is made under regulation 123 of the Environment Protection Regulations 2020

NT EPA reference number: EP2025/043

Government authority: Mining Division, Department of Lands, Planning and Environment

Summary:

Significant knowledge gaps remain, preventing a robust assessment of any potential significant environmental impacts. Specifically:

- insufficient source (quarry) water quality data is available to characterise discharge water quality;
- insufficient information is provided to support the estimated discharge volume; and a site water balance has not been provided;
- lack of transparency regarding the mine plan and assumptions made when estimating the projected 'mixed' discharge water quality. Discharge water quality will vary depending on what voids are being dewatered and the volume(s) of water. Also, over the life of a mine, as the depth of each quarry increases, the water quality may change;
- the quality and quantity of water to be dewatered and discharged from the eastern and northern leases is unknown;
- whilst use of the 1st percentile dilution contour to model the mixing zone may be considered conservative, the 'Approach 1 - Less conservative' method was chosen to estimate the 95th percentile of source analyte concentrations, and the 'base case' rather than the 'worst-case' was used to estimate the projected dewatering flow rate. Neither of which, can be considered conservative. No explanation was provided explaining what the base and worst-case scenarios represent, or the assumptions made (including groundwater inflows); and
- the assumptions used to calculate the volume weighted assessment of dewatering discharge contaminants have not been provided.

Section of referral or terms of reference	Theme / issue	Comment
Response to RFI 12 May 2026	1.e) Discharge modelling and supporting data 2.b) Discharge duration	1. Reference to conservative assumptions throughout. 1.e) states that "<i>the conservative assumptions applied are numerous</i>". Two of these are identified as: • Defining water quality based on the estimated 95th percentile of analyte concentrations, and • Simulating a continuous 12-month discharge at 80GL/a (representing assumed peak flow that would only in reality be maintained for shorter periods on the order of days).

		There is significant uncertainty regarding the quality of source (quarry) water, and of the volume of mine affected water requiring discharge. In principle, adoption of the 95th percentile of the source analyte concentrations would be considered conservative, however, there is currently insufficient data available to robustly estimate the 95th percentiles. The variability in water quality across the existing quarries is poorly understood, both spatially and temporally, as demonstrated in Excel spreadsheet: "<i>analyte_distributions_quarry.csv</i>". Water quality in the proposed or new quarries in the eastern and southern leases is not considered. The discharge water quality will change subject to the mine plan, and/or any significant or unpredicted change in water inventory, e.g. significant rainfall event, unpredicted groundwater flows. No empirical data or modelling has been provided to support the assumption that any discharge would not be continuous, or that discharge at peak flow will be limited in duration.
Appendix B Memo Volume weighted assessment	Water quality data Sample number	3. Insufficient water quality data is available to robustly estimate the 95th percentile of analyte concentrations in the mixed discharge. a) The memo identifies consistent with ANZG 2018, a minimum of 36 samples is required to accurately estimate the 95th percentile. Table 1 provides the mean sample number per quarry. The mean ranges from 8.4 to 17.7 (excluding Mercury). For 13 of the 17 metal/metalloid analytes presented, only a single sample

dewatering discharge analyte concentrations		has been collected. In relation to nutrients, the mean number of samples per quarry, ranges from 2.8 to 3.1. In relation to Nitrate, the memo states, in contrast (to rare-earth elements): <i>“the quarry nutrient data was particularly sparse with a maximum of 6 observations and a mean of 3 per quarry for Nitrate, as such extreme care should be taken when interpreting the output for nutrient concentrations in particular”</i>. The date range over which data were collected, is not provided and temporal variability is not considered. b) <i>“Due to the projected mine expansion in GEMCO’s eastern and southern leases areas there were many quarries in the projected flow dataset that were not included in the quarry water quality monitoring dataset as they have not yet been established. We accounted for the gaps in the available data using two approaches which differed in conservatism of the assumptions used.”</i> The quality of water from the eastern and southern leases is not considered (currently unknown). Of the two approaches identified, the ‘less conservative’ approach (Approach 1) was used to estimate the discharge analyte concentrations. The memo concludes: <i>“As discussed above, the lack of data for individual quarries results in the 95th percentile estimates with extremely high uncertainties. The selection of approach used to estimate the overall mixed dewatering discharge analyte concentrations will depend on risk tolerance”</i>.
	Flow volume data	4. No information including empirical/modelled data is provided in the memo of the assumed flows/volumes. a) The memo identifies two data sets, being the ‘base’ and ‘worst’ case. The ‘base case’ and not the worst-case data set was used to estimate the discharge analyte concentrations. b) The methodology is not described in the memo. How were the base and worst-case scenario flows estimated? What modelling has been undertaken, assumptions made etc.? c) The flow volumes and analyte concentrations (Table 2 and 4 of the memo) are estimated across a financial year. Wet and Dry season variability is not considered. d) A mine plan has not been provided, and any mine plan is subject to change. The lack of transparency regarding the mine plan adds to the level of uncertainty (risk). e) The Excel spreadsheet titled: <i>“gemco_quarry_annual_water_volumes_v3”</i> provides FY annual water volumes (in ML) for 16 voids. The methodology used is not provided in the memo. It is unclear if this has been modelled, or if it is calculated based on void size and inflows, days/months of mining etc. Was groundwater recharge considered, and how? Any assumptions made, are not provided. f) No modelling of groundwater inflows is provided. It is unclear whether this has been considered in the base or worst-case scenario estimation. Similarly, what assumptions regarding rainfall, evaporation and climate change were made?

		g) Does not currently consider the volume of mine affected water from the eastern or southern leases. The volume of water generated at the eastern and southern leases is not known/well understood. ■ [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED]
Appendix C Memo Volume weighted assessment of dewatering discharge pH	Data adequacy	6. Comments 3 to 5 regarding Appendix B are equally as applicable here. In addition: a) Sample number is far lower. Two of the 20 sites presented in Table 1 have only one data point. Except for quarry F3N, the remaining quarry sample numbers are a single digit. pH at F3N has been reported on 11 times. b) In addition to seasonal variation, diel function is not considered. The memo notes: <i>"Where quarry sumps have high levels of organic matter or algal growth, pH may fluctuate widely throughout the day as ecosystem metabolism varies due to changes in rates of respiration and photosynthesis. With few pH samples available quantification of diel function is not possible"</i>. The presence of organic matter and algae in quarry sumps has not been considered in relation to the discharge. The quarry water is high in nutrients, and algae will thrive in the sumps. The impact on water quality, and of any discharge via the outfall has not been considered. Chlorophyll-a, is commonly used to indicate nutrient enrichment, but is not considered here. Further, algae has the potential to physically clog pumps, filters in/outlets.
Appendix D	Compliance monitoring	The proposed approach to compliance monitoring has not been updated to consider previous advice provided in relation to the initial SER submission (DLPE2026/0048, March 2026). Monthly monitoring is considered insufficient, and the role of real-time monitoring unclear.