Submissions on an environmental impact statement (EIS)

Name of Project: Lake Vermont Meadowbrook ProjectSubmitter: Department of Environment and Science 1 June 2023

Background:

The Department of Environment and Science (the department) has reviewed the environmental impact statement (EIS) submitted by Bowen Basin Coal Pty Ltd in February 2023 and publicly notified from 3 April 2023 to 18 May 2023. Key matters to be addressed in the amended EIS are summarised below. Key matters, and all other matters that require further detailed assessment and consideration in the EIS, are described in more detail in the following Detailed Comments table.

Where amendments are made to the EIS in response to submissions, these changes will need to be applied within the relevant amended EIS chapters and appendices, as well as summarised with clear referencing to relevant sub-section numbers. A clean, amended EIS version as well as a track-changes version that incorporate amendments in response to submissions, are required. Include a suitable cross-reference guide. Furthermore, advice to the department received from the Independent Expert Scientific Committee (IESC) is attached as Annexure 1. It is the department's expectation that all technical matters and additional work requirements raised in the IESC advice are addressed in any amended EIS.

Key matters:

1. No details are provided of the design or construction of the Lake Vermont Mine Phillips Creek levee. The levee has been included in the flood modelling, but design and construction details are not included in the Lake Vermont Mine environmental authority (EA). This information must be provided in the amended EIS for inclusion in the EA assessment and to ensure consistency with the modelling results.
2. Site-specific groundwater triggers and limits have not been proposed for the project. There appears to be adequate groundwater monitoring data to support the development of these triggers and limits.
3. There is a possible anomaly in the groundwater model input data because of a noted significant difference between the observed and corrected groundwater levels in the bores at W15. The amended EIS must clearly explain how any such anomalies in the data may have impacted the model calibration and subsequent groundwater level predictions and associated impacts on aquatic and groundwater dependent ecosystems.
4. Assumptions in the submitted EIS that instream and terrestrial subsidence impacts will self-repair must be supported by evidence-based data and discussion, including the timeframes for effective repair to be achieved.
5. Stage 4 offsets must be fully addressed in the amended EIS, including a suitable Offset Area Management Plan.
6. The EIS does not provide sufficient detail or assessment of robust planning and mitigation measures for greenhouse gas emissions abatement for the proposed project.
7. A complete set of site-specific background noise measurements have not been provided in the EIS.

Deatiled Comments

Issue #	Topic, EIS section, and Terms of Reference (ToR) section	Issue/Comment	Recommendation	Summary of changes made / response to comment
Executive Summary				
1	Figure ES. 2: Project Layout	Underground Development – Vermont Lower Seam Legend colouring does not clearly match the colour on the map.	Ensure the legend correctly reflects all mark-ups and colours displayed on the map.	AARC 1209: This has been reviewed and the colours in the legend do match to the map. Suggest this may be a display/monitor issue? It is noted that the Vermont Lower Seam is the darker of the 2 seams shown (which is present both north and south of the mains development). The Leichardt Lower Seam is only mined in the north. Further, we did try to change the colour of the Leichardt Lower Seam to make this clearer, however the map appearance is negatively impacted by using darker shades.
2	ES 5.1 Climate	The EIS notes a decreased risk of rainfall extremes and therefore lowered risk of flooding. However generally, climate change is expected to bring increased frequency and intensity of weather events including the severity, duration and spatial extent of droughts and extreme rainfall events.	Provide a reference to support the statement that there will be a lowered risk of rainfall extremes and lowered risk of flooding due to climate change.	AARC 0808: Section 5.1 of our Executive Summary has now been updated, to reference 'Appendix V - Climate Change Assessment, Section 7.5.3 - Extreme Rainfall'. It is noted that Section 7.5.3 of our Climate Change Assessment specifically provides that: "[e]xtreme rainfall events in the Isaac Regional Council area have generally been associated with cyclone activity. Climate projections for the East Coast (North) sub-cluster indicate that the formation of tropical cyclones is expected to become less frequent. Maximum 1-day precipitation can be used as an indicator of an extreme rainfall event. Climate change projections for the Isaac Regional Council area, indicate that the intensity of extreme rainfall events is expected to decrease in 2050 and 2070 compared to the baseline period." Data has also been provided in Section 7.5.3 to support this position.
Chapter 2- Consultation Process				
3	Table 2.2 Interested Persons	The relationship to the project of "*Ergon Energy*" and "*Resource Centre of Excellence/Regional Industry Network*" has not been included. Also "*Queensland Resources Council*" and "*Mr Ian McFarlane*" appear to be provided in the wrong columns.	Review and update the Interested Persons Table 2.2 for accuracy and completeness.	AARC 0808: Missing details and data corrections have been added to EIS Chapter 2, Table 2.2
Chapter 3 - Project Description				
4	Chapter 3 Project Description Chapter 9 Flooding and Regulated Structures Appendix Z Flood Modelling Assessment Report	There is insufficient information provided about the design and implementation of the proposed Lake Vermont Mine Phillips Creek levee. The flood modelling in Chapters 3, 9 and Appendix Z assumes this levee is already constructed. However, no details are provided in the EIS about the Phillips Creek levee crest levels or flood protection levels (i.e., up to a certain annual exceedance probability (AEP)) or the proposed timing for its installation. If the levee on Phillips Creek has been previously approved to protect the existing Lake Vermont Mine up to a certain AEP, this information should be provided in EIS. It is not stated in the EIS what is the actual approved, or intended flood protection level of the Phillips Creek levee.	Address the following: - Include details of any previous approvals relating to the Flood Protection Levels for the Phillips Creek levee. - Confirm the dimensions, length, design, construction materials and methods and timing for the Philips Creek Levee. - Confirm the Phillips Creek Levee will be constructed to an AEP level commensurate with the 0.1% AEP level proposed for the project levees. At a minimum, a draft condition requiring the levee to be constructed in accordance with design parameters that meet assumptions made about the levee in the EIS flood modelling should be included in the amended EA.	WRM 0731: A 7.8 km long levee was included in the Functional Design of the Phillips Creek diversion (WRM, 2016). The functional design report was prepared as part of the impact assessment for the Lake Vermont Northern extension project. There Phillips Creek includes plots of peak levels - but the more relevant issue is that there was a commitment to build it to the 1 in 1000 AEP plus freeboad. AARC 0808: The Phillips Creek diversion and associated levee are approved developments within the existing Lake Vermont Mine EA (granted 20 August 2015). The Phillips Creek diversion and levee have not yet been constructed, however are anticipated to be built in advance of the proposed Project. As such, the Phillips Creek diversion and levee have been considered within the flood modelling scenarios for the proposed Project. Given the Phillips Creek diversion and levee developments are already approved, further assessment and conditioning has not been undertaken or proposed as part of this EIS.

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5	Figure 3.24	The sediment dams are not shown in the layout of the proposed water management system features within the mine infrastructure area (MIA) in Figure 3.24.	Update Figure 3.24 to clearly depict all mine water infrastructure, including all sediment dams.	AARC 1109: EIS Chapter 3 (Project Description) Figure 3.24, illustrates all of the proposed water management infrastructure that will exist within the MIA. It is noted that no sediment dams are proposed in this location. There are three sediment dams which will be constructed in conjunction with the satellite open cut pit (Southern Sediment Dam, Northern Sediment Dam 1 and Northern Sediment Dam 2). These dams are detailed within Section 3.4.1.8 of the Project Description, as well as EIS Chapter 8 (Surface Water).
Chapter 5 Land Resources				
6	Chapter 5 Land Resources	The volume and frequency of the ponded water expected to be captured in the residual subsided ponds is not addressed in the EIS.	State the frequency and volume of water expected to be captured in residual ponded areas (currently refers to area (ha)). Also express the volumes per underlying land parcel. Show how the proponent has considered the Fitzroy Basin Water Plan, including potential licencing requirements for the post-mining landform and capture of overland flow.	AARC 0509: It is noted that geomorphological impacts to surface water resources are discussed in EIS Chapter 8 (Surface Water), as well as Appendix W (Geomorphological Assessment Report) - which have both now been updated. As discussed during our 21 August 2023 meeting with DCCEEW and DES, the frequency and volume of water being held within ponds is highly variable, subject to seasonal rainfall. It is therefore difficult to provide a statement on what the expected frequency and volume of water within ponds will be, in any given period. Notwithstanding this, EIS Chapter 8 (Surface Water) Section 8.3.7.1 has sought to quantify this impact by providing that "[t]he duration of ponding in these depressions would depend on the depth and duration of rainfall, but based on water balance modelling, they would be unlikely to fill completely, and would be expected to store more than 1 m of water less than 10% of the time. However, based on modelling of the 50% AEP flood, the depressions would be expected to fill with Boomerang Creek floodwater at least every few years. The ponded water would then persist until it evaporated or seeped into the underlying soil. In the absence of seepage, depending on their depth, the ponds could then be expected to persist for several months post filling." In regards to licencing requirements to authorise the take of overland flow, it is noted that no works are proposed to be constructed for the purposes of capturing overland flow, and nor is any use/take of water from within these ponds proposed to occur. Indeed, water retained in subsided areas will remain available to the environment, supporting habitat values and replenishing localised alluvium. As such, a licence to take overland flow is considered inappropriate in these circumstances. To further mitigate potential catchment losses, the proponent proposes to use pumping equipment to further reduce the total volume of overland flow captured. This would involve pumping water from the ponds into the downstream flow paths when accumulated volumes become significant. Pumps would be located at the deepest sections of each subsidence depression and deliver water to the pre-mining overland flow path (as indicated in Section 3.3.4; Appendix W). The effectiveness of pumping out each of the depressions at a nominal rate of 50 L/s (4.3 ML/d) when water depth exceeds 0.5 m above the lowest point, was tested using the water balance model. The modelling results demonstrate that pumping is expected to reduce the volume captured in the depressions to 11% of the total runoff draining to the depressions, negating the need for a licence. Notwithstanding this, the potential for impacts to water resource availability (consistent with Water Act considerations) have been assessed. Specifically, EIS Chapter 8 (Surface Water) provides that "[f]or the subsidence impacted areas of the land adjacent to One Mile Creek, minor drainage channels are proposed to drain the subsidence panels where practicable, ponding of runoff captured in the floodplain between Boomerang and One Mile Creeks would effectively reduce the local catchment draining to One Mile Creek by approximately 900 ha (6.9%). During open-cut operations, water which would normally flow to One Mile Creek would be intercepted by the proposed mine water management system within the levees protecting the mine pit and sediment dams. During the period of peak open-cut mining disturbance, the temporary maximum additional reduction in catchment area to One Mile Creek would be approximately 300 ha (i.e. a total of 1,200 ha in catchment reduction). At the completion of mining and rehabilitation of the final landform, this would reduce by approximately 150 ha (i.e. a total catchment loss of 1,050 ha - 8%). This catchment loss would impact the downstream 4 km to 6 km reach of One Mile Creek in minor runoff events, (which has been impacted by historical mining activities in the upper catchment) but would not significantly further alter the flow regime. The impacts of the catchment loss would be minimal downstream of the confluence, where it would make up 1.8% of the 48,900 ha total catchment." As such, water losses to the receiving environment are minimal (such as to impact Water Act considerations). Impacts to ecological values as a result of hydrological and geomorphological changes has also been considered within other Chapters of our EIS (noting these are not the focus of this comment here).
7	Section 4.4.7	The EIS notes that the duration of any current impacts to land would be extended for the life of the proposed project but does not explain in what areas and operations this would occur.	Provide adequate information to support this statement, including identifying the type and location of current impacts to land and impacts (if any) to the Lake Vermont Mine operations.	Note that this comment is referring to Section 5.4.7 of EIS Chapter 5 (Land Resources). Specifically, Section 5.4.7 addresses 'Cumulative Impacts' to land. The full context of the statement cited by DES here, is as follows: *"Apart from the direct impacts to land outlined above; and given that the proposed Project maintains the current production rate of the Lake Vermont Mine; there will not be any other cumulative impacts to land as a consequence of this Project. However, the duration of any current impacts to land would be extended for the life of the Project. " (EIS Chpater 5, Section 5.4.7)* It is noted that the the 'type and location' of impacts to land are addressed in detail through Section 5.4 of EIS Chapter 5 - 'Potential Impacts'. Current impacts to land are also considered in detail, through Section 5.3 - 'Description of existing values'. As such, no changes to EIS documentation are understood to be necessary to address this comment.

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Chapter 7 – Groundwater Appendix E - Groundwater Impact Assessment				
8	Chapter 7 Groundwater Appendix J Stygofauna assessment	Section 7.4.7 'Stygofauna impact mitigation and management' states, "*…. ongoing monitoring of groundwater levels and quality will provide a means to monitor potential changes to the stygofauna community. This monitoring will be facilitated through the proposed updates to the Lake Vermont Mine Water Management Plan* ." The presence of stygofauna identifies a surface water and groundwater link (Appendix J). Stygofauna monitoring in riparian zones should be included as part of the Groundwater-Dependent Ecosystem Monitoring and Management Plan (GDEMMP).	Outline, as part of the GDEMMP, an effective monitoring program that clearly sets out the objectives and requirements to detect any changes to Stygofauna communities as a result of the project, and appropriate mitigation measures or management actions to protect those values, if required.	AARC 0808: EIS Chapter 7 (Groundwater) has been updated to correctly reference the GDEMMP as the applicable plan to monitor stygofauna. Further, a draft GDEMMP is also now provided as part of our updated EIS documentation (as Appendix A4 of the EIS). The GDEMMP sets out the process for monitoring potential impacts to stygofauna that may arise as a result of the Project. Stygofauna monitoring has been developed in consultation with Dr Peter Serov (StygoEcologica).
9	Section 7.2.1	The EIS statement "*For most of the Project area, in particular the Permian groundwater unit, groundwater quality is poor and unsuitable for stock purposes or aquatic ecosystem support* " is not supported as the statement is mainly based on elevated electrical conductivity. Groundwater often naturally displays high electrical conductivity and can support specific aquatic ecosystems.	Remove reference to "*aquatic ecosystem support* " from this statement or provide specific evidence to justify the claim.	AARC 0808: EIS Chapter 7 (Groundwater) Section 7.2.1 has been updated to remove the reference to "aquatic ecosystem support".
10	Table 7-4 and Appendix E section 4.3.4	These summary tables and sections refer to metal concentrations without specifying if they relate to the dissolved fraction or total metals. Data must be more precise to facilitate review and comparison with relevant guideline values or water quality objectives.	Specify all metal concentrations as dissolved or total metals.	AARC 1109: EIS Chapter 7 (Groundwater), Table 7.4 has now been updated (footnote added) to clarify that metals values are all 'dissolved metals'.
11	Table 7-4 and Appendix E section 4.3.4	Table 7.4 provides statistical data about metal concentrations in groundwater. However, percentiles are not presented to inform the establishment of groundwater quality triggers and limits and comparison with the ANZG (2018) guideline values for toxicants.	Supply the 80th and 95th percentiles for each indicator in the different formations or group of bores.	AARC 0910: Groundwater trigger levels have now been proposed through the addition of Appendix A7 to the EIS (including an analysis of water quality data).
12	Section 7.4.2	The proposed groundwater monitoring program does not list water levels as an indicator to be monitored. Water levels are required to identify and manage any drawdown issues.	Include groundwater standing water levels as an indicator for the groundwater monitoring program.	AARC 0808: EIS Chapter 7 (Groundwater) Section 7.4.2 has been updated to acknowledge that standing water level will be monitored as part of the proposed groundwater monitoring program for the Project. This is consistent with proposed EA Conditions.
13	Table 7.9	Table 7.9 presents the locations of the monitoring bores and their relevant formation. However, it does not describe in detail which bores would potentially be impacted in terms of quality and levels by the activity (underground and new open-cut sections) and therefore, which bores should be compliance bores or interpretation bores (see *Using monitoring data to assess groundwater* quality and potential environmental impacts, Queensland Government, 2021).	Identify potential compliance bores or interpretation bores for the proposed project based on their potential to be impacted by the mining activity. This is to enable the relevant compliance requirements to be included in the amended EA conditions.	AARC 0910: Proposed monitoring bores for the Project are included within Chapter 23 of the EIS (Proposed EA Conditions). A map of these monitoring bores is also provided as Attachment 4 of the proposed EA. Groundwater trigger levels have also now been proposed through the addition of Appendix A7.
14	Section 7.4.4	Section 7.4.4 states that "*the groundwater trigger levels and limits will ultimately be maintained and managed through updates to the existing Lake Vermont Mine Water Management Plan* ." However, triggers and limits for the project are not proposed as part of the EA conditions. Existing groundwater data is available from 13 sampling events and several bores, which should be sufficient to allow site-specific triggers/limits to be proposed based on the department guidelines '*Using monitoring data to assess groundwater quality and potential environmental impacts'* (2021).	Use existing groundwater data, including any additional data as it becomes available to propose robust groundwater triggers and limits as part of the amended EIS EA conditions, for both the existing Lake Vermont site and the proposed Meadowbrook site.	AARC 0910: Groundwater trigger levels have now been proposed through the addition of Appendix A7 to the EIS (including an analysis of water quality data). JBT-JB 0815 added: "(28 monitoring events at Meadowbrook, 37 monitoring events at LVN)"
15	Section 7.4.5	The EIS states that "*Changes in water level will be assessed on an annual basis against model predictions, by a suitably qualified person, as part of the Annual Return* ", but trigger levels are not included for the new monitoring bores in the EA conditions.	Include EA conditions, details of the bores to be monitored and their associated triggers for standing water levels.	AARC 0910: Groundwater trigger levels have now been proposed through the addition of Appendix A7 to the EIS and the addition of these proposed triggers to Chapter 23 (Proposed EA Conditions). A map of these monitoring bores is also provided as Attachment 4 to the proposed EA.

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16	Appendix E Section 6.2.2, 6.2.5 Section 8	The EIS states that "*From review data within the Queensland Government Wetlands Mapping website…there are no mapped surface expression or terrestrial GDEs within the potentially impacted Meadowbrook project*". However, the *Groundwater Dependent Ecosystems Atlas* shows the presence of Groundwater Dependent Ecosystems (GDEs) mapped at the national and regional scale (high potential to low potential) within the Meadowbrook project area. The GDE report (Appendix I) confirmed the presence of GDEs that access groundwater from the Tertiary aquifer within the Project area. This is confirmed again from the presence of stygofauna (Appendix J) in Tertiary bores W3_MB2 (above panels) and W14_MB1 both along Boomerang Creek. Chapter 7 of the EIS also correctly identifies the presence of GDEs within the project footprint. It is unclear what is the new predicted drawdown impact to GDEs in light of corrected groundwater level data. It is unclear whether the groundwater model is still fit for purpose to detect impacts to GDEs along Boomerang Creek (see comment below).	Update the GDE assessment across all relevant chapters of the amended EIS to ensure consistency including the following: - section 6 Groundwater impacts (6.2.2 GDEs) and section 8 Conclusions of Appendix E of the EIS to reflect the presence of identified GDEs; - the peer review of the groundwater model to reflect the identification of GDEs along Boomerang Creek; - impacts to GDEs in light of corrected groundwater level data (see below comment) using a fit-for-purpose model.	AARC 2909: Through our review, it appears that there may have been some confusion here, between the Groundwater assessment section about GDEs with the GDE Report. Appendix E (groundwater Impact Assessment) has now been updated to address this issue.
17	Appendix E - Section 5.3.2 Appendix A, B of Attachment A	The observed water levels for the three (3) bores at W15 (used in Appendix A, Calibration Residuals and Appendix B Calibration Hydrographs of Attachment A Groundwater Technical Report of Appendix E Groundwater Impact Assessment) were all approximately 160m AHD compared to the corrected values of 146m in the Apendix E hydrographs (Figures 4-6).	Clearly explain the anomalies in the data and how they have impacted the model calibration and subsequent predictions.	The model tended to overpredict water levels. It underpredicted the level at W15 because of the erroneous data, and the change in data leads to an overprediction of water level at this site as well. It is anticipated that the overall impact to predictions will be minimal, though the correct values will be utilised in any future modelling. JBT- JB 0808: "In the original and V1 versions of the groundwater report, the water level at W15 was shown as ~RL160. DES queried why Figure 4-10 showed the shallow groundwater flowing SE from W15 when the conceptual model said that groundwater flowed to the east, which was a reasonable pickup. When I checked the collar data for all the bores in the dataset the collar RL in the geological dataset was higher than what was shown in the site topo, so I corrected the collar RL for W15 and it brought the groundwater RL down from ~160 to ~146. This change is not reflected in the model hydrographs, where the modelled waterlevel is shown ~RL157, ~11 m higher than the corrected water level. The model was originally under-predicting the water level at W15 by a couple of metres, but over-predicting at nearby bores such as W15 by ~9 m. The change brings the model residual closer to other nearby bores such as W14. This has limited impact on water levels for the deeper (Permian) units as W15 is compartmentalised into an eastern occurrence of Permain sediments that is separated from the areas where mining occurs by faulting (Figure 4-12)"
18	Appendix E Section 7.1.2	Section 7.1.2 states that the Groundwater Monitoring and Management Plan (GMMP) will be developed for the Meadowbrook Project, extending on the existing Lake Vermont Mine's Groundwater Monitoring Program (GMP) and that the combined GMMP will include the groundwater commitments and trigger levels for the proposed Meadowbrook Project. However, the groundwater level triggers are not proposed as part of the draft EA conditions in the EIS. Existing water quality data should allow site-specific triggers/limits to be determined. Alternatively, water quality objectives (WQOs) or guideline values can be used until site-specific limits are calculated.	Specify groundwater quality triggers and limits for the Meadowbrook project in the EA conditions.	AARC 0910: Groundwater trigger levels have now been proposed through the addition of Appendix A7 to the EIS. These triggers have also been included within Chapter 23 of the EIS (Proposed EA Conditions).

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Chapter 8 – Surface Water Appendix F – Surface Water Assessment Report				
19	Chapter 8 Surface Water	The EIS does not discuss fine sediment and dissolved inorganic nitrogen (DIN) loads for mine affected water (MAW). Further consideration is required to confirm if the release of MAW under the amended EA, with the addition of the Meadowbrook project MAW, will have a residual impact to water quality in the Great Barrier Reef catchment waters from dissolved inorganic nitrogen (DIN) or fine sediment (TSS). This is a requirement of section 41AA (reef) of the Environmental Protection Regulation 2019 that will need to be addressed when assessing and amending the Lake Vermont EA to add the Meadowbrook project.	Confirm the fine sediment and DIN loads for MAW to be pumped to the existing Lake Vermont Mine; and the potential to impact TSS and DIN water quality in the receiving environment.	WRM 2809: Additional content has now been added to section 4.6 of Appendix F (Surface Water Assessment Report) as follows. Elevated Dissolved Inorganic Nitrogen (DIN), which comprises nitrate, nitrite and ammonium, is a feature of the local surface water receiving environment, and was one subject of the surface water monitoring program. Nitrite, which is a short term intermediate product from oxidative and reductive processes such as nitrification and denitrification, was below the limit of reporting in all samples. All samples had total Nitrate concentrations well below the the default value in the Model Mining Conditions for Water (1.1 mg/L) - average Nitrate was 0.05 mg/L in Boomerang Creek, 0.12 mg/L in One Mile Creek and only 0.07 mg/L in Ripstone Creek. Ammonia is electrochemically attracted to clays and organic matter in soil, and is therefore less mobile than dissolved Nitrate. The default aqautic ecosystem guideline for total Ammonia (0.02 mg/L) was exceeded in Boomerang Ck for five of the seven sampling events during 2021 (average 0.16 mg/L). In Ripstone Creek, the guideline was exceeded in 6 of 7 samples (average 0.16 mg/L) The highest recording of 1.37 mg/L was recorded in Boomerang Creek in May 2021. Ammonia concentrations were lower in One Mile Creek - with all samples being at or below the guideline value. DIN is occasionally measured within the existing Lake Vermont water management system. Recent samples indicated Nitrite concentrations below the defaul aquatic ecosystem guidleine. Ammonia levels were below the limit of reporting except in all dams tested except Environmental Dam 5 (0.22 mg/L), which stores water decanted from the CDAs and pumped from the mine pits. Total Nitrate levels were also below the limit of reporting in all dams except ED3, where the concentration was 1.93 mg/L. These results indicate overflows from the water management system would be unlikely to elevate DIN concentrations above background levels. Compared to other point and diffuse sources of DIN in the Barreir Reef catchments, the contribution of dam overflows to toal nutrient loads in the Barrier Reef lagoon would be minimal and will not have a residual impact on DIN concentrations in the Great Barrier Reef catchment waters.
20	Section 8.2.6 Chapter 23 Proposed Environmental Management and Monitoring Commitments, Table C5	Although baseline water quality data collected between 2020 and 2021 shows exceedance for a number of parameters (DO, EC, turbidity, suspended solid, pH, ammonia, nutrients, sulphate and metals), the trigger values in the draft EA have not been amended.	The amended EIS must demonstrate that the trigger values in the draft EA are applicable. Alternatively, propose and justify new trigger values for tables C3, C5 of the draft EA based on site specific data or guideline values.	AARC 0709: EIS Chapter 8 (Surface Water) and EIS Chapter 23 (Proposed EA Conditions) have both been reviewed. As a result, Chapter 23 has now been updated, as follows: Table C5 (Receiving Waters Contaminant Trigger Levels) - pH trigger level amended from 6.0 - 8.0 to now be 6.5 - 8.5 (consistent with the Upper Isaac River Catchment Waters trigger for aquatic ecosystems, moderately disturbed). In regards to dissolved oxygen, nutrients and turbidity - it is noted that trigger values are not imposed or considered necessary. Further, EC, suspended solids, ammonia and sulphate all have trigger levels above the relevant WQOs, based on the operation of the existing Lake Vermont Mine. These triggers remain suitable when assessed against project specific data. In regards to metals, it is noted that Chapter 8 (Surface Water) Section 8.2.6 (Baseline water quality data) provides that "dissolved metal values outside WQO or guideline values were infrequent across all sites." Further, as per the footnote to Table C3 of Chapter 23 (Proposed EA Conditions) it is noted that trigger levels for metals/metalloids only apply if dissolved results exceed trigger values. As such, existing trigger values for metals are beleived to be suitable.
21	Section 8.2.8 Table 8.1	In Table 8.1, some WQOs are based on Limit of Reporting (LOR) which are higher than the ANZG (2018) toxicant guideline values and therefore not appropriate. In addition, for metals/metalloids, it is not specified if the listed WQOs apply to dissolved or total metals. Where available, the aquatic ecosystem ANZG (2018) guideline values should be used as WQOs to assess the impact of the activity to the receiving environment. Most of the ANZG (2018) toxicant guideline values for metals apply to dissolved metals.	Table 8.1 should explicitly indicate whether WQOs apply to total or dissolved metals in the table or in the footnotes. The ANZG (2018) guideline values (aquatic ecosystems) in freshwater for the following toxicants should be used as WQOs: - 1.4 µg/L for copper - 0.06 µg/L for mercury - 5 µg/L for selenium (total) - 0.05 µg/L for silver - 0.5 µg/L for uranium - 6 µg/L for vanadium	AARC 0709: EIS Chapter 8 (Surface Water) Table 8.1 has been updated to include a footnote, clarifying that stated WQOs are for dissolved metals. In regards to the WQOs stated in Table 8.1, it is noted that the following changes have now been made: - mercury WQO has been amended to 0.00006 mg/L (consistent with ANZG 2018) - uranium WQO has been amended to 0.0005 mg/L (consistent with ANZG 2018) - vanadium WQO has been amended to 0.006 mg/L (consistent with ANZG 2018) - no change was made to the copper value of 0.0014 mg/L (which is consistent with ANZG 2018) - no change was made to the selenium value of 0.005 mg/L (which is consistent with ANZG 2018) - no change was made to the silver value of 0.00005 mg/L (which is consistent with ANZG 2018) It is noted that WQO are not stated within existing or proposed EA Conditions.
22	Section 8.2.10	Section 8.2.10 states that, "*Dilution by flows in the receiving waters would likely result in an indiscernible impact to the downstream environment*.". However, the level of impact has not been adequately discussed.	Clarify and quantify what comprises the '*indiscernible impact'* to the downstream environment.	AARC 1109: This statement has been removed, as it is unecessary within this section (which discusses the 'Site water balance numerical model'). Potential impacts to water quality are discussed through Section 8.3 (Potential Impacts).

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23	Section 8.2.10	The EIS states that the Lake Vermont Mine water management system has "*significant potential storage capacity available* " and that transfers from Meadowbrook could be accommodated, but it does not quantify this capacity.	For the underground, open-cut and rehabilitation stages of the proposed project: - specify the volume of water to be delivered to the Lake Vermont Mine water management system - the volume of available capacity at Lake Vermont over all stages of the proposed project - demonstrate adequate storage capacity at Lake Vermont for the life of the proposed project.	WRM 2809: Additional content has now been added to Appendix Y (Site Water Balance and Water Management System Report) through Section 5.7 (and section 7). Mine water storage in existing environmental dams at the Lake Vermont Mine totals 4.94 GL. Following extreme wet periods, up to 200 GL of storage in the mine voids could be used for emergency surface water storage - though this would be undesirable - as it would cause significant disruption to the open cut mining operations. With careful managment of the land bridges separating the North and South Pits (within the open cut disturbance area) there is sufficient capacity to store as much as 15 GL without overflows into the adjacent operating mining areas - this would allow mining operations to continue at Lake Vermont even if water was stored in the pits as a contingency. The potential available storage will likely increase as the Lake Vermont Open cut continues to advance.
24	Section 8.3.6	Section 8.3.6 states that, "*It is anticipated that excess water and dissolved salt would seep from the proposed landform into spoil under and adjacent to the pit landform and salts will not accumulate in surface water over time* ." Phrases like 'it is anticipated' do not provide sufficient certainty on the potential impacts to water quality.	Provide further discussion on potential impacts on water quality, based on the results from the site water balance conceptual model. While it is noted that Appendix X, Rehabilitated Pit Water Balance, has been provided, the main Chapter 8 should contain the relevant information on the results of the conceptual model.	AARC 1109: Predictions of future outcomes can never be certain, and are therefore qualified as such. Notwithstanding this, we have developed a model of how we beleive salts will behave within the rehabilitated pit landform. Given the nature of the pit being backfilled, spoil material is anticipated to provide increased opportunity for seepage. Modelling of salinity within the rehabilitated pit landform is also discussed in detail in Section 8.3.5 of Chapter 8 (Surface Water). Further, additional content on the Rehabilitated Pit Water Balance has now been imported from Appendix X (Rehabilitated Pit Water Balance) into EIS Chapter 8 (Surface Water) - within Section 8.3.6.
25	Section 8.3.7 Appendix F Section 7.4	The geomorphology sections of both Chapter 8 and Appendix F detail the impacts of subsidence to a number of creeks. Subsidence of up to 4m along the channel and floodplain would cause a number of troughs. These troughs can cause changes to channel velocity, bed shear and stream power, which can cause changes to channel morphology and bank erosion. The EIS predicts that these troughs will rapidly aggrade sediment during flow events, however the timing and the frequency of such events are unclear and therefore the potential impact of bank erosion is also unclear. Mitigation measures proposed in the EIS for bank erosion are to develop a subsidence monitoring plan and install bank protection measures when they occur. However, it is unclear when such plans will be developed, and how effective these measures will be to protect the stream banks. The EIS lacked any assessment of the potential residual impacts from bank protection measures.	Provide: - details of the frequency of aggradation events - estimates of the time it will take for instream subsidence sites to fill in - an assessment the likelihood and risks of instream and bank erosion as a result of subsidence - evidence-based examples (case studies) of measures that have successfully mitigated subsidence impacts on creeks - the likelihood of success of proposed mitigation measures for the impacts from subsidence - a robust evaluation and estimate the residual impacts of bank protection measures on the downstream channel hydraulics and hydrology. Subsidence monitoring plans, and mitigation measures for bank erosion as a result of subsidence, must be developed prior to the commencement of the underground mining activity.	AARC 0910: EIS Appendix F (Surface Water Assessment) Section 7.4.1; and EIS Appendix W (Geomorphological Assessment) Section 4.5.1 and 5.2; have been updated to provide estimated aggradation timeframes. Upstream influences have been considered through this process. A draft Subsidence Management Plan (SMP) (EIS Appendix A2) has also now been provided as part of the updated EIS. The SMP includes a risk assessment which considers the likelihood and severity of subsidence-related erosion, and assesses the effectiveness of the mitigation measures proposed. The plan for monitoring subsidence (and management measures) are provided within Section 4 and Section 5 of the SMP. The potential erosional risk comes from the increase in flow velocity, which is predicted to occur only at the subsidence areas within the creek. The erosion risk is therfore expected to be localised. As the natural sediment transport process will fill the troughs, artificial mitigation measures are not expected in the first place. Continuous monitoring will be conducted in accordance with the SMP. If futher erosion occurs, management interventions will be implemented in accordance with the SMP. The proposed mitigation measures have been recommended and proved to be effective by Catchments & Creeks, and also referred by International Erosion Control Association. Case studies/example of the measures can be found in the following link: https://www.catchmentsandcreeks.com.au/docs/Creek-Erosion-Part-3-print.pdf Section 14 soft measures: revegetation of stream banks; exclusion of stock from stream bed and banks; placement of soft material along the stream banks; and Section 15 hard measures: construction of rock armouring.
26	Section 8.4.1.2	The legends on the sediment dam figures (Figure 8.9-8.11) are unclear, with some features being cut off.	Provide legible figures and legends.	AARC 0709: These 3 Figures have now been replaced within Chapter 8 (Surface Water Assessment) with high resolution images.

Issue #	Topic, EIS section, and Terms of Reference (ToR) section	Issue/Comment	Recommendation	Summary of changes made / response to comment
27	Section 8.4.2	The EIS states that "*The mine affected water system will manage runoff from the open-cut waste rock dumps, which is to be directed to sediment dams managed under a sediment and erosion control plan* ." Runoff from waste rock dumps should be considered as MAW and risks from a release to the environment assessed and managed appropriately.	Amend the EIS to ensure all runoff from waste rock dumps reports to the MIA dam as MAW. On-site storage monitoring (MIA dam, dewatering dam and sediment dams) must be conducted on a quarterly basis and included as an EA condition requirement, with the location of the monitoring points, the indicators to be monitored and associated water quality trigger levels specified in the EA. This will ensure risks from dam overflow to the receiving environment are monitored and assessed appropriately and can be managed adequately when required.	AARC 0709: MAW from the satellite open cut pit will be pumped back to the Dewatering Dam, located within the MIA. Per EIS Chapter 8 Section 8.2.10 "[i]n-pit water volumes would generally be maintained at relatively low volumes which would not interrupt mining operations. Pumping to the Dewatering Dam would ensure the pit is empty prior to the following wet season." Rainfall runoff from waste rock dumps is not considered MAW under the existing Lake Vermont Mine EA or the existing Model Mining Conditions (Version 6.02), which both provide the definition that mine affected water means the following types of water: *"rainfall runoff which has been in contact with any areas disturbed by mining activities which have not yet been rehabilitated, excluding rainfall runoff discharging through release points associated with erosion and sediment control structures that have been installed in accordance with the standards and requirements of an Erosion and Sediment Control Plan to manage such runoff, provided that this water has not been mixed with pit water, tailings dam water, processing plant water or workshop water."* As per EIS Chapter 8, Section 8.4.2. rainfall runoff from WRDs will be managed through 3 sediment dams (South Sed Dam, North Sed Dam 1 & North Sed Dam 2) in accordance with an Erosion & Sediment Control Plan. This committment is provided within our EIS, including within Chapter 22 (Proposed Environmental Management & Monitoring Committments). It is also noted that no proposed routine monitoring of sediment dams is proposed to occur (consistent with the existing Lake Vermont Mine EA and existing Model Mining Conditions). Mandating quarterly monitoring of sediment dams would add limited value (providing only a point in time measurement). To mitigate the potential for the release of sediment laden water however, "[s]ediment dams will be constructed to contain a 1 in 10-year ARI 24-hour event and will be operated in accordance with 'Guideline – Stormwater and environmentally relevant activities' (DES 2021)." Further, as per Chapter 22 (Proposed Environmental Management & Monitoring Committments) "[t]he Lake Vermont Mine REMP will be updated to include monitoring of One Mile Creek and Phillips Creek, to identify any potential impact of sediment dam overflow. REMP Reports will be prepared annually and made available to the administrating authority as required."
28	Section 8.4.5	The EIS indicates that the existing Receiving Environment Monitoring Program (REMP) design document will be updated to include monitoring of One Mile Creek, to identify any potential impact of sediment dam overflow on ecotoxicological values. However, the proposed extension may also impact Boomerang Creek which is not included.	As per the new proposed condition C21 (see Chapter 23), include Boomerang Creek in section 8.4.5 of the amended EIS, in addition to One Mile Creek. Also list associated assessment monitoring locations.	AARC 0709: It is noted that EIS Chapter 23 (Proposed EA Conditions), Condition C21, identifies that "[f]or the purposes of the REMP, the receiving environment is the waters of One Mile Creek, Boomerang Creek, Phillips Creek and the Isaac River within 15km downstream of the release points." In contrast, EIS Chapter 8, Section 8.4.5 (Receiving environment monitoring program) discusses One Mile Creek as being relevant to identifying potential impacts resultant of sediment dam overtopping events. It is noted that Boomerang Creek will not be impacted by sediment dam overflows, however has the potential to be impacted by subisdence induced geomorphological changes (as does Phillips Creek & the Isaac River). As such, Section 8.4.5 has now been updated to make this clear.
29	Appendix F Table 4.4	Table 4.4 presents water quality data taken from different sampling events for both Boomerang downstream (DS) and upstream (US) points. However, it is not possible to delineate which sample events relate to the DS or US points.	Clearly identify in Table 4.4 which water quality data relate to the Boomerang DS point or to the US point.	WRM 2809: Table 4.4 has been updated - this was basically down to a formatting error - we also picked up a couple of small errors in the process (which have now been corrected).

Issue #	Topic, EIS section, and Terms of Reference (ToR) section	Issue/Comment	Recommendation	Summary of changes made / response to comment
30	Appendix F Section 5.4	The consequence category assessment of the mine dams does not appear to take into account that groundwater in the area is used for stock watering and that there are GDEs in the project area. Seepage of mine affected water is a potential issue for the dewatering, MIA and sediment dams with the potential to contaminate One Mile Creek and site groundwater. If this is the case, then it is unclear why the consequence category is low as opposed to high or significant. Further details of the estimated levels of contaminants as well as the water storage infrastructure designs are required to complete this assessment.	Provide: - Quantitative estimates of MAW stored in the dams and estimated levels of contaminants, as well as further details on the design of the dams (e.g. incorporation of a liner) to confirm whether the seepage of mine affected water has the potential to cause harm to any users of groundwater, or creek ecosystems and GDEs. - Revise the consequence category assessment in the light of this data.	WRM 0731: "The low category is on the basis that the extent of seepage would be limited (subject to detailed groundwater assessment) - i.e. that GDE's or groundwater suplies (which are more distant) wouldn't be affected - if this is not the case - the dam would be classified as significant - and seepage management measures implemented (refer 6.1.3 of Water Management Report)" WRM 2809: I've assumed based on this summary that the comment relates to the consequence of seepage on groundwater and not overflows and groundwater. It's still my view that seepage from the MIA dams is likely to be limited in extent - and would not extend as far as the consequences to groundwater users or GDEs exceeding the criteria in the Manual (harm to third party assets in the failure path require $1 million). The seepage consequence category will need to be reviewed by the designer prior to deciding if a liner is required. If necessary - monitoring bores could be installed if there is uncertainty about the potential for impacts. In terms of overflows - groundwater resources that could be impacted by the dam are not used for human consumption - and therefore a significant consequence category is not justified. Given the relatively benign nature of the Lake Vermont overburden, captured runoff water is unlikely to contain contaminants at concentrations that would negatively affect the receiving environment in exccedance of the criteria for signifcant hazard dams. (I've never known a sediment dam to have a signifcant consequence category). Nevertheless, the MIA Dam will be sized and operated to contain runoff under all historical events - with a maximum operating level such that pumped inflows would cease when the remaining capacity is equivalent to the 1 in 10 AEP 24 hour rainall volume.
31	Appendix F Section 7.5 Appendix Y Section 5	The EIS states that there is sufficient storage capacity within the MIA dam to contain inflows throughout the project life without overflow, but the likelihood of nearing the available capacity increases once open-cut operation commences in project year 20. There is no discussion on mitigation measures when the likelihood for overflow increases.	Describe effective mitigation measures and planning for when the risk of overflow from the MIA dam increases with the commencement of open-cut operation.	WRM 2809: Additional text has now been added to Appendix Y (Site Water Balance and Water Management System) in Section 2.29. The MIA Dam will be sized and operated to contain runoff under all historical events - with a maximum operating level such that pumped inflows would cease when the remaining capacity is equivalent to the 1 in 10 AEP 24 hour rainall volume.
Chapter 10 – Terrestrial Ecology				
32	Section 10.3	The EIS notes the implication of the change in listing under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC) of Koala but not the Greater Glider (southern and central).	Reference the change in the EPBC Greater Glider listing and its implication in this section for completeness (southern and central).	AARC 1209: EIS Chapter 10 (Terrestrial Ecology) Section 10.3 has now been updated to describe the listing change for the Koala and the Greater Glider.
33	Table 10.10	There appears to be a cut and paste error with Brigalow being discussed in place of Poplar Box threatened ecological communities (TEC).	Remove Brigalow TEC assessment of significance from the table and replace with assessment for Poplar Box TEC.	AARC 1209: Text in EIS Chapter 10 (Terrestrial Ecology) Table 10.10 has been corrected (and equivalent table in Chapter 21 and Appendix G have also been updated).
34	Section 10.6.7	Section 10.6.7 is confusing as to whether the assessment is considering the Koala as a listed Vulnerable species or in relation to its up-listing to Endangered, leading to contradictions with the content of Table 10.24.	Revise section 10.6.7 to clarify when the assessment is assessing Koala as Vulnerable and when the Endangered up-listing is being considered.	AARC 1209: The Koala significant impact assessment has been undertaken on the basis of a vulnerable listed species. This is in accordance with the obligations of the Project under the TOR, the NC Act, and the EPBC Act listing status at the time of the controlled action decision (22 Nov 2019). It is noted however, that following feedback on the adequacy of our initial EIS, updates were requested to identify that an uplisting of the Koala had occurred under the EPBC Act (during 2022) to a listing status of endangered. This update was made within our EIS, however appears to have generated some confusion. In this regard, it is noted that the impact assessment of this species has been undertaken on the basis of its listing as vulnerable (consistent with its listing at the time of the controlled action decision). This is the legally appropriate approach, so as to avoid the retrospective application of changes in listing status, which in this case occurred over 2yrs after the controlled action decision, following completion of significant survey effort. To improve the clarity of this messaging therefore, EIS Chapter 10, Section 10.6.7 has now been updated to make this clearer.

Issue #	Topic, EIS section, and Terms of Reference (ToR) section	Issue/Comment	Recommendation	Summary of changes made / response to comment
35	Section 10.9.1.1	The EIS states that the proposed offset strategy i.e., *Appendix K MNES Biodiversity Offsets Strategy* , only addresses offsets in relation to Stage 1-3 impacts and that Stage 4 offsets would be subject to assessment in a subsequent offsets strategy. It is not appropriate to defer assessment of Stage 4 proposed offsets until a later, undetermined time. The EIS process must provide information and assessment of all significant residual impacts on prescribed environmental matters, and proposed offsets for all project stages.	Address : - The full extent of potential significant residual impacts on prescribed environmental matters for the entire project. - For the Stage 4 offsets, account for the impact areas and the proposed offset requirements. Provide offset area calculations for Stage 4 in table format as per the other stages.	AARC 1209: The full extent of potential significant residual impacts on prescribed environmental matters (for the entire project) are presented in EIS Chapter 10 (Terrestrial Ecology) Table 10.32. Stage 4 impacts are also included within impact assessments undertaken within Chapter 10, through sections 10.6 to 10.7. In contrast, it is acknowledged that Stage 4 MNES offsets are not proposed at present. MNES **impacts** are identified (through Table 10.33) however proposed MNES **offsets** are not provided for Stage 4 of the proposed Project. Stage 4 is the final Project stage (being the satellite open cut pit) and is proposed to commence in Project Year 20 (circa 2045). Given the distant timing of this stage of the development, uncertainty exists in regards to whether this Stage of the Project will ultimately occur. For the proponent to manage this risk, it is proposed that offsets for Stage 4 are deferred (to be established prior to any future commencement of Stage 4). This is proposed to be managed through Commonwealth Project approval conditions. In this regard, it is noted that the impact of Stage 4 development on MNES values has been assessed and can be conditioned as part of this EIS process. Further, it is noted that Appendix K (Biodiversity Offsets Strategy) provides that: *"Offsets for significant impacts associated with development of Stage 4 will be proposed within a subsequent offset strategy, to mitigate the impacts to MNES contemplated in the EIS. The Stage 4 offset strategy would provide:* *- detail of the environmental offset for the stage 4 significant impacts,* *- justification that the proposed offsets satisfy the requirements of the EPBC Act Environmental Offsets Policy 2012,* *- evidence of the offset area connectivity to dispersal habitat and fauna habitat corridors,* *- the means of legally securing the proposed offset area."* In the interim, proposed offsets are established for Stages 1-3 of the Project (representing the life of the underground development).
36	Table 10.33	The table identifies the matters of national environmental significance (MNES) impact area for Stage 4 but does not provide the proposed offset areas for Stage 4.	Amend Table 10.33 to include offset area totals for Stage 4.	As above
37	Figure 10.25	Table 10.33 states that the total impact area for stage 1-3 for the Ornamental Snake equals 42ha. The proposed offset area to acquit this impact equals 92ha. However, the stage 4 impact area for the same species is 165ha. There is no calculation of the proposed offset area, but it is likely to be at least double the impact area. It is unclear whether the proposed MNES offset area identified in Figure 10.25 has accounted for the stage 4 offsets for the Ornamental Snake.	Amend as follows: - Identify whether stage 4 offsets will be located within the identified MNES offset area or elsewhere. - Delineate the stage 4 offsets for the Brigalow TEC, Ornamental Snake, Greater Glider and Koala. - Update Figure 10.25 to clearly show the location of proposed stage 4 offsets or provide a separate figure for stage 4 offsets.	As above
38	Section 10.9.1.3	It is stated that there are three REs available in undisturbed parts of the project area to offset matters of state environmental significance (MSES) values that are not also MNES values. The location of these areas is not adequately depicted on a figure. There is no analysis as to whether the offset areas would be adequately separated from the indirect impacts of the proposed mining operations, including groundwater drawdown and surface ponding.	Provide an accurate and clear depiction of the location of the proposed MSES offset areas. Explain how the offset areas would be adequately separated from, and not subject to, indirect impacts from the proposed mining operations.	AARC 1209: EIS Chapter 10 (Terrestrial Ecology) Section 10.9.1.3 shows that there is clearly sufficient area to provide direct offsets for all MSES not satisfied within the MNES offset proposal. These areas are outside the direct disturbance areas and the indirect disturbance subsidence footprint area and therefore separate from these potential direct and indirect Project impacts. Groundwater drawdown impacts for the ecology values are assessed in Section 10.5.2.3, with the assessment based on the findings of Appendix I (Groundwater Dependent Ecosystems Assessment). Given that GDEs identified in the Project area are limited to minor areas of vegetation and are dependent on sub-surface water recharged by surface flows and water infiltration, with resiliance to possible reductions in moisture availability as a result of groundwater drawdown, the GDE assessment found low risk to the minor areas of potential GDEs in the Project area. This risk assessment outcome includes all areas of proposed offsets. The proposed offset areas, and areas available for further offset proposals are considered adequately separated from impacts of the proposed mining operations.
39	Table 10.34	This table incorrectly states the area of offsets required. The areas stated are the impact areas. Offset areas are calculated using the multiplier of 4 stated in the Queensland Environmental Offsets Policy.	Amend the table to state the correct offset areas in hectares.	AARC 1209: Noted. EIS Chapter 10 (Terrestrial Ecology) Table 10.34 column title changed to 'impact area required to be offset'. It is noted that as the financial offset calculator applies the multiplier, the calculated financial offsets from the calculator already included the notional multiplier.
40	Figure 10.26	Figure 10.26 does not adequately depict the proposed MSES offset areas. The figure only depicts the proposed MNES offset area.	Amend the figure so that the proposed MSES offset areas are depicted, preferably in the same cross-hatching style as the proposed MNES offset area but using a different colour. Consider using the RE label on the figure rather than in the legend.	AARC 1209: The Project seeks to defer the delivery of these offset areas to after approval and prior to staged development. The EIS demonstrates that sufficient land owned by the proponent within the same land parcel as the impact areas is available for direct offsets. However, State based offsets may be financially settled, in accordance with the calculation provided in Table 10.34. Given this offset strategy, the exact offset areas are not depicted in Figure 10.26.
41	Table 10.34	Section 10.9.1.3 states that the project site provides sufficient areas of the relevant REs for land-based offsets. The last row of Table 10.34 apportions financial settlement totals for each stage. It is not clear whether the MSES is proposed to be offset with a land-based or financial settlement option. The financial settlement amount for the “Stage 1-3 total” and the “Stage 1-4 total” do not correspond to the respective individual stages.	Amend the table: - to clarify whether the MSES values are proposed to be offset with a land-based or financial settlement option - so that the financial settlement amounts for the “Stage 1-3 total” and the “Stage 1-4 total” correspond to the respective individual stages.	AARC 1209: The EIS demonstrates that sufficient local land owned by the proponent is available for land-based offsets. The EIS also provides calculated financial offset costs. Either offset strategy may be adopted and will be staged according to Project development stages. The financial offset stage totals in Table 10.34 have now been updated / corrected.

Issue #	Topic, EIS section, and Terms of Reference (ToR) section	Issue/Comment	Recommendation	Summary of changes made / response to comment
Chapter 11 - Aquatic Ecology Appendix H – Aquatic Ecology Assessment Appendix J – Stygofauna Assessment				
42	Section 11.3.3	Baseline aquatic ecological studies do not appear to have been designed with a view to using the baseline data for the construction and operational monitoring programs. There are only two aquatic survey sites within the proposed project site and only one within the footprint of the underground panels. This suggests that the collection of baseline data has not taken into consideration its use as a point of comparison for future monitoring results and for quantifying impacts.	Collect baseline data at additional aquatic ecology survey site(s) within the footprint overlying the underground panels (including wetlands and creeks) to enable a suitable assessment of the likely impact of the proposed project on the floodplain and creek water features. Provide sufficient baseline data for monitoring the success of mitigation and management measures within subsided areas (as well as downstream.)	AARC 1209: In total there were three baseline survey sites on One Mile Creek and four survey sites on Boomerang Creek and its tributaries and floodplain features. Additional baseline monitoring sites on Phillips Creek, Hughes Creek, Ripstone Creek and the Isaac River provide baseline monitoring. The preliminary aquatic ecology surveys sites on One Mile Creek and Boomerang Creek were also monitored for aquatic ecology values. The sites selected are representative of the watercourses and the survey effort is considered sufficent to describe the baseline conditions of these watercourses. The baseline survey sites span the upstream, the Project footprint area and the downstream reaches of the watercourses (once the Project is developed), and thereby will provide continuity of monitoring for reference and receiving environment monitoring. The coverage of monitoring from upstream (future reference sites) and downstream (future receiving sites) will provide baseline data useful for the assessment of Project impacts immediately from the commencement of the Project. The Lake Vermont Mine Receiving Environment Monitoring Program will be updated to incorporate monitoring for Project impacts to the receiving waters (consistent with EIS Chapter 22 Proposed Environmenmtal Monitoring & Management Committments; and EIS Chapter 23 Proposed EA Conditions). Water quality objectives for the Project have also been proposed through Chapter 23 (Proposed EA Conditions) and will be adopted by the REMP to assess impacts to aquatic ecology values and water quality. Given that: - baseline monitoring was adequate to describe the aquatic ecology and surface water values and conditions of the watercourses in the Project area; - the Project proposes no release points or releases of mine affected water; - no threatened aquatic ecology species are present in the watercourses of the Project potential impact area; - the potential impacts to non-threatened endemic aquatic ecology values of the watercourses have been assessed as avoided or minimised by the Project design and water management approach. It is therefore considered that the potential impacts have been adequately assessed, and will be adequately managed through the proposed monitoring committments provided.
43	Table 11.3	Aquatic ecology survey site locations are shown in Table 11.1 and figure 11.3 however the location of site '*MA Extra*', included in table 11.3 and which is the only site where seine nets were used, is not described in table 11.1 or shown on figure 11.3.	Revise Table 1.1 and figure 11.3 to show the location of '*MA Extra*'.	AARC 1409: It is noted that the site named 'MA Extra' was not shown on Figure 11.3. The site MA Extra was renamed 'MA 17' and Table 11.3 had not been updated. The table has now been corrected (in Chapter 11 and Appendix H).
44	Chapter 11 Section 11.5.2.3 Chapter 3 Project Description Section 3.3.2	The EIS states that the haul road crossings will be causeways with low flow culverts (single 750x600 at One Mile Creek and twin 3600x1800 at Phillips Creek). These will create an afflux sufficient to extend off the mine lease with a 60mm afflux at the lease boundary in a 50% AEP event. This afflux is likely to increase velocities at the road crossings and impact on fauna passage at the crossing.	The design of the haul road crossings should seek to minimise any impacts on flows or afflux. A full span of culverts of sufficient capacity to pass all flows without afflux up to drownout or low bridges should be incorporated in favour of the proposed causeways and low flow culverts.	WRM 0731: "We've put in as many culverts as we can really (to minimise afflux) the only alternative that would promote fish passage and minimise afflux would be a bridge. The impact in a 50% AEP flood is not material". AARC 1409: In regards to concern that afflux from the Phillips Creek crossing has the potential to impact the passage of aquatic fauna, it is noted that: "In the 2% and 1% AEP events, increases of 0.2 m/s would occur upstream of the haul road in the channel of Phillips Creek and increases of 0.1 to 0.2 m/s along the haul road on the Phillips Creek northern floodplain." Further to this, "[m]inimal upstream velocity impacts are predicted for the 50% and 10% AEP floods." (EIS Chapter 11, Section 11.5.2.3). These velocity increases are minor and not predicted to impact fish passage. Changes in flow velocities are presented in Appendix Z (Flood Modelling Assessment Report) Section 3.3.2 to 3.3.3. To clarify this, updates have now been made to EIS Chapter 11 (Aquatic Ecology) Section 11.5.2.3 to expand on previous content. This updated content is consistent with the content of Appendix Z (Flood Modelling Assessment Report).

Issue #	Topic, EIS section, and Terms of Reference (ToR) section	Issue/Comment	Recommendation	Summary of changes made / response to comment
45	Appendix H Table 16	Aquatic fauna survey gear (other than AusRivAS sampling) are limited to opera house and box traps with deployment of a seine net at a single site. There are no details on the opera house or box trap entrance dimensions or mesh sizes. There is also no discussion of the limitations of these traps in surveying aquatic fauna, including large bodied fish, turtles and platypus. There do not appear to have been targeted surveys for aquatic reptiles (e.g., turtles) or mammals (e.g. platypus).	Undertake targeted surveys for aquatic reptiles and mammals and large bodied fish during flow conditions and post-wet conditions in waterbodies to better characterise the aquatic fauna of the site. Using this survey data, re- assess the potential impacts of the proposed project including subsidence (and associated ponding and erosion), waterway barriers and direct habitat loss on aquatic fauna at the site and downstream of the site, and suggest potential management and mitigation measures.	AARC 1409: The survey methods used were tailored to the targeted species. For fish species, the 'Survey Guidelines for Australia's Threatened Fish' (SEWPAC 2011) and the 'Background to fish sampling and index calculation' (DES 2018) specify that the appropriate collection techniques for fish is to be determined by factors such as: rarity of target species, size of target species, stream physical parameters, water attributes, behaviour of species, and seasons. The Silver Perch and Murray Cod are unlikely to occur (advice from DAF) and the collection method is considered tailored to the species with potential to occur. It is considered that the collection methods used represent suitable use of active and passive collection methods in line with the relevant guidelines. The records of nine fish species is considered representative of the fish community of the Project area and provides sufficient information to describe the community and assess potential impacts to aquatic ecology values. It is noted that the box traps and opera house traps were targeting smaller aquatic fauna. For turtles and platypus the targeted species are unlikley to enter traps and the traps and therefore the trapping effort (seine and cast netting) is considered supplementary to targeted habitat assessments and searches. The waterways of the Project area are highly ephemeral and lack large pools that are sustained for long periods of time, therefore the waterocurses are considered to lack habitat suitable for turtles or playtpus. The combination of traping and other targeted surveys are considered suitable to detect aquatic reptiles or mammals. This matter was also discussed in a meeting with DAF on Monday 28 August 2023, with a follow up email (dated 08 September 2023) further summarising this position. No response has yet been received to this email.
46	Appendix J Section 2.2	A total of 12 samples were taken at 9 bores for stygofauna on two occasions more than 3 months apart (May and September 2021). This number of samples does not constitute a comprehensive survey as required under the '*Guideline for the Environmental Assessment of Subterranean Aquatic Fauna*' (2016) stipulated in the Terms of Reference.	Undertake a comprehensive survey of stygofauna in accordance with the recommended guidance under the Terms of Reference or provide justification for the departure from that guidance.	AARC 1409: Regarding the number of stygofauna samples, there were in fact 12 bores sampled on two occasions, totalling 24 samples, with two locations recording stygofauna (once for each site). An initial analysis and distillation of all available bore data (a total of 33 bores) located within or adjacent to the mining lease produced a subset of bores to be used in the stygofauna assessment. The sampling regime and sites selected were determined by using a BACI (Before/After Control/Impact) experimental design i.e. Before and After sampling at potential Impact and Control (reference) sites. This was used to select bores across a broad spatial and depth coverage, where possible, of all major shallow geologies and subcatchments both within and outside of the proposed area of operations. The bores selected excluded the coal seams, except for the Girrah 1 Seam and the Vermont Seam, as they presented moderate to high water quality (i.e., lower EC). The other bores provide a coverage of all other major geologies, most with control and impact sites with (relative) moderate to high water quality i.e., pH was relatively neutral across most bores. Sites were selected with Conductivity below 23,000 uS/cm. The higher conductivity levels allowed for a cross-section of geologies and control/impact sites. Bores with a vibrating wire piezometer (VWP) were not selected due to the difficulty this presents for the sampling for stygofauna. It was accepted that the area has a generally moderate to high EC in most geologies and as a general rule this may preclude the presence of stygofauna. However, as this project area has not previously been surveyed and stygofauna have been recorded in a coal seam in Queensland, as well as an ostracod being recorded in a nearby mine (ostracods form an important component of some groundwater communities and are regarded as obligate stygofauna and not stygoxenes) and in aquifers with very high EC (>25,000 EC) in other region of northern and western Australia, it was concluded necessary to conduct a pilot survey to confirm presence or absence of stygofauna. The survey effort undertaken is therefore considered sufficient to describe the subterranean aquatic fauna present within the Project area.
Chapter 12 - Biosecurity				
47	Chapter 12	No figures have been provided for spatial indication of current pest and weed species distribution. This is particularly important for weed species distribution, where localised infestations may need to be contained and managed.	Provide figures showing the current spatial distribution of pest and weed species in the project area.	AARC 2609: The scope of the flora surveys included the recording of presence of weeds within the Project area, but not mapping the distribution of these weeds in the property. The weeds recorded within the Project area (particulalry the WONS) were widely distributed throughout the proprty and occurred in association with landform and vegetation communities, rather than in localised infestations. The recorded observations of weeds were collected for the purpose of broadly describing the presence of weed species rather than idenfiying areas of presence and absence throughout the Project area. Notwithstanding this, accociations between vegetation groups and weed species were described in the terrestrial ecology report (Appendix G, Section 8.3). EIS Chapter 12 (Biosecurity) Section 12.2.2 has therefore now been updated to direct the reader to Appendix G, Section 8.3 regarding the distribution of vegetation communities and associated weed species. Further to this, the Pest & Weed Management Plan for the existing Lake Vermont Mine is suggested to be the applicable tool with which to assess and manage existing (and future) weed outbreaks.The proponent has committed to review and update this management plan to extend its operation across the Project site, as stated within EIS Chapter 22 (Proposed Environmental Management and Monitoring Committments).

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48	Sections 12.3.1, 12.3.4, 12.4.3	Section 12.3.1 and 12.3.4 note that subsidence -induced water ponding may increase pest habitat suitability, including mosquito populations. This risk is dismissed in Section 12.3.1 based on the infrequency of ponding and in 12.4.3 based on the operational experience of the Lake Vermont Mine. It is noted that the existing mine is an open cut mine, while the proposed project is underground and that ponding, although infrequent, may persist for months at a time. The rationale dismissing the additional biosecurity risk posed by subsidence induced ponding is therefore considered inadequate.	Using relevant information and evidence, re-evaluate the additional biosecurity risk posed by subsidence-induced ponding.	AARC 2609: The Queensland Joint Strategic Framework for Mosquito Management (Queensland Government 2010) provides the priorities for mosquito management in QLD. Given the following: - The Project is outside of the known range of dengue activity (since records from 1990). - The Project is remote from areas at risk of appearance of exotic mosquito borne diseases of importance to QLD (e.g. Chikungunya and malaria). - Feedback from the existing Lake Vermont Mine has advised that no recorded problems have existed with mosquito borne diseases such as Ross River virus or Barmah Forest virus. The biosecurity risk posed by mosquito borne diseases is therefore considered low. It is noted that the existing landscape surronding the Lake Vermont Mine contains extensive areas of gilgai formations which are ponding areas, infrequently inundated for short periods of time following rainfall events. Subsidence ponding areas are expected to behave similar to these gilgai formations. For this reason, the operational experience of no mosquito borne diseases from Lake Vermont Mine is considered relevant to the proposed Project. The management approach of continued surveillance for detection and identification of mosquito disease problems is therefore considered appropriate for the Project. To address this matter, EIS Chapter 12 (Biosecurity) Section 12.4.3 has been updated to provide further justification of the approach of continued surveillance for potential mosquito borne disease issues. This content now also references the QLD Joint Stratgeic Framework.
49	Sections 12.4.4, 12.4.5, 12.4.6	There is insufficient detail provided on the content and efficacy of the existing Lake Vermont Mine Pest and Weed Management Plan. Given the reliance on the Lake Vermont Mine Pest and Weed Management Plan to manage biosecurity risks for the proposed project, it is not possible to assess its suitability for application to the proposed project.	Provide evidence of the successful implementation of the Lake Vermont Mine Pest and Weed Management Plan and demonstrate its suitability for application to the proposed project. Demonstrate that the Plan's associated monitoring and audit program has been successful in activating corrective actions to achieve the Plan objectives.	AARC 2609: The Lake Vermont Mine has undertaken ongoing monitoring and control of known weed occurances on the site. Harrisia Cactus and Parthenium are known to occur on the site and have been treated in accordance with the Department of Agriculture and Fisheries factsheets and subject to post-treatment monitoring. The site has maintained control of the spread of weed occurences. In accordance with the management plan, pest fauna species have been succesfully managed through waste management practices. Further, the proponent has committed to review and update this management plan to extend its operation across the Project site, as stated within EIS Chapter 22 (Proposed Environmental Management and Monitoring Committments).
Chapter 13 - Air Quality and Greenhouse Gas Appendix L – Air Quality and Greenhouse Gas Assessment				
50	Section 13.2.2.1 Appendix L - Appendix A, Table A1	The EIS states that "*predicted wind characteristics are representative of conditions in the region, as outlined in the validation comparison.*" This statement does not reflect the results of the validation comparison provided in Appendix L: Appendix A, Table A1, which shows modelled mean and maximum wind speeds approximately 31% and 38% respectively less than measured wind speed. Lower modelled wind speeds will lead to lower modelled estimates of dust generation and transport.	Address the limitations on the reliability of the modelling, which is considered low overall due to lack of local data on emissions or ambient concentrations for validation, and the lower predicted wind speeds. The model is likely to predict lower concentrations of particulate matter. Limitations should be made explicit in any discussion of ambient and predicted air quality.	Katestone 1008: "Wind speed plays the following role in dust modelling: 1). Emissions. For sources that have emissions that are dependent on wind speed (such as wind erosion), lower winds will result in lower emissions and higher wind speeds lead to higher emissions of dust. 2). Dispersion. Lower wind speeds result in poor dispersion and dust tends to cumulate whereas higher wind speeds improves dispersion of dust, resulting in lower concentrations. The emission inventories presented in Section 3.5.7 of the Katestone Report indicate that wheel generated dust on the haul road is the primary dust source for the Meadowbrook Underground Mine, accounting for 99% of dust emissions. These emissions are independent of wind speed. The ROM stockpile will be a source of wind generated dust, however this is not a significant source relative to wheel generate dust due to its small size (~4.4ha). Therefore the suggested underprediction of wind speed does not affect the estimation of emissions of dust due to the Meadowbrook Underground Mine. Low dispersion and high accumulation of dust occurs at low wind speeds, while high wind speeds lead to greater dispersion and therefore lower ground concentrations of dust. Counter-intuitively, modelling of dust dispersion at lower wind speeds provides a worst case scenario compared to a model that applies a higher wind speed when the dominant dust source is independent of wind speed. The contribution of the Underground Mine to ground-level concentrations of dust is therefore likely to be overpredicted in the Katestone model. "

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51	Section 13.3.1.1	The modelling scenarios use dust emission factors and emission reduction factors from the National Pollution Inventory Emission Estimation Technique Manual for Mining and ACARP PM_{10} emission factors for coal mines. This is common practice for situations with no site-specific emissions data. However, additional mitigation factors have also been used and the report states: "It is conservatively estimated that Bowen Basin Coal apply dust mitigation measures a minimum of 24 days per year. As such, this level of mitigation has been built into modelling scenarios". Further detail is provided in Table 13.7: (pg 19) Predicted 24 hour and annual average PM2.5 and PM10 for Project Year 7. That states an additional 50% control factor has been applied to existing overburden haul roads for 24 days of the year to reflect proactive dust controls". This means that the consultant has modelled particulate concentrations assuming a 50% reduction in emissions from existing operations on the 24 days of highest emissions. The stated basis for this is because of "proactive emissions controls that are applied at the existing Lake Vermont operations" (Appendix L, Air Quality and Greenhouse Gas Assessment section 3.5.4 Mitigation measures – proactive) There is no information provided to justify the 50% reduction or how the estimate of 24 days of additional proactive controls was determined. This approach does not provide a reliable basis for assessing potential impacts from the expanded mining activities. It should also be noted that: ● Table 13.7 suggests that a number of sensitive receptors are predicted to be subject to PM10 concentrations that are close to the Environmental Protection Policy (EPP)(Air) air quality objective in year 7 of the project. - It can be reasonably presumed that without the arbitrary reduction in modelled emissions the model would have predicted that the EPP(Air) objective for PM_{10} would be exceeded at these locations. - If modelled without the arbitrary emission reduction assumptions, the likely exceedances in year 7 of the mine expansion are caused primarily by estimated emissions from the existing Lake Vermont Mine. The Air quality component of the EIS relies on modelling that cannot be validated due to a lack of data on emissions, meteorology, or existing air quality.	As the results of air quality modelling cannot be validated, add a condition in the amended EA requiring ongoing monitoring of ambient PM_{10} and TSP as a basis for managing particulate emissions for the project being: 'The Environmental Authority holder must implement a monitoring program, designed by a suitably qualified and experienced person, with the objective of: a) validating the predicted concentrations of PM10 at nearby sensitive receptors. b) informing a dust control strategy for proactively managing dust emissions from mining activities.'	Katestone 1008: "Bowen Basin Coal currently has an existing AQMP in place for the existing Lake Vermont operations. This consists of a combination of standard mitigation measures (as outlined in Section 3.5.3 of the Katestone Report) along with additional mitigation measures to control dust emissions when required (outlined in Section 3.5.4 of the Katestone Report). The proposed mine is an underground mine. Therefore, the main source of emissions of dust (accounting for 99% of dust from the proposed mine) is the haul road from the ROM stockpile to the existing processing plant. These dust emissions are independent of wind. The ROM stockpile and material handling of the ROM contribute at most to 1% of the total emissions. Bowen Basin Coal is proposing to seal this haul road in order to minimse emissions of dust as far as reasonable and practicable. Bowen Basin Coal will continue to implement the current AQMP for existing operations in order to maintain the existing air quality in the region."

<table>
<tr><th>Issue #</th><th>Topic, EIS section, and Terms of Reference (ToR) section</th><th>Issue/Comment</th><th>Recommendation</th><th>Summary of changes made / response to comment</th></tr>
<tr><td>52</td><td>Appendix L Section 4.4.1</td><td>The emissions intensity of 0.023 t CO2-e per tonne ROM coal selected for estimating fugitive methane emissions in Table 19 of Appendix L appears a lot lower than that of neighbouring underground mining operations and of underground coal mines in the Bowen Basin, as summarised in the table below.

<table>
<tr><th>Underground mining operation</th><th>Total ROM produced (Mt)</th><th>Total Scope 1 emissions ($^{(Mt\ CO_2-e)}$)</th><th>Emissions intensity factor ($t\ ^{CO_2-e/t}$ ROM)</th></tr>
<tr><td>This project[1]</td><td></td><td></td><td>0.023</td></tr>
<tr><td>Red Hill mine[2]</td><td>234</td><td>22.94</td><td>0.098</td></tr>
<tr><td>Broadmeadow Underground mine[2]</td><td>138</td><td>10.63</td><td>0.077</td></tr>
<tr><td>Oaky Creek[3]</td><td>3.72</td><td>0.86</td><td>0.23</td></tr>
<tr><td>Moranbah North[3]</td><td>3.16</td><td>2</td><td>0.63</td></tr>
<tr><td colspan="3">Emissions factor for underground coal mines in Bowen Basin[4]</td><td>0.14-0.295</td></tr>
</table>
1: Appendix L BBC_Meadowbrook EIS_Air Quality and Greenhouse Gas Assessment
2: Red Hill Mining Lease Environmental Impact Statement (BMA, 2013)
3: National Energy and Energy Reporting database for the period of 2021-2022
4: National inventory report 2019. Page 126, Figure 3.22

It is also noted that the emissions factor selected for this proposed project is based on emissions factors for open- cut mines in Queensland as provided in the National Greenhouse Accounts Factors 2021. However, this proposed project is an underground coal operation, which generally has much higher emissions intensity compared to open-cut operations.</td><td>Conduct a thorough review and reconsideration of the methane emissions factor for estimating greenhouse gas (GHG) emissions over the lifetime of the proposed project. To reduce the level of uncertainties, it is recommended that the proponent uses a mine-specific emissions factor for estimation.
Using this representative emissions factor, update the projections in the amended EIS and re-assess the potential effect of the proposed project on both the state and national GHG inventories and emissions commitments.</td><td>AARC 2809: Katestone has developed a technical note that now attaches to the EIS as Appendix A6 (GHG Assessment Addendum Report). This appendix contains amended fugitive methane emissions data based on direct measurement. This work provides:
- Revised data in a table
- An explanation for the revision
- A presentation of emissions reduction potential through flaring or electricity generation
- An explanation of the potential for a reduction in fugitive methane emissions</td></tr>
</table>

Issue #	Topic, EIS section, and Terms of Reference (ToR) section	Issue/Comment	Recommendation	Summary of changes made / response to comment
53	Appendix L Section 4.7	The EIS does not provide sufficient detail regarding the decarbonisation plan to abate GHG. Considering that the proposed project falls under the purview of the Commonwealth Safeguard Mechanism, which is expected to come into effect from the 1st of July 2023, it is imperative that additional information be provided in a decarbonisation plan to assess how the project aligns with the Safeguard Mechanism's requirements with respect to the proposed decline rate up to 2030 and longer term target to achieve zero net emissions by 2050. The following measures and technologies have been commonly applied in underground coal mines in Queensland and worldwide: - power generation from coal mine waste gas (i.e., pre-drainage gas and goaf gas) using gas engines or gas turbines - flaring of coal mine waste gas (i.e., pre-drainage gas and goaf gas) to reduce GHG emissions. Commercially available technology, such as regenerative thermal oxidisers (RTOs), can be used to abate ventilation air methane, which typically constitute a significant share of the total fugitive methane emissions from underground coal mines.	Provide comprehensive details of a decarbonisation plan in the amended EIS, with additional mitigation measures to reduce GHG emissions. Include: - a detailed assessment of abatement measures to reduce fugitive methane emissions and estimate the expected reduction of methane emissions over the lifetime of the proposed project. - an assessment of the suitability of RTOs for abating ventilation air methane on site. - a detailed assessment of additional measures to minimise fuel consumption and associated emissions. - additional measures to reduce fuel consumption on site such as: o use of renewable hydrogen, biofuels and electric vehicles (charged from renewable electricity sources) o integration of transport for the project with other local industries to minimise GHG emissions from the construction and running of transport infrastructure o project-appropriate energy efficiency measures o maximisation of the use of renewable energy sources - details of a proposed plan to purchase carbon credits to offset emissions that cannot be reduced on site. the plan should specify the estimated amount of credits, type of credit (i.e., Australian carbon credit Units, Safeguard Mechanism credits), and planned timeframes for purchase of the credits.	Katestone 0810: Katestone has developed a technical note which has now been appended to the EIS, as Appendix A6 (GHG Assessment Addendum Report). This addendum report provides amended fugitive methane emissions based on direct measurement data. The report presents: - Revised data in a table - An explanation for the revision - Presentation of emissions reduction potential through flaring or electricity generation - An explanation of the potential for a reduction in fugitive methane emissions.
Chapter 14 – Noise and Vibration				
54	Section 14.2	The proposed noise criteria provided has L_{A1} value 10dB above that of LAeq. Although typically, L_{A1} of 5-10 dB above LAeq is acceptable, it is a more conservative approach to set it around 7dB due to the low background in the area. The modelling shows that this level would be achievable.	Set the proposed L_{A1} noise criteria at LAeq +7.	AARC 2909: Noise limits for the proposed Project are consistent with the noise limits of the existing Lake Vermont Mine (as per EA Conditions). Risk of noise impacts arising to sensitive receptors (as a result of the proposed Project) is also low. As such, any tightening of noise limits (beyond that which the site has been operating under for the last ~14years) would be considered unreasonable.
55	Section 14.3.1.2	Assessment of existing noise level (environmental values) does not report on any other parameters than LA90. While this may be due to the insect noise impact and that mining noise was active throughout the monitoring, it is difficult to assess the actual impact. Conducting the noise assessment in the presence of mining activity has also not been justified. Suitable noise level data is required to demonstrate compatibility with existing and future land uses.	- Provide a comprehensive assessment of existing noise levels, including Laeq, to detail existing environmental noise values in the area. - Assessment of the existing noise environment should be conducted away from the impact of the activity (mining) or clearly justified in the amended EIS. - The EIS must compare these existing noise levels to the predicted future noise levels and demonstrate the proposed activity is compatible with existing and future land uses.	AARC 2909: It is noted that EIS Appendix M (Noise and Vibration Assessment) Section 5, provides a detailed overview of the existing noise environment. Specifically, Section 5.2 provides attended noise measurements for L10, Leq and L90. Attended noise measurement across these 3 paramaters were collected from 3 sensitive receptor locations; being SR5 Meadowbrook (located 4.6km from the Project); SR6 Lake Vermont (located 7.8km from the Project); and SR3 Old Kyewong (located 16.5km from the Project). It is acknowledged that L90 values have been utilised within the EIS Chapter however; as this data was subsequently filtered to remove insect noise. Notwithstanding this, a broader data set is available through Appendix M (which is designed to be read in conjunction with Chapter 14). In regards to assessing the existing noise environment away from the impact of mining, it is noted that existing background noise measurements included the noise emissions from the existing Lake Vermont Mine and the existing Saraji Mine. As such, the modelling of Project noise emissions was built on top of a more conservative baseline (overstating potential impacts). Notwithstanding this, model outcomes indicate that compliance with EA conditions can be acheived. As per EIS Chapter 14, Section 14.4.5 "[t]he assessment of Project noise impacts determined that noise impacts will not exceed the proposed noise criteria, and thereby achieve the performance outcome for the environmental objective for noise under Schedule 8 of the EP Regulation. By demonstrating the Project can achieve the proposed noise criteria, the Project is compatible with current and future land uses which include mining and grazing."

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Chapter 15 – Waste Appendix S – Land-based Effluent Disposal Assessment Report				
56	Section 15.7.3 Appendix S	The current EIS sewage volume associated with the proposed expansion has been estimated at 200 people x 200 L/person/day = 40 kL/day. At the project agency briefing, the sewage volume was quoted as = max "250" x 200 L/ep/day = 50 kL/day. ("for construction workforce max"). It was further stated that the initial underground development workforce would be "300-320" i.e max 320 x 200L/ep/day = 64 kL/day. These numbers do not equate to the original estimation of 200 persons and the required daily peak design capacity of the proposed sewage treatment plant (STP) and the MEDLI modelling submitted to the department for review.	The amended EIS must clarify the number of people and sewage volume associated with the proposed project and demonstrate the proposed STP and submitted MEDLI modelling are still adequate. Alternatively revise the proposed STP and MEDLI modelling to reflect the actual people numbers and sewage volume.	It is noted that a primary sewage treatment process will be in use until the STP is operational. Regarding the workforce numbers, we note that the construction workforce personnel numbers of 250 per day is correct (refer to Section 3.1.7). This figure includes all construction including the drift and shaft construction. It is noted that rostering for the construction period will be based of 12 hour shifts and this includes the staff working on drift and shaft sinking, which will operate 24 hours per day (refer section 3.1.7.4). Given these workforce and rostering arrangements, the estimation of sewage generation at 200 workers on site at any time is considered conservative and the submitted MEDLI modelling is adequate.
57	Appendix S	MEDLI modelling work appears to be acceptable, and no major adverse environmental impacts were predicted. However, some MEDLI inputs need verification.	Verify MEDLI input - daily maximum treated sewage production is 40 kL/day. Confirmation is required that the maximum total daily treated sewage volume is 40 kL. (200 persons @ 200L/person/day) and this volume will not be exceeded at any stage of the project (see above).	The assumptions of workforce numbers and daily maximum sewage production are considered correct. Please refer to previous comment.
58			Verify MEDLI input - average total nitrogen (TN) concentration in treated sewage is 30 mg/L. As the sewage treatment plant (STP) has not been built yet, confirm the performance guarantee (if any with regard to TN concentrations) from the expected/planned STP.	Estimates of wastewater quality are conservative and based on the long-term limits established in the *Eligibility Criteria and Standard Conditions for Sewage Treatment Works* (ERA 63) – Version 2. The values also align with the quality which would be expected from a basic sewage treatment plant as per Table A3.2 of the *Australian Guidelines for Water Recycling: Managing Health and Environmental Risks* (Phase 1). The explanations of the origin of these estimates are provided in Appendix S, Section 4.2. Given the assumptions of waste water quality including total nitrogen concentration are conservatively based on the relevant Australian guidelines, the performance predictions are condirmed and these MEDLI input value assumptions are considered acceptable for the modelling undertaken.
59			- Verify MEDLI input - total dissolved salt (TDS) concentration in treated sewage is 1024 mg/L. - Detail how this TDS concentration was estimated.	The TDS input is verified. It is noted that the input TDS value of 1024 mg/L is a conversion of 1600 uS/cm which is a conservative estimate as established in the Eligibility Criteria and Standard Conditions for Sewage Treatment Works (ERA 63) – Version 2. The conversion factor 0.64 is applied to the uS/cm value for conversion to TDS in mg/L.
60			Clearly describe and show the location of the wet weather storage (CWWS), 120 kL enclosed tank. Specify the accidental overflow management process.	The location of the wet weather storage enclosed tank is shown on the layout map of the mine infrastructure area (Figure 3.24). Section 15.7.3 referred to this figure in paragraph 5, and additional cross reference has been added in paragraph 2 immediately after the mention of the wet weather storage area. The effluent management system modelled wet weather storage tank overflow events with the requirement that overflow events be negligible in frequency and volume, 95% reuse of treated water, no overflow events greater then 55 L, overflow experienced less than 10 days per year. Given the wet weather storage tank is sized to limit predicted overflow to negligible overflow events of less than 55L, and the wet weather storage is located within the effluent irrigation area, any accidental spills will be negligible and will report to the disposal area. In the unlikely event the irrigation area or sewage treatment plant are unable to operate as designed, removal of effluent from site for disposal offsite would be required.
Chapter 16 – Hazards and Safety				
61	Sections 16.9.2, 16.9.3 Appendix N	The EIS states that the Emergency Response and Bushfire Management plans are applicable to the proposed projects however an outline of the proposed integrated emergency management planning procedures (including evacuation plans) has not been provided.	Provide an outline of the proposed integrated emergency management planning procedures, including evacuation plans, for the range of situations identified in the risk assessment developed in this section.	An outline of the Emergency Response Plan is provided in Section 16.9.2 of EIS Chapter 16 (Hazards & Safety). As noted here, emergency management procedures will be addressed in detail within the Emergency Response Plan. Notwithstanding this, further detail on the characteristics of evacuation procedures for emergency types has now been added, including the following: ogeneral emergency situations – evacuation of the building/work area/mine area and assembly at the relevant muster point; otyre fires - evacuation areas of distance not less than 300m radius of the fire; omobile equipment fire – evacuation of the mobile equipment on the side of the machine opposite the fire if possible; oexplosives fire or unintentional detonation – evacuation area for a distance of no less than 1 km; omajor gas/chemical fire/floatation agent/fuel spill or fire – evacuation to up wind of emergency area; omalicious threat - evacuation to a relevant exclusion zone; ovehicle contacts powerlines - evacuation the immediate vicinity; oflash flood - evacuation from at risk areas; oconfined space - evacuation confined area; osevere weather event or bushfire - revise evacuation arrangements or evacuate to storm evacuation point. It is noted that the characteristics outlined will be adopted by the integrated Lake Vermont Meadowbrook Emergency Response Plan, which includes responses to bushfire management.

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62	Section 16.9 Appendix N	The EIS states that the existing Lake Vermont Mine operation has a good safety record in accordance with the emergency response plan and other supporting safety plans. However, no evidence has been provided to demonstrate this claim.	Provide evidence that demonstrates the safety record of the plans in managing hazards and safety at the existing Lake Vermont Mine.	The Lake Vermont Mine has an exemplary safety and environmental performance history, as demonstrated by the following: - zero 'non-compliance' environmental incidents - no Transitional Environmental Programs - no Environmental Evaluations - no Environmental Protection Orders - no Direction Notices - no Clean-up Notices - no Prosecutions
Chapter 21 – MNES				
63	Section 21.12.4.3 Table 21.50:	557.5 ha of Ornamental Snake habitat is proposed to be impacted by subsidence and associated ponding area impacts. However, the EIS concludes that the subsidence area and extent of predicted ponding is expected to retain or increase habitat viability for this species. The conclusion that disturbance of Ornamental Snake habitat from mining impacts may benefit the species has not been established. It is unclear whether the altered surface habitat (indirectly impacted by underground mining) would still have the capacity to: ● pond shallow surface water for extended periods (critically, the two to three months to complete frog breeding cycles) ● provide a nutrient-rich seasonal wetland environment capable of supporting amphibious prey habitat ● dry and crack extensively on a regular basis to provide dry season snake refugia via surface cracks and sub-surface voids.	Provide an Ornamental Snake management plan (OSMP). The OSMP must provide details of the measures, and timeframes for implementation, that will be taken in the project area to avoid, mitigate and manage impacts on the Ornamental Snake and its habitat during clearance, construction, operation and decommissioning of the action. An objective of the OSMP must be to describe monitoring measures that would be implemented to assess the effectiveness of mitigation measures, and to inform adaptive management actions.	AARC 1309: An Ornamental Snake Managemernt Plan (OSMP) has now been provided as part of the updated EIS (as Appendix A5). The OSMP includes details of avoidance/mitigation measures, timing, predicted effectiveness, adaptive management, policy basis for proposed measures, and performance indicators and corrective actions.
64	Table 21.80	There are some inconsistencies between figures entered in Table 21.80 compared to Table 10.33 that require reconciliation. a) The offset area stages for the Brigalow TEC requires reconciliation. An offset area of 59.5ha is stated as the total for stages 1-3 in Table 21.80 but is 23ha in Table 10.33. b) The offset area stages for the Poplar Box TEC requires reconciliation. An offset area of 299ha is stated as the total for stages 1-3 in Table 21.80 but is 291.7ha in Table 10.33. c) The "Total stages 1 – 3" figure for Greater Glider of 100.6ha is incorrect. It should be consistent with Table 10.33 and is 93.58ha.	Resolve Table 21.80 inconsistencies with Table 10.33	AARC 1309: Noted. The version provided had not been updated since previous iterations of the offset strategy. Table 21.80 has now been updated accordingly.
Chapter 22 – Proposed environmental management and monitoring commitments				
65	Table 22.1 – Land resources, subsidence	Underground mining and subsidence impacts are proposed under One Mile Creek (third order stream) and Boomerang Creek (fifth order stream). The management and monitoring commitments for subsidence impacts lack detail on management of subsidence under a watercourse.	Include additional detail on how subsidence under a watercourse and floodplain will be managed. The Subsidence Management Plan must detail potential impacts of subsidence on any watercourse and floodplain and their monitoring, mitigation and management, including but not limited to: 1. physical condition of surface drainage: a. erosion b. areas susceptible to higher levels of erosion such as watercourse confluences c. incision processes d. stream widening e. tension cracking f. lowering of bed and banks g. creation of instream waterholes h. changes to local drainage patterns. 2. overland flow: a. capture of overland flow by subsided long- wall panels b. increased overbank flows due to lowering of high bank of watercourses c. the area and portion of local and large- scale catchment likely to be captured by subsided long-wall panels and the associated impacts on downstream users. 3. water quality: a. surface water and b. groundwater. 4. options for mitigating impacts associated with subsidence under a watercourse and how these mitigation methods will be implemented. 5. cumulative impacts on watercourses or catchments. 6. impacts on groundwater.	AARC 1409: A Subsidence Management Plan (SMP) has now been provided as part of the updated EIS (as Appendix A2). The SMP addresses the potential impacts to surface drainage and overland flow (Sections 2.2) and proposes monitoring for impacts (Section 4). Sepecific responses to the review comments include: Points: 1 & 2 addressed in SMP Section 3.2 Cracking; 3.3 potential erosion and changes in stream morphology, hydrological regimes. Point 3a - SMP Section 3.4.5 "The current turbidity of water in Boomerang Creek and One Mile Creek typically exceeds the water quality guidelines values. The increased sediment load associated with the subsidence-induced localised erosion and change in sediment transport is not expected to impact water quality to the extent that aquatic ecology values will be negatively impacted." Point 3b - Groundwater quality is not expected to be impacted by subsidence. No content has been included in SMP. Refer to Appendix E, Section 6.2.1, for explanation of relationship between groundwater quality and subsidence. Point 4 - Refer to SMP Section 5. 5 & 6 - SMP S3.7.

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66	Table 22.1 – Land resources, subsidence	As it is proposed to utilise the Subsidence Management Plan to predict magnitude of impacts from subsidence, for risk assessment and to guide rehabilitation and remediation, the holder must commit to conducting an annual condition inspection of each subsided longwall panel. The inspection would assess the structural, geotechnical and hydraulic adequacy of the subsided longwall panel and the adequacy of the works with respect to the Subsidence Management Plan.	For each subsided longwall panel include commitments to: - conduct an annual inspection of each subsided longwall panel - assess the structural, geotechnical and hydraulic condition and adequacy of each subsided panel - assess the adequacy of the subsidence management works for each subsided panel.	AARC 1409: A Subsidence Management Plan (SMP) has now been prepared as part of the updated EIS (as Appendix A2). The SMP includes commitments for the inspections of subsidence panels as per this comment. Monitoring of subsidence areas and annual reporting of the results of subsidence inspections are also proposed as EA conditions (refer Section 1.4 of the SMP) and EIS Chapter 23 (Proposed EA Conditions). In the SMP, through Section 4.2, the annual inspection of longwall panel subsidence or associated surface disturbance from the commencement of longwall mining is outlined. Inspections will include assessment of impacts to landform, surface cracking, erosion, ponding, creek channels and ecological values.
67	Table 22.1 – Flooding and Regulated Structures Chapter 9 Flooding and Regulated Structures Section 4.4.4 Appendix W Geomorphological Assessment Report Section 3.3.3	Commitments to mitigate extent of ponding due to subsidence include: • construction of a 2.5 km long mitigation drain • construction of a 1.4 km long mitigation drain and • construction of two earthen mitigation bunds across subsidence panels to prevent floodwater flowing north and into One Mile Creek. This is described in Chapter 9 and Appendix W as resulting in "*significant reductions in ponding areas*". However, there is no quantification of the extents (footprints) and estimated volumes of residual ponding, both before and after mitigation measures. (It is noted chapter 3, section 3.1.4 states 214ha is expected to be indirectly disturbed through subsidence-induced ponding impacts and associated mitigation measures.)	Quantify and map the extents of residual ponding predicted before and after implementation of proposed mitigation measures, in terms of areas and volumes for each affected land parcel. For clarity, the extents of impact from residual ponding should be included in the amended EA and be consistent with areas of impact included in updated Table G1 (impacts to prescribed environmental matters).	AARC 1309: EIS Chapter 9 (Flooding & Regulated Structures) through Figure 9.13, shows the extent of subsidence induced ponding areas before and after proposed mitigation measures. This is also presented in EIS Chapter 11 (Aquatic Ecology) through Figure 11.8. The extent of the impacts of subsidence induced ponding prior to any mitigation is 370 ha, and post mitigation ponding is 213 ha. This information is presented in EIS Appendix B (PRCP). It has now been included in EIS Chapter 9 (Flooding & Regulated Structures) through Section 9.4.4.3. Further, it is noted that the predicted ponding areas (post mitigation) are a worst-case scenario, with maximum possible water held in subsidence pond represented, which will rarely occur. In the maximum ponding event it is expected to take up to several months for all water to dry or seep from the ponds. The extent of impacts from residual ponding is included in the areas of impact in Table G1 of Chapter 23 (Proposed EA Conditions). Noting that subsidence areas and ponding areas were assessed for all matters of environmental significance, and the matters identified to be significantly impacted in residual ponding areas included Brigalow TEC, Poplar Box TEC, Koala, Greater Glider, and regulated vegetation. The extent of these significant impacts that are attributed to ponding, as opposed to other staged Project activities is identified in the tables and descriptions of disturbance extent (Tables 10.7, 10.9, 10.23, 10.26, Section 10.7.1). It is considered that the level of detail to further characterise the significant impact areas in Table G1 will over inhibit its usability as an EA commitment, where that detail is provided in full in the assessments. We also note that figures of the extent of the significant impacts have now been provided within Chapter 23 in repsonse to comment 89, which adds clarity as requested.
68	Table 22.1 – Air Quality and GHG	Appendix L, Section 4.6 states '*In all years of operation, for Lake Vermont Mine (including existing operations), estimated Scope 1 emissions (excluding LULUCF) exceed the reporting threshold of 100 kt CO2-e/y. Under the current Safeguard Mechanism, facilities with Scope 1 emissions of more than 100 kt CO2-e/y are required to keep their emissions within baseline levels. This Safeguard Mechanism would apply to the Project; however, the exact implications of this would need to be reviewed on an annual basis in communication with the Clean Energy Regulator'*. Appendix L, Section 4.7 also includes a number of GHG mitigation and management actions to help mitigate, reduce, control or manage GHG emissions from the proposed project. The above commitments have been included in Chapter 22, however the commitments have not been included in Chapter 23 Proposed EA conditions.	In accordance with the Queensland Resources Industry Development Plan (June 2022) the department is developing a draft Industry Decarbonisation Plan Policy. The proponent will be required to be consistent with the Industry Decarbonisation Plan Policy once finalised. The commitments made in Chapter 22 with regards to air quality and GHG emissions must be addressed in Chapter 23 with a proposed EA condition requiring the development and implementation of a GHG emissions reduction management plan (or decarbonisation plan) that also addresses DES recommendations on Chapter 13 above.	AARC 0910: A draft Decarbonisation Plan, which aims to meet the requirements of the as yet to be released QLD Decarboniation Plan Guideline, has been prepared and is provided with the revised EIS (Appendix A3). Given the QLD Decarboniation Plan Policy is not finalised, and the requirements of a valid plan under that policy are not yet known, it is considered inappropriate to propose EA conditions to satisfy this policy at this time. Therefore, a commitment to provide a decarbonisation plan has been proposed (refer Chapter 23, Table 23.1, Condition B4). Development of the draft Decarbonisation Plan for the Project has referenced the recently updated generic Terms of Reference for Qld EISs (produced by DES). Further, it is noted that a meeting was undertaken with DES and DCCEEW representatives on 22 Sep 2023, where an overview of the draft Decarbonisation Plan was provided.

Issue #	Topic, EIS section, and Terms of Reference (ToR) section	Issue/Comment	Recommendation	Summary of changes made / response to comment
Chapter 23 – Proposed EA conditions				
69	Condition B1	*Condition B1 states:* *"b) A concentration of particulate matter with an aerodynamic diameter of less than 10 micrometres (PM10) suspended in the atmosphere of 50 micrograms per cubic metre over a 24-hour averaging time, for no more than five exceedances recorded each year…"* *and "[Note 1]: The five exceedances for the PM10 standard were introduced to account for the impact of bushfires, dust storms and fuel reduction for fire management purposes. The five exceedances are in essence arbitrary in that the number was chosen as it is difficult to determine exactly the number of times these events may happen in any one year. More than five exceedances as a result of one or more of these events would not be considered to be a breach of condition."* The allowance of 5 exceedances per year is derived from a superseded EPP (Air) air quality objective. The wording of the condition overall would also make it difficult to determine compliance.	Recommend amending condition B1 wording to: "The environmental authority holder must ensure that air emissions generated by the mining activities do not cause the following criteria to be exceeded at a sensitive place or commercial place: a) dust deposition, of 120 milligrams per square metre per day, averaged over 1-month, when monitored in accordance with the most recent version of *Standards Australia AS/NZS 350.10.1 Methods for sampling and analysis of ambient air – Determination of particulate matter – Deposited matter – Gravimetric method* ; b) for a concentration of particulate matter with an aerodynamic diameter of less than 10 micrometres (PM10) suspended in the atmosphere, of 50 micrograms per cubic metre e over a 24-hour averaging time1 and 25 micrograms per cubic metre over a 1-year averaging time1, when monitored in accordance with the most recent version of either: (i) *Standards Australia AS/NZS 3580.9.6 Methods for sampling and analysis of ambient air – Determination of suspended particulate matter –* $^{PM}10^{\text{high volume sampler with size-selective inlet}}$ *– Gravimetric method* ; or (ii) *Standards Australia AS/NZS 3580.9.9 Methods for sampling and analysis of ambient air – Determination of suspended particulate matter –* $^{PM}10^{\text{low volume sampler – Gravimetric method ;}}$ or (iii) *Standards Australia AS 3580.9.8 Methods for sampling and analysis of ambient air – Determination of suspended particulate matter –* $^{PM}10^{\text{continuous direct mass method using tapered element oscillating microbalance analyser}}$. c) for a concentration of particulate matter with an aerodynamic diameter of less than 2.5 micrometres $^{(PM}2.5^{)\text{ suspended in the atmosphere, of 25 micrograms}}$ per cubic meter over a 24-hour averaging time1 and 8 micrograms per cubic meter over a 1-year averaging time1 when monitored in accordance with: (i) the most recent version of *Standards Australia AS/NZS 3580.9.12 Methods for sampling and analysis of ambient air, Determination of* $^{\text{suspended particulate matter – PM}}2.5^{\text{beta}}$ *attenuation monitors* ; or (ii) the most recent version of *Standards Australia AS/NZS 3580.9.13 Methods of sampling and analysis of ambient air, Determination of* $^{\text{suspended particulate matter – PM}}2.5^{\text{continuous}}$ *direct mass method using a tapered element oscillating microbalance monitor* ; or (iii) another method as agreed to in writing by the administering authority.	AARC: The Lake Vermont project has managed air quality impacts effectively during its period of operation under the existing EA conditions, which do not include a condition requiring an air emissions management plan. Given the Meadowbrook Project is predicted to be able to comply with these conditions, the management of air impacts at both project sites will be undertaken in conjunction with each other, and a condition requiring an air management plan is not included in the model mining condtions, it is considered that a management plan is not necessary to ensure compliance with the proposed EA conditions. Management measures relating to air quality will be maintained under the Environmental Management Plan (EMP). An EMP is in use at the existing LV operation, which will be updated to provide management measures for air quality across the Meadowbrook Project area. The text in Section 13.5, and commitments in Chapter 22 have been updated to include this information.
70	Replace/Add Conditions B2, B3	The air quality impact assessment was carried out assuming control factors additional to standard practice: "*In consideration of the proactive emissions controls that are applied at the existing Lake Vermont operations, an additional control factor has been applied to existing overburden haul roads for 24 days of the year to reflect proactive dust controls, which impacts PM10 results* ." Reference to proactive emissions controls is also made in chapter 22 (pg 16-17). These should be captured in the EA conditions.	Add the following conditions: B2 "An Air Emissions Management Plan must be developed by a suitably qualified and experienced person in relation to air emissions and implemented for all stages of mining. The Air Emissions Management Plan must be submitted to the administering authority for review and approval." B3 "The Air Emissions Management Plan must incorporate a program of continuous improvements for the management of dust resulting from mining operations including, but not limited to: a) a dust control strategy which activates a timely implementation of dust control management actions aimed to avoid or minimise elevated levels of dust including PM10 at a sensitive place or commercial place due to mining activities. b) A trigger action response plan that requires the environmental authority holder to investigate, mitigate and manage TSP caused by mining activities at any sensitive place or commercial place. c) A monitoring program including PM10 and meteorology designed to inform proactive dust control actions. d) Annual review of the Air Emissions Management Plan, including its adequacy and effectiveness in avoiding and minimising air emissions and dust at a sensitive place or commercial place."	The identified proactive emisison controls are applied at the existing operation under the Environmental Management (EM) Plan. The EM plan will be updated to include the Meadowbrook operations prior to the construction of the Project, including the proactive emission controls accounted for in the Air Quality Impact Assessment. The proposed EA conditions presented in EIS Chapter 23, Schedule B (relating to dust and particulate matter) are as per the existing Lake Vermont EA and the Model Mining Conditions. It is noted that the Lake Vermont Mine has managed air quality impacts effectively during its period of operation under the existing EA conditions. Proposing an underground extension also does not significantly increase the risk of air quality impacts arising. The text in Chapter 22 (Environmental Monitoring & Management Committments) has been updated to identify that the proactive emissions controls are provided by the EM Plan, and that this Plan will be updated to include the extensions of the Lake Vermont Mine as they commence.

Issue #	Topic, EIS section, and Terms of Reference (ToR) section	Issue/Comment	Recommendation	Summary of changes made / response to comment
71	Add condition B4	An additional condition is recommended to enable efficient regulation of the activity in the event of nuisance from dust emissions.	Add condition B4: “Dust and particulate monitoring must be undertaken within a reasonable and practicable timeframe nominated by the administering authority to investigate any complaint of environmental nuisance at any sensitive or commercial place, and the results must be notified within fourteen (14) days to the administering authority following completion of monitoring.”	Given the following aspects of the Project: - is predicted to operate without exceedance of dust emissions; - will use the demonstrated effective management framework from Lake Vermont mine; and - inflexibility of this condition for monitoring timeframe for dust complaints, it is therefore considered unneccessary to include this condition.
72	Add condition B5	The commitment in Chapter 22 to seal the run of mine (ROM) haul road should be captured as a condition. The ROM haul road has potential to be a significant source of dust emissions and the air quality assessment was carried out with the assumption that the haul road was sealed.	Add condition B5: “The ROM haul road from the project to the existing CHPP must be sealed with bitumen or an equivalent hard surface and cleaned as necessary to minimise the release of dust and particulate matter to the atmosphere.”	This condition has been included in Chapter 23 (Proposed EA Conditions) as condition B3.
73	Add condition B6	Recommend clarifying that the EA does not authorise environmental nuisance.	Add condition B6: “The release of dust or particulate matter, or both, resulting from the mining activity, must not cause an environmental nuisance at any sensitive or commercial place.”	Condition B2 has been amended to include 'environmental' nuisance. Refer to Chapter 23, condition B2.
74	Add condition C#	Runoff from waste rock dumps is intended to be collected in sediment dams and should be considered as mine affected water. Associated risks from a release to the environment via overflow need to be monitored and managed appropriately. This should ensure risks from dam overflows to the receiving environment are monitored and assessed appropriately and can be managed where necessary.	Add an EA condition requiring on-site water storage monitoring at the MIA dam, dewatering dam and sediment dams and that includes: - location of the monitoring points - monitoring frequency to be quarterly - suite of monitoring indicators - water quality trigger values to be specified for electrical conductivity, sulphate, pH, turbidity and suspended solids (as a minimum.)	The Project does not propose release points for the Meadowbrook on-site water storages (MIA dam, dewatering dam and sediment dams). Therefore these water storages have not been included in the conditions relating to mine affected water, which are to do with release points and release limits. The Meadowbrook Project on-site water storage monitoring across all Project stages will be conducted through the Erosion and Sediment Control Plan (EA condition C28). This approach is consistent with model mining conditions. There are no relevant trigger values for these water storages because no releases are proposed. The detail of the location of monitoring points, monitoring frequency and monitoring suite is addressed by the Erosion and Sediment Control Plan.
75	Table C3	Several trigger levels in Table C3 are based on LOR (level of reporting). Some of the proposed LORs are higher than the ANZG (2018) toxicant guideline values and therefore not appropriate.	Based on the ANZG (2018) Guidelines in freshwater, amend the trigger levels in Table C3 of the EA to: - 1.4 µg/L for copper - 0.06 µg/L for mercury - 5 µg/L for selenium (total) - 0.05 µg/L for silver - 0.5 µg/L for uranium - 6 µg/L for vanadium	There are no release points proposed for the Project. The trigger levels in EA Table C3 are for the existing and approved release points for the Lake Vermont Project. The approval of those trigger levels were based on the previous assessment of that Project. The Meadowbrook Project EIS does not propose any new release points and therefore does not propose any changes to the existing conditions for water releases in Table C3.
76	Condition C21 and Table C6	REMP locations, indicators and monitoring frequency should be specified in the EA conditions. The proposed EA does not include the new REMP monitoring locations for One Mile Creek and Boomerang Creek in Table C6.	Include new REMP monitoring points for One Mile and Boomerang creeks in Table C6.	It is noted that Table C6 does not include REMP monitoring sites, rather these sites are for monitoring enhanced release of mine affected water. No water releases or release points are proposed for the Meadowbrook Project and therefore, no changes to TableC6 are proposed. The Lake Vermont REMP monitoring sites are identified in the REMP design document. As per EA condition C21, the REMP design document for the Lake Vermont project will be updated to include monitoring for the poposed Project. It is noted that this condition (as it exists) is consistent with the ‘Model mining conditions guideline’ (ESR/2016/1936). Under this approach, the REMP design document is required by a EA condition and is available to the administrating authority on request. The details of the REMP including sites, methods etc are then contained within the REMP document.
77	Condition C22	The existing condition does not provide the ability for the administering authority to review and provide comments on the REMP. In order to ensure the REMP design document is appropriate to monitor potential impacts, the condition must allow for this.	Amend wording to: “Prior to the commencement of mining at Meadowbrook, a REMP Design Document that addresses the requirements of the REMP must be prepared and made available to the administering authority for review and feedback, and comments from the administering authority must be incorporated into the REMP design document.”	The EA condition C22 provides the ability for the administering authority to review and provide comments on the REMP. This condition is consistent with the ‘Model mining conditions guideline’ (ESR/2016/1936). It is noted that the timing requirements of the REMP condition will be stipulated by the date of effect of the EA.

Issue #	Topic, EIS section, and Terms of Reference (ToR) section	Issue/Comment	Recommendation	Summary of changes made / response to comment
78	Condition D4, add D#	The wording of the new proposed condition D4 is not sufficient to ensure that groundwater quality limits will be updated prior to commencement of operation at Meadowbrook.	Recommended wording for 2 separate conditions: Condition D4 "*Additional baseline monitoring data must be collected, including at least twelve (12) sampling events, no more than one (1) month apart, for each aquifer and groundwater monitoring location required in* ***Table D1: Groundwater Monitoring Locations and Frequencies*** ." – on the premise that Table D1 will be updated with monitoring locations associated with Meadowbrook. Condition D# "*Prior to the commencement of mining activities on ML70528 and <new Meadowbrook MLa>, the holder of this environmental authority must provide a report to the administering authority that includes:* (a) *a review of the adequacy of current groundwater quality triggers and limits in* ***Table D2:*** ***Groundwater Quality Triggers and Limits;*** *and* (b) *where relevant, proposed updated groundwater quality triggers and limits, based on the baseline* monitoring data collected in accordance with **Condition D4."**	It is noted that the amount of baseline data requested by DES (12 months continuous monthly) has already been collected. There have been 28 monitoring events at Meadowbrook and 37 monitoring events at Lake Vermont Mine. The data is now sufficient for setting of trigger levels, which are now provided with the updated EIS (as Appendix A7). Further, it is noted that Table D1 already provides the proposed monitoring locations for Meadowbrook, with a supporting map provided as Attachment 4 of the proposed EA. It is noted that the wording of condition D4 is already consistent with the second part of the DES comment, i.e. water quality criteria may be updated by amendment application to the administering authority. Words added 'based on the results of (baseline monitoring)" to explicitly capture the intent of the DES suggestion while keeping the condition text as brief as possible.
79	Table D1	Table D1 is proposed to be updated to include the new bores related to the Meadowbrook extension. However, these have not been identified as either interpretation or compliance bores, therefore not allowing the application of conditions D2 and D6 to D8.	The new monitoring bores proposed for the Meadowbrook site must be identified as either compliance or interpretation bores (as opposed to '*reference*') in Table D1.	Groundwater trigger levels are now provided as part of the updated EIS (as Appendix A7). Appendix A7 identifies the location of reference and compliance monitoring bores. The proposed groundwater trigger levels are also now included as EA conditions in Chapter 23 (Proposed EA Conditions).
80	Table D2 Table D3	Table D2 and Table D3 currently only list the existing monitoring bores for the Lake Vermont Mine site.	The specific monitoring bores to which the triggers and limits apply must be listed in the Tables D2 and D3 (unless they apply to all compliance bores.) Relevant triggers and limits for the proposed Meadowbrook site must also be listed based on currently available information.	Trigger levels have been calculated and provided with this updated EIS submission (as Appendix A7). The trigger levels are provided as proposed EA conditions in Chapter 23. Monitoring bores (and their identification as reference or compliance bores) are identified in Table D1 of Chapter 23 (Proposed EA Conditions) with trigger levels provided in Tables D2 and D4.
81	Table D2 Table D3	The footnotes "*Monitoring required under (these tables) is only required within aquifers that may be potentially affected from mining activities carried out within ML70528"* could confuse the application of the EA conditions in the absence of a list of the individual relevant compliance bores.	Delete the footnotes under Tables D2 and D3 stating "*Monitoring required under (these tables) is only required within aquifers that may be potentially affected from mining activities carried out within ML70528"* and list the specific bores to which the limits and triggers apply.	The groundwater quality trigger levels and conpliance limits in Table D2 (of Chapter 23 - Proposed EA Conditions) apply to compliance bores. The table footnote has been replaced with "Trigger levels and compliance limits are applicable to compliance bores". It is noted that the compliance bores are identified in Table D1 of Chapter 23 (Proposed EA Conditions).
82	Table D3	The existing Table D3 includes water level triggers of 5m and 2m/year, which were derived from Section 362 of the *Water Act 2000* . This conditioning is no longer considered sufficient to capture the approved maximum impact (drawdown) on groundwater levels.	Maximum predicted groundwater drawdown values are required to be provided/included in the EIS. The values must then be used to populate an amended Table D3 for water level triggers.	Groundwater level trigger thresholds are now provided in Appendix A7, Groundwater Trigger Levels, and are included as proposed EA conditions (Chapter 23, Table D4).
83	Condition D5	Typographical error- condition refers to incorrect attachment number (attachment 2 instead of attachment 4).	Update within condition referencing of attachment to attachment 4 for condition D5	Noted - Condition D5 refers to attachments 3 and 4.

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<tr><th>Issue #</th><th>Topic, EIS section, and Terms of Reference (ToR) section</th><th>Issue/Comment</th><th>Recommendation</th><th>Summary of changes made / response to comment</th></tr>
<tr><td>84</td><td>Add Condition E#</td><td>Treatment and land disposal of sewage should be subject to a management plan that reflects the inputs to the MEDLI model and best practice management.</td><td>Add condition requiring a site-based Sewage Treament and Irrigation Management Plan for the project that maintains the activity in accordance with the MEDLI modelling including:
a. Daily maximum treated sewage production (maximum 40 m^3)
b. Capacity of closed storage tank for treated sewage (minimum 120 m^3)
c. Size of irrigated land (minimum 3.6 ha)
d. Treated sewage disposal areas are maintained with an appropriate crop in a viable state for transpiration and nutrient uptake.
e. The crop used for the irrigation of treated sewage is Rhodes Grass, or similar pastures.
f. The crop on the treated sewage disposal areas is harvested and removed from the disposal area.
g. Visual inspection of crop status to determine “health” of crop on a monthly basis.
h. The treated sewage is to be disposed of uniformly across the allocated land areas by means of fixed sprinklers or low travelling irrigators.
i. Percolation to groundwater must be minimised.
j. Sludge produced by sewage treatment must be disposed of on land other than the irrigated land.
k. Surface and subsurface flows of contaminants to surface waters are prevented.
l. Degradation of soil structure in the treated sewage irrigation areas is minimised.
m. Soil sodicity and the build-up of nutrients and heavy metals in the soil and subsoil in the treated sewage irrigation areas are minimised.</td><td>The proposed conditions are in line with the model mining conditions. These conditions provide for the management of treated effluent irrigation as presented in the assessment in Chapter 15 (Waste) Section 15.7.3. The additional conditions requested are considered to be overly prescriptive, and although relevant to sewage treatment and effluent irrigation, not necessary in the pursuit of achieving the outcome of preventing environmenal impacts from the treatment and irrigation of sewage effluent. In the interest of maintaining the outcome focus of the proposed conditions, and to ensure consistency with the model mining conditions, no changes to Conditions within Schedule E have therefore been made.</td></tr>
<tr><td>85</td><td>Condition E4</td><td>Reword condition to ensure interaction with “Class C” treated sewage and access to the Effluent Irrigation Area is adequately controlled.</td><td>Amend condition E4:
“Control access and interaction with the treated sewage by:
(a) installing fencing around the Effluent Irrigation Area to control access by the public and onsite workers
(b) installing clear signage that show the “treated sewage irrigation area”
(c) ensuring effluent irrigation pipes are coloured lilac”</td><td>It is noted that the irrigation areas are within the mining lease and MIA and there is no practical risk of access by the public. Prominent signage (as proposed) is considered suitable given the irrigation areas will only be accessible by Project employees and fencing is considered unnessecary to prevent access by employees.

EIS Chapter 23 (Proposed EA Conditions) has been updated to include "effluent irrigation pipes must be lilac or lilac striped" (per Condition E4).</td></tr>
<tr><td>86</td><td>Table E1</td><td>Update indicators and limits in Table E1 on the basis of MEDLI input data being correct.</td><td><table><tr><th>Quality Characteristics</th><th>Release Limit</th><th>Monitoring Frequency</th></tr><tr><td>5 day Biochemical oxygen demands (BOD5)</td><td>20</td><td>Monthly</td></tr><tr><td>pH</td><td>65 – 8.5</td><td>Monthly</td></tr><tr><td>Total Chlorine “in situ”</td><td>5</td><td>Monthly</td></tr><tr><td>E.coli</td><td>1000</td><td>Monthly</td></tr><tr><td>Total Phosphorus</td><td>10</td><td>Monthly</td></tr><tr><td>Total Nitrogen</td><td>30</td><td>Monthly</td></tr><tr><td>Total dissolved salts</td><td>1024</td><td>Monthly</td></tr><tr><td>Sodium Adsorption Ratio</td><td>-</td><td>Quarterly</td></tr></table></td><td>The land based effluent irrigation assessment did its modelling on the basis of effluent contaminant release limits as per the Eligibility Criteria and Standard Conditions for Sewage Treatment Works (ERA 63) – Version 2 , which are also already included in the existing Lake Vermont EA limits (Table E1). We note that the release limits proposed in this comment differ from the standard eligibility criteria and from the MEDLI modelling, and are therefore inncompatible with the assessment provided in the EIS. For this reason no change has been made to Table E1.</td></tr>
<tr><td>87</td><td>Conditions G19-G20</td><td>Proposed new conditions do not include all commitments made in relation to subsidence as per Chapter 22, Land Resources section. Timeframes for the delivery and review of subsidence management have also not been made clear in the conditions.</td><td>Update conditions to include all commitments made in relation to subsidence in Chapter 22 and to ensure conditioning is enforceable including:
- G19 – the Subsidence Management Plan must be developed prior to commencement of mining on the relevant MLa relating to the Meadowbrook extension (from GeoResGlobe does not appear that the application has been submitted to Resources)

- Annual review of the Subsidence Management Plan should include a requirement for a report to be provided to the administering authority that assesses the plan against G19, includes recommended actions and identifies any amendments to the Subsidence Management Plan</td><td>A draft Subsidence Management Plan (SMP) has now been prepared and provided with the updated EIS (as Appendix A2).

EIS Chapter 23 (Proposed EA Conditions) through condition G19 (now G20) requires a SMP to be developed prior to the commencement of mining. Further, additional conditions have also now been added to Schedule G of the proposed EA, to support the regulation of subsidence impacts. This includes a condition requiring that an annual subsidence monitoring report be prepared (G23).

The draft SMP talks to the delivery of the proposed EA Conditions within Schedule G (and vice-versa). In the absence of subsidence related conditions with the model mining conditions, this approach has been developed through review of the conditions of other Bowen Basin underground mines.</td></tr>
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Issue #	Topic, EIS section, and Terms of Reference (ToR) section	Issue/Comment	Recommendation	Summary of changes made / response to comment
88	Table G1	Table G1 does not address cumulative impacts from both the existing approved maximum extent of impact on RE11.3.27 Wetland and Squatter Pigeon and the proposed impact for the Meadowbrook project. Once a significant residual impact threshold for a matter is reached for the project, anything additional to that (if not avoided or mitigated) will require an offset.	The extent of cumulative impacts must be captured in the EA Table G1, including impacts to Wetland RE11.3.27 and Squatter Pigeon. Example: impact for RE11.3.27 still remains as '3.9ha in ML70528' in proposed Table G1. However, the table must also account for the additional (cumulative) impact for the Meadowbrook project. This is also the case for Squatter Pigeon.	The cumulative impacts (including from the existing approved project as well as other adjacent and regional projects) were included in the assessment of impacts. Cumulative impact assessment, which highlighted the already authorised impacts to RE 11.3.25, RE 11.3.27 and Squatter Pigeon habitat, is presented in Chapter 10, Section 10.5.4. The significant impact assessment for Squatter Pigeon includes further address of cumulative impacts in Section 10.6.5. We note that as a MNES and MSES, impacts Squatter Pigeon habitat was assessed under the Significant Impact Guideline 1.1 and residual significant impacts determined from the assessment, i.e. significance is assessed as a federal matter. The impacts to these matters were assessed with consideration of the authorised Lake Vermont impacts. And the assessment outcome of whether the residual impact threshold for the Meadowbrook assessment was met was based on the cumulative impacts from the separately assessed and approved Lake Vermont project. We acknowledge that DES believes that according to the QLD Environmental Policy, the approval stage of amending the Lake Vermont EA automatically requires any additional impact area to an offset matter with approved impacts. However, given the EIS terms of reference identifies the assessment as being undertaken of the Project, which is defined as only the Meadowbrook Project. Given this definition, other approved impacts are considered as to separate Projects (including other Lake Vermont approved impacts) and as a consequence, it is considered incorrect to automatically define Meadowbrook Project impacts as significant becuase of approved Lake Vermont impacts. Notwithstanding, in the interest of assessing terrestrial ecology impacts conservatively, Meadowbrook Project impacts to prescribed matters have been offset where direct impacts are cumuative to authorised Lake Vermont Impacts, which includes impact to Squatter Pigeon. With regard to impacts to an RE intersecting an area shown on the wetland MV map, the Meadowbrook Project proposes an insignificantly small area of impact ha to an area mapped as a wetland (0.0135 ha), which is within too small to justify inclusion as an additional significant impact.
89	Schedule G	Figures depicting the extent of authorised impacts to prescribed environmental matters have not been included in the EA proposed conditions. These are required to clearly show the location of authorised impacts for matters and not just the overall authorised disturbance footprint.	Provide figures depicting the extent of authorised impacts to each prescribed environmental matters for inclusion in the EA i.e., one figure per matter. Each figure should be referenced in Table G1 against the relevant prescribed environmental matter.	These maps are now provided as attachements to Schedule G (for Brigalow TEC, Poplar Box TEC, Ornamnetal Snake, Koala and Greater Glider).
Appendix B Progressive Rehabilitation and Closure Plan (PRCP)				
90	Section 3.1.1.1 Table 1	Table 1 '*ERAs applicable to the Project*' still states an ERA threshold for Ancillary Activity 16 being *16(1)(c) Extraction and screening: screening 5,000t or more of material in a year.* This is an error as ERA 16 (1) refers to dredging. Appendix B of the EIS must be consistent with the EA ERA thresholds, unless a change of threshold is going to be proposed int he EA Amendment. The current threshold is 16(2)(a).	Amend Table 1 of Appendix B to state the correct ERA threshold e.g., 16(2)(a) extracting other than by dredging, in a year - 5000t	EIS Chapter 1 (Introduction) Table 1.3 and Appendix B (PRCP) Table 1, have been updated and now refer to ERA 16(2)(a). This change is consistent with the relevant ERAs contained within the current EA for the Lake Vermont Mine.
91	Section 3.2.1	Table 11 '*Summary of offset requirements for MSES*' interrupts section 3.2.1 '*Stakeholder and community engagement activities*'. It still appears to be in the incorrect location of the document.	Relocate Table 11 from page 51 of Appendix B to the appropriate location (e.g., section 3.1.7.4).	Table 11 in the PRCP has now been moved to the correct location, with fields updated.
92	Section 3.5	Although section 3.5 of the EIS includes some information on the revegetation approach, analogue sites and monitoring, there is still a lack of clear integration between the regional ecosystems (REs) being disturbed, the proposed PMLUs, the proposed revegetation approach and the analogue sites and the monitoring. Section 3.5 of Appendix B still does not address these comments. Section 3.7.1 explains analogue site locations but does not go into the detail previously requested. The EIS states that the work (e.g., baseline data) will be done, but the work has not yet been completed.	Amend the PRCP so there is clear and unambiguous and well explained linkage between the Regional Ecosystem (i.e., 11.5.3, 11.5.2 for RA6) and (i.e., 11.3.4 and 11.3.25 for RA9), available BioCondition benchmarks or Regional Ecosystem technical descriptions, species proposed for rehabilitation and the monitoring data collected from analogue sites and then the Milestone Criteria.	Sections 3.5.2, 3.5.3 and 3.5.5.4 of the PRCP have been updated to clearly address previous comments on the PRCP including the monitoring assessment approach whereby rehabilitation sites are compared to analogue site data for the relevant pre-mining RE, consistent with the relevant 'Grazing Native Vegetation' PMLU. Clear linkages have been provided throughout these sections to explain how the PRCP will achieve PMLUs consistent with the exisitng (pre-mining) land use being 'Grazing Native Vegetation'. Monitoring and Maintenance Program (Appendix E of the PRCP) has been updated to incorporate all updates to milestone criteria.
93	Section 3.5.5.4	Despite previous land use in the area to be disturbed by subsidence (i.e., RM6) being low intensity grazing by cattle, it is not appropriate to propose the use of exotic pastures for rehabilitation ("*better suited to changed conditions*"). There are ample candidate native species which can be gleaned from the RE Technical Descriptions or the analogue sites.	In the PRCP, propose native species for use in land use rehabilitation for low intensity grazing, avoiding the use of exotic seed mixes.	Native species suited to pastoral uses have been added to the grazing PMLU revegatation species lists.

Issue #	Topic, EIS section, and Terms of Reference (ToR) section	Issue/Comment	Recommendation	Summary of changes made / response to comment
Appendix K MNES Biodiversity Offsets Strategy				
94	Section 2.4	The Offsets Strategy has not addressed the Stage 4 impacts and Stage 4 offsets. It is not appropriate to defer assessment of stage 4 impacts and proposed offsets until a later, undetermined time. The EIS process must provide information and assessment on the total proposed offsets for all project stages.	Amend the Offsets Strategy to address the full extent of potential significant residual impacts on prescribed environmental matters for the entire project: - For the stage 4 offsets, amend the Strategy to account for the impact areas and the proposed offset requirements. Offset area calculations should be provided for stage 4 in table format like the other stages. - Amend the conclusion to address the entire impact area and proposed offset area calculations.	AARC 2809: The full extent of potential significant residual impacts on prescribed environmental matters (for the entire project including stage 4) are presented in EIS Chapter 10 (Terrestrial Ecology) Table 10.32. Stage 4 impacts are also included within impact assessments undertaken within Chapter 10, through sections 10.6 to 10.7. It is acknowledged that Stage 4 MNES offsets are not proposed at present. MNES impacts are identified (through Table 10.33) however proposed MNES offsets are not provided for Stage 4 of the proposed Project. Stage 4 is the final Project stage (being the satellite open cut pit) and is proposed to commence in Project Year 20 (circa 2045). Given the distant timing of this stage of the development, uncertainty exists in regards to whether this Stage of the Project will ultimately occur. For the proponent to manage this risk, it is proposed that offsets for Stage 4 are deferred (to be established prior to any future commencement of Stage 4). This is proposed to be managed through Commonwealth Project approval conditions. In this regard, it is noted that the impact of Stage 4 development on MNES values has been assessed and can be conditioned as part of this EIS process. Further, it is noted that Appendix K (Biodiversity Offsets Strategy) provides that: "Offsets for significant impacts associated with development of Stage 4 will be proposed within a subsequent offset strategy, to mitigate the impacts to MNES contemplated in the EIS. The Stage 4 offset strategy would provide: - detail of the environmental offset for the stage 4 significant impacts, - justification that the proposed offsets satisfy the requirements of the EPBC Act Environmental Offsets Policy 2012, - evidence of the offset area connectivity to dispersal habitat and fauna habitat corridors, - the means of legally securing the proposed offset area." In the interim, proposed offsets are established for Stages 1-3 of the Project (representing the life of the underground development). The impact areas areas for stage 4 are identified in the assessments, and the offset strategy which will address the proposed offset area calculations, will be provided prior to the commencement of stage 4, when there is greater certainty that it will be undertaken.
95	Section 2.7	There is insufficient detail provided on the location and size of the proposed offset site. This section provides three figures but does not identify where the offset area is located. There is no figure that provides the location of all proposed MNES values and whether there is co-location/ overlap of these values. It is noted that stage 4 offsets are proposed to be located on the same property. Stage 4 offset areas should be added to a relevant figure to indicate their extent and location.	Address the following: - Provide comprehensive details on the location (coordinates) and size (in hectares) of the proposed offset site and depict in a relevant figure. - Provide an assessment on how the offset site boundary was determined, and why there appears to be no buffer distance provided to the boundary of the “limit of measurable subsidence” depicted in Figure 3 Project layout. - Provide a figure that combines the location of each MNES value subject to an offset by relevant project stages.	It is noted that Section 2.7 identifies the regional context of the proposed offset strategy. The proposed stage 1-3 offset area is then identified in Figure 4, with a comprehensive breakdown of the size of the area by assessment unit in Table 4 (Section 5). The offset site boundary was determined on the basis of: - the connectivity the offset site to regionally and state significant corridors including to riparian corridors of Boomerang C, Hughes Ck, One Mile Ck, Phillips Ck and the Isaac River (refer Appendix K, Section 8.2); - The vegetation present in the offset sites, which provide the offset values required (refer Appendix K, Section 8.4); - The connectivity within the offset areas (the proposed offset areas are a contiguous area) to provide advantageous management outcomes. The proposed areas exceeds 100% of the liability provided, in the interest of achieving a greater than required beneficial outcome. No buffer distance to the subsidence footprint is provided on the basis that there is confidence of no negative impacts to ecological values in the subsidence footrpint (outside of modelled ponding areas) justified by the subsidence assessment (Appendix A, and outcomes from analogous underground mining operations in the region (refer EIS chapter 10, Section 10.5.2.1) for greater detail. Figures of the location of each MNES value subject to an offset by relevant Project stages are provided in Appendix K Figures 7, 8, 9, 10, 11 depicting impact areas by stage. And Appendix K Figures 13, 14, 15, 16, 17 depicting offset areas by stage.
96	Section 8.2	The riparian corridors in the proposed offset site are stated to provide species (including Koala and Greater Glider) with opportunities for movement and dispersal to the Isaac River. However, there is no analysis of the impact that the adjacent mining approvals, such as the Olive Downs project, will have on maintaining this current connectivity. The likely ability of an offset area to provide an overall conservation gain is contingent on its position in the landscape and whether threats to its future viability, such as from adjacent mining approvals, have been adequately assessed. This analysis should be provided to further understand the suitability of the offset area being located adjacent to proposed underground mining operations.	Provide assessment of the future viability of the proposed offset site to maintain connectivity for the Koala and Greater Glider. This should address cumulative impacts from adjacent active and proposed mining projects on the viability of the riparian corridors (associated with Boomerang Creek, Hughes Creek, One Mile Creek and Phillips Creek) to provide east–west fauna movement through the landscape.	The connectivity of Koala and Greater Glider habitat in the proposed offset area to the Isaac River will not be impacted by the Proposed (and approved) Olive Downs project. It is noted that teh Olive Downs project proposes project infrastructure (a conveyor) which will intersect the Isaac River north of the Meadowbrook Project, however, no barriers to dispersal and movement are proposed to the Isaac River south of the Meadowbrook Project. The connectivity impacts of the Olive Downs project are assessed and offsets proposed within that Project EIS, and the Meadowbrook Project does not propose changes which are considered to cumulatively increase impacts to the potential movements of fauna on the Isaac River. Additionally, the Meadowbrook Project is not expected to remove the movement and dispersal value of other riparian corridors within the Project area connecting to the Isaac River (including, Boomerang Ck, Hughes Ck, One Mile Ck, and Phillips Ck). These riparian corridors will be maintained during all phases of the Meadowbrook Project, and the proposed stage 1-3 offset area will retain connevtivity to these corridors. Further explanation of the assessment of connectivity is provided in Chapter 10, Section 10.5.2.4 and 10.5.4.
97	Table 16	The offset area is stated to be 231.70ha. This is inconsistent with the figure of 291.7ha stated in other parts of the EIS.	Amend the inconsistency.	We note that Table 16 quotes the figure 291.7ha.

Issue #	Topic, EIS section, and Terms of Reference (ToR) section	Issue/Comment	Recommendation	Summary of changes made / response to comment
IESC Advice 2023-142 Lake Vermont Meadowbrook Project				
98	Annexure 1	Advice was sought from the IESC on the adequacy of the EIS for: - Characterising surface and groundwater resources and related assets - Identifying and assesssing key risks to water resources and related assets - Addressing cumulative impacts on water resources and related assets - Adequacy of monitoring, mitigation and management measures for impacts on water resources and related assets - Justifying conclusions on the impacts from subsidence, including on creek hydraulics and hydrology - Determining the level of impacts on GDEs - Presenting impacts on and management measures for aquatic and terrestrial fauna Comprehensive advice has been provided including areas where additiona work is required.	Address and action all the points raised, including the additional work requirements, in the IESC Advice and Response to Questions (Annexure 1).	

References

ANZG (2018). *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* . Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia. Available at www.waterquality.gov.au/anz-guidelines

Using monitoring data to assess groundwater quality and potential environmental impacts , Version 2, 2021, Department of Environment and Science, Queensland Government, Brisbane. Available at https://www.publications.qld.gov.au/dataset/groundwater-quality-assessment-guideline/resource/472cc88a-000a-4bb8-a60d- 204cfe7e0238

Annexure 1 – Independent Expert Scientific Committee (IESC) Advice

Independent Expert Scientific Committee
on Coal Seam Gas and Large Coal Mining Development

Advice to decision maker on coal mining project

IESC 2023-142: Lake Vermont Meadowbrook Project (EPBC 2019/8485) – Expansion

Requesting agency	The Australian Government Department of Climate Change, Energy, the Environment and Water and The Queensland Department of Environment and Science
Date of	4 April 2023
Date	5 April 2023
Advice	Assessment

The Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development (the IESC) provides independent, expert, scientific advice to the Australian and state government regulators on the potential impacts of coal seam gas and large coal mining proposals on water resources. The advice is designed to ensure that decisions by regulators on coal seam gas or large coal mining developments are informed by the best available science.
The IESC was requested by the Australian Government Department of Climate Change, Energy, the Environment and Water and the Queensland Department of Environment and Science to provide advice on the Bowen Basin Coal Pty Ltd's Lake Vermont Meadowbrook Coal Mine Project in Queensland. This document provides the IESC's advice in response to the requesting agencies' questions. These questions are directed at matters specific to the project to be considered during the requesting agencies' assessment process. This advice draws upon the available assessment documentation, data and methodologies, together with the expert deliberations of the IESC, and is assessed against the IESC Information Guidelines (IESC, 2018).

Summary

The Lake Vermont Meadowbrook Coal Mine Project ('the project') is a proposed expansion of open-cut and longwall operations north of the existing approved operations located 25 km north of Dysart, Queensland. The project will mine 108.6 million tonnes (Mt) of metallurgical coal from underground operations targeting the Vermont Lower Seam and Leichhardt Lower Seam and 13.3 Mt from open-cut Operations until 2055 (AARC 2023a. Executive Summary, p.3).

The project will consist of underground single- and dual-seam longwall mining, open-cut mining and construction of supporting infrastructure which includes an electrical substation, underground portal, drifts and shafts, boreholes and gas drainage bores (AARC 2023a, Executive Summary, p. 3).

The project area falls within the Isaac-Connors sub-catchment of the Fitzroy Basin. Boomerang Creek, One Mile Creek and Phillips Creek are within the project site where underground operations will occur (AARC 2023a, Ch 8, p. 8-8). Subsidence-induced ground movements of up to 5 m are predicted in the catchments of Boomerang and One Mile creeks.
The project is located within the Bowen Basin where considerable mining activity occurs. The impacts from the project will contribute to the cumulative impacts to groundwater, surface water and ecosystems and biota across the basin.
Key potential impacts from this project are:

- ground movements including predicted vertical subsidence of up to 5.0 m (Gordon 2022, p. 33), including up to 4.0 m beneath Boomerang Creek (AARC 2023a, Ch. 5, p. 5-26). This subsidence is likely to affect groundwater dynamics, surface runoff, stream flows and water-dependent biota and ecosystems;
- possible connected fracturing (surface to seam), which could result in the loss of surface water flows to the subsurface and potentially the goaf areas. This process could influence groundwater level recovery, alter groundwater flow paths and change surface water flow regimes permanently;
- drawdown within the alluvial system that will likely impact stygofauna and other groundwater- dependent ecosystems (GDEs) including riparian vegetation along One Mile, Phillips and Boomerang creeks which may use groundwater during low-rainfall periods;
- direct clearing of 247.7 ha of habitat used by species listed by the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act);
- impairment of aquatic ecosystems and landforms during operations and post mine closure due to erosion and sediment transport;
- collective effects and interactions among two or more of the above individual impacts (e.g., between drawdown and subsidence) that combine to affect, for example, alluvial recharge, stream flow and GDE condition along Boomerang and One Mile creeks; and
- contribution to cumulative impacts to groundwater levels, surface water regimes and ecosystems and biota.

The IESC has identified areas in which additional work is required to address the potential impacts, as detailed in this advice. These are summarised below.

- Further analysis is needed to understand the areas where possible connected fracturing may occur and its potential impacts on surface water-groundwater connectivity (e.g., alluvial fluxes), ecologically important components of the surface water flow regime, and biota dependent on surface water and groundwater.
- Additional information is required to better understand the potential impacts of surface cracking on surface water systems and alluvial groundwater, including changes to quantity of runoff, and to the frequency of low- and zero-flow days and other ecologically important components of the flow regime.
- Additional information is required to demonstrate how the final landform and stream channels will stabilise, including how dispersive soils and erosion will be monitored and managed.
- Additional hydrogeological and ecological studies are required to characterise potential GDEs, including several wetlands (e.g., Wetland 8). This should include:
- field surveys and ground-truthing to establish groundwater dependence of the Brigalow Threatened Ecological Community (TEC) along One Mile Creek, Poplar Box TEC on alluvial plains and remnant River Red Gum woodlands fringing drainage lines and lacustrine wetlands.
- further sampling for stygofauna within alluvial sediments, especially along One Mile Creek.
- Improvements are required to the groundwater modelling at the local scale to increase confidence in the predicted impacts and their nature and magnitude. These include the influence of the Isaac Fault, gas drainage, recharge rates, representation of surface and groundwater interactions, local-scale calibration, mine inflows, groundwater mounding post-mining, alluvial fluxes and climate change.
- Monitoring of contaminants in the proposed sediment dams is needed to determine if there is a risk of increasing contaminants in the surface water system from overflow during large flood events (e.g., those with a 1% Annual Exceedance Probability (AEP)).
- One or more impact pathway diagrams (IPDs) derived from an evidence-based ecohydrological conceptualisation should be developed to illustrate the collective and interacting impacts that may arise from this project. These IPDs should link predicted drawdown, subsidence, erosion and other impacts to potential ecological outcomes such as adverse effects on GDEs, riparian vegetation and aquatic biota and ecosystems.
- Further information is needed about timeframes and the potential cumulative impacts of allowing the natural sediment load of creeks to infill subsidence troughs.

Context

The project is a proposed expansion of existing approved operations at Lake Vermont and will consist of one open-cut pit and two areas of longwall operations. The project is located 25 km north of Dysart, Queensland within the Bowen Basin and will mine approximately 122 Mt until 2055.
The project area covers 8,238 ha and will directly disturb 827.8 ha. The disturbance arises from open-cut operations (666.4 ha), infrastructure development (15.3 ha) and indirect disturbance through subsidence- induced ponding and mitigation measures (214 ha) (AARC 2023a, Executive Summery, p. 3). The proponent plans to expand the water management system within the project area by constructing three new sediment dams and one mine infrastructure area dam (WRM 2023b, p. 6). All mine-affected water will be collected from both operations and managed within the existing approved water management system at Lake Vermont Mine. The proponent is not proposing additional mine-affected water release points and all releases will be managed through currently approved release points (AARC 2023a, Ch. 8, p. 8-17).
In the project area, Boomerang Creek, One Mile Creek and Phillips Creek are ephemeral streams which recharge the alluvial groundwater system during rainfall events. Groundwater-dependent ecosystems (GDEs) possibly rely on these shallow groundwater systems during periods of low surface water flow.
Four species listed under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) occur in the project area: Ornamental Snake (Denisonia maculata), Squatter Pigeon (Geophaps scripta scripta), Koala (Phascolarctos cinereus) and Greater Glider (Petauroides volans), along with two TECs (Brigalow and Poplar Box). The proponent plans to directly clear 0.9 ha of Brigalow TEC, 207.1 ha of Ornamental Snake habitat, 15.6 ha of Squatter Pigeon habitat, 12.3 ha of Koala habitat and 11.8 ha of Greater Glider habitat (AARC 2023b, p. 107).
Other mining projects surrounding the proposed project include Saraji Mine, Saraji East Project, Olive Downs, Winchester South Project, Eagle Downs, Vulcan Complex, Peak Downs, Daunia, Caval Ridge, Poitrel, Millennium, Isaac Downs, Moranbah South and Isaac Plains East (AARC 2023a, Ch. 3, p. 3-11). This proposed project will likely contribute to cumulative impacts, especially water and sediment movements.

Response to questions

The IESC's advice in response to the requesting agencies' specific questions is provided below.

Water resources and assets **Question 1: Advice is sought on whether the proponent has adequately characterised surface and groundwater resources and related assets, including those related to the use of adjacent existing Lake Vermont Mine's pits.**	**Summary of changes made / response to item**
Groundwater	
1. Geology (drill holes and geophysical surveys), groundwater levels and groundwater quality (regular monitoring at 32 bores at the project site (see AARC 2023a, Ch. 7, pp. 7-39 to 7-41)) have been used to assist characterisation of groundwater resources, and conceptualisation is adequate at the regional scale. This also includes recent groundwater level and quality data that are discussed for the adjacent mining area of Lake Vermont (for 26 monitoring sites identified in AARC 2023a, Ch. 7, Table 7.10, p. 7-42). However, at the local scale, information pertinent to potential impact pathways from underground operations via subsidence and faulting to receptors (e.g., creeks and GDEs) has not adequately informed the assessment.	1. HydroAlgorithmics-NM 0707: "The easy answer would be to install more monitoring bores, though it is difficult to do this because: (i) there is an offset from the creeks that we can't drill within and (ii) we have sufficient drilling data to indicate that the alluvium is not uniformly saturated."
2. It is unclear from the information provided how the pits at the adjacent Lake Vermont Mine are, or will, affecct the groundwater systems at the project site. Although these pits are assumed to be included in the groundwater modelling, limited discussion has been provided on how these pits will be used post mining and how this could affect the groundwater resources of the project area.	2. HydroAlgorithmics-NM 0707: "The LVN pits have been included in the cumulative impact analysis."
Surface Water 3. The proponent has provided limited information about the surface water resources potentially impacted by the proposed project and limited detail has been provided to characterise the surface water resources affected by the previously approved project. No quantitative information has been provided on stream flows or on ecologically important components of the flow regime for watercourses that may be impacted by the proposed project. 4. In terms of characterising mine water management, it is not possible to assess the defensibility of the parameters used in the rainfall-runoff model (AWBM) as no information is provided on its calibration (WRM 2023b, Section 3.4.2, p. 27), and no discussion is provided on whether the estimates are consistent with regional and other sources of information. Accordingly, it is not possible to have confidence in the estimates of storage behaviour, the risk of unregulated spills from the dams, annual volume estimates of required raw water supplies or the transfers to Lake Vermont.	3. Potential impacts to surface water resources are discussed through EIS Chapter 21 (MNES) Section 21.9.6. This section also references a number of related appendices - including Appendix F (Surface Water Assessment); Appendix W (Geomorphological Assessment); Appendix X (Rehabilitated Landform Water Balance); Appendix Y (Site Water Balance and Water Management System Report); and Appendix Z (Flood Modelling Assessment). This package of information has now been expanded upon as part of our updated EIS. Specifically, quantitative information on stream flows and floodplain impacts is now discussed in greater detail in Chapter 21 (MNES) Section 21.9.6.9. Further detail has also been provided within Section 21.9.6.2 to expand upon the overview of the conceptual model developed for the Project. 4. AWBM parameters are discussed in EIS Appendix Y (Site Water Balance and Water Management System). AWBM parameters were derived during the development of the operational water balance model for the existing Lake Vermont Mine operations, and were derived by calibrating to observed water levels in the major storages. The water balance model for the existing Lake Vermont Mine has been in operation for ~8yrs providing a strong platform upon which to base the project model.
Ecology 5. The characterisation of in-stream aquatic ecosystems and terrestrial ecology is sufficient; however, characterisation of the stygofauna and other GDEs is limited. a. The IESC commends the proponent for using multiple lines of evidence to evaluate the presence of terrestrial GDEs. However, the assessment is limited by the timing (surveying in August yet November and December have the highest pan evaporations) and lack of temporal variation accounted for in the surveys. This means that not all potential terrestrial GDEs may have been characterised because they were not accessing the groundwater during the period of sampling.	5a. AARC & 3D Environmental: A Groundwater Dependent Ecosystem Monitoring & Management Plan (GDEMMP) has now been prepared and provided as part of the updated EIS, to address uncertainties associated with the environmental impacts on GDEs. Under the GDEMMP, additional intensive monitoring will be conducted for two years prior to Project construction, including measurement of leaf water potential, stable isotopes, leaf area index, NDVI and groundwater monitoring. This monitoring will be conducted at a group of areas which have been selected based on the distriubution of field verified GDEs, TECs, HES wetlands and areas indicated with potential GDE in GDE Atlas mapping. This additional effort is considered to be ample to describe all potential terrestrial GDEs. In the GDEMMP, corrective actions are described for implementation when statistically significant impacts on GDE function are detected, these corrective actions will be applied when the Project commences.
b. Baseline stygofauna sampling at nine bores was conducted in May and September 2021 and two sites were confirmed to contain stygofauna (Stygoecologia 2022, p. 21). Under the DSITIA (2015) *Guideline for the Environmental Assessment of Subterranean Aquatic Fauna* , this sampling constitutes a pilot study. As stygofauna were detected within the Tertiary alluvium, further comprehensive sampling should be conducted to characterise this GDE. The IESC suggests the following:	5b. Stygoecologica - PS 0627:"As noted above, all available and suitable bores in and adjacent to the mine lease area were examined for the potential for stygofauna as well as to sample bores representing most aquifer units. As a baseline (pilot) study, additional bores are not installed until the initial investigation is completed. If it is deemed necessary and following discussion with regulators and the mine, additional bores targeting appropriate aquifers in control and impact sites will be conducted."
i. groundwater pumping techniques for stygofauna sampling should be considered in addition to netting to increase the likelihood of stygofauna detection and detection of species representative of the aquifer environment; and	5b(i). Stygoecologica - PS 0627:"The techniques used for the stygofauna sampling in this project are the standard techniques used for all stygofauna surveys, with pumping being used as an additional technique in certain substrate types. DSITIA (2015) is a general guideline document that does not stipulate a certain technique has to be used for every bore sampling but instead states that "the effectiveness of survey in documenting subterranean aquatic fauna present in the area is dependent on the appropriateness of survey design, sampling method and effort expended." Therefore, the use of pumps is suitable under certain conditions but not all. While pumping is a useful method in highly transmissive/porous substrates such as course gravels/cobble, highly fractured igneous and karstic geologies with large voids or pores spaces, it is not an effective technique in low flow/transmissive, fine-grained substrates such as is found in the Project area, due to the clogging of pore spaces under rapid drawdown within the bore and/or emptying of the bore and loosing suction. In this case, therefore it was not deemed essential or appropriate for the baseline surveys in this project. In addition, the three-month time period between surveys, as suggested by DSITIA (2015) was complied with for this project, should have been sufficient time for the bores to be recolonised under a nature flow and pressure regime. The advice, however, is taken on board as a potential addition to the techniques used and can be incorporated in future surveys if deemed necessary. This study also complies with all DSITIA (2015) requirements in sampling technique, bore selection and identifications, including with the following bore characteristics: · subterranean fauna would have access to the borehole. · bore is at least six months old; and · bore has groundwater present."
ii. shallow monitoring bores (<30 m) close to One Mile Creek should be added to the sampling regime and installed if necessary. This area was not adequately investigated in the pilot study but is within both subsidence and drawdown zones.	5b(ii). Sygoecologica - PS 0627:"Yes, we agree with the advice. If it is deemed necessary and following discussion with the regulators and the mine, additional bores targeting appropriate locations in the aquifer along this watercourse will be conducted." HydroAlgorithmics-NM 0707: "Can look at potential bore sites, but it will depend on access considerations."

Question 2: Advise whether the EIS has identified and assessed the key risks and impacts to water resources and related assets as a result of the proposed project, in particular to: **a. groundwater and surface waters;** **b. groundwater-surface water interactions; and** **c. water-dependent ecosystems.**	**Summary of changes made / response to item**
Groundwater	
6. The proponent's assessment of ecological impacts at receptors via potential links to the proposed underground mining via pathways such as surface and groundwater interactions, subsidence, and induced fracturing and faults is siloed and not integrated. The hydrogeological investigations are more general and have not targeted potential receptors and pathways. Impact assessment relies on a regional-scale model that is acknowledged (JBT 2023, Att. A, Sections 3.1-3.2, pp. 20-33; HydroAlgorithmics 2022, Table 2, pp. 8-9) not to capture important local-scale detail and processes including groundwater/surface water interactions and the local-scale influence of faults.	6. Further content has now been added to Appednix E (Groundwater Impact Assessment) through Section 6.2.2, to address this feedback.
7. Although faulting has been mapped across the project site (e.g., AARC 2023a, Ch. 3, Figure 3.15, p. 3-30 and Gordon 2022, Figure 19, p. 18), there is a lack of field data to clearly understand the effect of faults, particularly the Isaac Fault, on groundwater flows and impact predictions.	7. Profiles have now been prepared to improve explanation of compartmentalisation. Refer Appendix E (Groundwater Impact Assessment, Figure 3.7). Further, groundwater contours in Appendix E (Groundwater Impact Assessment) Figure 4.10 to 4.12) provide a clear demonstration of the effects of faults on predictions.
a. The groundwater model tends to overpredict groundwater levels which is more apparent in the areas near the Isaac Fault (JBT 2023, Att. A, Figure 3-4, p. 24).	7a. There is no relation between worst residuals and location of faults.
b. The assumption of compartmentalisation by the Isaac Fault limits the extent of predicted drawdown. Future work should provide evidence for compartmentalisation (e.g., Murray and Power 2021). For example, drilling and monitoring bores through and either side of the fault zone, hydraulic testing and suitable environmental water tracers are required to evaluate the influence of faults on groundwater flow and vertical hydraulic connectivity. If drawdown in the Permian Coal Measures and the overlying Rewan Formation is not compartmentalised by the Isaac Fault, then there may be potential for increased drawdown in the overlying unconsolidated formations including the Isaac River alluvium.	7b. HydroAlgorithmics-NM 0707: "I would not recommend trying to drill on either side of the fault, undertaking of tracer testing etc. A couple of observations with respect to this: - The formations have been assessed to be of low permeability, therefore any pumping tests are liable to result in significant drawdown in the pumped bore, but the drawdown would not extend far laterally. - The Isaac Fault is not one single clean break, but a shear zone with an impacted zone of unknown width. It would be difficult to site bores that could be confidently stated as being on one side of the fault or the other." JBT - JB 0815: "Tracers are unworkable, as is drilling bores either side of the fault (difficult to achieve in a shear zone)." Potential for trasmission across the fault is likely best conceptualised. One suggestion was to draw west-east profiles to show the degree of compartmentalisation. More on this below: "I have updated a figure from the EIS report (Appendix E - Groundwater Impact Assessment, Figure 3.7) for the west-east geological sections. (Note that the location of these sections are illustrated through Figure 4.1). These sections highlight the extent of compartmentalisation (as noted above). I have also added the available bore construction and water level data to these sections, with the water levels from November 2022 (refer attached West-East Sections.jpg). West-East Section 2 includes data for bore W15 (discussed above under Item 17 of DES comments). You can see that this bore is quite far removed from the underground mining area at Meadowbrook, being located within an isolated compartment that is separated from the Meadowbrook mining area by at least 2 major faults that have truncated the Permian strata. So, the error at W15 due to the incorrect collar data won't be having an influence on drawdown predictions within the mining area."
8. The proponent proposes to pre-drain gas from the underground panels in advance of mining using 'surface-to-seam' and 'underground in-seam' boreholes and pumps (AARC 2023a, Ch. 3, p. 3-65). It is vital that hydraulic isolation across strata is maintained to ensure these gas boreholes do not become pathways for impact propagation, which may be challenging when goafing occurs (AARC 2023a, Ch. 3, Figure 3.41, p. 3-69). These boreholes are not included in the groundwater modelling assessment.	8. HydroAlgorithmics-NM 0707: It is assumed that the mining process (cracking/subsidence) will overprint any impacts from the gas drainholes. It is not usual to model in-seam gas holes due to low water volumes - first working roadways swamp the depressurisation effects. In-seam holes get mined out. Surface-to-seam holes will get crushed by goafing. This matter was discussed with DCCEEW during our 22 August 2023 meeting.
9. Although some estimates for recharge rates were determined from field data (JBT 2023, Table 4-12, p. 66), the calibrated groundwater model recharge rates were substantially different for some geological formations (JBT 2023, Att. A, Table 3-9, p. 42). The IESC suggests that: a. the differences between field data and calibrated recharge rates be discussed and justified. b. uncertainty in recharge rates be explored further and clearly reported. This should include an analysis of how different rates could affect the extent and magnitude of groundwater drawdown, surface water-groundwater connectivity and future predicted groundwater mounding. c. the effect of climate change on future recharge rates be considered. d. further discussion and justification be provided of the proposed spoil recharge rate. A recharge rate of 1% of annual rainfall has been adopted for backfilled spoil (JBT 2023, Att. A, p. 9). This rate may be low depending on the properties of the backfilled spoil (e.g., particle size), thus predictions of groundwater level recovery times and mounding may not be accurate. 10. The water balance is dominated by flows between groundwater and the Isaac River. To support this, evidence should be provided on baseflow estimates and riverbed conductance should be included in the uncertainty analysis.	9. UA has been done on %RCH for 7 zones [JBT 331-332] over 2.5 OoM, which is argued to be more than enough investigation. But units are not clear for the distributions. Issue is z106 & z107 where CMB >> 0.01%. Groundwater recharge rates and assumptions are discussed within Appendix E of the EIS (Groundwater Impact Assessment) through Section 4.5. Consideration of climate change effects on recharge rates is argued to provide limited value, as its very subjective. It is acknowledged that spoil recharge could be higher, and recovery faster, but this would provide limited value when dealing with centuries (refer Mackie 2009).
11. The groundwater model is a regional-scale model, and calibration results at the local scale suggest that there are issues with conceptualisation or data assimilation in the project area. This is shown by a scattergram of calibration residuals (JBT 2023, Att. A, Figure 3-1, p. 21) with predicted water levels at the site forming a horizontal line, suggesting that most groundwater level predictions are near- identical. Although this may be a function of the limited variation in topography across the site, further explanation is required, especially the implications of the model's inability to replicate vertical head differences (JBT 2023, Att. A, p. 32). 12. Two different approaches to predicting the groundwater inflows to the underground workings were provided (JBT 2023, Figure 5-11, p. 90). There is considerable difference in the total predicted inflows (5,110 ML versus 17,948 ML, JBT 2023, Table 5-2, p. 91). The IESC considers that: a. further discussion on the suitability of the assumptions used in the reduced inflow case should be provided. This should be supported by field observations if possible. b. uncertainty in the predictions for both approaches should be further explored and contextualised. This should include an analysis of potential impacts to surface water-groundwater interactions, surface water flow regimes and water-dependent ecosystems. The likely source of the additional water under the 'base case' approach should be explained. c. discussion is needed on how the 'base case' water volumes would affect the site water inventory and how the excess water would be managed. d. monitoring of inflows during operations will be essential to confirm the reduced inflow case. The data should be used to trigger timely updates to the groundwater modelling if inflow observations are greater than predictions. Additionally, management plans will also require updating if greater inflows are observed because the predicted impacts may increase. 13. The timing of the maximum extent of groundwater drawdown is unclear from the information provided and may not coincide with the end of mining, particularly in the case of cumulative drawdown predictions. Additionally, there should be further discussion of the predicted groundwater mounding, and why 4 m of mounding appears to be predicted in most groundwater sources (JBT 2023, pp. 78- 79).	10. It is noted that the water balance is global, so the domination is not correct locally. The river is LOSING east of the mine, so NO baseflow. Additional content has now been added to EIS Appendix E (Groundwater Impact Assessment) to address this. Please refer to Section 6.2.2. 11. As above. 12. The lower inflow number was used as an assumption going forward, based on experience with inflow rates at other Bowen Basin underground mines and conceptualisation of the goafing process. The higher number was included as a "fracture to surface" case, but the probability/risk of higher inflow rates was assessed to be low based on Bowen Basin experience and the nature of the strata at Meadowbrook (low permeabiliy, low rates of water encountered during drilling etc). Inflows are discussed in Appendix E (Groundwater Impact Assessment) through Sections 5.6.1 and 5.6.2. 13. Please refer to EIS Appendix E (Groundwater Impact Assessment) Figures 5.4 to 5.7. It is noted that mounding is related to enhanced spoil recharge over the partially refilled pit. It is also noted that further modelling would add limited to no value, as the rise is inconsequential (as well as a century away).

Question 2: Advise whether the EIS has identified and assessed the key risks and impacts to water resources and related assets as a result of the proposed project, in particular to: **a. groundwater and surface waters;** **b. groundwater-surface water interactions; and** **c. water-dependent ecosystems.**	**Summary of changes made / response to item**
14. The proponent's analysis has identified considerable uncertainty associated with the predictions of groundwater fluxes from the alluvium (JBT 2023, Att. A, Figure 6-4, p. 90). The effect of the predicted losses on the surface water flow regimes, including potential changes to ecologically relevant components such as the duration and timing frequency of low and zero flows, is not discussed. Further analysis and interpretation of these predictions is required to understand the range of potential impacts to surface water-groundwater interactions and ecological processes which rely on these interactions. 15. It is unclear how the groundwater modelling incorporates climate change. Recharge in the model is based on different historic rainfall datasets, generally using data from 1990-2020 (JBT 2023, Att. A, p. 9). Given the project extends to 2055 and groundwater drawdown recovery is predicted to take over 270 years (AARC 2023a, Ch. 7, p. 7-29), climate-change scenarios, including RCP8.5, should be discussed, including an analysis of impacts on drawdown, groundwater recovery times, the pit lake and potential mounding. 16. Potential for seepage through the Tertiary sediments once groundwater levels have recovered was identified by the proponent (JBT 2023, p. 98) but its likely effects on groundwater and surface water features are not discussed. The water quality of this seepage is unclear, although it will contact backfilled materials. From Figure 6-2 (JBT 2023, p. 104), it appears that one pathway for this seepage is towards Phillips Creek. Surface Water	14. HydroAlgorithmics-NM 0707: refer to response above. 15. HydroAlgorithmics-NM 0707: refer to response above. 16. AARC 1011: Groundwater modelling predicts that a groundwater mound will develop beneath the rehabilitated pit landform due to seepage of water located at the depression at the base of the landform. The mound is predicted to be approximately 4 m above the pre-mining groundwater level, resulting in radial seepage from the final landform area to the Tertiary sediments. The seepage is likely to occur from the surface water within the final landform depression that has had minimal residence time/contact with deeper spoil. Post-mining mounding pathways are shown in Figure 5-4 of the Groundwater Impact Assessment (Appendix E). Potential impacts of the rehabilitated landform on groundwater quality are described in Section 6.2.7 of the Groundwater Impact Assessment.
17. The analysis undertaken to characterise flood risks in the project area has made good use of available information and the adopted procedures are consistent with guidance detailed in the national flood guidelines (Ball et al., 2019). 18. The proponent has not adequately identified and assessed two key potential risks to surface water systems: a. assessment is limited of the potential impacts on the surface water flows from possible surface cracking associated with underground mining. Further assessment is needed of how ecologically relevant components of the flow regime (e.g., the duration of low-flow and no-flow periods) may be altered and could affect aquatic biota and riparian vegetation. b. the project's risks to local-scale sediment regimes (e.g., sediment sources, amounts and transfer pathways) are unclear. For example, the proposed mitigation measure for subsidence-induced ponding is for the natural sediment load of the creeks to infill the subsided areas. However, there is no discussion on the timeframes required for this to occur or how the potential reduction of creek sediment loads due to subsidence at the Saraji East Project may affect sediment dynamics in the project area. 19. A qualitative risk assessment is required of the likely collective impacts of the two risks identified above (Paragraph 18) with potential impacts of altered runoff caused by ponding and the effects of drawdown. As these impacts are likely to occur concurrently, their combined effects on receptors such as aquatic biota and ecosystems, riparian vegetation and terrestrial GDEs should be considered, guided by an appropriate IPD (Paragraph 26). Ecology	17. WRM 2809: Noted. 18a. AARC 0910: The Subsidence Impact Assessment (Appendix A of the EIS) predicted that the creek beds of both One Mile Creek and Boomerang Creek would experience subsidence impacts where the creeks traverse the northern longwall panels. Potential losses to surface cracking are described in Section 3.3.4.4 of the Geomorphological Assessment (Appendix W). The potential impacts to aquatic ecology values are discussed in Section 9.2.2 of the Aquatic Ecology Assessment (Appendix H). 18b WRM 2809: Cumulative impacts on creek hydraulics and hydrology have been addressed addressed in the Geomorphological Assessment (Appendix W) through Section 4.5.1 and 5.2; and through the Surface Water Assessment (Appendix F); which have been updated to provide estimated aggradation timeframes. Section 4.5.1 of the Geomorphological Assessment (Appendix W) has been updated to provide this additional information. 19. AARC 0910: A qualitative risk assessment of impacts to GDEs is provided in Table 8 of the GDE Assessment (Appendix I). This assessment considers the predictions of the Surface Water Assessment and Groundwater Assessment, which included an assessment of cracking scenarios and subsidence. Given the surface and ground water assessments have confirmed that the cracking and subsidence assumptions are still valid (with justification provided in response to other review comments) is it considered that the risk assessment in the GDE Assessment is adequate and reliable.
20. To improve assessment of the risks of project-related drawdown, the proponent should extend the ground-truthing of terrestrial GDEs along One Mile Creek. Only one site was surveyed along this creek despite the presence of riparian vegetation along its length, and no groundwater bores were sampled within the area to determine accurate groundwater levels (3D Environmental 2022, p. 23). Brigalow TEC is also present along One Mile Creek. As Brigalow may be groundwater dependent (Doody et al., 2019) the proponent should investigate whether trees within this TEC are accessing groundwater and may be at risk from the predicted drawdown. 21. Depressurisation within the Tertiary aquifer could result in increased downward drainage of Quaternary alluvium (3D Environmental 2022, pp. 80-81). The IESC agrees with the recommendation (3D Environmental 2022, pp. 87-88) to further investigate and quantify drawdown-related impacts to Wetland 8, a wetland of High Ecological Significance mapped as a Type 2 GDE. 22. Additional field data and ground truthing are required to quantify the probability and extent of increased infiltration along Boomerang and Phillips creeks arising from depressurisation within the Tertiary aquifer that leads to increased downward drainage of Quaternary aquifers. Reduced capacity of Quaternary and Tertiary aquifers could pose a threat for terrestrial GDEs that periodically rely on this resource. 23. Changes induced by ponding may pose risks (e.g., waterlogging) to vegetation, some of which are species listed by the EPBC Act. These risks should be assessed in more detail, especially for arboreal fauna because much of the surrounding landscape has been cleared and is already fragmented. 24. Drawdown beneath Boomerang Creek could significantly change water levels and dewater the aquifer at the locations where stygofauna were observed (Stygoecologia 2022, p. 36). This magnitude of drawdown is also likely to reduce stygofauna habitat and sever subsurface movement pathways critical for recolonisation of newly saturated sediments. Given the results of the pilot study (Paragraph 5), a comprehensive survey is needed of more bores, sampled more frequently, to better document stygofauna composition and abundance and improve predictions and monitoring of impacts associated with prolonged drawdown. This additional sampling should focus on alluvial sediments and include suitable reference sites where no project-related drawdown is predicted. 25. Site surveys identified evidence of Koalas and Greater Gliders along Boomerang and Hughes creeks (AARC 2023b, pp.183, 197). Impairment or loss of this vegetation due to groundwater drawdown may have repercussions for these two species which are both listed as Endangered under EPBC Act, as well as other native wildlife. More details on the likely impacts of groundwater drawdown to vegetation that supports arboreal and other fauna, and provides ecological connectivity within the area, are needed. 26. The EIS's identification and assessment of the project's risks to water resources needs to include one or more IPDs, derived from an evidence-based ecohydrological conceptualisation, to illustrate all the potential direct and indirect impact pathways and their interactions during and after mining. Much of the current EIS treats each potential impact (e.g., drawdown, subsidence) individually but does not clearly describe their likely collective impacts and how these may vary. As project-related drawdown, subsidence, erosion and other processes will occur concurrently, the combined effects of these in different parts of the project area should be explored. For example, ponding in the catchment caused by subsidence may interact with spatially variable drawdown to affect groundwater dynamics in the alluvium along Boomerang and One Mile creeks and alter groundwater availability for terrestrial and aquatic GDEs. Drawing up the IPDs will better integrate the different sections of the EIS, illustrate interacting impact pathways, and help identify and justify where further data, monitoring and mitigation measures are required (see response to Question 4).	20 - A GDEMMP has been prepared by 3D Environmental and provided with the EIS. The GDEMMP reduced uncertainties by requiring a two year intensive monitoring of potential GDEs prior to project commencement. This will include further assessment of One Mile Creek vegetation (monitoring areas 11 and 12), in addition to the baseline monitoring provided in the GDE Assessment (Appendix I). 21 - Wetland 8 (HES), is proposed to be subject to further monitoring under the GDEMMP, where it is designated as GDE Monitoring area 2. 22. Stygoecologica 0627: All terrestrial GDEs identified in the Project area (both type 1 and type 2 GDEs) are considered to be solely reliant on surface flows for groundwater recharge (as perched systems) and no alteration to surface flows are predicted, such that impacts would be expected to arise. However, the GDEMMP provides for additional monitoring of identified and potential GDEs, including monitoring of groundwater levels and isotopic assessment, which will provide certainty of the dependence of vegetation on groundwater resources. 23. The assessment of potential impacts of subsidence on vegetation includes the changes induced by ponding. A generalised explanation of the approch is presented in Section 10.5.2.1 (Chapter 10). In short, the Surface Water Assessment provided modelling of areas predicted to be subject to periodic inundation as a result of surface subsidence. An extremely conservative assessment approach was taken, and all ecological values of terrestrial vegetation and arboreal fauna (for which habitat quality is highly dependent on tree canopy qualities) in the subsidence ponding area are considered to be significantly impacted as a result of the ponding. It is worth considering that the ponding affected areas are expected to continue to provide habitat (in reality the majority of trees are not expected to die), despite conclusion of significant impact. And consequently, habitat connectivity may remain effectivly unchanged despite the conclusions of the assessment. Assessment of the fragmentation of arboreal habitat fauna is presentned in the impact assessments for koala (Section 10.6.7) and greater glider (Section 10.6.8). An additional section reference has been included in Chapter 10 to direct readers to the relevant information in Section 10.5.2.1. 24. Stygoecologica - PS 0627 answer to advice 24:"Yes, we agree with the advice. The impact of the proposed drawdown levels on the Tertiary aquifer was covered in some detail in pages 35-37 of the report. If it is deemed necessary and following discussion with the regulators and the mine, additional bores targeting appropriate aquifers in this area will be conducted." 25. The GDE Impact Assessment report (Appendix I) assessed the Project area. Some areas of GDE vegetation were identified, however the as all areas of GDE were identified to be reliant on surface flow. The significant impact assessments were cognisant that no vegetation was predicted to be impacted by groundwater changes. It is noted that other EIS review comments questioned aspects of the GDE assessment, and in response a GDEMMP has been proposed which includes continued baseline monitoring to validate the GDE assessment findings. However, for the purposes of the assessment of impacts provided in Chapter 10, the impacts of drawdown on vegetation have been assessed adequately, and the proposed comprehensive GDE monuitoring and trigger levels (Section 11.4 of the GDEMMP) are suitable to identify and manage the unlikely and unpredicted impacts to GDEs. 26. Project impact conceptualisations are provided for environmental values, refer conceptual groundwater model (Chapter 7, Section 7.3.2), GDEs (Chapter 10, Section 10.4.7), etc. The impacts to values are quantified where possible, and conservative calculations of these effects have been used where potential imteractions of impacts are assessed, for example drawdown predictions, subsidence. It is noted that groundater modelling models the dominant mechanism of recharge as infiltration, and the ponding areas are predicted to be infrequently inundated, persist for short periods, and the ponding extents depicted (Appendix W, Section 3.3) are of the infrquently occuring maximum extent. In this regard, the ponding areas are not expected to substantially alter the groundwater availability for ecological values. Thorough monitoring measures are proposed for groundwater dependent values (refer Appendix A4, GDEMMP) which are expected to be sufficient to identify any impacts and provide corrective actions.

Cumulative impacts Question 3: Advice is sought on whether the EIS has sufficiently addressed the cumulative impacts on water resources and related assets (including within the project area, other mining activities and coal seam gas projects) and whether the conclusions on cumulative impacts are appropriately supported.	**Summary of changes made / response to item**
Groundwater 27. Cumulative impacts have been examined in the groundwater modelling. Due to the large number of mining activities operating in the area, considerable cumulative drawdown of groundwater is predicted. The IESC notes the following limitations of the provided assessment. a. It is unclear whether the potential impacts from the Bowen Gas Project are included in the cumulative groundwater drawdown predictions provided. Although it is stated that the Bowen Gas Project was included in a sensitivity analysis (AARC 2023a, Ch. 7, p. 7-19), the Bowen Gas Project is not clearly discussed, and it appears the results may not have been provided within the documentation of this project. b. As discussed in Paragraphs 7 and 9, further work is required to parameterise the groundwater model to increase confidence in impact predictions. Similarly, more work is needed to justify the predictions of inflows to underground mining areas (Paragraph 12) and to clarify post-mining impact predictions (Paragraph 13). Once the suggested additional works are completed, updated cumulative impacts predictions should be provided.	27. The Bowen Gas Project has been considered within the cumulative impact assessment for groundwater (EIS Appendix E - Groundwater Impact Assessment) per Section 6.2.8.1. As discussed during the 22 August 2023 meeting with DCCEEW (and per a follow up email to DCCEEW on the same day) it is unclear what parameteres are referred to here. No further advice has been provided in respect of this query. It is noted however, that the methodology for assessing cumulative impacts has followed the IESC UA Guideline.
Surface Water 28. The proponent discussed cumulative impacts to water quality and reduced surface water runoff due to capture by different mine water management systems. However, there is no information about the potential cumulative impacts to Boomerang Creek and downstream to the Isaac River from the combined subsidence predicted for the project and the Saraji East Project.	28. WRM 2809:- Cumulative impacts on creek hydraulics and hydrology have been addressed in the Geomorphological Assessment (Appendix W) through Section 4.5.1 and 5.2; and through the Surface Water Assessment (Appendix F); which have been updated to provide estimated aggradation timeframes. Section 4.5.1 of the Geomorphological Assessment (Appendix W) has been updated to provide this additional information.
Ecology 29. The proponent has not discussed potential cumulative impacts arising from habitat fragmentation and modification to remnant floodplain vegetation and riparian corridors along ephemeral streams in the project area which are potentially important habitats for a range of EPBC Act-listed species such as the Koala and Greater Glider. This may be especially important in areas where drawdown and subsidence affect the condition and persistence of this vegetation. 30. The proponent acknowledges that impacts of the Saraji East Project are likely to contribute to the cumulative ecological impacts of the project on Type 1 GDEs associated with Boomerang Creek (3D Environmental 2022, pp. 85-86). However, the potential impacts from these combined with subsidence, drawdown, erosion and alterations to flow regimes within the project area have not been adequately considered and are likely to contribute to cumulative impacts on regional GDEs and their associated biota. 31. While potential climate-change impacts have been well described in Katestone (2022), their implications have not been considered in the cumulative effects on terrestrial GDEs and aquatic ecosystems. Climate-change scenarios should be incorporated into the assessment of potential cumulative impacts on GDEs and other water resources.	29. These aspects of potential project impacts have been discussed in the EIS. The comment highlights areas where drawdown and subsidence will affect vegetation, and in response it is noted that all potential groundwater impacts to vegetation are assessed in the GDE Assessment (Appendix I of the EIS). It is noted that other EIS review comments have motivated the preparation of a GDEMMP now, as part of this updated EIS. The GDEMMP outlines additional baseline monitoring and monitoring for project impacts. With the combination of the GDE Assessment report and the GDEMMP, it is considered that the assessment conclusions are reliable, and the rigorous monitoring will provide certainty of avoidance of, or cause of, any potential unforseen impacts. Subsidence impacts to ecology values have been given careful consideration. Subsidence predictions and consequences are described in the subsidence assessment (Appendix A of the EIS) and the predictions were included in hydrological modelling to identify possible modifications to hydrological processes which could impact vegetation (Appendix W & Appendix F of the EIS). This modelling informed the assessment of potential impacts to ecology values. Explantion of the assessment of subsidence and hydrological impacts is outlined in Sections 10.5.2.1 and 10.5.2.2 of EIS Chapter 10 (Terrestrial Ecology Assessment). In short, an extremely conservative assessment was made with the assumption that all subsidence areas predicted to experience any infrequent (periodic) ponding, will significantly impact ecology values which are dependent on standing trees (Poplar Box TEC, Brigalow TEC, koala and greater glider habitat). Consequently all areas of these values in predicted ponding areas were considered to be significantly impacted. The assessment of habitat fragmentation for koala and greater glider included the assumption that these ponding areas will be impacted to an extent considered equivalent to clearing, in the assessment of fragmentation of habitat (including habitat acting as dispersal corridors) (Sections 10.6.7 and 10.6.8). It is noted that ponding impacts to habitat adjacent to Boomerang Ck and One Mile Ck will not fragment the broader habitat of the Project area, while the northern and southern sections of One Mile Creek will retain connectivity with other identified habitat areas (via areas of remaining habtiat that will not be disturbed by the Project). Additionally, although ponding was considered equivalent to direct impact for the TECs, koala and greater glider habitat - a complete loss of habitat value will not be experienced. Therefore, despite the conservative assessment approach, based on experience from analagous mining operations in the region, there may be no fragmentation of habitat along One Mile Creek (refer to Section for 10.5.2.1 for complete explanation). 30. The GDE assessment identifies that Saraji East project impacts have the potential to contribute cumulatively to our Project impacts. Not that they are likely to. It is noted that this statement is based on the premise that there may be some water releases from our Project. However, the Project water management system does not propose the release of any mine affected water. 31. As part of this updated EIS, a GDE monitoring and Management Plan (GDEMMP) has now been developed (as Appendix A4). The GDEMMP provides for further baseline monitoring, as well as providing for ongoing monitoring to assess groundwater dependence and potential impacts. The GDEMMP monitoring will include leaf area index, leaf water potential, stable isotopes and NDVI capture.

Mitigation and management Question 4: Advice is sought on whether the proposed monitoring, mitigation and management measures are specific enough to adequately identify, mitigate and manage impacts from the proposed project on water resources and related assets.	**Summary of changes made / response to item**
32. Limited information on mitigation and management measures has been provided. There are existing monitoring and management plans for the currently approved areas of the Lake Vermont Complex which will be updated and extended to cover the project (e.g., AARC 2023a, Ch. 7, p. 7-43). However, details of the existing plans and proposed updates are not fully discussed. The proponent should address the following when updating monitoring, mitigation and management plans:	32. Noted.
a. site-specific water quality objectives (WQOs) and groundwater level triggers are required and can be derived from groundwater quality monitoring that has occurred monthly since October 2020. It is unclear whether the WQOs and groundwater level triggers will be site-specific or only aquifer- specific. Site-specific values are preferable as these will consider the variability across the project site and provide an improved level of protection over objectives derived across an entire water source.	32a. Baseline groundwater data is now sufficient to calculate groundwater quality trigger levels for the Project. Trigger levels for groundwater quality and levels are now provided as part of the updated EIS (Appendix A7 - Groundwater Triggers). Trigger levels have been included in EIS Chapter 23 (Proposed EA Conditions). Trigger levels are sites specific to the Meadowbrook Project and are derived from baseline monitoring; existing Lake Vermont Mine triggers; as well as ANZG 2018 guideline values for ecosystem protection.
b. although the groundwater monitoring network will be expanded, it is unclear how many of the additional bores will be compliance bores. Justification should be provided for why monitoring bores will not be compliance bores.	32b. Trigger levels for groundwater quality and levels are now provided as part of the updated EIS (Appendix A7 - Groundwater Triggers). Appendix A7 identifies bores subject to water quality trigger levels, and the bores with groundwater level thresholds. The monitoring bores in the proposed EA conditions (EIS Chapter 23) are now also identified as either reference bores or compliance bores (refer Table D1).
c. the IESC agrees with the recommendation (RGS 2021, p. 28) that further monitoring should be conducted to ensure that any contaminant accumulation in the proposed three sediment dams does not lead to contamination of One Mile Creek and a tributary of Phillips Creek due to dam overflow (WRM 2023b, pp. 15-17).	32c. Noted.
d. monitoring of wetlands for potential impacts from groundwater drawdown is planned (JBT 2023, p. 106) but more details (e.g., sampling locations, parameters, predicted responses) are needed. If the additional work suggested in Paragraph 5 identifies that any of the wetlands are groundwater-dependent, these areas should be included in the planned GDE Monitoring and Management Plan (GDEMMP).	32d. A GDEMMP has now been developed as part of the updated EIS for the Project. The GDEMMP proposes continued baseline and ongoing monitoring at 14 sites, including two wetland sites. The GDEMMP monitoring will include leaf area index, leaf water potential, stable isotopes and NDVI capture. Groundwater monitoring of the bore network is also proposed (refer Appendix E) and will be a condition of any future approval. The groundwater monitoring commitments are also provided as EA conditions in EIS Chapter 23. The GDEMMP includes provisions for identification of groundwater dependence and triggers for investigative actions.
e. any areas of Brigalow TEC or other vegetation identified as groundwater-dependent (see Paragraph 20) should also be included in the GDEMMP.	32e. The GDE assessment found that impacts to groundwater dependent vegetation is unlikely, including Brigalow TEC vegetation. Notwithstanding this, a GDEMMP has now been developed as part of the updated EIS for the Project. The GDEMMP will provide further baseline and ongoing monitoring of brigalow vegetation to assess groundwater dependence and potential impacts. This monitoring will include two sites within Brigalow vegetation of One Mile Creek.
f. a monitoring and management plan is needed to address subsidence. There is considerable uncertainty about the magnitude of subsidence-induced land movements likely to occur above the areas of dual-seam extraction as there are no basin-specific field data for dual-seam extraction available. Impact predictions will require verification with data from elevation surveys to enable appropriate management measures to be implemented.	32f. A Subsidence Management Plan (SMP) (Appendix A2) has now been developed as part of the updated EIS, which provides for pre- and post-subsidence lidar surveys (refer Section 4.3) which will provide the data necessary to determine appropriate landform management measures to be implemented (in accordance with the SMP).
g. erosion management should specifically consider the increased risks posed by dispersive soils found in some parts of the project area.	32g. Dispersive soils within the subsidence footprint are described in Section 2.4 of the SMP (Appendix A2). Management measures for subsidence impacts to dispersive soils are describe in Section 4.2.2 and Section 5 of the SMP (Appendix A2).
h. all management plans should include trigger action response plans (TARPs) that incorporate sufficiently frequent monitoring and timely actions to detect impending impacts and allow appropriate mitigation and management actions to be implemented.	32h. Project management plans provide the process for monitoring, mitigating and managing potential impacts. The GDEMMP (Appendix A4 of the EIS) identifies triggers for investigative actions in Section 10 and corrective actions in Section 11. The Ornamental Snake Management Plan (Appendix A5 of the EIS) identifies the targets, perfomance indicators and corrective actions in Section 5.3. The Subsidence Management Plan (Appendix A2 of the EIS) identifies triggers for remedial actions and incorporates an annual monitoring and reporting regime to identify and assess any areas of observable or measurable impact that might be associated with subsidence or associated surface disturbance and identify any requirements for remedial rehabiliation works (refer Section 4.3). The SMP will be reviewed every 4 years to identify any additional recommended actions or amendments to the SMP (refer Section 4.4). A report on subsidence monitoring will also be prepared annually.
33. Adaptive management options such as modified design of longwall panels in areas where subsidence predictions are exceeded were not considered in the provided documentation. The IESC suggest that the proponent discuss these adaptive management options.	33. The adaptive management of the SMP (Appendix A2) considers available options to address any unpredicted impacts that may be identified through monitoring. Where unpredicted impacts occur, these will be identified first through annual monitoring and reporting, with actions to manage impacts to be developed within the annual SMP report (refer Section 4.3) and reviewed the following year.
34. The design and likely effectiveness of the mitigation measures proposed for subsidence troughs within the catchments of Boomerang and One Mile creeks are not adequately discussed (see Paragraph 18b). Further information is needed about the mitigation measures and potential cumulative impacts with subsidence associated with the Saraji East Project.	34. There is no overlap of predicted subsidence from the Meadowbrook and Saraji Projects. Predicted subsidence as a result of the Saraji project is limited to the Saraji MLA, while the Meadowbrook project subsidence is predicted to be limited within the Meadowbrook MLA (refer Chapter 5, Section 5.4.1 and Appendix A, Subsidence Assessment). Subsidence troughs are expected to develop in line with predictions of the Subsidence Assessment and all subsidence troughs will be within the catchments of Boomerang or One Mile Creek (refer Chapter 5, Section 5.4.1 and Appendix A, Subsidence Assessment), A portion of the subsidence troughs are predicted to be subject to ponding, on the basis of hydraulic modelling (refer Chapter 8, Section 8.3.7 and Appendix W, Geomorphological Assessment, Section 3.3). To clarify, it should be observed that the subsidence troughs are not proposed to be mitigated and subsidence is expected to develop according to the aforementioned predictions, however the area of ponding is proposed to be mitigated (where topology allows) for the purpose of minising impacts to terrestrial ecological values. Ponding mitigation was designed within the process of the hydraulic modelling (refer Appendix W, Geomorphological Assessment, Section 3.3.2), and the effectiveness of the ponding mitigation is predicted with the same certainty of the hydraulic modelling. Details of the hydraulic modelling used for predictions of project area flooding and geomorphic assessment is provided in Chapter 8, Section 8.2.5, and detailed explanation from the geomorphic perspective in Appendix W, Section 1.4. As per EIS Chapter 21 (MNES) an assessment of cumulative impacts to surface water resources is also provided through EIS Chapter 8 (Surface Water Assessment) Section 7.7. Please also refer to response 18b above, for further detail.

Mitigation and management Question 4: Advice is sought on whether the proposed monitoring, mitigation and management measures are specific enough to adequately identify, mitigate and manage impacts from the proposed project on water resources and related assets.	**Summary of changes made / response to item**
35. The proponent proposes channels as mitigation measures on some areas of the floodplain to manage ponding from subsidence, and the surface water course is expected to naturally recover through erosion and sedimentation over time. Further information is needed on how this will result in a stable landform, particularly given the presence of dispersive soils on site. Details should include any post-mining monitoring and how this will be used to inform mitigation or management measures. The proponent needs to also consider the risk of channel avulsion across the floodplain between Boomerang and One Mile creeks, especially in subsided areas and their mitigation channels, and how this risk might be managed.	35. An assessment of the risk of channel avulsion is provided in EIS Appendix W (Geomorphological Assessment) Section 4.5. It is noted that the abandonment of the Boomerang Creek channel for a new Boomerang Creek channel is identified as possible under pre and post mine conditions. These findings are outlined in EIS Chapter 8 (Surface Water) Section 8.3.7. Additional information on estimated timing of infilling of subsidence depressions has now been provided in Appendix W (Geomorphological Assessment Report). Specifically, natural infilling of subsidence depressions is predicted to take 15 to 45 years, with dependency on the occurence of large floods. Assessment of ecological impacts resultant of water ponding within subsidence depressions is provided within Chapter 21 (MNES). Further, a draft Subsidence Management Plan (SMP) has now been developed as part of the updated EIS. The SMP (Appendix A2 to the EIS) includes monitoring and reporting of elements for landform, erosion and creek channels, including the monitoring of geomorphic conditions such as: opool/riffle/run sequences; obank erosion; osediment transport and channel alteration (sediment deposition, bar formation, scouring); oin-stream ponding; otension cracking; obank stability; and ochannel profile and dimensions, channel slope, bank height. The SMP monitoring and reporting program will provide information to inform adaptive management.
36. The proposed offset area (AARC 2023a, Ch. 10, Figure 10.25, p. 10-136) within the mining lease application coincides with areas indicated to have potential groundwater drawdown. Baseline condition surveys should be conducted, and further information should be provided on how this will be managed and mitigated if maximum drawdown is reached, and the vegetation community is adversely affected. The proponent may need to reconsider the offset's location to one where the offset will not be affected by nearby activities.	36. Proposed offset areas are outside the underground mining footprint and subsidence area. The vegetation in the offset areas was subject to assessment for potential impact from groundwater drawdown (refer Appendix I GDE Assessment Report). There is potential GDE vegetation in the offset area (vegetation adjacent to Boomerang Creek), and the GDE Assessment Report concludes that this vegetation is at low risk of impact from predicted groundwater drawdown becuase it is dependent on water recharge from surface flows (which will not be impacted by Project drawdown), and are adapted to natural fluctuations in response to changing seasonal conditions. A GDEMMP has been developed primarily for the purpose of continuing the collection of baseline data for areas outside the inial GDE assessment area, as well as identifying potential corrective actions in the event of unpredicted impacts to GDEs. The proposed offset area is considered highly suitable to achieve the purposes of provision of offsets for Project impacts including the following reasons (refer Appendix U, OAMP): - The delivery of the offset will be adjacent to the impact site, noting that due to the conservative impact assessment approach, the subsidence footprint is considered unlikely to be substantially affected by subsidence impacts, therefore resulting in a large contiguous area subject to ongoing management (the offset area and the adjacent subsidence area which will be subject to the SMP). - The offset area is located within a corridor of regional significance (Phillips Creek) and have vegetation connectivity to the state significant corridor of the Isaac River. - The relevant field-verified biodiversity values are present on the offset property. - The property management objectives align with the offset management objectives - There is potential for the future location of other offsets on the same property for other projects, thus creating larger areas of biodiversity offsets and achieving a better environmental outcome. No other location is able to provide all the advantages of the proposed offset site. The offset area condition, including habitat quality improvement are a management objective of the Offset Area Management Plan (Appendix U). Given it is unlikley any drawdown impacts will occur to the offset area and the monitoring, management, and corrective actions proposed in the GDEMMP and OAMP, it is considered that the offset area location is the most suitable to provide offsets for the the Project biodiversity impacts.
37. As many impacts discussed individually in the EIS will occur concurrently and are likely to interact, mitigation and management measures should explicitly address these collective impacts, illustrated using one or more IPDs (Paragraph 26). Identification of specific impact pathways and their interactions would help target the most effective mitigation measures in a given area (e.g., placement of mitigation channels to minimise undesired impacts of gully erosion and sedimentation).	37. The ponding mitigation drain locations are selected within the constraints of topography, noting that ponding cannot be effectively further reduced. The mitigation drain performance is predicted through surface water hydraulic modelling (refer Appendix W, Geomorphological Assessment, Section 3.3). Alternative locations with different soil characteristics are unable to provide effective performance (noting both soil types present for each of the the mitigated ponding areas share similar subsoil characteristics). The post mining impacts to environmental values are conceptualised through diagrams, such as the post mining conceptual groundwater model, conceptual models of GDEs, and diagrams of surface water modelling. Impact predictions are provided for environmental values in each specialist assessment section and quantification of impacts described that pathway diagrams are unable to convey.

Subsidence Question 5: Advice is sought on whether the EIS has provided justification and evidence to support the claim that subsidence will have no significant impacts to surface and groundwater resources and assets.	**Summary of changes made / response to item**
38. The IESC does not consider that adequate explanation and evidence have been provided to justify the proponent's conclusion that subsidence will have no significant impacts to surface and groundwater resources and assets. The limited data and information available to predict potential subsidence movements in dual-seam extraction areas (Gordon 2022, pp. 23-24) increases uncertainty in the predictions of subsidence-induced land movements and resulting impacts to surface waters and their biota and ecosystems. The following additional information is also required.	38. Comment noted and addressed through the below responses.
a. Impact predictions and uncertainty in these predictions are based on the assumptions that connected fracturing will only occur up to 120 m above areas of single-seam extraction and 180 m above dual-seam extraction areas (AARC 2023a, Ch. 7, p. 7-32). However, recent advances in quantifying subsidence above longwalls indicates that an enhanced fracture zone connecting surface to seam is plausible in cases that were previously not considered to be hydraulically connected to surface (Seedsman 2020, Byrnes 2022, p. 1). A more thorough assessment is required that compares various approaches to predicted height of fracturing and hydraulic connectivity with the surface. This revised assessment should include vertical profiles and maps of areas where surface-to-seam hydraulic connectivity is plausible under different approaches in the context of surface features and processes that could be impacted.	38a. It is noted that the proponent proactively engaged a Peer Review of our Subsidence Impact Assessment as part of our EIS submission (which was actually undertaken by Ross Seedsman). This is Attachment 5 of our EIS. Ross had requested we run a sensitivity scenario in our groundwater model which assumed a 2-order of magnitude increase in vertical hydraulic conductivity in the layers to surface. This impacted mainly the units above the Permian Coal Measures (Rewan Group and Tertiary sediments). This scenario resulted in relatively significant increases in mine inflow rates relative to the base case (~1,280 ML/year). While this scenario was considered, it is assessed as unrealistic that such an outcome (seam to surface fracturing) occurs in the Bowen Basin. As an example, at Kestrel underground mine (a relatively wet mine) the maximum inflow rate was in the order of 100 L/s and averaged ~50-60 L/s. This water was sourced from an overlying Tertiary basalt aquifer where fracturing from shallow underground mining reached the base of basalt. At Meadowbrook the formations are generally low-yielding (from drilling observations) and the modelled fracture to surface inflow (peaking at ~170 L/s) in this type of formation is unseen in other Bowen Basin underground mines with similar geology. Further, Seedsman's findings on NSW mines are based on very different geology and arguably, a different cracking mechanism occurs. It is also noted that Seedsman does not take into account the density of surficial cracking, and the reduction in density of fractures with height above the mined coal seam. As a groundwater model uses an equivalent porous medium to represent the fracture zone, this equates to a high density of surficial cracks, and that is conceptually wrong. So, a fracture to surface model scenario is extremely pessimistic. There has also been a previous Bowen Basin study which was identified on tensile cracking (by Hansen & Bailey) across 2 longwall operations (Moranbah Mine and Grasstree Mine) which supports that tensile cracking occurs only around longwall panel perimeters, with no cracking within the centre of longwall panels. Through this study, the relative area of cracking was observed to be very low (0.004%) representing very limited opportunity for surface water loss. Further, this matter was also discussed with DCCEEW (at some length) during our meeting of 21 August 2023.
b. The groundwater modelling assumes and uses equivalent porous media (EPM) conditions. This approach is unable to explicitly simulate the impacts of surface cracking and fracturing of deeper strata. The IESC does not believe that an EPM-based groundwater model can adequately address the main impact pathways or worst-case scenarios. The limitations of this modelling approach should be discussed in detail and further inform the risk assessment, monitoring and adaptive management of the impacts of subsidence.	38b. It is our belief that this comment is based on a false premise of extensive conduits linking a mine and environmental receptors; and an unrealistic expectation that such conduits can be modelled (on the assumption they exist). It is also asserted that it is very unlikely that connective cracking would arise during the development of the Project (refer above response). Given the very low probability of such a scenario, modelling effort to further examine such pathways is argued not to provide value. This matter was also discussed with DCCEEW (at some length) during our meeting of 21 August 2023. Our groundwater peer reviewer (Dr Noel Merrick) presented a number of slides to address this issue. Slides of this discussion have also since been provided to DCCEEW.
c. Although the proponent considered a scenario in the groundwater model which includes connected fracturing from seam to surface, no clear evaluation of the potential impacts of the predicted additional drawdown on surface water systems, including wetlands, and their dependent ecology was provided. Considerable additional drawdown (up to approximately 25 m) is predicted within the Tertiary Sediments beneath Boomerang Creek (JBT 2023, Figure 5-8, p. 86) which may have significant impacts on surface water flow regimes and the frequency and duration of intermittent wetting of the alluvium associated with this creek. Given this uncertainty and that drawdown may actually exceed 25 m, there is a risk of long-term desaturation of the alluvium below parts of Boomerang Creek.	38c. Please refer to response on connectivity of cracking above. Given there is unlikely to be conditions for connective fracturing to the surface, impact assessments for groundwater dependent values has been undertaken on the predicted likely drawdown conditions. In response to uncertainty of the impacts to groundwater dependent values, a GDE Monitoring and Management Plan (GDEMMP) has also now been provided as part of the updated EIS (as Appendix A4). The GDEMMP provides for monitoring to detect unpredicted impacts and develop corrective actions. Annual reporting also enables subsidence impacts to be recorded progressively, with corrective actions also reviewed and reported on.

Question 6: Advice is sought on whether the impacts to the GDEs due to subsidence are negligible and acceptable.	**Summary of changes made / response to item**
39. The IESC does not consider that the information provided by the proponent is sufficient to determine that potential impacts of subsidence on GDEs are negligible (Paragraphs 40-41). The IESC does not comment on acceptability of potential impacts as that is a regulatory decision; the IESC's advice is solely scientific.	39. A GDEMMP has now been prepared for the Project (as Appendix A4 to the EIS) to address uncertainties associated with the environmental impacts on GDEs through consistently applied monitoring actions, analysis and reporting. The GDEMMP proposes continued baseline monitoring for two years prior to Project commencement and continued monitoring during operation with corrective actions for if significant impacts on GDEs are detected.
40. Localised changes in topography and stream morphology, including tension cracking and ponding in the channels and along riparian corridors of Boomerang and One Mile Creek, are predicted as a result of underground mining. A series of six small troughs in the channel bed of Boomerang Creek and eight main troughs in the channel bed of One Mile Creek are expected to develop (Gordon 2022, Figures 35 and 36, p. 34). These troughs are also predicted across the alluvial floodplains where tension cracking could potentially reach the Quaternary and Tertiary sediments, causing leakage through to deeper aquifers. As these alluvial aquifers may support GDEs, more detailed discussion is required about potential impacts to GDEs from changes in groundwater recharge to the Quaternary and Tertiary sediments arising from subsidence and ponding.	40. JBT - JB 0815: We don't have any monitoring bores along this creek, however the creek is quite degraded due to the changed flow regime that has resulted from Saraji Mine discharges (directly upstream). There is also no appreciable alluvium associated with this drainage line.
41. Additional data are also required to provide a reliable baseline for assessing potential impacts of subsidence and ponding on GDEs in the project area. These data should be collected from monitoring sites located in areas where impacts are predicted as well as appropriately dispersed reference sites where impacts of the project are unlikely (enabling the proponent to distinguish project-related impacts from background changes over time).	41. A GDEMMP has now been prepared as provided as part of the updated EIS (as Appendix A4). Proposed monitoring under the GDEMMP will be conducted at fourteen sites including potential impact and reference sites and include monitoring by LAI, LWP, stable isotope assessment, NDVI, and groundwater monitoring. Monitoring will include two years of baseline monitoring prior to project commencement, and ongoing monitoring aimed at idenfiying impacts.

Question 7: Advice is sought on whether the EIS has provided sufficient justification and evidence to support conclusions that impacts from subsidence on creek hydraulics and hydrology are likely to be temporary or minor and manageable.	**Summary of changes made / response to item**
42. The subsidence assessment did not fully assess potential impacts to creek hydraulics, surface water flow regimes or surface water-groundwater connectivity and, as such, there is insufficient justification provided to support the proponent's conclusions. Additional analysis is needed as outlined below.	42. Noted and addressed through the below responses.
a. Areas of ponding arising from subsidence impacts were presented (AARC 2023a, Ch. 6, Figure 6.8, p. 6-18) as were cross-sections of likely changes to the bed of Boomerang and One Mile creeks (Gordon 2022, Figures 35-36, p. 34). However, there is no discussion of the potential impacts of these changes on ecologically relevant components of the flow regimes of these creeks or how potential impacts of grade reversals such as limiting the spatial extent of low flows could impact aquatic and riparian ecosystems and biota.	42a. AARC 1010: The Subsidence Assessment (Appendix A) predicted that the creek beds of both One Mile Creek and Boomerang Creek would experience subsidence impacts where the creeks traverse the northern longwall panels. The Aquatic Ecology Assessment (Appendix H) provides an assessment of the potential impacts of subsidence induced ponding within the creek beds and describes how changes to flow regimes could impact aquatic and riparian ecosystems and biota (refer Section 9.2.2). Further, additional content has now been provided in Chapter 8 (Surface Water) Section 8.3.8.1, to provide greater detail on potential impacts to streamflow.
b. Impact predictions of groundwater drawdown including changes in flux from the alluvial aquifers appear to be based on the 'base case' which does not include connected fracturing reaching the surface in any location. Given connected fracturing is possible (Paragraph 38), further analysis and assessment is needed of how connected fracturing would alter the potential impacts currently predicted, including on creek hydraulics and hydrology.	42b. AARC 1010: Sections 5.5, 5.6, and 6.2.2 of EIS Appendix E (Groundwater Impact Assessment) have been updated to detail the assessment of potential drawdown impacts resulting from the fracture to surface scenario. Given that conditions for connective fracturing to the surface are unlikely (refer to response to comment 38a above), impact assessments relating to connected fracturing on creek hydraulics and hydrology have been undertaken on the predicted likely drawdown conditions.
c. Potential impacts from surface cracking (not connected fracturing) such as the diversion of surface flows (including temporarily) and changes to water quality (e.g., increased turbidity) should be assessed, along with feasible mitigation options.	42c. AARC 1010: The Subsidence Impact Assessment (Appendix A of the EIS) predicted that the creek beds of both One Mile Creek and Boomerang Creek would experience subsidence impacts where the creeks traverse the northern longwall panels. Potential losses to surface cracking are described in Section 3.3.4.4 of the Geomorphological Assessment (Appendix W). The Subidence Assessment informed the assessment of changes in sediment transport characteristics in One Mile Creek and Boomerang Creek (Appendix W of the EIS - Geomorpological Assessment). The potential impacts to aquatic ecology values are discussed in Section 9.2.2 of the Aquatic Ecology Assessment (Appendix H). A draft Subsidence Management Plan (SMP) has also now been developed as part of the updated EIS (Appendix A2). Any surface cracks in the creeks will be identified during subsidence monitoring processes and will be managed in accordance with the SMP.
d. Sediment accumulation in subsided areas is seen as a positive outcome as it will reduce ponding but these sediments will be eroded from other parts of the catchment. More information is needed on the hydraulic and ecological impacts of these changes to the sediment regime in the affected creeks and their receiving waters. Given the identification and nature of dispersive soils in the project area (WRM 2023a, Section 2.3.3, p. 34), it can be expected that management of sediment will require ongoing monitoring.	42d. AARC 0910: A draft Subsidence Management Plan (SMP) has now been developed as part of the updated EIS (as Appendix A2). Subsidence induced erosion and changes to creek morphology will be monitored in accordance with the SMP. Remedial works will be undertaken in impacted areas as required under the SMP.
e. A reduction of sedimentation in the system due to the Saraji East Project's predicted subsidence troughs causing less sediment to be available for mitigation of the proposed project subsidence is likely. Discussion of potential project-specific and cumulative impacts on creek hydraulics and hydrology has not been provided.	42e. AARC 0910: Cumulative upstream impacts on creek hydraulics and hydrology have been addressed in the Geomorphological Assessment for the EIS (Appendix W) through Section 4.5.1 and 5.2; and through the Surface Water Assessment (Appendix F); which have been updated to provide estimated aggradation timeframes.
f. Drainage channels are proposed to manage ponding (AARC 2023a, Ch. 6, p. 6-17). The potential impacts on creek hydraulics and hydrology arising from these drainage channels are not discussed, especially where they may interact with other impact pathways such as drawdown.	42f. AARC 1010: The proposed mitigation drainage channels are described in Sections 9.4.4.3 and 9.5.2 of Chapter 9. The potential impacts of the proposed drainage channels on creek hydraulics and hydrology arising from these are discussed in Sections 9.2.1 and 9.2.3 of the Aquatic Ecology Assessment (Appendix H) .

Question 8: Advice is sought on whether the EIS has sufficiently addressed impacts on aquatic and terrestrial fauna due to subsidence, and whether the proposed mitigation measures are sufficient to manage the potential impacts.	**Summary of changes made / response to item**
43. The IESC considers that the EIS has not sufficiently addressed impacts on aquatic and terrestrial fauna due to subsidence. Insufficient evidence is presented to demonstrate that the proposed mitigation measures will effectively manage the potential impacts.	43. AARC 0910: The potential impacts to terrestrial ecology values are detailed in Chapter 21, Section 21.12.3.6 and the consequences of these subsidence impacts are applied in the assessment of each MNES, through Section 21.12.4.1. It is noted that the predictions of subsidence and their impacts are derived from: the outcome of the subsidence assessment (Appendix A), hydrological modelling of post subsidence conditions (Appendix E and Appendix F), and evidence from analagous underground mining operations in the Bowen Basin (refer to Chapter 21, Section 21.12.4.1). The reviewed EIS proposed a subsidence management plan to be prepared post approval, however to remove uncertainty of the functions of the plan, the SMP has been prepared and provided (Appendix A2). The SMP is a proposed project EA condition and the plan provides for the monitoring and reporting of the progress of subsidence, including for monitoring of condition of ecological values, reporting of subsidence monitoring results through Annual Monitoring Assessment Reports and identification of restorative action requirements. Subsidence mitigation measures are proposed in addition to environmental offset commitments. Project impacts to terrestrial ecology MNES dependent on the standing trees are identified as significant impacts (Brigalow TEC, Poplar Box TEC, Koala and Greater Glider) and are offset accordingly. Therefore any impacts to habitat availability and stability from subsidence-induced impacts are adequately offset. The reponse to IESC comments 44 and 45 elaborate on the specifics of assessment of subsidence impacts and how the proposed subsidence management plan will effectively manage the potential impacts.
44. Subsidence-induced ponding may result in the following impacts that require further discussion and justification that proposed mitigation measures are sufficient to manage the potential impacts:	Responses provided for each bullet point below.
a. die-back of vegetation that is intolerant of inundation. This may affect Brigalow TEC and Poplar Box TEC, especially recruitment and seedling growth.	44a. AARC 0910: Note all ponding areas have been identified as significant impact for: Brigalow TEC, Poplar Box TEC, and terrestrial ecology values idenfied to have habitat quality dependent on tree vegetation (Koala and Greater Glider). The justification for this position is provided in Chapter 21, Section 21.12.3.6 and is subsequently addressed in the significant impact assessments of Brigalow TEC, Poplar Box TEC, Koala and Greater Glider (Section 21.12.4.1). It is noted that this appraoch is considered a very conservative, the hydrological modelling predicts infrequent short term inundation events. On the basis of conditions as analogous underground mining operations (where die-back of vegetation has not occured in subsidence areas, refer section 21.12.3.6) it is further considered that the assessment approach taken is conservative and allows for an offset proposal which will be not only adequate, but in surplus to Project impacts.
b. loss or impairment of habitat for EPBC Act-listed species that utilise the riparian corridor.	44b. AARC 0910: It is noted that all areas predicted through hydrological modelling to undergo periodic ponding have been considered to be significantly impacted for species dependent on tree vegetation (refer to Section 21.12.3.6). The assessment of potential impacts to connectivity use of riparian corridors is provided in Section 21.12.3.9 and in Section 21.12.3.18 1for assessment in the context of cumulative impacts. These connectivity impacts have subsequently been considered in the significant impact assessment of EPBC listed species (refer Section 21.12.4). It should be noted that the the conservative assessment approach taken resulted in all predicted ponding areas to be significantly impacted (for tree vegetation dependent MNES). However, tree vegetation will not be cleared from these areas, and the vegetation (whether unaffected, or somewhat affected by inundation) will continue to provide connectivity values. It is emphasised that the ponding depicted in all figures is the maximum extent which will occur periodically after extreme weather events, and the pre-mining landscape already expeciences some comparable ponding under equivalent conditions (but to a smaller extent). For the vast majority of the time where these areas are not ponded, connectivity functions will continue.
c. disconnection and alteration of surface water habitats through changed flow regimes arising from ponding from subsidence and changes in sedimentation.	44c. AARC 0910: The changes to flow of watercourses is addressed as a assessment item in Aquatic Ecology chapter Section 21.13.3. Flow regimes (including as under changes from subsidence impacts) are not predicted to change substantially from the current approved conditions (refer discussion which includes the hydrographs in Section 21.13.3.2). These assessments are based on hydrological modelling results (which include predictions of ponding, flow regimes, sedimentation and alteration of watercourses) provided in Appendix F and Appendix W. Additionally, it is noted that there is no potential habitat for EPBC listed aquatic species in the Project area (althought impact assessment for the Fitzroy River Turtle and Southern Snapping Turtle) (refer Section 21.13.4).
d. increased erosion and scouring which will likely increase turbidity and alter instream habitat availability and stability.	44d. AARC 0910: The potential impacts to aquatic ecology values from erosion and sedimentation are assessed in Section 21.13.3.2. It is noted that erosion instream predictions are based on the hydrological modelling provided by hydrological modelling (refer Appendix F, Section 7.4 and chapter 21, Section 21.9.6.8). In short, the abundant sediment supply in Boomerang creek is predicted to fill troughs and halt further erosion/sedimentation in a short period of time and for One Mile Creek a lack of stream sediment is expected to allow troughs to persist longer before they can infill by intercepting sediment from stream flows. The previously submitted EIS proposed a Subsidence Management Plan which would provide for monitoring and management of watercourses to mitigate erosion and sedimentation impacts. With this resubmission, the Subsidence Management Plan draft has been provided (Appendix A2), which provides monitoring program elements for subsidence impacts, including creek channels (Section 4.2). The Subsidence Management Plan also outlines reporting requirements in relation to creek channnel monitoring and the deliverables related to monitoring and observations of potential creek channel impacts.
45. The proponent proposes to monitor ponding-induced changes to vegetation (AARC 2023a, Ch. 6, p. 6-17). However, no details of the monitoring program are provided to enable assessment of its likely effectiveness. Impacted vegetation is to be replaced with native species adapted to ponding; thus, the management measures will facilitate ecosystem changes rather than attempting to mitigate these first. The proponent should explain how this species replacement might alter runoff from the catchment and habitat availability for native fauna.	45. AARC 0910: The previously submitted EIS proposed a Subsidence Management Plan which would provide for monitoring and management of watercourses to mitigate erosion and sedimentation impacts. With this resubmission, the Subsidence Management Plan draft has been provided (Appendix A2) and it includes the proposed revegetation measures for areas subject to intermittent ponding. It is noted that these measures are only proposed in the event that deleterious impacts to vegetation resulting from ponding are identified (refer Section 4.2.2. of the Subsidence Management Plan). Impacts to vegetation from other potential causes (subsidence cracking) would be mititgated through the revegetation consistent with the rehabilitation plan (refer Appendix B, PRCP). It should be noted that terrestrial ecology MNES dependent on the standing trees are identified as significant impacts (Brigalow TEC, Poplar Box TEC, Koala and Greater Glider) and are offset accordingly. Therefore any impacts to habitat availability and stability from ponding (however unlikely) are adequately offset.

Question 8: Advice is sought on whether the EIS has sufficiently addressed impacts on aquatic and terrestrial fauna due to subsidence, and whether the proposed mitigation measures are sufficient to manage the potential impacts.	**Summary of changes made / response to item**
46. The aquatic ecology assessment states that impacts to fish passage due to subsidence will be monitored and remediated (AARC 2022, p. 107). However, this is not extended to other aquatic flora or fauna. Further investigation is suggested to evaluate subsidence-related impacts on instream biota, in conjunction with annual assessments of stream habitat condition and aquatic flora and fauna. There should also be evidence presented that the proposed mitigation measures are feasible and will maintain instream ecological connectivity and aquatic habitat availability. 47. Gilgai were identified in some areas overlying longwall panels (AARC 2023a, Ch. 7, Figure 7.5, p. 7- 16). Subsidence of these gilgai is likely to affect their structure and ability to hold water, impacting their suitability as habitat for EPBC Act-listed species such as the Ornamental Snake. This should be discussed, along with feasible mitigation measures. 48. Stabilisation of the channel system proposed to mitigate subsidence-induced ponding is not discussed or demonstrated for post-mining scenarios. Given the presence of dispersive soils and the low gradient of the area, it is unclear that the proposed channels have a high likelihood of success. Construction of the mitigative channels may increase erosion (e.g., creating gullies that need management) and decrease water quality. The proponent needs to further justify this proposed mitigation measure and provide examples of its effectiveness in similar environmental settings.	46. AARC 0910: The aquatic ecology assessment considered the potential impacts of surface subsidence to fish passage values and concluded that significant impacts are unlikely. The assessment identified that subsidence monitoring will monitor the progress of subsidence and potential impacts to watercourses. The previous submitted EIS proposed this monitoring would be described in the Subdidence Management Plan to be prepared after Project approval, however the draft plan has been prepared with this revised submission. The proposed monitoring for streams in the SMP is provided in Section 4.2 of the SMP (Appendix A2). It is noted that the watercourses with potential to be affected by subsidence were identified to not provide habitat to any MNES, the assessment for the Fitzroy River Turtle and the Southern Snapping Turtle (Chapter 11, Section 11.6.1). Given no EPBC or NC Act listed aquatic species are present in potentially subsidence affected watercourses, no monitoring of these species is proposed. 47. AARC 0910: Descriptions of the Ornamental Snake habtiat at the Project area (including with respect to gilgai as an important habitat quality characteristic) is presented in the habitat assessment in Chapter 10, Section 10.6.3. The potential impacts to Ornamental Snake, with reference to changes to gilgai and waterponding are considered in the significant impact assessment. Hydrological modelling conducted for the geomorphological assessment (Appendix W, refer section 3.3.1) predicted changes to surface water conditions in these areas including the ability of surface features to hold water. The areas predicted to continue to provide waterholding structures, with increased extent and duration of water holding for some portions of subsidence troughs (this modelling is of conditions inclusive of surface ponding mitigations). These predictions informed the significant impact assessment for the Ornamental Snake, which draws on the geomorphological assessment findings (Section 10.6.3). Notwithstanding the conclusion that subsidence areas will not be subject to significant impact to Ornamental Snake habitat, the Subsidence Management Plan and Ornamental Snake Management Plan (Appendices A5 and A5 respectively) propose monitoring of ornamental snake habitat in subsidence areas and adaptive management if impacts occur. 48. AARC 0910: The proposed ponding mitigation drains are a component of the rehabilitation of the subsidence area (refer PRCP, Section 3.3.3.3). The ponding mitigation works will be located within the rehabilitation areas RA6 and RA7 as per the PRCP, and the proposed PMLU and rehabilitation plan are provided in the PRCP (and Chapter 6, Section 6.3.4). The milestone critera for these rehabilitation area are cognisant of soil properties (PRCP, Section 3.1.6) and include critera for erosion (with reference to gully erosion) and drainage following appropriate paths (refer PRCP Rehabilitation Milestone Criteria, Section 3.5.3). The PRCP Section 3.5.5 provides the rehabilitation practices including risk assessment for failing erosion or drainage milestone criteria. The soil characteristics of the subsidence areas are

Date of advice	23 May 2023	
Source documentation provided to the IESC for the formulation of this advice	AARC 2023. *Lake Vermont Meadowbrook Extension Project Environmental Impact Statement.* AARC Environmental Solutions. Prepared for Bowen Basin Coal Pty Ltd. 2023.	
References cited within the IESC's advice	AARC 2023a. *Lake Vermont Meadowbrook Extension Project Environmental Impact Statement* . AARC Environmental Solutions. Prepared for Bowen Basin Coal Pty Ltd. 2023. AARC 2023b. *Lake Vermont Meadowbrook Project Terrestrial Ecology Assessment* . AARC Environmental Solutions. Prepared for Bowen Basin Coal Pty Ltd. January 2023. (Appendix G of the Lake Vermont Meadowbrook EIS) AARC 2022. *Lake Vermont Meadowbrook Project Aquatic Ecology Assessment* . AARC Environmental Solutions. Prepared for Bowen Basin Pty Ltd. November 2022. (Appendix H of the Lake Vermont Meadowbrook EIS) Ball J, Weinmann E, Kuczera G 2019. *Book 3 of Australian Rainfall and Runoff Peak Flow Estimation* . Australian Rainfall and Runoff A Guide to Flood Estimation. Available: ARR: A guide to flood estimation (au.s3-website-ap-southeast- 2.amazonaws.com). Byrnes 2022. *Lake Vermont Meadowbrook EIS Peer Review Subsidence* . Byrnes Geotechnical Pty Ltd. Prepared for Bowen Basin Coal Pty Ltd. March 2022. (Attachment 5 of the Lake Vermont Meadowbrook EIS) Doody TM, Hancock PJ, Pritchard JL 2019. *Information Guidelines Explanatory Note: Assessing groundwater-dependent ecosystems.* Report prepared for the Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development through the Department of the Environment and Energy, Commonwealth of Australia 2019. Available [online]: Information Guidelines Explanatory Note - Assessing groundwater-dependent ecosystems | iesc accessed 18 May 2023. DSITIA 2015. *Guideline for the environmental assessment of subterranean aquatic fauna* . Department of Science, Information Technology, Innovation and the Arts, Queensland Government. Available [online]:	
	https://www.publications.qld.gov.au/dataset/subterranean-aquatic- fauna/resource/ba880910-5117-433a-b90d-2c131874a8e6 accessed 18 May 2023. Gordon 2022. *Subsidence Prediction Report for the Meadowbrook Underground Project* . Gordon Geotechniques Pty Ltd. Prepared for Bowen Basin Coal Pty Ltd. November 2022. (Appendix A of the Lake Vermont Meadowbrook EIS) HydroAlgorithmics 2022. *Lake Vermont Meadowbrook Project – Groundwater Peer Review.* HydroAlogrithmics Pty Ltd. Prepared for Bowen Basin Pty Ltd. July 2022. (Attachment 6 of the Lake Vermont Meadowbrook EIS) IESC, 2018. *Information Guidelines for proponents preparing coal seam gas and large coal mining development proposals* . Available [online]: Information guidelines for proponents preparing coal seam gas and large coal mining development proposals | iesc accessed 18 May 2023. JBT 2023. *Jellinbah Resources Meadowbrook Project Groundwater Impact Assessment.* JBT Consulting Pty Ltd. Prepared for Bowen Basin Coal Pty Ltd. February 2023. (Appendix E of the Lake Vermont Meadowbrook EIS) Katestone 2022. *Lake Vermont Meadowbrook Project Climate Change Assessment* . Katestone Environmental Pty Ltd. Prepared for AARC Environmental Solutions Pty Ltd. November 2022. (Appendix V of the Lake Vermont Meadowbrook EIS) Murray TA and Power WL 2021. *Information Guidelines Explanatory Note: Characterisation and modelling of geological fault zones* . Report prepared for the Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development through the Department of Agriculture, Water and the Environment, Commonwealth of Australia 2021. Available [online]: Information Guidelines Explanatory Note - Characterisation and modelling of geological fault zones | iesc accessed 18 May 2023. RGS 2021. *Technical Report Geochemical Assessment of Mining Waste Materials Lake Vermont Meadowbrook Project* . RGS Mine Waste and Water Management. Prepared for Bowen Basin Coal Pty Ltd. June 2021. (Appendix D of the Lake Vermont Meadowbrook EIS) Seedsman R 2020. Prediction of the height of caving and fracturing above an isolated longwall extraction panel. *Mining Technology* , 129(2): 95-103, DOI: 10.1080/25726668.2020.1773124. Available [online]: Prediction of the height of caving and fracturing above an isolated longwall extraction panel: Mining Technology: Vol 129, No 2 (tandfonline.com) accessed 18 May 2023 Stygoecologia 2022. *Lake Vermont Meadowbrook Project Stygofauna Assessment* . Stygoecologia. Prepared for Bowen Basin Coal Pty Ltd. June 2022. (Appendix J of the Lake Vermont Meadowbrook EIS) WRM 2023a. *Lake Vermont Meadowbrook EIS Project Geomorphological Assessment Report* . WRM Water & Environment Pty Ltd. Prepared for Bowen Basin Coal Pty Ltd. February 2023. (Appendix W of the Lake Vermont Meadowbrook EIS) WRM 2023b. *Lake Vermont Meadowbrook Project EIS Site Water Balance and Water Management System Report* . WRM Water & Environment Pty Ltd. Prepared for Bowen Basin Coal Pty Ltd. February 2023. (Appendix Y of the Lake Vermont Meadowbrook EIS) 3D Environmental 2022. *Lake Vermont Meadowbrook Project Groundwater Dependent Ecosystem Assessment* . 3D Environmental Landscape & Vegetation Science. Prepared for Bowen Basin Coal Pty Ltd. June 2022. (Appendix I of the Lake Vermont Meadowbrook EIS)	

Issue #	Topic, EIS section, and Terms of Reference (ToR) section	Issue/Comment	Recommendation	Summary of changes made / response to item
Chapter 18 - Social				
1	Chapter 18: Social. Section 18.2.2.4 Health and community wellbeing. (page 18-5)	Second paragraph could imply Dysart Hospital is well equipped to general health and medical services at a large scale when in fact it would struggle due to size and staffing	Recommend the insertion of the word “small scale” before the word’s general health and medical services. (2nd paragraph, end of 1st line)	EIS Chapter 18 (Social) has been updated as requested.
2	Chapter 18: Social. Table 18.1. 1st Social impact on page 18-18	Industries with multiple shift rosters put a greater burden on local hospitals as the workforce cannot get to see a GP or pharmacist during normal trading hours. As such workers then put high strain on the hospitals ED Dept and pharmacy (which carries limited stock) afterhours	Add the words “and community pharmacists” after the sentence in Management measures, “Collaborate with Queensland Health and other stakeholders to identify and support a solution to the need for additional medical practitioners.” In the stakeholders affected add Dysart Medical Centre and Dysart Pharmacy	EIS Chapter 18 (Social) has been updated as requested.
3	Chapter 18: Social. Table 18.1. 1st Social impact on page 18-39	Industries with multiple shift rosters put a greater burden on local hospitals as the workforce cannot get to see a GP or pharmacist during normal trading hours. As such workers then put high strain on the hospitals ED Dept and pharmacy (which carries limited stock) afterhours	In the 2nd Management measure, add the words “and community pharmacists” after the sentence, “Collaborate with Queensland Health and other stakeholders to identify and support a solution to the need for additional medical practitioners.” In the 2nd relevant stakeholder group add “Dysart Pharmacy” to the list compiling of local community, Dysart Hospital, Qld Health & Dysart Medical Centre.	EIS Chapter 18 (Social) has been updated as requested.

Issue #	Topic, EIS section, and Terms of Reference (ToR) section	Issue/Comment	Recommendation	Summary of changes made / response to item
Chapter 16 - Hazards and Safety				
1	Chapter 16 – 16.9.2 Hazards and Safety	Emergency Response Plan	Please provide the Queensland Ambulance Service (QAS) with a copy of the updated Emergency Response Plan during each phase of the project. Notification to QAS of emergency response / management plan testing or exercises for possible attendance and participation. The stakeholder contact is Officer-in-Charge, Dysart Ambulance Station Email: QASDysart.OIC@ambulance.qld.gov.au	Noted. The Project operations team have been advised of this request.

Issue #	Topic, EIS section, and Terms of Reference (ToR) section	Issue/Comment	Recommendation	Summary of changes made / response to item
General				
1	-	Powerline	Ergon has an existing 19kv powerline at the south-west corner of Lot 102 SP310393. The proponent will need to identify and resolve any conflicts with this powerline. An asset relocation request can be made through Ergons Portal as required: Electrical Partners Portal - Ergon Energy. All works must comply with Working Near Overhead and Underground Electric Lines (WP1323) (energex.com.au).	Noted. There is currently no plan to impact this existing infrastructure.

Issue #	Topic, EIS section, and Terms of Reference (ToR) section	Issue/Comment	Recommendation	Summary of changes made / response to item
Chapter 20 - Transport Appendix R: Traffic Imapact Assessment				
1	Chapter 20 Transport	s9.14 (Transport) in the project EIS Terms of Reference stipulates the transport impact assessment should be undertaken in accordance with the Dept. Environment and Science Transport – EIS Guideline. The guideline states on page 2: Describe in detail the project's proposed demand for transport for: people, materials coming in, products going out, and wastes. The guideline further states on page 2: Describe the composition and expected size and weights of all significant shipments of materials (such as machinery, equipment and supplies) that would be brought into the project. Describe how the materials would be transported; show the likely routes from their distribution source; and estimate the frequency of shipments. Include any pipeline(s) that would input gas, liquid (including water) or slurry. Make particular mention of any flammable or hazardous goods, or over-mass or oversized loads and vehicles. While the EIS does provide a limited description of the nature of vehicle types to be employed for transport tasks and a qualitative description of various elements of the project transport tasks, it does not adequately address the requirements of the Terms of Reference. The EIS currently does not provide estimates on the volumes of construction material, vehicle types and estimated trip numbers for the construction phase. Similarly, the EIS does not provide any meaningful estimates of the operational phase transport tasks for project inputs.	Update chapter 20 of the EIS, to comply with the Terms of Reference by including include a summary (preferably tabulated) of the transport tasks for all phases of the project. The summary should identify: • the volumes of project material and equipment transported for all phases of the project. Significant volumes of differing construction materials should be distinctly identified, (for example, gravel, premix concrete, building materials, building supplies, fuels). • likely OSOM tasks, such as heavy machinery, prefabricated modules etc. • the anticipated vehicle types to be for each transport task, the number of trips, and frequency and duration of the tasks.	EIS Chapter 20 (Transport) should be read in conjunction with Appendix R (Transport Impact Assessment). Project materials and equipment transported for the Project are discussed through Appendix R, Section 2.5. This section acknowledges that materials, plant and equipment will be delivered to the Project via road based transport. This section also provides a breakdown of the transportation requirements for each project phase (construction and operations) and provides an overview of the relevant haul routes for different supplies. As opposed to presenting volumes of materials, the proponent has developed estimates of truck types and truck numbers (per day) for the different project phases. This is presented as daily movements for each Project phase, in Table 4.8 of Appendix R. This approach is argued to best facilitate an understanding of potential road impacts (as opposed to the provision of volumes of concrete, mesh etc). Should the raw data that sits behind these estimations be required, this can be provided. There are currently no known OSOM vehicle loads, however it is acknowledged that some of these may be required over the life of the Project. These will be managed through obtaining the relevant permits required by legislation (per Appendix R, Section 2.5). Anticipated vehicle types for each transport task, number of trips and frequency of tasks is provided through Section 4.8 of Appendix R.
2	Section 20.5 Sea Transport (s20.5.1 – 20.5.3) Table 22.1 – Summary of Project Commitments:Transport	Background information: Industries and companies reliant on shipping, such as the proponent, have a social responsibility to help ensure current and future threats to the Great Barrier Reef are addressed in an effective, efficient and appropriate manner, by embedding practices within their operations that minimises the impact of shipping on the reef. The Australian and Queensland Governments' joint commitments under the 'Reef 2050 Long-Term Sustainability Plan' (July 2018 revision) action item MTR EBA1 require: Maritime industry to adopt ship vetting practices for bulk carriers to ensure they meet high safety standards. Vetting practices should take into account the quality of the ship, competence of the crew, ship emissions and general protection of the marine environment considerations. Maritime Safety Queensland, a branch of TMR, has published a ship vetting guideline to assist industry in achieving this action. The guideline is available online https://www.msq.qld.gov.au/About-us/News-and-stories/Shipvetting-guideline-for-bulk-carriers-moving-through-the-GreatBarrier-Reef . There is an expectation that ship vetting will occur to all bulk carriers transiting the Great Barrier Reef, whether for existing operations or future operations. Issue: Section 20.5.1 highlights that the project will continue to export coal via the Abbott Point Coal Terminal, RG Tanna Coal Terminal and Dalrymple Bay Coal Terminal. Section 20.5.2 states that there will not be an increase in production and will be in line with existing agreements. Section 20.5.3 states that there are no specific sea transport mitigation measures proposed, and this is reflected in no reference to sea transport under the Transportation part of Table 22.1. Whilst it is acknowledged that there are no proposed changes in the export of coal from expanded operation areas, the expansion of the project will result in (up to) an additional 20 years of bulk carriers transporting coal through the Great Barrier Reef. Requirements for factors such as emission standards and crew management continue to change, and as such it is important that the proponent provides a commitment to ensuring high quality shipping is engaged for the purposes of exporting their coal for the life of the mine.	Update section 20.5 (particularly 20.5.3) and Table 22.1 (Transport Section) to provide a commitment from the proponent to ensuring ships engaged in the export of coal from the mine are subject to appropriate vetting to ensure a high quality of shipping through the Great Barrier Reef in accordance with the guidelines provided by Maritime Safety Queensland (https://www.msq.qld.gov.au/About-us/News-and-stories/Ship-vetting-guideline-for-bulk-carriers-moving-through-the-Great-Barrier-Reef) or other appropriate guidance.	All shipping operators will be expected to comply with the statutory obligations imposed upon them.
3	Appendix R: Traffic Imapact Assessment	TMR notes that the TIA suggests the project's construction and operational traffic falls below the 5% trigger threshold in TMR's Guide to Traffic Impact Assessment. However, TMR notes that the proponent is yet to appoint construction contractors, and as such the traffic estimates are likely to change as the project proceeds through the approval process.	To minimise the risk that the project will have impacts on the Statecontrolled road network that have not been anticipated by the draft TIA, TMR recommends that: 1. The EIS be updated to include the following additional proponent commitment in the Transport Section of Table 22.1 Summary of Proponents Commitments Bowen Basin Coal will provide a RPEQ certified and updated Traffic Impact Assessment and Road-use Management Plan prepared in accordance with TMRs' Guide to Traffic Impact Assessment (GTIA) to TMR to demonstrate that the project's will manage and mitigate its safety and efficiency impacts on the State-controlled road network, no less than six months prior to construction or the use commencing, and 2. DES place the condition 1 and 2 included in Attachment A on the environmental authority to make these commitments binding.	A transport impact assessment has been prepared as part of this EIS, in accordance with the Department of Transport and Main Roads 'Guide to Traffic Impact Assessment' (DTMR 2017) and the 'EIS Guideline–Transport' (DES 2020). This is final TIA and not a draft document. As such, it is not proposed to undertake a further, equivalent assessment prior to construction commencing. While some inherent variation may exist in final road impacts, the Project is currently well below the 5% pavement impact threshold (refer Appendix R, Transport Impact Assessment, Table E1.6).

Issue #	Topic, EIS section, and Terms of Reference (ToR) section	Issue/Comment	Recommendation	Summary of changes made / response to item
4	Appendix R: Traffic Imapact Assessment	TMR notes the TIA indicates that "There are no rail level crossings in the vicinity of the Project or its frontage, and no new railway crossings are proposed for the Project. Therefore, no assessment is necessary in accordance with the 'Australian Level Crossing Assessment'" However, the construction traffic may have impacts on level crossings further afield than just the 'vicinity' of the project. The proponent needs to confirm construction traffic and demonstrate that the construction traffic does not reduce the safety or efficiency of existing level crossings.	TMR recommends 1. The EIS be updated to include the following additional proponent commitment in the Transport Section of Table 22.1 Summary of Proponents Commitments Bowen Basin Coal will provide a RPEQ certification to TMR to demonstrate that the development's construction traffic will not worsen the safety risk at any level crossing affected by the project's construction traffic. 2. DES place the condition 3 included in Attachment A on the environmental authority to make this commitment binding.	The proponent believes that limited value (if any) would be derived from having a 'Road Use Management Plan' for the Project (such as to manage impacts to State Controlled Roads). The transport impact assessment for the Project estimated a <5% traffic impact to state controlled roads; during the peak impact period of construction. In regards to level crossings, it is estimated that the nearest crossing is located over 70 km away (on the Peak Downs Mine Road, approximately 20km south of the Peak Downs Highway). The Peak Downs Mine Road is part of the Isaac Regional Council locally controlled road network. Notwithstanding this, it is considered unlikely that a <5% increase in traffic on the Peak Downs Mine Road would worsen the safety risk at this crossing. Online searches indicate that there is no record of any accidents associated with this level crossing. The crossing currently utilises warning signs, road markings and warning lights to manage safety.

Attachment A

No.	Condition	Condition Timing
Road/Traffic Impact Assessment		
1	(a) The development must manage and mitigate its traffic impacts to maintain the safety and efficiency of the state-controlled road network.	(a) At all times
	(b) The applicant must provide a RPEQ certified Traffic Impact Assessment prepared in accordance with TMRs' Guide to Traffic Impact Assessment (GTIA) to the Program Delivery and Operations Unit, Mackay/Whitsunday District within the Department of Transport and Main Roads (Mackay.Whitsunday.IDAS@tmr.qld.gov.au) that is generally in accordance with GTIA, and among other matters identified in the GTIA, includes the following. • a final Pavement Impact Assessment (PIA) that considers cumulative impacts of all project-related traffic on the state-controlled road network, and identities any mitigation measures required to adequately manage all project-related traffic impacts, • a road safety risk assessment, which includes among other things, - a road safety audit of the current conditions of the state-controlled road network and identifies mitigation measures as necessary to improve road safety, - confirms the total transport task for the project including workforce, inputs and outputs, during the construction and operational phases (including a description of the expected volumes, weights and origins/destinations of materials, products, hazardous goods or wastes for each phase of the project), - confirms existing pavement conditions and defects which may lead to safety issues, - existing intersection performance from a safety perspective, and - existing state-controlled road infrastructure and impacts of project related traffic.	(b) At least 6 months prior to the commencement of construction and least 6 months prior to the commencement of use (c) Prior to the commencement of use and to be maintained at all tin
	(c) The applicant must implement the mitigation measures identified in the certified Traffic Impact Assessment as agreed with TMR and obtain all relevant approvals as required under the *Transport Infrastructure Act 1994*.	
Road-use Management Plan		
2.	(a) The operational management of the development must avoid and manage the impact of project traffic on the safety, efficiency and integrity of state-controlled roads.	(a) At all times
	(b) The applicant must provide a finalised Road-use Management Plan (RMP) to the Program Delivery and Operations Unit, Mackay/Whitsunday District within the Department of Transport and Main Roads (Mackay.Whitsunday.IDAS@tmr.qld.gov.au) that considers (and includes where appropriate) the following: i. haulage routes for construction and operational phases of the project; ii. public safety at worksites; iii. obstruction to road users; iv. workforce management strategies to reduce traffic generation including but not necessarily limited to: • provision of a shuttle service for workers to reduce private vehicle usage and overall traffic generation; • provision of a ride sharing scheme to increase worker vehicle occupancy and decrease overall traffic generation; • scheduling shift times and heavy vehicle movements such that project traffic does not coincide with network peak periods. v. management of driver behaviour to ensure that project traffic is driving in a safe manner; vi. driver fatigue management strategies; vii. use of vehicle location tracking systems that allow monitoring of driver behaviour; and viii. providing a system of identifying project related vehicles and provision of a free call number for community members and other road users to contact if they have concerns, queries or complaints about driver behaviour; ix. defining responsibilities and procedures for implementation, monitoring and Road-use Management Plan strategy amendment; x. management strategies to limit the impacts of over size and over mass loads through the National Heavy Vehicle Regulator (NHVR); xi. management strategies for the transportation of hazardous materials such as fuels and chemicals; and xii. ongoing monitoring for road safety impacts from project activities (for example, dust, debris/construction materials on roads and site lighting and so on).	(b) At least 6 months prior to the commencement of construction and at least 6 months prior to the commencement of use (c) Prior to the commencement of construction, prior to the commencement of use and to be maintained at all times
	(c) The construction and operation of the development must be in accordance with the Road-use Management Plan.	
Railway level crossing safety		
	(a) The development must ensure that there is no disruption to the safety and operational integrity of railway crossings (including railway level crossings and rail bridge structures).	(a) and (d) At all times. (b) – (c) Prior to the commencement of construction/works.
	(b) Provide RPEQ certification to the Program Delivery and Operations Unit, Mackay/Whitsunday District within the Department of Transport and Main Roads (Mackay.Whitsunday.IDAS@tmr.qld.gov.au), confirming that the construction of the development will comply with part (a) of this condition. In particular, the RPEQ certification must include the following supporting documentation: i. A traffic management plan identifying: • the expected timeframe for delivery; • the expected access/haulage routes; • the existing traffic flows, background traffic growth and expected development generated traffic that will use railway crossings (expressed as vehicles per day); • the maximum size and type of vehicle (including length, width, height and weight) expected to use railway crossings; • any safety procedures and controls and management measures for the safe use of railway crossings; • any railway crossing upgrades/works required to ensure safe use of specified access/haulage routes for development generated traffic; and • site induction requirements for all personnel and drivers on safe access/haulage routes and the appropriate use of railway level crossings; and ii. a swept path analysis of the maximum design vehicle demonstrating adequate queuing distance between the impacted railway level crossing/s and relevant intersections/access points. The minimum clearance must be 5m from the edge running rail (of the closest railway track) as per Section 5.4 – Short Stacking and Figure 3.2 – Yellow Box Marking of AS1742.7:2016 *Manual of Uniform Traffic Control Devices, Part 7: Railway* plus the length of the maximum design vehicle. (c) Provide written evidence that comparative Australian Level Crossing Assessment Model assessments demonstrate that the development will not worsen the safety risk at the impacted railway level crossing/s or detailed design drawings showing mitigation measures in accordance with AS1742.7:2016 *Manual of Uniform Traffic Control Devices, Part 7: Railway* to mitigate the identified risks. (c) The development must be carried out generally in accordance with parts (a) - (c) of this condition.	

Issue #	Topic, EIS section, and Terms of Reference (ToR) section	Issue/Comment	Recommendation	Summary of changes made / response to item
Chapter 6 – Rehabilitation **Appendix B - Progressive Rehabilitation and Closure Plan**				
1	Section 6.5.3.1	(Page 6-17) Channels to drain ephemeral wetlands created by subsidence, are planned to be constructed as drainage works. There is no information regarding how potential erosion and therefore water quality issues resultant from the construction of these will be managed.	To control erosion and associated water quality issues, and to create habitat that will directly benefit fisheries values, drains should be fenced to exclude stock, and constructed to mimic natural waterways, following a meandering path, have low flow channels and intermittent pools, and be revegetated (i.e., both instream and along banks).	The proposed subsidence drainage mitigation drains are within the predicted subsidence area. Fencing of active subsidence areas is proposed (in section 5.5.1.2. and section 6.5.3.1). The revised EIS includes a Subsidence Management Plan (Appendix A2) which details the proposed stock exclusion fencing of areas under the Subsidence Management Plan. The proposed ponding mitigation drains are designed to maximise the mititgation of ponding areas. Although meandering drain paths, additional flow channels and pools would provide beneficial impacts to aquatic ecology values, in order to minimise detrimental impacts to other environmental values, the minimisation of pooled areas is required. Context for why the design seeks to minimise pooled areas (including the ponding mitigation drains) is in Section 10.5.1.2 and 10.5.2.1. It is noted that the ponding areas (including mitigation drains) represent the creation of aquatic ecology habitat, so the impact of these ponds can be viewed as a net aquatic ecology habitat creation. The drains will be rehabiltiated as they are no longer needed (Section 6.5.2.2).
2	Section 6.5.3.1	(Page 6-17) Erosion management in creek channels.	From a fisheries perspective, stock exclusion and revegetation of stream banks is a far preferred option than rock armouring of creek channels, the latter resulting in channel hardening and ultimately less diverse and more physically hostile habitat that is generally unsuitable for fish (and fish passage). To benefit fish, erosion management should therefore include stock exclusion (i.e., through fencing) and revegetation of both bed and banks of creek channels. Rock armouring of channels should be avoided, and softer options, such as the placement of large woody debris (that is sourced from the wild), jute matting, coir logs etc (i.e., where drain armouring is necessary), should be considered as an alternative. Consider a softer option for erosion management in creek channels.	"Placement of soft material along the stream banks" has been added to rehabilitation measures, which can better avoid potential impacts on fish. The following statement has been added to Section 6.5.3.1 "Natural mitigation and rehabilitation measures, such as revegetation and fencing to exclude stock along the stream banks, will be preferred over artificial structures to stabilise banks, prevent erosion and maintain streamflow. Where the artificial structure is needed, soft material, such as woody debris, jute matting, and coir logs, will be placed to further assist in erosion management and rehabilitation. Rock armouring will be used if other bank protection measures are not effective. It is noted that this approach has been included in the Subsidence Management Plan (Appendix A2, refer Section 4.2.2.2).
3	Section 6.5.4	(Page 6-19) It is not clear, based on the information provided, why the Phillips Creek Crossing would require a disturbance area that is 100m wide.	It is stated that the works footprint is to maintain existing flow velocities. It is unclear what this statement means and therefore why such extensive works are required. Further information is therefore required to justify why such extensive disturbance is required. To minimise impacts on fisheries resources, the area of impact within waterways should be minimised and works conducted in accordance with Fisheries Queensland's Accepted development requirements for operational work that is constructing or raising waterway barrier works (ADR). Any works that do not have a functional requirement to be in a waterway should be located outside of waterways. Any disturbance to bed and banks due to construction should be rehabilitated and returned to pre-works, or better, condition.	We note the wording in section 6.5.4 is unclear. A better explanation is that this width is required to produce acceptable slopes for the edges of the causeway entrance and exit. It is noted that the width of the disturbance is not related to the slope of the channel, rather the acceptable slopes of the edges of the causeway entrance and exit. The text in Section 6.5.4 has been changed to: "The sloped excavated edges of the entrance and exits of the causeway extend to a total width of 100m at the widest point. This is the minimum disturbance width required to provide acceptable slope of the causeway edges" . The assessment of impact of the watercourse crossings as potential barriers to fish passage is is Chapter 11. Note that responses to DAF comment issue #32 and #35 are related to this topic. The responses to those comments and related edits to EIS chapters will provide detail in explantion of accordance with the ADR.
Chapter 8 – Surface Water **Appendix F – Surface Water Assessment Report**				
4	Section 8.2.4 Appendix F Section 7.7	(Page 8-6) The information supplied in the EIS pertaining to surface water suggests that there will be an impact downstream, in particular as mentioned in Appendix F "Regional cumulative impacts – These include the Project's contribution to impacts that are caused by mining operations throughout the Bowen Basin region or at a catchment level. Each coal mining operation in itself may not represent a substantial impact at a regional level; however, the cumulative effect on the receiving environment may warrant consideration." The EIS and associated documents do not indicate the downstream users of this water, particularly agriculture that may have associated surface water entitlements. Additionally, there is no information on how impacts on downstream users will be managed.	DAF suggests that any downstream agricultural users of surface water are identified and if their surface water is impacted by resource activities then management measures such as make good arrangements should be implemented.	Downstream agricultural users of surface water have been identified in Appendix F, Surface Water Assessment, Table 4.3. The section reference identified by DAF is the from the introduction of the cumulative impact assessment, the assessment and its outcome is detailed throughout Section 7.7 of Appendix F. The outcome of the assessment of cumulative impacts on surface water quality and stream flow is that impacts are negligible (Appendix F, Section 7.7.3) . As a result, no water management measures (beyond the proposed water management system) specifically addressing cumulative surface water quality impacts are proposed.

Issue #	Topic, EIS section, and Terms of Reference (ToR) section	Issue/Comment	Recommendation	Summary of changes made / response to item
5	Section 8.2.6	(Page 8-10) All the sites where physico-chemical parameters are described are not shown on Figure 8.4. There is therefore no context as to where these parameters were measured.	Add physico-chemical sites to Figure 8.4. Establish regular monitoring of sites and guidelines for remedial actions and fish salvage. Refer to the Department of Agriculture and Fisheries (DAF) Guidelines for fish salvage. It is important to understand if physio-chemical properties across the proposed work area are suitable for the survival of fish both now and into the future. Unsuitable physico-chemical properties would result in fish stress and ultimately fish kills. It is therefore important that regular monitoring of sites occur, and guidelines are in place. If parameters approach those deemed as unsuitable, remedial action should occur to return water parameters to those deemed suitable, or to allow fish salvage to occur prior to fish kills occurring. Include an alert to action component for actions to undertaken should physico-chemical properties approach unsafe levels for aquatic fauna.	It is noted that Figure 8.4 did not show all baseline water quality monitoring locations. An additional map (now Figure 8.4) has been included in Section 8.2.6. The section text has been corrected stating the original map shows locations of monitoring data from other projects, and the newly included map shows monitoring locations for the Project. No signifcant residual impacts to fish passage are identified as a result of the Project. No bunding of watercourses is proposed for construction of watercourse crossings, so no salvage of fish will be required for crossing construction. Subsidence areas in floodplains will entrap overland flow and are not considered a risk to fish passage, or at risk of entrapping fish from watercourses. Ponding connected to One Mile Creek is considered comparable to the existing function of the watercourse, and ponds are expected to retain connectivity to channels in lowflow conditions.
Chapter 9 – Flooding and Regulated Structures				
6	Section 9.3.2	(Page 9-14) It is unclear what material (if any) will be used to line diversion drains.	Provide detail as to what material (if any) will be used to line diversion drains. The use of rock to line channels should be avoided due to this substrate resulting in a less diverse and more physically hostile environment that is not conducive to fish habitat. Instead, soft options that include revegetation of beds and banks and the use of logs, jute matting, coir logs etc should be used.	If drain lining is required, soft lining like jute matting and coir logs will be preferentially used, however, drain lining has not been specified for these drains. It is noted this drain diverts overland flow, with no substantial upstream catchment and therefore diverts waters with minimal fish habitat potential. Regardless, it is considered that the lack of lining material should be more conducive to fish habitat than a rock armoured drain. Additional detail specifying that the MIA diversion drain will not be lined has been added to Section 9.3.2

Issue #	Topic, EIS section, and Terms of Reference (ToR) section	Issue/Comment	Recommendation	Summary of changes made / response to item
Chapter 11 - Aquatic Ecology Appendix H – Aquatic Ecology Assessment Appendix J – Stygofauna Assessment				
7	Section 11.3.3	(Page 11-6) Images from Queensland Globe indicate that several waterholes exist within the study area, however, these do not appear to have been surveyed for aquatic life (e.g., complex of Billabongs south of Boomerang Creek, and waterholes within One Mile Creek, and tributaries of Boomerang Creek and Hughes Creek).	Either: 1. Survey refuge pools using a standardised methodology and additional survey techniques including fyke nets and electrofishing methodologies. If fish, including protected species, are found to be present, develop an appropriate management strategy that takes account of their presence and need for protection, or; 2. As waterholes within the mining lease are likely to be refuge for fish during the dry season, ensure that they are protected from any mining related impact. Remove any reference to Silver Perch and Murray Cod as these are not endemic to the system.	Regarding the Silver Perch and Murray Cod, we have added text in Section 11.3.3 explaining that these species were recorded in the desktop searches, but are not endemic to the system. Regarding the wetland areas questioned by DAF: Noting that the survey effort for targeting fish already assessed refuge pools along watercourses (the two sites that had water were non-flowing with pooled water - MAq01 and MAq04). These sites represent refuge pools of One Mile Ck, the primary watercourse which creates suitable refuge pools. Boomerang Creek was assessed in suitable weather condtions but did not have any refuge pools with water. The billabongs south of Boomerang Creek also lacked water for sampling fish during the surveys. Philips Creek has similar hydrology to Boomerang Creek and does not have any substantial pools providing refuge to fish. Fish were found at the refuge pool at MAq01(5 species of non-listed/least concern native fish at MAq01). No fish were found at the pool at MAq04. The 'Survey Guidelines for Australia's Threatened Fish' (SEWPAC 2011) and the 'Background to fish sampling and index calculation' (DES 2018) specify that the appropriate collection techniques for fish is to be determined by factors such as: rarity of target species, size of target species, stream physical parameters, water attributes, behaviour of species, and seasons. Considering DAF have advised the threatened species Silver Perch and Murray Cod are unlikely to occur, therefore collection method should not be tailored to these species (or other large bodied species). It is considered that the collection methods used represent suitable use of active and passive collection methods in consideration of guideline advice. Fyke nets and electrofishing are alternative passive and active survey techniques, however given these methods are not required by either relevant guideline, the expected fish species targeted by the trapping, and the success of the methods used, the employed methods are considered suitable. The records of ten fish species including those collected from refuge pools surveyed is considered representative the fish community of the Project area and provides sufficient information to describe the community and assess potential impacts to aquatic ecology values. It is noted that a number of other fish surveys have been conducted in overlapping areas of the Meadowbrook Project area (in particular the Saraji East and Olive Downs surveys covered Project areas and used electrofishing). Refer to Appendix H, Section 5.2) It is noted that: • the Meadowbrook survey recorded a similar species to the Saraji East surveys and both these surveys covered the same main watercourses; • the Olive Downs survey recorded five more species than the Meadowbrook survey, however this survey included extended reaches of the Isaac River and numerous watercourses north of Meadowbrook; • high rainfall conditions in the years of survey for Saraji East (2010 was the wettest SE QLD year on record) and Olive Downs (most surveys were post 2017 Cyclone Debbie) would have provided more opportunity for survey of the ephemeral watercourses. The Meadowbrook survey years provided comparatively less rainfall and less opportunity for surveying the ephemeral watercourses; • the results obtained from the Meadowbrook survey are consistent with other surveys which covered the same watercourses and employed electrofishing. The species list obtained from the Meadowbrook survey results is considered representative of the fish community of the area. Notwithstanding, the assessment of potential impacts to fish considered the species identified in the surveys and species recorded in the region (including the Projects tabled below as well as other fish surveys from the region (refer Aquatic Ecology Assessment, Section 5.2). Therefore, given the rigorous survey effort and inclusion of findings of other surveys, the characterisation of the fish community of the Project area is considered robust and suitable to inform assessment of potential Project impacts. No protected species were recorded, and it is noted that DAF recommend removing Silver Perch and Murray Cod (the two species identified some likelihood of occurence). Therefore it is considered that ony non-threatened fish species are relevant for considerations for the appropriate management strategy. Appropriate management measures are proposed, and we consider these suitable for protection of the fish species present within the potential impact area. As fish were found to be present within the refuge pools of the Project area, and the characetrisation of the fish species in the Project area as a whole is considered adequate and representative, the assessment of impacts to watercourses and wetlands (Section 11.5) is considered to have adequately addressed the potential impacts to all fish species of the aquatic habitat of the Project area. The proposed avoidance, mititgation and management measures in Section 11.5 address the impacts identified and have taken account of the presence and need for protection of fish species within the Project area.

Issue #	Topic, EIS section, and Terms of Reference (ToR) section	Issue/Comment	Recommendation	Summary of changes made / response to item
8	Section 11.5.1.2	(Page 11-6) It has not been demonstrated that the impacts of waterway crossings on fish passage have been avoided or mitigated.	Best practice guidelines should be followed to ensure impacts to fish habitats and fish passage are minimised. Provide information detailing that waterway crossings are undertaken in accordance with Fisheries Queensland's What is not a waterway barrier work? factsheet, or the ADR.	Included this detail detailing watercourse crossings configurations against the ADR guideline to be described as 'accepted development' (Section 11.5.1.2). Also noting, meeting this guideline is voluntary, the proposed culverts are not actually subject to this guideline becuase they will be within the mining lease, and therefore exempt from being assessable under the Planning Act. Notwithstanding the requirements of the Project with regard to fish passage barriers, the proponent aims to prevent the creation of anay passage barriers. To demonstrate no fish passage barriers the culvert crossings will include configuration in accordance with the ADR as follows: • All instream works will commence and finish within 180 calendar days. • The culvert aperture will span a minimum of 100% of the low flow channel width. • The culvert will be installed at no steeper gradient than the waterway bed gradient. • Outermost culvert cells will incorporate roughening elements on the bank side walls and upstream wingwalls to the height of the upstream obvert. • The culvert cells will be aligned parallel to the direction of water flow. • The width of the culvert aperture will span a minimum of 75% of the main channel width for Phillips Creek and approximately 40% for One Mile Creek where channel width is approximately 3 m. • The internal roof of the culvert must be 600 mm above the waterway bed level. • The culvert (which is designed with flood immunity of average recurrence interval of less than 50 years) depth of cover is no greater than 750 mm.
9	Section 11.5.4	(Page 11-6) Minimising facilitated impacts of mining infrastructure	It should also be stated here that "any proposed infrastructure, including electrical, water supply and telecommunications, will avoid waterways where possible, and any that do not have a functional requirement to be in a waterway will not be placed within them."	Infrastructure (other than the ones being co-located within the infrastructure corridor), will not be constructed within waterways. The recommended statement has been added to Section 11.5.4 (Page11-26) of Chapter 11 and Section 9.4 (Page 94) of Appendix H.
10	Appendix H Section 9.1.1	(Page 79) It is stated that "The Project may result in the loss of individuals of species that are considered common and have a broad distribution in the region but is unlikely to result in the loss of any individuals of listed species".	The Fisheries Act 1994 applies to all endemic fish species regardless of whether they are protected or not under the EPBC Act. Demonstrate that adverse impacts to endemic fish and their habitat are avoided, minimised, or mitigated, regardless of their EPBC status.	The endemic fish species present in the Project area are outlined in Appendix H Section 8.6.1. Potential impacts to the habitat of fish species proposed mititgation to potential impacts is presented in Section 9. A summary of the measures described in Section 9 to avoid, minimise and mititgate impacts to aquatic ecology values including endemic fish include: • designing watercourse crossings to consider fish passage; • building flood levees, which are designed to withstand increase in flood velocities; • limiting the extent of direct impact on the identified disturbance area; • locating areas of disturbance outside of watercourses and wetlands where possible; and • developing environmental management plans, including: o Water Management Plan; o Chemical and Fuel Management Plan; and o Waste Management Plan It is noted the statement distinguishing between impacts to unlisted species and listed species forms justification required for the assessment of potential MNES impacts.
11	Appendix H Section 9.1.2	(Page 80) It is stated that "The watercourse crossings of Phillips Creek, One Mile Creek associated with the Meadowbrook Project's infrastructure corridor would be constructed in consideration of fish passage and water flow".	Demonstrate that waterway crossings will be undertaken in accordance with the What is not a waterway barrier work? factsheet or ADR.	It is noted that the Project culvert crossings have been identified as potential fish passage barriers in Section 9.1.2 (as per the definitions of the What is a waterway barrier work? Factsheet), and an assessment of these potenital impacts is provided. The ADR is referenced for the purposes of informing the assessment of the potential fish passage barrier. However, as the culverts will be within the ML, they will not be assessable as fish passage barrier, even if they failed the ADR, becuase the development in the ML is exempt from the Planning Act. Regardless, the proposed culverts uses the design configurations from the ADR to demonstrate that impacts to fish passage are minimised. Greater detail in the culvert configuration has been provided in Section 9.1.1 (which is referenced from Section 9.1.2).
12	Appendix H Section 9.1.2	(Page 89) It is noted that the velocity of waterways, and therefore erosion is likely to increase as a result of the construct of flood protection levies.	Measures that stabilise existing waterways should be considered to limit erosion and potential issues relative to downstream water quality. Measures include fencing (for stock exclusion), revegetation of beds and banks and the use of natural logs, jute matting, coir logs etc should be considered.	The recommended measures have been included in Section 11 Table 36 (Page 114) to limit erosion and water quality issues associated with the construction of flood protection levees.
13	Appendix H Table 32	(Page 108) Contains a statement that "Remnant ponds are small and create environments for entrapment and predation".	Remnant pools are known to act as refuge for fish in dry times, and as such are important habitat for fish and act as seeding sites when water returns to an area. Suggest removing the sentence "Remnant ponds are small and create environments for entrapment and predation". Demonstrate how these refuge pools will be protected from any related mining impact.	The sentence has been removed. Description of the impacts of subsidence to watercourses is detailed in Appendix H, Sectoin 9.2.3. In summary, existing refuge pools (watercourse remnant pools) will not be diminished by subsidence and are therefore considered to be protected from mining impacts. Subsidence impacts are predicted to increase the area of pools within One Mile Creek.

Issue #	Topic, EIS section, and Terms of Reference (ToR) section	Issue/Comment	Recommendation	Summary of changes made / response to item
Chapter 23 – Proposed EA conditions				
14	Table K2	(Page 23-10) It is noted in Table K2 that an enhanced release limit of 8000 EC is used. It is unclear whether this water is planned to be released to a waterway.	Release of water at 8000EC to waterways containing fish resources should be avoided as conductivity would result in fish kills and therefore unacceptable outcomes for fisheries resources.	As stated in Section 8.2.7, the mine-affected water system of this Project is a closed system designed to prevent any releases of mine-affected water into the environment. No water will be released into the environment and no release points are proposed (all the mine-affected water from this Project will be pumped to Lake Vermont Mine.). The 8000 uS/cm EC release condition is an existing condition fo the Lake Vermont EA and applies to releases from approved Lake Vermont release points, not the Meadowbrook Project.

Issue #	Topic, EIS section, and Terms of Reference (ToR) section	Issue/Comment	Recommendation	Summary of changes made / response to item
Chapter 18 - Social				
1	Chapter 18 Social	Mackay Regional Council's areas of interest relate to direct and cumulative impacts of the Lake Vermont Meadowbrook Project, as follows: - potential industrial mining support services from Mackay; - potential impact on local housing provision (i.e. percentage of mine workers residing in the Mackay region); - potential impact on community services, which include health, education, welfare and social facilities in Mackay; and - potential impact on Council's regional road infrastructure. In summary, the EIS provided sufficient information to assess the potential beneficial and adverse environmental impacts from a Mackay Regional Council perspective. Council does not have an objection the issues raised on the EIS documentation.	Council recognises the positive economic impacts from the project and associated benefits in mining support services from the Mackay Region. Council supports the Lake Vermont Meadowbrook Project, subject to relevant approvals with local and state government bodies.	Noted.

Issue #	Topic, EIS section, and Terms of Reference (ToR) section	Issue/Comment	Recommendation	Summary of changes made / response to item
Chapter 18 - Social				
1	Chapter 18 Social	It is acknowledged that the Project is expected to increase the demand for police and emergency services due to the anticipated increase in the non-local workforce during construction and the residential population during operation. It is also acknowledged that the increase in non-resident population may contribute to the community concerns about community safety or to amenity impacts. The QPS therefore acknowledge and strongly support the proposed engagement strategies and measures pre-construction and during construction and operation to mitigate the potential impacts to emergency services, as detailed in the EIS and Social Impact Assessment. It is further noted that the traffic movement generated by the Project is not anticipated to impede emergency services operations.	The QPS has no objection to the proposed project or EIS.	Noted.

Issue #	Topic, EIS section, and Terms of Reference (ToR) section	Issue/Comment	Recommendation	Summary of changes made / response to item
Chapter 5 - Land Resources Chapter 6 - Rehabilitation Chapter 9 - Flooding and regulated structures Chapter 10 - Terrestrial_Ecology Appendix B - Progressive Rehabilitation and Closure Plan Appendix C - Soils and Lands Suitability Assessment				
1	Section 5.5.4, Chapter 5 – Land Resources, page 5-40, Topsoil Management AND Section 6.4.1, Chapter 6, page 6-8, Topsoil management and surface preparation AND Section 9.1, Chapter 9, page 68, Study area soil stripping recommendations	Compaction of topsoil stockpiles reduces topsoil health and suitability for use in later rehabilitation activities.	The list of topsoil management actions should include the need to avoid compaction while excavating, stockpiling, and placing topsoil.	Edited in line with recommendation made to: Chapter 5 Section 5.5.4 and Chapter 6 Section 6.4.1. Chapter 9, Section 9.1 does not address soil stripping recommendations.
2	Section 5.5.4, Chapter 5 – Land Resources, page 5-40, Topsoil Management	Dot point nine (9) states “Stripped topsoils from SMUs with alkaline pH (Booroondarra, Kirkcaldy, Knockane, Mayfair, Norwich and Parrot) are likely to require fertiliser application to compensate for low pH available nitrogen deficiency”. This dot point appears to contradict itself using confusing language about pH.	It is recommended that dot point 9 be replaced with the following: Topsoils from SMUs with high pH (such as Booroondarra, Kirkcaldy, Knockane, Mayfair, Norwich, and Parrot) will likely suffer from a low availability of nitrogen that may require amelioration with nitrogen fertiliser.	Change made to Chapter 5, section 5.5.4 as recommended.
3	Section 6.5.3.1, Chapter 6, page 6-16, Subsidence – Erosion	This section acknowledges the increased risk of erosion that results from the change in slope following subsidence but does not provide enough detail on how erosion will be identified and managed.	Further information is required detailing how erosion will be identified and managed. A site specific, standalone erosion and sediment control plan (ESCP) should be produced to guide the monitoring and management of erosion on-site resulting from both mining and subsidence induced changes in slope. The ESCP should be applicable to all stages of mine development and rehabilitation.	A Subsidence Management Plan (SMP), which was previously proposed to address monitoring and guide adaptive management for subsidence impacts, has now been prepared and submitted with the revised EIS. The SMP is provided as Appendix A2. Monitoring of erosion in subsidence areas described in Section 4.2, and reporting of subsidence monitoring in Section 4.3. Erosion and sediment control strategies for areas outside the subsidence footprint will be addressed by updates to the existing Lake Vermont Water Management Plan (refer Section 5.5.3 of Chapter 5, Land Resources).
4	Section 6.5.3.1, Chapter 6, page 6-17, Subsidence – Ponding and drainage AND Section 10.2.1, Chapter 10, page 71, Erosion AND Section 10.2.3, Chapter 10, page 72, Alteration of overland flow	Works to alleviate ponding and drainage impediments following subsidence will need to be designed to monitor and avoid erosion from occurring.	A site specific, standalone erosion and sediment control plan (ESCP) should be produced to guide the design and implementation of pondage draining works including measures for monitoring and managing any erosion that results. The ESCP should be applicable to all stages of mine development and rehabilitation.	Refer to response to previous comment and the Subsidence Management Plan (Appendix A2, Section 4.2).
5	Section 3.5.5.2, Appendix B, pages 85, 86 & 87, Flooding (Figure 32)	This section states flooding will cause “local reduction in flood levels but increase in the depth and extent of flooding”. It is unclear whether this change in flood pattern has been reflected in land suitability assessments.	Clarify whether changes in flood pattern and duration have been considered when determining land suitability classes post mining e.g., Appendix 6 Soil and land suitability assessment.	Flooding was considered when determining land suitability classes pre and post mining, although it is noted that the Land Suitability Assessment was conducted prior to the detailed flood mapping presented in Appendix Z, Flood Modelling Assessment. Given the flooding criteria for land suitability is not the limiting factor for any of the SMUs, the information provided by the flood modelling does not change the Land Suitability Assessment. However, the flooding assessment has been revised in line with the implications of the review comment.
6	Section 3.7.2, Appendix B, page 123, Annual rehabilitation monitoring	Erosion monitoring is proposed as part of the annual rehabilitation monitoring program. Annual monitoring of erosion however allows for potential development of severe, undiscovered erosion over a 12-month period, especially in areas affected by mining activities and subsidence.	The proponent needs to increase the proposed frequency of erosion monitoring to a level appropriate for erosion rates and risks expected. Frequency of inspections should increase during high-risk periods such as summer when high intensity storms can be expected. The development of a site specific, standalone erosion and sediment control plan (ESCP) as detailed above should be used to guide monitoring and include these increased inspection frequencies.	Erosion monitoring in the subsidence areas is addressed in the Subsidence Management Plan (refer section 4.2, Appendix A2), in addition to rehabilitation monitoring. The monitoring of subsidence areas will consider timing of subsidence of individual longwall panels, ponding events and wetseasons. Areas outside the subsidence footprint will be subject to erosion and sediment control strategies under the Water Management Plan (refer Section 5.5.3 of Chapter 5, Land Resources).
7	Appendix C – Soil and land suitability assessment	The quality of photos provided (particularly soil profile photos) in this report are poor and do not convey sufficient information.	The existing photos should be replaced. Good quality photos of soil profiles, soil surfaces and surrounding landscapes can assist in providing missing or additional land resource information. It is recommended that larger and clearer photos of soil profiles, landscapes, and surface features (e.g., cracking, or self-mulching) be provided to convey all information available at a site. Additionally, soil cores should be split open before taking photos to allow their defining features to be clearly seen.	The Appendix C soil profiles and landscape photos have been replaced with uncompressed versions. Other comments are noted for future reference.

Issue #	Topic, EIS section, and Terms of Reference (ToR) section	Issue/Comment	Recommendation	Summary of changes made / response to item
8	Section 3.2.4, Appendix C, page 13, Characterisation of soil management units	The EIS indicates that the most recent version of the Australian Soil Classification has not been used for the classification of soils. The soil and land suitability assessment in Appendix C references an outdated (2002) version of this classification which is no longer current and lacks several relevant updates	It is recommended that all Australian Soil Classifications in Appendix C, are revised to ensure accordance with The Australian Soil Classification, third edition (2021).	The soil and land suitability assessment work was conducted prior to the release of the third edition of the Australian Soil Classification.
9	Appendix C, Chapter 4, Figure 6, page 21, Soil management units	Figure 6 does not clearly indicate all sites used to compile the map. It is important that assessors can determine the location of all sites used to compile a map and, while figure 6 displays the location and name of all “detailed sites” it only contains the location of “check points”.	Figure 6 should be updated to show site labels on “Check points”.	Check point labels added to Figure 6.
10	Chapter 4, Appendix C, pages 23 to 41, Profile descriptions	In describing soils to a standard where they can be classified according to the Australian Soil Classification, third edition (2021), certain compulsory elements must be recorded. The Vertosol description in Section 4.1.3 does not provide any mention of two defining characteristics of Vertosol soils as outlined in the Australian Soil Classification, third edition (2021). Incorrect assignment of classification may lead to a misunderstanding of soil behaviour and soil suitability.	It is recommended that all profiles classified as Vertosols be reviewed to determine if slickensides and/or lenticular peds are present. In their absence the classification of these soils as Vertosols is incorrect.	The Vertosols identified in the study area meet the characteristics of the Australian Soil Classification, third edition. The partical size distribution result of these soils (very heavy clay), strong presence of cracks (also confirmed through extensive survey for Ornamental Snake habitat, refer Appendix G) and vegetation is consistent with the Vertosol classification. Field survey timing was selected for access (dry conditions). The dry conditions inhibit the observation of slickensides and lenticular peds, however, we note the following quote from the classification "Because cracking, slickensides and lenticular peds are essentially used a evidence to indicate shrink-swell behaviour, it is desirable that surrogate measurements be available if the morphological evidence is lacking or cannot be determined" (Australian Soil Classification 2021, pp 116). In this instance, the clay content is considered surrogate evidence in addition to the cracking morphology. The classification of Vertosols in Appendix C is considered justified and correct.
11	Chapter 4, Appendix C, pages 23 to 41, Profile descriptions	Where sites are recorded as having gilgai microrelief present, the component of microrelief sampled have not been recorded where they should have been. Differing components have differing properties which influence soil and land suitability, and ideally multiple components should be sampled to properly inform such assessments. Sites with gilgai microrelief in Chapter 4 and accompanying Appendix 2 (2019 survey soil profile data) do not nominate the microrelief component sampled.	It is recommended that all sites with gilgai microrelief are reviewed and updated to report what component of microrelief was sampled as per the Australian Soil and Land Survey Field Handbook (NCST 2009). Additionally, if multiple components were described and their attributes averaged, this process should be clarified.	The microrelief component has been described for each description in Appendix C (Sections 4.4.1, 5.1.6, 5.2.7, 5.4.7).
12	Chapter 4, Appendix C, pages 23 to 41, Profile descriptions	Several described profiles appear to be terminated at shallow depths. When describing soils, it is desirable to describe the entire profile to a depth where equipment can no longer operate or to where an impenetrable layer (e.g., rock) is encountered. As soil depth also impacts plant available water capacity, suitability may be affected by premature hole termination.	The proponent needs to provide justification for the terminating depths chosen for the profiles described and review any suitability and/or on plant available water capacity related decisions.	Soils were sampled to depth of resistance encountered by the field team. The characteristics of soil profiles were considered for suitability descriptions.
13	Chapter 4, Appendix C, pages 23 to 41, Profile descriptions	Several profile descriptions in Chapter 4 use the term “loose” to describe soil structure type. This structure type is not found in the Australian Soil and Land Survey Field Handbook (NCST 2009). The description of structure in soil profiles is crucial to determining many soil properties such as classification, drainage, and permeability. Missing or non-standard descriptions of structure are misleading and do not allow for assessment of a soil’s properties.	Revise the chapter 4 soil descriptions that include “loose” as a soil texture descriptor to align with structure categories in the Australian Soil and Land Survey Field Handbook (NCST 2009).	Loose' replaced with 'single grain', as provided by the NCST 2009. (Sections 4.2.3, 4.3.3, , 4.3.4, 4.5.2).
14	Section 4.2, Appendix C, Chapter 4, page 26, Mayfair sodic variant soil management unit	Section 3.2.4 states that: “Soil classification and nomenclature follow the 1:100,000 soils mapping from the Windeyers Hill area, surveyed by the Department of Natural Resources and Mines in 2003 (Burgess 2003). Where soils identified did not fit the Burgess (2003) classification, a site-specific classification was used.” The Windeyers Hill survey did not contain a Mayfair sodic variant soil, however, the suitability assessment conducted by NQSA (2012) from 2012 did. Government databases and reports do not refer to or contain information relating to this soil type. The Windeyers Hill survey report does contain a Mayfair sandy surface variant soil that closely matches the “Mayfair sodic variant” soil used in this assessment.	Clarify the origin of the “Mayfair sodic variant” soil and provide a reference for its description and standard properties. Alternatively clarify if it was intended to follow the description of the “Mayfair sandy surface variant” as per the Windeyers Hill (Burgess 2003) survey report.	Refer to Appendix C, Section 3.2.4 for the characterisation of SMUs, "Soil classification was undertaken using the methodologies specified in The Australian Soil Classification (Isbell 2002). Soil Management Units (SMUs) were then defined based on grouping soils of like soil morphology, parent material, and land attributes in accordance with the Guidelines for Surveying Soil and Land Resources(McKenzie et al. 2008). SMUs were mapped across the study area at scales between 1:25,000 and 1:100,000.Soil classification and nomenclature follow the 1:100,000 soils mapping from the Windeyers Hill area, surveyed by the Department of Natural Resources and Mines in 2003 (Burgess 2003). Where soils identified did not fit the Burgess (2003) classification, a site-specific classification was used." The description is provided within Appendix C, Section 4.2. This SMU was not intended to follow the description of the 'Mayfair Sandy Variant'.

Issue #	Topic, EIS section, and Terms of Reference (ToR) section	Issue/Comment	Recommendation	Summary of changes made / response to item
15	Section 4.3, Appendix C, Chapter 4, page 26, Moreton soil management unit	Section 3.2.4 states: “Soil classification and nomenclature follow the 1:100,000 soils mapping from the Windeyers Hill area, surveyed by the Department of Natural Resources and Mines in 2003 (Burgess 2003). Where soils identified did not fit the Burgess (2003) classification, a site-specific classification was used.” The Windeyers Hill survey did not contain a Moreton soil. Government databases and reports do not refer to or contain information relating to this soil type.	Clarify the origin of the “Moreton” soil and provide a reference for its description and standard properties.	Refer to Appendix C, Section 3.2.4 for the characterisation of SMUs, "Soil classification was undertaken using the methodologies specified in The Australian Soil Classification (Isbell 2002). Soil Management Units (SMUs) were then defined based on grouping soils of like soil morphology, parent material, and land attributes in accordance with the Guidelines for Surveying Soil and Land Resources(McKenzie et al. 2008). SMUs were mapped across the study area at scales between 1:25,000 and 1:100,000.Soil classification and nomenclature follow the 1:100,000 soils mapping from the Windeyers Hill area, surveyed by the Department of Natural Resources and Mines in 2003 (Burgess 2003). Where soils identified did not fit the Burgess (2003) classification, a site-specific classification was used.". The description is provided within Appendix C, Section 4.3. It is noted that the Australian Soil Classification changes between second and third edition for Kandosols are the removal of 'weakly developed tenic B horizon' from the classification. This characteristic was not used in the classification of the Moreton SMU.
16	Section 4.3, Appendix C, Chapter 4, page 26, Moreton soil management unit	A soil classification of Kandosol has been applied to the Moreton soil in Section 4.3, however, its correct classification is Arenosol (or Tenosol under the abovementioned and outdated 2002 version of the classification). Correct classification of soils according to The Australian Soil Classification, third edition (2021) allows for general properties to be understood and soils of similar classification to be compared. Incorrect classification causes confusion.	Revise the Australian Soil Classification of the Moreton soil in Section 4.3 to align with The Australian Soil Classification, third edition (2021).	The Moreton SMU classification has been revised to be Arenosol as recommended.
17	Chapter 5, Appendix C, pages 42 to 58, Land Suitability Assessment	It is unclear whether the “limiting features” (for PAWC, Nutrient deficiency etc.) assigned in this chapter are determined by considering only the single descriptions and analyses for each soil management unit provided in Chapter 4 or are based on a wider range of soil characteristics drawn from all profiles allocated to a soil management unit.	Clarify how representative limiting land suitability features were assigned to soil management units, including whether the characteristics of more than one profile were considered.	Representative limiting features were assigned to SMUs from the representative sites (described in Sections 4). More than one soil profile was considered in the description of representative sites, they are selected for their representivity of the SMUs.
18	Chapter 5, Appendix C, pages 42 to 58, Land Suitability Assessment	This chapter considers the limitations (as listed on page 43) of 5 soil management units – Knockane, Mayfair sodic variant, Moreton, Norwich, and Parrot – to arrive at land suitability for grazing in Table 44 on page 50. Table 44 however, also includes land suitability limitations for 2 additional soil management units – Booroondarra and Kirkcaldy –which were not included in preceding tables 32 to 43. A note below Table 44 indicates “Suitability assessment conducted by NQSA (2012)”. While this study considered the suitability of the soil management units missing from pages 42- 49, it is understood that the NQSA survey covers only a portion of the area to which this assessment applies. It is not clear if suitability limitations were assigned based on the NQSA survey, were taken only from the additional sites and analysis that formed the latest survey, or a combination of both.	Clarify where the data to inform suitability limitations for cattle grazing assigned to soil management units was obtained and whether suitability results presented in Table 44 are representative of the entire 8,681ha site.	The suitability limitations for SMUs are based on the profile descriptions for the SMUs. Section 4. page 20 describes the rational for the SMU descriptions for SMUs established in previous reporting: "Soil descriptions for the Kirkcaldy and Mayfair SMUs, which are mapped in ML70477 and not within the proposed MLA, are presented in Appendix D (NQSA 2012). Soil descriptions for the Booroondarra and Kirkcaldy SMUs, which are mapped in ML70528 and not in the proposed MLA, are presented in Appendix E.". In summary, limitations were assigned primarily from the descriptions as described above and informed by characteristics identified from surveys conducted in the Meadowbrook Project area.
19	Section 5.1.6, Appendix C, Chapter 5, page 46, Microrelief	Microrelief suitability class assigned to the Norwich soil management unit in Table 37 is class 2 based on “Shallow melonholes (30–60 cm deep) cover 20–50% surface area”. The description of Norwich surface characteristics in Section 4.4 of Appendix C however indicates “The soil surface exhibits deep cracking and development of normal gilgai with vertical intervals ranging from 0.1 m to 0.3 m” which would result in a microrelief suitability class of 1 as there is <20% melonhole coverage and no gilgai >30cm deep.	Clarify the nature of gilgai associated with the Norwich soil management unit including their depth, type and review the assigned Land Suitability Class.	The Norwich microrelief limitation has been revised to be 1, as recommended.

Issue #	Topic, EIS section, and Terms of Reference (ToR) section	Issue/Comment	Recommendation	Summary of changes made / response to item
20	Section 5.2.8, Appendix C, Chapter 5, page 56, Wetness	Table 52 (Wetness suitability class for rainfed broadacre cropping) has assigned a land suitability class of "3" to the Norwich soil management unit indicating "Low-lying level plains with melonholes covering 25–50% surface area". Table 40 in assessing grazing land suitability however assigned a suitability class of "2" to the same soil management unit which, in the Queensland Department of Mines and Energy (QDME) 1995 guidelines, would equate to "Low lying level plains with melonholes covering <25% surface area". The description of the Norwich soil management unit on page 34 does not indicate that melonhole gilgai are present, instead saying that "The soil surface exhibits deep cracking and development of normal gilgai with vertical intervals ranging from 0.1 m to 0.3 m". It is not clear: 1. why a suitability class was assigned using characteristics that were not described as belonging to that soil management unit i.e., 25-50% coverage of melonhole glgai; 2. why different suitability classes were applied to the same soil management unit when only the potential use (grazing vs cropping) has changed.	Revise assigned land suitability classes for the wetness limitation for both dryland cropping and cattle grazing to be consistent with one another and with observed soil surface characteristics. Make any necessary adjustments to overall land suitability resulting from this revision.	The wetness criteria for Norwich SMU in Section 5.2.8 has been revised as recommended.
21	Chapter 5, Appendix C, pages 42 to 58, Land Suitability Assessment	This chapter considers the limitations (as listed on page 52) of 5 soil management units – Knockane, Mayfair sodic variant, Moreton, Norwich, and Parrot – to arrive at land suitability for rainfed broadacre cropping in Table 56 on page 57. Table 56 however also includes land suitability limitations for 3 additional soil management units – Booroondarra, Kirkcaldy and Mayfair – which were not included in preceding tables 45 to 55. A note below Table 56 indicates "Suitability assessment conducted within NQSA (2012)". While this study considered the suitability of the soil management units missing from pages 53-57, it is understood that the NQSA survey covers only a portion of the area to which this EIS applies. It is not clear if suitability limitations were assigned based on the NQSA survey, were taken only from the additional sites and analysis that formed the latest survey, or a combination of both.	Clarify where the data to inform suitability limitations for rainfed broadacre cropping assigned to soil management units was obtained and whether suitability results presented in Table 56 are representative of the entire 8,681ha site.	The suitability results presented in Table 56 are representative of the entire 8,681ha site. The Project soil assessment (Appendix C) determined that the descriptions of these SMUs established in the previous reporting is consistent with the same SMUs throughout the entire Project area. The data that informed the suitability limitations is provided in the referenced and appended survey reports.
22	Section 5.4.8, Appendix C, page 61, Wetness	Table 64 has described the Norwich soil management unit as being "poorly drained", however, drainage characteristics for Norwich described elsewhere in Appendix C (including the NQSA 2012 report) and the in the publication Land Resource Assessment of the Windeyers Hill area, Central Queensland (the origin of the Norwich soil description) range from imperfectly drained to moderately-well drained. It appears Norwich drainage has been downgraded without evidence, lowering its wetness suitability classification from "4" to "5" and lowering its overall land suitability for dryland cropping from "4 to "5" in Table 65.	Review the wetness limitation assigned to the Norwich soil management unit in Table 64 and adjust the suitability class accordingly or provide evidence as to why Norwich drainage was reduced to "poorly drained".".	Norwich wetness criteria revised as recommended.
23	Chapter 5, Appendix C	A map of land suitability for cattle grazing is provided at Figure 12 (page 51), however, results of the two dryland broadacre cropping assessments are shown in map form.	Update the land suitability assessment chapter to include maps showing the location of each land suitability class for dryland broadacre cropping.	No SMUs were identified as suitable for cropping under the QDME Guideline. As there are no suitable cropping areas present, a map of suitable cropping land is considered redundant.
24	Table 76, Appendix C, page 64, Agricultural land class assessment summary	Table 67 shows an agricultural land class of B/C1 was assigned to both Knockane and Norwich soil management units. It is unclear how an agricultural land class of "B" (suitable for a narrow range of crops) can be assigned to these soil management units when Table 65 shows they are unsuitable for dryland cropping.	Clarify how an agricultural land class of "B" was assigned to Norwich and Knockane soil management units deemed unsuitable for dryland cropping.	Agricultural land class assessment revised as recommended.

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25	Appendix 2 of Appendix C, page 81, 2019 survey soil profile data	Several soil profile descriptions contain errors or omissions as per the following list: - Limited or inadequate photos of soil profiles, soil surfaces and surrounding landscapes that do not demonstrate soil and landscape characteristics described. - Site GPS locations (UTM coordinates) are missing a zone e.g., Zone 55. - Several sites are described as having a microrelief type of "D". According to The Australian Soil and Land Survey Field Handbook (NCST 2009) "D" denotes "Debil-debil" microrelief – a type that is considered uncommon. - None of the site descriptions in the appendix include geology or lithology information. - None of the site descriptions in the appendix include and Australian Soil Classification according to The Australian Soil Classification, third edition (2021), nor are they assigned a soil management unit. - Several site descriptions include the codes "VW" and "VM" for structure. The Australian Soil and Land Survey Field Handbook (NCST 2009) does not allow for these structure codes. It allows "V" for massive structure or "W" and "M" for weak and moderate structure respectively. - It is unclear how field pH depths were selected. Best practise is to select depths at even spacings down the soil profile whilst avoiding horizon boundaries. However, selected depths in Appendix 2 appear somewhat random. - Despite some soil profile depths of 1m or more, only 3 field pH tests were undertaken on each profile. Best practise is as per The Australian Soil and Land Survey Field Handbook (NCST 2009) page 198. Regular field pH testing down the soil profile allows for the identification of the depth at which important pH changes occur. - Site MP12 has an incorrectly recorded site location. Coordinates provided for this site are located near Winton in western Queensland. - Site MP13 describes the structure as "AB/LE". Angular blocky (AB) and Lenticular (LE) are distinctly different soil structure types and are not interchangeable. It is not clear what a code of "AB/LE" is intended to mean.	It is recommended to: - Update Appendix 2 photos to demonstrate soil and landscape characteristics described. - Update site GPS locations to display appropriate UTM zone. - Revise sites with "D" type microrelief and determine if this is correct. - Update site descriptions to include geology and lithology information. - Update site descriptions to include an Australian Soil Classification according to The Australian Soil Classification, third edition (2021) and a soil management unit name. - Revise and update structure codes for site descriptions where "VW" and VM" are used. - Clarify how field pH sampling depths were selected and why only a limited number of tests were undertaken. - For noting: Refer to The Australian Soil and Land Survey Field Handbook (NCST 2009) page 198 for best practise field pH testing procedure. - Update GPS coordinates for Site MP12. - Update site descriptions with the structure code "AB/LE" to display an accepted code as per The Australian Soil and Land Survey Field Handbook (NCST 2009).	- map grid zones added to appendix 2. - Sites with D microrelief revised as recommended - Geology information provided in Section 2.5. - Site descriptions were made in 2019, prior to the release of the third edition of the Australian Soil Classification, and the descritpions are current with the edition relevant at the time. - VW revised to W (weak). VM revised to M (moderate). - pH sampling depths selected by observations of horizons, in accordance with NCST 2009 procedure. - MP12 coordinates corrected. Structure codes AB LE revised to LE.
26	Appendix 3 of Appendix C, page 82, 2019 survey soil observation data	Mapping observations (or "soil survey visual observations" as they are in the appendix) are intended to be brief and are used to confirm soil boundaries, soil type changes and other rapid survey information. To be of use to the soil surveyor and others using the information collected, there is a minimum amount of data required to be collected. The following relates to the data presented in Appendix 3: - No photos accompany the list of sites – as recorded data is limited for this site type, photos of observations are important to allow users of the data to see surface features, landscape, and vegetation. - While the locations are represented in Figure 6 (page 21) "check points" are not numbered. - No GPS coordinates are provided in the appendix for "check point" sites. - It is unclear what "NOC" means in the soil description/unit column. - Despite being named "soil description/unit" this column does not record the soil management unit at the location.	It is recommended that: - Update Appendix 3 to include photos of observation sites. - Update Figure 6 to include numbering for "check point" sites. - Update Appendix 3 to include GPS locations for all observation sites. - Clarify what "NOC" means in relation to "soil description/unit". - Update the appendix to include soil management unit names for all sites, especially those used to determine placement of soil management unit boundaries.	- photos of check points sites not provided, however, - Figure 6 updated to include site labels. - Coordinates added to appendix 3 - 'NOC' replaced with full text - SMU added to appendix 3.
27	Terrestrial Ecology Chapter 10, section 10.7.1, Page 10-119	The EIS has only identified the portions of the REs which did not trigger assessment as MNES require assessment as a MSES.	For clarity purposes, it is recommended that a plan is provided that distinguishes the extent of endangered and of concern regional ecosystems that meet the requirements of TECs (MNES) from the extent of endangered and of concern regional ecosystems that will be assessed as MSES.	The extent of Poplar Box TEC (excluding other potential Poplar Box regional ecosystems) is presentned in Figure 10.15. Extent of Brigalow TEC (excluding other potential TEC brigalow regional ecosystems) is presented in Figure 10.14. The extent of impacted MSES regional ecosystems (excluding TEC vegetation) is presentned in Figure 5 of Chapter 23.

Issue #	Topic, EIS section, and Terms of Reference (ToR) section	Issue/Comment	Recommendation	Summary of changes made / response to item
Attachment 1 Terms of Reference Appendix P Social Impact Assessment, Appendix T Social Impact Management Plan				
1	Section 9.12 Workforce accommodation Appendix P, Appendix T	The Lake Vermont Accommodation Village is proposed to undergo an expansion to increase capacity up to 750 rooms (currently 637 rooms). The SIA notes Native Title on land subject to acquisition for the expansion and that the camp adjoins Dysart State High School and nearby residents (with potential for changes to amenity) (SIA p.93). Management measures are discussed in the SIMP. The SIA has committed to maintain the local workforce however there are plans to expand the camp accommodation (separate to the EIS process). It is noted the SIA refers to the camp currently running at capacity and is in need of refurbishment and upgrade (SIMP p.23), however the expansion appears at odds with a workforce not expected to increase.	- Provide information on the Development Application lodged for the expansion of the Lake Vermont Accommodation Village and any outcomes of consultation (including on the DA) with key stakeholders i.e. Isaac Regional Council, Barada Barna People (including an update of the relinquishment of native title through the ILUA process) and Dysart State High School. - Provide further explanation for the necessity of a workforce camp expansion (i.e. amenity improvements, dedicated rooms for workers, no hotbedding etc) as an expansion of approx. 100 beds currently seems at odds with workforce numbers expected to be maintained (as opposed to increased).	The refurbished Lake Vermont Accommodation Village is an important component of the workforce accommodation strategy, to provide genuine choice for the workforce (on living arrangements). The Development Application (DA) is subject to a separate assessment process under the IRC local planning scheme. As this remains under consideration by IRC, details on the DA are not proposed to be included in The SIMP. No amendments required. As outlined in Section 1.1.1.4 of the SIA, refurbishment of the Lake Vermont Accommodation Village will ease the congestion currently being experienced and facilitate progressive refurbishment of existing facilities. Overall, the refurbishment will enhance living conditions and support improved workforce wellbeing. Further information (as outlined below) has been provided in Section 3.5.2 of the SIMP. BBC is committed to providing workers with a high standard of accommodation and to achieve this outcome, refurbishment of the camp is required to ensure adequate accommodation is provided to ensure genuine workforce accommodation options are available at point of hire. There are other existing camps in Dysart however engagement with these providers has confirmed that they have little to no available capacity. Furthermore, BCC places a high priority on all non-local operational workers being accommodated in a single, purpose-built accommodation facility rather than being split across multiple camps. This is considered vital to workforce cohesion, collaboration and coordination. Refurbishing of the Lake Vermont Accommodation Village is the only option which achieves this outcome. Additional information has now been provided in Section 3.5.2 of the SIMP regarding the need for the refurbishment of Lake Vermont Accommodation Village.
2	Section 9.12 Housing Appendix P, Appendix T	The SIA notes that there are a significant number of unoccupied dwellings in Dysart. A significant proportion of the unoccupied dwellings are owned by BMA. Overall, there is ample capacity for Dysart to provide housing for families moving to town, however, BMA ownership and the quality of some of the available housing may be a barrier (SIA p.55). An impact has been identified with increase in demand for 3-4 bedroom housing sought by families looking to relocate to Dysart. It is understood there is a shortage of quality housing of this type in Dysart (SIA p.38). The SIMP commits to collaboration with BMA to release Dysart housing on the market where potential new workers encounter barriers in accessing housing (SIMP p.27). The SIA refers to management measures 'interventions such as potential purchase of housing stock as it becomes available' (SIA p.89). The SIMP refers to the local workforce in Dysart to remain relatively constant, 'and this may result in the release of two houses into the market at Dysart' (SIMP p.20). With the expectation that the local workforce in Dysart remains relatively constant or increases it is not expected that existing workforce housing would be released into the market (it is not clear if this is referring to private workforce housing or company owned housing).	- Provide an update on consultation with BMA and housing providers on The housing market in Dysart and The program for collaboration with BMA on The release of surplus housing. this would include The circumstances in which company housing would be secured for The project workforce in Dysart. - management measures included in The SIA (i.e. commitment to purchase of housing stock as It becomes available) should be included in The SIMP. The 'release of two houses into The market at Dysart' (SIMP p.20) is also confusing and requires clarification.	IRC and IAHT were engaged in August-September 2023 to discuss and refine management measures relating to housing and accommodation. Based on these discussions, Jellinbah has committed to implementation of the Workforce Accommodation Solution to provide genuine accommodation choice for workers. To ensure workforce accommodation options are available at point of hire, BBC is committed to: • Purchase or construction of 15 dwellings in Dysart comprising a mix of housing types which meet worker preferences. • Refurbishing the Lake Vermont Accommodation Village to provide high quality accommodation to the non-resident workforce. • If there is constrained workforce access to housing, consideration of potential long-term leasing arrangements to access existing unused dwellings in Dysart. A new management measure has been included as part of the Housing and Accommodation Plan to implement the Workforce Accommodation Solution. The management measure relating to collaboration with BMA has been omitted from the SIMP. The SIMP has been updated to further clarify the predicted release of a small number of houses (two) on to the market due to the out-migration of some workers associated with open cut operations. It is noted that the commitment referred to in the SIA (Table 6-2) is to avoid impact volatility in the housing market through collaborating with major housing providers in Dysart (such as BMA and Department of Communities, Housing and Digital Economy) to provide early indications of housing demand and interventions such as potential purchase of housing stock as it becomes available, in order to stagger housing demand. In the event of demonstrated need (refer to response above), BBC will collaborate with major housing providers in Dysart to secure housing for the project's operational workforce. A new management measure has been included as part of the Housing and Accommodation Plan to implement the Workforce Accommodation Solution.

Issue #	Topic, EIS section, and Terms of Reference (ToR) section	Issue/Comment	Recommendation	Summary of changes made / response to item
3	Section 9.12 Local workforce Appendix P, Appendix T	A local recruitment strategy commits to maximise local employment and residency (SIMP p.12). The SIA includes that 8 % of existing workforce reside in Dysart and the project is looking to maintain the existing workforce. The SIMP includes a target of 8 % for the operational workforce to reside in Dysart (i.e. maintain existing levels of local employment) (SIMP p.13). However, the health and community wellbeing plan has a target/KPI of 10 % of the operational workforce to reside in Dysart (SIMP p.47). A more aspirational target of 10% of the operational workforce residing in Dysart would better reflect the intent of the Strong and Sustainable Resource Communities Act 2017 and the project's enhanced commitments to local employment (i.e. recruitment hierarchy).	Clarify the commitment and targets/KPIs for operation workforce residing in Dysart.	BBC understands that a more aspirational target of 10% would better reflect the intent of the SSRC Act and the project's enhanced commitments to local employment. The SIMP has been updated to reflect a KPI/target of up to 10% of operational workforce to reside in Dysart during operations. The Local Recruitment Strategy (Section 2.5.1) has been revised to include the aspirational target of 10 per cent of workers who reside in Dysart.
4	Section 9.12 Aboriginal and Torres Strait Islander employment targets Appendix P, Appendix T	The Lake Vermont Mine currently employs 4.9 % of workers who identify as Aboriginal and Torres Strait Islander (SIA p.77). The SIMP workforce monitoring framework includes an aspirational target of 5 % of workforce for the project to identity as Aboriginal and Torres Strait Islander by 2040 (SIMP p.15).	The 5 % aspirational target for Aboriginal and Torres Strait Islander should apply to the commencement of the project operation (not by 2040). The targets for Aboriginal and Torres Strait Islander employment and business procurement should also be included in the project commitments.	The SIMP includes commitments and targets for Aboriginal and Torres Strait Islander employment and business procurement. The Workforce Management Plan has been updated to reflect the target of 5% of the operations workforce identifying as Aboriginal and/or Torres Strait Islander. The management measure regarding maxismising opportunities for identified under-represented groups in the labour force has been expanded to include the action to adopt aspirational target of 5 per cent of the operations workforce who identify as Aboriginal and/or Torres Strait Islander.
5	Section 9.12 Isaac Regional Council Appendix P Ch. 2	The SIA includes a summary of engagement with Isaac Regional Council (SIA, p. 33) that has now dated (2020). The Consultation Process (ch.2) refers to most recent consultation with Isaac Regional Council on 11 April 2022 in Moranbah). However, the SIA or Consultation Process (ch.2) has not been updated to reflect the outcomes of more recent consultation.	Ensure that the project's local government (Isaac Regional Council) has had the opportunity to comment on the EIS. Update the SIA/ SIMP with outcomes of recent consultation with Isaac Regional Council (this may include response to submissions).	Additional engagement has been undertaken in August and September 2023 to discuss and refine management measures. Engagement occurred with key stakeholders in Isaac Regional Council and the Council's Economy and Prosperity team. Engagement also occurred with IAHT and the childcare provider in Dysart to confirm appropriateness of existing management measures. The SIMP has been updated where relevant to reflect outcomes of recent stakeholder engagement.

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Chapter 18 - Social Chapter 19 - Economic Appendix T - Social Impact Management Plan				
1	Chapter 18 Social; Table 18.1, page 11 Workforce Management	Pleasing to see specific reference to maximising labour force participation for under-represented groups, including Aboriginal people and/or Torres Strait Islander people.	Addition of workforce employment targets that align with population representation would be of benefit in focussing measure of success.	EIS Appendix T (SIMP) includes commitments and targets for Aboriginal and Torres Strait Islander employment. The SIMP has been updated to reflect the now adopted, aspirational target of 5% of the operations workforce identifying as Aboriginal and/or Torres Strait Islander (Table 2.3).
2	Chapter 19 Economic; Table 19.1 Summary of beneficial economic impacts of the project; Support for Local Business	While the EIS outlines the presence of Aboriginal and/or Torres Strait Islander businesses within the area (18.2.2.7 Business and Industry) there is no reference in this section to the inclusion of these businesses to the project's supply chain.	Recommend inclusion of intent to include relevant Indigenous businesses within the supply chain for the expansion project. The inclusion of Indigenous business procurement targets would be of benefit in focussing measuring success.	EIS Chapter 19 (Economics), Table 19.1 has now been updated to specifically reference local and regional indigenous businesses as part of the Project supply chain. EIS Appendix T (SIMP), Section 4 also provides a committment to prepare a 'Local Business and Industry Procurement Plan' for the Project. The objectives of the Local Business and Industry Procurement Plan are to: -Maximise opportunities for competitive and capable local and regional businesses to provide goods and services to the Lake Vermont Meadowbrook Complex. -Reduce barriers for entry to the supply chain for local, small, Indigenous and/or new businesses where feasible. -Build relationships with local businesses to maximise local awareness of supply opportunities. -Ensure that the objectives and strategies of this Local Business and Industry Procurement Plan are reflected in the structuring of contracts and of contractors. Procurement targets for indigenous businesses are not proposed, however this group is a key consideration within the 'Local Business and Industry Procurement Plan'.
3	Appendix T – Social Impact Management Plan Chapter 18 Social	Workforce Management Plan	When outlining employment opportunities for identified under-represented groups (appendix T table 2.2) in the labour force to also include people with disability and older persons. Amend Appendix T table 2-3 to also include establishing targets for workers who identify as people with disability and older persons. Amend Appendix T section 2.5.3 – training initiatives to ensure training initiatives and programs are inclusive and accessible to all including people with disability and older persons.	EIS Appendix T (SIMP), Tables 2.2, 2.3 and Section 2.5.3 have now been updated as requested (to specifically reference people with disabilities and older people within the workforce).
4	Appendix T – Social Impact Management Plan Chapter 18 Social	Housing and Accommodation Plan	When outlining the housing strategy identified in Chapter 18 and in appendix T section 3, it is suggested that it is acknowledged and outlined that the project would contribute to a negative effect on housing availability, affordability and accessibility for the whole community including people with disability and older persons in the region. The department recommends any initiatives and activities to navigate the supply and demand of housing needs includes accessible housing options for people with disability and older persons; and any expansion (constructed or updated) of the current Lake Vermont Accommodation Village is accessible for all as per the Liveable Housing Design Standard.	Significant commitments have been made in respect of housing availability and affordability. These committments include an annual contribution of $80,000 to Isaac Affordable Housing Trust (IAHT), over 20 years. This represents a total contribution of $1.8M to housing accessibility and affordability. Further, since the time the EIS was publicly exhibited, the proponent has made a further committment to acquire (purchase or construct) 15 dwellings in Dysart, comprising a mix of housing types. These 15 dwellings will be made available to employees, to encourage members of the workforce to reside locally within Dysart. This committment has been resultant of ongoing engagement with the Isaac Regional Council and the IAHT, and represents a significant committment to our local community of Dysart.
5	Appendix T – Social Impact Management Plan Chapter 18 Social	Health and Community Wellbeing Plan	Amend Appendix T section 5.2 – summary of existing social environment, to acknowledge that vulnerable groups also include people with disability. The department encourages any community enhancement initiatives (appendix T section 5.5.1) under the community investment program should consider the needs of people with disability and older people. This includes community events and bus shuttle services to access health and other allied services. It is important to note that offering a bus shuttle service one day per week, may not meet the needs of people who are needing to access health and other allied health services multiple times a week. The department recommends all communication activities and resources (including new worker information sheets) are made accessible for people with different types of disability.	EIS Appendix T (SIMP) Section 5.2 has been updated to specifically reference "people with disabilities" when referring to "people who need assistance". Section 5.5.1 of the SIMP has also been updated to specifically reference people with disabilities and the elderly. Further, since the time of the EIS being publicly exhibited, contributions towards the operation of a shuttle bus have been revised, resultant of the identification of the 'Hinterland Community Care' organisation. Hinterland Community Care is a local organisation that provides a transportation service for vulnerable residents in Dysart (including but not limited to people with disabilities and the elderly) to access health and other allied services. The proponent has committed a financial contribution of $30,000 per annum to maintain and enhance the operation of this service.
6	Appendix T – Social Impact Management Plan Chapter 18 Social	Community and Stakeholder Engagement Plan	When outlining ongoing consultation in Appendix T section 6 and in Chapter 2, it is encouraged that any proposed engagement and stakeholder consultation should consider the needs of people with disability and older people as well as ensuring communication activities and resources are made accessible for people with different types of disability. Amend Appendix T section 6.3 Table 6-1 Key Stakeholder Groups to reflect that the department's interest includes "Accessible Housing and Employment and business opportunities for Aboriginal and/or Torres Strait Islander peoples, people with disability and older persons".	EIS Appendix T (SIMP), Table 6.1 has been updated as requested.

Issue #	Topic, EIS section, and Terms of Reference (ToR) section	Issue/Comment	Recommendation	Summary of changes made / response to item
Chapter 3 - Project Description **Appendix F - Surface Water Assessment Report**				
1	Section 01, Chapter 3.3.7, page 3-47, Water supply and management infrastructure	Additional infrastructure required to transfer raw water will be under the management and control of Bowen Basin Coal. There appears to be nil additional construction required by Sunwater. Normal safety provisions for the supply of water do not change.	Nil for EIS. As project develops, additional information on the tie in of the project line to the current raw water supply to show appropriate risk assessment.	Noted.
2	Appendix F, Section 4.4, pages 30-32, Water Use Entitlements	Water Use Entitlements – this section is incorrect – refers to unsupplemented water use entitlements only and has not included consideration of supplemented water users (Sunwater customers).	Consider all water users downstream including those off Tartrus Weir (the Nogoa Mackenzie WSS Tartrus Weir is located at the junction of the Isaac and Mackenzie Rivers) and the Rookwood Weir WSS upstream of the Lower Fitzroy and Fitzroy Barrage WSSs mentioned.	This section has been reviewed in respect of these comments and it is confirmed that supplemented water users do not exist within the Project impact area; including on One Mile Creek, Boomerang/Hughes Creek, and Phillips Creek. Tartrus Weir is located over 125km downstream of the Project site. With localised catchment losses estimated at approximately 8% for the One Mile Creek catchment (representing the most significant catchment loss impacts of the Project) impacts 125km downstream will be indiscernible. Indeed, water loss impacts immediately downstream of One Mile Creek (at its junction with Boomerang Creek) are estimated at just 1.8%; with the impact at the downstream junction of the Isaac River likely indiscernible (just 15km downstream of the Project site).
3	Appendix F, Section 4.4, pages 30-32, Water Use Entitlements	Water Use Entitlements – this section is understated – refers to mining, irrigation and stock watering indicating that water use is “limited” to mining, irrigation and stock watering.	Mining and irrigation water use in this location and downstream is significant. By use of the word limited in this context it implies that this use is not significant. Additionally, there is potable water use further downstream in the Fitzroy.	EIS Appendix F (Surface Water) Section 4.4 has now been updated to capture potable water uses. In regards to the use of the word "limited" it is noted that this is to describe the types of water uses in the catchment being limited, as opposed to making any reference to the significance of these uses. No change is therefore required.

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Chapter 18 - Social				
1	Chapter 18: Social - General	**Data currency** While it is understood there is inevitably a 'data lag' between SIA analysis and the SIA report being published, it is imperative the SIMP relies on the most current data available given mining towns have historically experienced acute fluctuations driven by the cyclical nature of the resource sector. It is also critical any housing and accommodation modelling relies on the most current data as inputs given the sensitivity of the property market.	- The proponent is requested to ensure the SIMP relies on the most current datasets available prior to implementation, particularly in relation to revising the 2016 census datasets to the 2021 versions. - The proponent is also requested to ensure housing and accommodation strategies reflect the most current datasets available prior to implementation and also undertake further engagement with Council regarding these strategies prior to commencing operations.	A number of direct engagements have occurred between BBC and IRC since the comments on the EIS were received. This has resulted in an updated SIMP, which now includes significant further committments by the proponent, to support the management of social impacts. The SIMP has been updated to reflect the latest datasets (such as with 2021 Census). As an adaptive management tool, the SIMP is subject to regular reviews to assess the effectiveness and relevancy of mitigation and enhancement measures. Social baseline characteristics will be updated where relevant as part of the annual SIMP review process. Relevant sections of the SIMP have been updated with the most recent dataset available. The SIMP, including the housing and accommodation strategy, have been updated to reflect the latest datasets and will be subject to regular review. IRC has been engaged in August-September 2023 to discuss and refine management measures relating to housing and accommodation. Based on these discussions, BBC has committed to implementation of the Workforce Accommodation Solution to provide genuine accommodation choice for operations personnel. To ensure workforce accommodation options are available at point of hire, BBC is committed to: • Purchase or construction of 15 dwellings in Dysart comprising a mix of housing types which meet worker preferences. • Refurbishing the Lake Vermont Accommodation Village to provide high quality accommodation to the non-resident workforce. • If there is constrained workforce access to housing, consideration of potential long-term leasing arrangements to access existing unused dwellings in Dysart. BBC will maintain ongoing engagement with Isaac Regional Council regarding housing and accommodation strategies prior to the commencement of Project operations. The Housing and Accommodation Plan (Section 3) has been updated with the most recent dataset available, such as from the ABS 2021 Census of Population and Housing and SQM Research. The Housing and Accommodation Plan includes the new management measure to implement the Workforce Accommodation Solution.
2	Chapter 18: Social - General	**Risk of unmanaged impacts arising from Lake Vermont Meadowbrook Complex operations** Within Chapter 3 of the EIS 'Project Description', the proponent notes: 'The existing Lake Vermont Mine is not within the scope of this EIS, and Lake Vermont Resources will continue to undertake open-cut mining operations and related activities at the Lake Vermont Mine in accordance with the terms of its existing approvals.' While Council recognises there is no regulatory requirement to compel the proponent to consider the true scale of impact which may arise from the proposed Lake Vermont Meadowbrook Complex as a whole, however in not doing so The Project presents a material risk of continued unmanaged negative impacts and loss of benefits in the absence of mitigation and enhancement measures for the full scope of operations. The unmanaged cumulative effects arising from smaller and extension projects which do not trigger an EIS process, projects which gained approval prior to the introduction of the Strong and Sustainable Resource Communities (SSRC) Act (2017) or where an extension project is only required to consider the impacts of 'new' operational activities, as has occurred in this case, have potential to translate to negative outcomes and loss of benefits for both directly affected communities and the broader Isaac Region. In Isaac's lived experience the quality of Social Impact Assessment (SIA) and associated Social Impact Management Plans (SIMPs) approved prior to the introduction of the SSRC Act (2017) has been highly variable. The proponent has committed to maintaining the implementation of established community investment initiatives such as partnership with CQ rescue and sponsorship community events. However, while sponsorships and donations certainly have their place, they do not take the place of strategic social investment which seeks to deliver long-term socially sustainable outcomes for communities. Council considers the current SIA process and development of a SIMP for the Lake Vermont Meadowbrook Extension presents a clear opportunity to incorporate any social impact management measures which may exist as part of the original Lake Vermont Mine approvals and genuinely manage both positive and negative impacts in alignment with the true nature and scale of the Lake Vermont Meadowbrook Complex in preference to the minimum required in the current regulatory context.	Council requests the proponent mitigate and enhance identified social impacts arising from the proposed Lake Vermont Meadowbrook Complex as a whole, in preference to limiting the scope of the SIA and SIMP to the minimum required to achieve project approval under the current process.	BBC is committed to a comprehensive and cohesive approach to managing impacts and has subsequently developed a SIMP which addresses both the underground extension and the existing Lake Vermont mine. As outlined in Section 1.1 and Table 1-1 of the SIMP, a holistic approach has been adopted with the underground extension and the existing mine collectively referred to as the Lake Vermont Meadowbrook Complex. The SIMP incorporates existing management measures for the Lake Vermont Mine and details management measures developed specifically in response to social impacts from the project. No amendments required.

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3	Chapter 18: Social - General	**Extent to which management measures outlined in the SIMP deliver meaningful social value.** Council's review of the SIA and SIMP identified a number of prevalent concerns from community members which do not appear to have been considered in the SIMP or have only been minimally addressed. Council considers this inconsistent with the following SIA principles as set out in the Queensland Government's Social Impact Assessment Guideline (2018): - Rigorous: an SIA is to be based on objective, comprehensive social impact analysis, incorporating the most up to date information on the communities affected and the project. - Effective management: an SIA is to include potential benefits and mitigate potential negative impacts. The Summary of Community and Stakeholder Engagement presented within the SIA provides up to date information on current community concerns. Multiple stakeholders raised concerns relating to Youth needs, the current condition of the shopping centre, quality of housing available in Dysart, drug and alcohol issues, domestic violence, mental health and local living options for the workforce however a number of these issues appear not to have been explicitly addressed through the management measures outlined in the SIMP or have been addressed in a minimal sense from an apparent perspective of 'not making a bad situation any worse' as opposed to creating meaningful social value which will deliver a genuine net benefit to affected communities. While Council remains focussed on management measures which deliver enhanced social value outcomes and recognises the quantum of financial social investment is only part of the picture, benchmarking against other similar projects reveals the amount to be comparatively low. Council holds concerns the level of financial investment proposed will be insufficient to support the creation of meaningful social value or are structured in a manner which may prove challenging to implement in a practical sense.	- Council requests The proponent revise The SIMP to include management measures which respond directly to The principal concerns voiced by community and other stakeholders during The SIA engagement process. - particularly, Council requests The proponent develop management measures which respond to unmet child and youth needs. This could include youth service delivery funding which could potentially be coordinated through The Moranbah youth and community Centre as Isaac's regional service provider and urban amenity projects which enhance The appeal of public facilities to local youth, promote engagement and reduce anti-social behaviour. The Dysart urban Design Framework may assist The proponent in This respect.	The Proponent has revisited, and made significant further commitments to address community challenges and concerns raised by IRC. Further to this, the existing Lake Vermont Mine currently supports a number of community support programs, including the Dig Deep boxing club, which provides a popular source of recreation, fitness and discipline for Dysart youth. Support of this program (and other similar opportunities) will continue.
4	Chapter 18: Social - Workforce Management Plan	**Live Local Incentive** Council is encouraged by the proponent's commitment to incentivise employees to live locally through the provision of an allowance of $130 per week to be included in the employee's gross pay. While Council commends the proponent on this initiative it is important to understand genuine choice for employees cannot be achieved through any one means. Conditions need to be considered across many mechanisms including: - Salary and other employment conditions - Absence of discrimination or disadvantage - Housing availability, suitability and affordability - Genuine ability for employees to be at home with family every night - Satisfaction with banking conditions, for example loan valuation ratio and servicing conditions, where employees seek to owner occupy - Facilitative transport modes, including buses to towns rather than camps - Fatigue management measures - Rostering options including shift length, structure and changeovers. In periods of intense upward growth pressure rents frequently escalate beyond the means of many households and have peaked in the past at $1900 per week for a standard three-bedroom home. In this context the $130 allowance per employee per week may not greatly incentivise the choice to live locally for employees. Further, given the allowance is to be included in the employees' gross pay it may be subject to tax reducing its value in real terms. Loan providers requiring 40% deposits if employees choose to owner occupy also serves as a barrier to living locally as would concerns regarding the poor quality of housing stock in Dysart as identified in the SIA. The program would benefit from being supplemented with further incentives beyond the weekly allowance. Council notes the proponent is currently intending to provide bus transport between Worker Accommodation Villages (WAVs) and the project site and suggests extending bus transport between towns and the project site presents a relatively easily achieved means to enhance the live local program. Noting the Lake Vermont Village WAV provides gym access for non-resident workers Council also suggests providing equivalent gym memberships for resident workers would a similarly achievable measure which may enhance the appeal of living locally. While the SIA provides 'aspirational' targets for the percentage of resident workers employed by the project it is unclear whether the $130 per week allowance would be capped if uptake is greater than the identified target. Council also acknowledges the proponent's intent to 'identify' roles which could be structured to be offered on a job-share basis, however 'identifying' roles does not necessarily translate to action and therefore cannot be considered to constitute a commitment.	- Council acknowledges and supports The intent of The additional allowance for employees who choose to live locally, however cautions against reliance on any one mechanism to achieve genuine choice for employees to reside where they wish. - Council strongly recommends The proponent increase The amount of The weekly allowance for employees who choose to live locally and supplement The program with further measures including, but not limited to, bus transport from Dysart to The project site for resident as well as non-resident workers and equivalent access to facilities enjoyed by non-resident workers such as gym access or alternative memberships. - Council seeks an assurance from The proponent that The local living allowance will not be capped if uptake is greater than anticipated and will be offered to all employees regardless of length of service and commencement date.	BBC acknowledges the point raised by Council and is committed to providing employees with genuine housing choice. The allowance amount ($130 per week) is that paid to the existing workforce that resides locally. The intent is to raise this to $200 per week however this needs to be negotiated with Thiess as the current operator of the Lake Vermont mine. The management measure regarding the live local incentive has been revised to $200 per week allowance (previously $130 per week) which is included in gross pay of new workers or existing workers on FIFO arrangements to relocate to Dysart. BCC notes Council's recommendation and intends to increase the live local allowance to $200 per week however this will be subject to negotiation with the current operator Thiess. Bus transportation to the mine site will continue to be made available to workers who are residents of Dysart. BBC notes Council's suggestion and workers residing locally will also be offered access to the gym at the accommodation facility. See above. BBC is committed to providing employees with genuine housing choice and will actively encourage members of the workforce to take up residence in the region. BBC confirms that there will be no cap applied to the uptake of the living local allowance, which will be offered to all employees regardless of length of service and commencement date. Section 3.5.2 (Living Local initiative) has been amended to clarify that the living local initiative will be available to all project employees regardless of length of service and whether employed by BBC directly or through a contractor. It is also noted that there is no cap applied to the uptake of the living local initiative.

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5	Chapter 18: Social - Workforce Management Plan	**Advertising of job opportunities** Council notes the proponent's commitment 'No job opportunities will be advertised as FIFO only position to fully comply with the Anti-Discrimination Act 1991 provisions in the SSRC Act' and recognises this is consistent with the provisions of the SSRC Act (2017), however it is unclear whether the proponent intends to apply this commitment to job opportunities which arise on an ongoing basis for the entirety of the proposed Lake Vermont Meadowbrook Complex or attempt to demarcate job opportunities associated with the portion of the project which falls within the scope of the EIS. Council wishes to emphasise the importance of offering new and existing employees genuine choice in where they chose to reside from the early recruitment phase through to end of mine life.	Council strongly recommends the proponent apply the commitment to prohibiting the projects job opportunities being advertised as FIFO only to the total project workforce on an ongoing basis, in preference to demarcating job opportunities associated only with the portion of the project which falls within the scope of the EIS.	BBC acknowledges Council's concerns and reaffirms that no jobs will be advertised as FIFO only regardless of operations (i.e., the project or Lake Vermont Mine). It should be noted Lake Vermont Mine is already listed as a 'large resource project' and as such is subject to the anti-discrimination provision of the SSRC Act. No amendments required
6	Chapter 18: Social - Workforce Management Plan	**Workforce health and wellness** Council commends the proponent's recognition of the additional stress and/or anxiety which is experienced by families and workers employed on a non-resident basis and supports the promotion of uptake of the proponent's existing Employee Assistance Program (EAP) and additional support of the Lives Lived Well program which services the Isaac region on an outreach basis. However, given this commitment appears to have been made not only to manage the additional stress placed on workers and their families from the impacts of non-resident employment arrangements, but also in response to concerns expressed by the local community regarding drug and alcohol use and poor mental health Council again questions whether the proposed financial investment of $5,000 per year equates to sufficient support for this service. Recent data released by Mental health Australia indicated 53% of Australians needed mental health support and 42% obtained mental health support in the 'past three months' of the study period1. While Council recognises the determinants and management of mental health issues are varied, on the basis of 42% of the workforce potentially requiring support the investment equates to $0.25 per employee, per week to access this service. When the broader community, which does not have alternative access to the EAP is considered this equates to an investment of $0.06 per person per year. Council does not consider this level of investment to be commensurate with the nature and scale of the project, particularly when considering local ambulance services reported callouts to workers camps which include 'mental health issues which can be challenging for paramedic staff'. Council acknowledges the proponent's intent to provide first aid facilities at work sites and Lake Vermont Accommodation Village and to 'provide emergency service providers with advance notice of workforce mobilisation and operational changes' however wishes to draw to proponent's attention to current Queensland Government service funding models which are based on the Estimated Resident Population (ERP) and disregard demand attributable to the non-resident worker (NRW) population. The current non-resident population of the Isaac Region represents in excess of 13,000 people potentially requiring access to local health services. The current NRW population of Dysart is 19352 with 774 workers, or 40% of the Dysart NRW population being attributable to the proposed Lake Vermont Meadowbrook Complex inclusive of impacts arising from the proportion of the project workforce beyond the scope of the EIS. It is Council's experience non-resident workers access local GP services and present at the Dysart hospital for routine matters, including obtaining medical certificates, in preference to devoting time during rostered days off for these purposes. The places extra pressure on services which in some cases are already strained beyond capacity. Despite the SIMP is absent of any meaningful commitment managing these impacts which is inconsistent with management measures proposed by recent comparable projects in the Isaac region.	- Council requests The proponent be conditioned to developing management measures, consistent with The nature and scale of The project, which respond to The negative impacts arising from The demand of The projects non-resident workforce and promote positive community health outcomes for The life of The project. - Council requests The proponent's support in advocacy efforts to The Queensland Government for appropriate levels of funding and service provision of health and other essential services inclusive of The high non-resident population of The region.	Whilst the commitments made are consistent with the scale and nature of the project, BBC acknowledges that there may be an opportunity to further contribute to mental health services delivered in Dysart. It should be noted that the employee assistance program (EAP) available for the workforce of the Lake Vermont Meadowbrook Complex includes specialist mental health services through Gryphon Psychology. A new management measure has been included in the SIMP to address lack of mental health services Dysart. The management measure is provision of financial contribution of $10,000 per year to ELAM to support delivery of mental health and youth programs in Dysart. BBC will continue to advocate for the Isaac region to be provided appropriate levels of funding and service provision for health and other essential services. No amendments required.

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7	Chapter 18: Social - Housing and accommodation Plan	**Resident worker accommodation and impacts to property markets.** The SIMP appears absent of any meaningful strategy to ensure the project workforce is able to access suitable accommodation where employees seek to reside locally beyond and intent to 'Collaborate with BMA to release Dysart housing onto the market in instances where potential new resident workers encounter barriers in accessing housing in Dysart.' It is Council's lived experience relying on negotiations with other mining houses to access housing stock carries an unacceptable level of risk as has occurred in the township of Glenden which has been impacted to potential closure following the failure in negotiations to secure resident worker accommodation between mining companies and the apparent reluctance of the Queensland Government to enforce commitments made to providing accommodation for resident workers made by proponents as part of the approvals process. It is unclear whether the proponent has approached BMA and entered into any agreement which may support their intent for BMA to release housing to the benefit of the Lake Vermont Meadowbrook Complex proposal. BMA are currently advancing the Saraji East Mining Lease Project and Peak Downs Mine Continuation Project which are likely to increase demand for local accommodation from BMA's own employees, however this does not appear to have been taken into consideration by the proponent. Council has consistently advocated for proponents to invest in their own housing stock to remove barriers for employees to have genuine choice in where they wish to reside and reduce volatility in the highly sensitive property market in the Isaac region. The SIA indicates this view is shared by the Queensland Department of Housing and Public works who recommend 'mining companies should try to invest in housing as it reduces the volatility of local housing markets.' Further, the proponent acknowledges the poor quality of housing stock in Dysart may serve as a barrier to employees seeking to reside locally, a concern which is consistent echoed by the community and other agencies in the SIA consultation report, however again no meaningful management measures appear to have been considered. The proponent indicates an intent to 'collaborate with relevant Queensland Government Departments and Isaac Regional Council to manage cumulative impacts to the local and regional housing impacts' however this is framed as 'if required' with no identified triggers and thresholds for when intervention by the proponent might be 'required' nor any indication of what management measures the proponent might be prepared to apply. In its current form Council considers the proponent's approach to managing housing and accommodation impacts will fail to achieve positive results nor deliver on the proponent's own objectives of ' Provide the workforce with choice regarding preferred housing and accommodation arrangements' and 'Ensure the Lake Vermont Meadowbrook Complex minimises negative effects on local housing affordability and availability'	Council requests the proponent be conditioned to develop and implement a meaningful and comprehensive housing and accommodation strategy, in consultation with Council, which ensures barriers to employees living locally are removed and impacts on the local property market are effectively managed.	BCC is committed to providing all members of the operational workforce with genuine choice regarding where they wish to reside. As outlined in the SIMP Housing and Accommodation Plan, the overall incremental effect on the availability and affordability of housing is predicted to be minimal as job losses associated with Lake Vermont Mine will be offset through the generation of new employment opportunities associated with Project. Current modelling suggests that even with additional incentives offered to operational employees to live locally, the predicted additional housing demand would equate to only six households. There is currently more than adequate supply of housing to meet such demand. In July 2023 there were 99 houses listed for sale in Dysart. IRC has been re-engaged in August-September 2023 to discuss and refine management measures relating to housing and accommodation. Based on these discussions, BBC has committed to implementation of the Workforce Accommodation Solution to provide genuine accommodation choice for workers. To ensure workforce accommodation options are available at point of hire, BBC is committed to: • Purchase or construction of 15 dwellings in Dysart comprising a mix of housing types which meet worker preferences. • Refurbishing the Lake Vermont Accommodation Village to provide high quality accommodation to the non-resident workforce. • If there is constrained workforce access to housing, consideration of potential long-term leasing arrangements to access existing unused dwellings in Dysart. BBC will maintain ongoing monitoring on ongoing housing market in Dysart. If operational workforce derived housing demand is unable to be met by supply in Dysart, suitable housing interventions will be derived in collaboration with IRC. A new management measure has been included as part of the Housing and Accommodation Plan to implement the Workforce Accommodation Solution.
8	Chapter 18: Social - Housing and accommodation Plan	**Affordable Housing** Council acknowledges the proponent's intent to provide a financial contribution of $80,000 per year to the Isaac Affordable Housing Trust (IAHT) for a nominal term of twenty years, a total investment of $1.6 million. However, while this is an appreciable investment Council is unable to support its sufficiency in addressing affordable accommodation needs in its present format, and notes there is no record of engagement with IAHT as to the preferred funding model within the SIA or SIMP. As noted previously the local and regional property markets are highly sensitive and experience rapid fluctuations driven by speculated or real demand associated with the cyclical nature of the resource industry. It is imperative therefore that mechanisms for the provision of affordable housing in the region have the flexibility to respond to market conditions to ensure those who are employed outside the mining sector are not forced out of the region due to escalating rents and other cost of living pressures. Under the current model proposed, IAHT would receive $80,000 per year to construct affordable accommodation units in Dysart. However, to proactively address housing affordability needs for essential service workers Council strongly recommends increased flexibility within the proposed funding model which would permit IAHT to meaningful respond to community needs and allow for lump sum payments which could be used not only to construct dwellings but also for the purchase of land or existing buildings if necessary. A focus on the overall level of contribution to affordable housing in the region should be commensurate with the size and longevity of the project aligned with the intent of the SSRC Act to provide benefit from the construction and operation of the Lake Vermont Meadowbrook Complex as the starting point.	Council requests the proponent engage with IAHT to determine the most suitable funding model to meaningfully deliver a meaningful affordable housing outcome in the Isaac region.	The proposed funding model was derived in consultation with IAHT. As noted in Section 3.5.3 of the SIMP, BBC will provide an annual community contribution of $80,000 to the IAHT to facilitate construction of additional affordable housing dwellings in Dysart. IAHT was engaged twice during August 2023 to discuss refinement of management measure relating to affordable housing. IAHT confirmed that the existing management measure remains relevant and appropriate.
9	Chapter 18: Social - Local Business and Industry Procurement Plan	**Local content definitions** The Business and Industry Procurement Plan defines local according to the 'Queensland Resources and Energy Sector Code of Practice for Local Content', which defines 'local' as either an Australian or New Zealand Business. Council promotes the Queensland Local Content Leaders Network 'Keeping it in the Regions' paper which provides appropriate definitions for local which facilitate genuine positive local content outcomes in preference.	The proponent is requested to adopt the definitions of 'local' provided by the Queensland Local Content Leaders Network 'Keeping it in the Regions' paper in preference to the definition supplied by the Queensland Resources and Energy Sector Code of Practice for Local Content	The SIMP includes a commitment to develop a Local Content Policy and Strategy to maximise opportunities for local and regional businesses to supply to the Project where feasible. As Jellinbah and Thiess are full members of the Queensland Resources Council, the Local Content Strategy will adopt the Queensland Resources and Energy Sector Code of Practice for Local Content and its definition of 'local'. No amendments required.

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10	Chapter 18: Social - Local Business and Industry Procurement Plan	**Stakeholders** The SIMP indicates the proponent intends to collaborate with a number of stakeholders to deliver benefits to local businesses, however Council's Economy and Prosperity Team are not identified as a stakeholder.	Council requests the proponent identify and collaborate with Council's Economy and prosperity Team as a local business and economic development stakeholder.	Council's Economy and Prosperity team has been engaged to discuss local business and economic development in the Isaac region. Introductions were made to the new lead of the Isaac Business Chamber. Council's Economy and Prosperity Team and the Isaac Business Chamber has been included as a key stakeholder in the SIMP
11	Chapter 18: Social - Local Business and Industry Procurement Plan	**Small business support programs** Council is developing the Isaac Business Alliance Project in partnership with GW3 and regional businesses. The project intends to develop a business connection/collaboration model which realises the following objectives: - Provides strong advocacy for issues which impact businesses in the Isaac region - Effective communications to and from the business community in the Isaac region - Coordinated delivery of capacity and capability-building professional development - A vehicle to support strong collaboration between business - Improved investment attraction to the region to support businesses - Improved capacity to apply for funding to deliver projects of significance to the Isaac region. While the project is currently in its infancy, it is anticipated it will have matured sufficiently prior to the commencement of operations at the proposed Lake Vermont Meadowbrook Complex to highlight opportunities for large organisations, which profit from the region's resources, to support local small business networks and community. The regulatory context in which SIAs are conducted in Queensland is largely limited to consideration of business capacity to directly supply the project and the removal of barriers for entry 'where feasible'. However, in reality the social sustainability and liveability of communities relies on a thriving small business sector offering a mix of retail and service options to ensure residents are able to meet their needs and exercise genuine choice in where they live without compromising lifestyle choices, be that access to cafes or spare parts for car enthusiasts. Initiatives such as the Isaac Business Alliance Project present an opportunity for large business, including resource sector proponents, to advance reputational objectives through pursuing shared value outcomes which deliver social value beyond compliance through supporting these initiatives.	Council requests the proponent demonstrate a dedication to delivering social value beyond compliance to affected communities through a commitment to consider financial and inkind support for the Isaac Business Alliance Project and/or other regional business development programs which are mature and active in the region at the commencement of Project operations.	As an established operator since 2009, BBC/Jellinbah is committed to the ongoing delivery of social value beyond compliance and takes pride in the continued support provided to local communities through direct investments, job creation, partnerships with local suppliers, and working with local community groups. The Isaac Business Chamber, which is newly established, was engaged in September 2023 to introduce the project and discuss how BCC can support the Chamber. Isaac Business Chamber has been included as a key stakeholder in the SIMP.
12	Chapter 18: Social - Local Business and Industry Procurement Plan	**Subsidised shuttle bus** Council commends the proponent on the intent of the proposed commitment to 'Engage a local and/or small business to operate the free shuttlebus service for vulnerable residents in Dysart to access health and other allied services' and subsidise the service to operate one day per week to a maximum value of $30,000 per annum. Council also supports the proponent's intent to simultaneously deliver positive outcomes for both small business and vulnerable residents but is again concerned the commitment may prove challenging to implement in a practical sense. $30,000 per annum equates to $576 per week and while this may appear to be a substantive contribution Council questions whether this would be a realistic opportunity for local businesses given costs associated with the purchase of a suitable vehicle, maintenance and employee expenses and no demonstration of additional demand for a service beyond the one day per week free service stipulated in the commitment from which a potential operator could realise returns. While the need for such a service is identified via the SIA consultation with local community service providers there does not appear to be a record of engagement with local businesses who may be able to provide this service and there is a clear risk the commitment may not be able to be implemented and funds reabsorbed. The Dysart Smart Transformation Advisory Council (STAC) is currently trialling a free bus service between Dysart and Moranbah operating on a weekly basis and may be able to provide further insights for the proponent.	- Council requests the proponent undertake further engagement with local businesses and the Dysart STAC to test the underlying assumptions of this commitment and revise the terms where necessary. - Council further requests the proponent demonstrate alternative comparable management measures which would be implemented should the proposed subsidised bus service not proceed	The lack of public transport services in Dysart was raised as an issue of concern by multiple stakeholders engaged as part of the SIA. It is understood that through the Smart Transformation Program there has recently been a trial bus service between Dysart and Moranbah. However, stakeholders engaged in August-September 2023 support need for improved mobility and transportation within Dysart for vulnerable residents. As such, the need for a shuttle bus service within Dysart remains valid. However, it has been identified that Hinterland Community Care already operates a bus service in Dysart. As such, the commitment has been revised to support and enhance operation of the existing bus service within Dysart. The management measure has been revised to support the existing shuttle bus service in Dysart managed by Hinterland Community Care.
13	Chapter 18: Social - Health and community Wellbeing Plan	**Childcare** Council notes the proponent's intent to provide both a lump sum contribution of $50,000 to support the expansion of the existing Lady Gowrie Childcare Centre and an ongoing contribution of $20,000 per annum to assist the centre to employ an additional diploma qualified childcare worker in response to concerns expressed by centre representatives. Council notes part of the difficulty in attracting qualified staff to Dysart is due to lack of quality and affordable housing operations and suggests this is a clear opportunity for the proponent to consider enhancing the social value of both the childcare and affordable housing management measures through partnering with the Lady Gowrie Childcare Centre, the Childcare Leadership Alliance and IAHT to supply affordable quality accommodation options for appropriately qualified childcare workers.	**Traffic generation** The traffic trip generation has been provided, however it fails to identify the component of existing traffic associated with the Lake Vermont project that the assessment has considered as background traffic that will transition to the Meadowbrook project as part of the workforce transition. The project further identifies nominated routes (refer Figure 2.3), however the generation of traffic has not been considered across the full extent of the route or the dimensional restrictions imposed on the projects nominated route. The assessment also includes a number of flawed assumptions regarding the origin/destination of project components such as	It is understood that the Childcare Leadership Alliance (CLA) was launched in April 2023, with BMA providing initial funding to establish the Alliance and provide strategic sector-wide support to childcare across Moranbah and Dysart. BCC engaged with the CLA and Lady Gowrie Childcare Centre in September 2023 to discuss adequacy of proposed management measures. The Lady Gowrie Childcare Centre confirmed the proposed management measure remains adequate, and suggested a minor revision so that the initial financial contribution is for upgrades to the centre, rather than for expansion of the centre. Lady Gowrie Childcare Centre also noted that they would utilise the annual financial contribution to pay for rental accommodation for a qualified worker, which would assist with attracting and retaining qualified staff to the region. No amendments required. The management measure regarding financial contribution to Lady Gowrie Childcare Centre has been retained as per stakeholder feedback.
Chapter 20 - Transport				
14	Chapter 20: Transport	**Background** The TIA provides relevant background to the project including that the project impacts are to be offset by a reduction in impacts from the Lake Vermont Project. This is consistent with the representations and consultation to date with respect to work force accommodation. If this is the case, the background traffic identified needs to be further evaluated. This is on the basis that the existing impacts associated with the Lake Vermont Project will continue, however be associated with the Lake Vermont Meadowbrook Project. This is demonstrated in Figure 2.2 of the TIA		

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15	Chapter 20: Transport	**Scope and study area** Section 2 of the TIA identifies details the project intent and expected impacts including the source of the relevant transport impacts. The following is noted: Figure 2.2 identifies the workforce to be close to or exceed the existing Lake Vermont workforce as a result of the transition arrangements through to year 22. Therefore the background traffic that is existing impacts associated with Lake Vermont needs to be considered as impact associated with Lake Vermont Meadowbrook. Section 2.5 identifies haulage of waste, however the waste management plan identifies that all project waste will be disposed of on site on a site based waste management cell. Section 2.5 identifies that quarry products are to be sourced from Tay Glen Council is currently investigating if there is a current approvals for operating a quarry on the identified parcel of land. As part of consultation regarding the Social Impact management Plan, this has been identified as a risk regarding project assumptions Section 2.5 identified that concrete is likely to be sourced from Mackay. Due to the time sensitive nature of concrete transport, this is not a reasonable assumption Section 2.5 identifies "Some oversize loads may be required throughout the life of the Project on an 'as required' basis". It is noted that this is an unreasonable assumption as comparable underground mines receive routine OSOM loads to facilitate operations. The proponent includes an indicative haulage route in Figure 2.3, however fails to take into account the height and width restrictions associated with existing infrastructure on Peak Downs Mine Road and Golden Mile Road. The Lake Vermont project currently uses the section of Golden Mile Road from Lake Vermont Mine Access Road and the Fitzroy Developmental Road as a critical access for OSOM, fuel and other freight deliveries from Mackay.		
16	Chapter 20: Transport	**Pre-lodgement meeting notes** It is noted that the project has not undertaken specific consultation with Isaac Regional Council regarding Traffic Impact Assessment. At consultation sessions regarding the Social Impact Management Plan IRC has extended the offer to engage in specific consultation, however this has not been accepted by the project.		
17	Chapter 20: Transport	**Surrounding road network details** The project identifies a number of roads in the surrounding road network however the following are not identified: - Peak Downs Mine Road – connects Saraji Road (at the Peak Downs Mine Access) to Peak Downs Highway - Dysart Middlemount Road – Connects Saraji Road to Dysart Bypass Road - Dysart Bypass Road – connects Dysart Middlemount Road to Golden Mile Road - Queen Elizabeth Drive – connects Lake Vermont Accommodation Village to Golden Mile Road. - Fitzroy Developmental Road – Connects Peak Downs Highway to Golden Mile Road It is also noted that Golden Mile Road is listed with incorrect attributes as follows -Within the TIA it is identified that the traffic numbers drop from approx. 800vpd to 400vpd when West of the Lake Vermont Mine Access Road is compared to East of the Lake Vermont Access Road - The nomination of a 400m road reserve is for within an isolated section of Golden Mile Road Section 3.1.1 identifies the presence of an existing agreement that calculates contribution between Dysart and Lake Vermont Access Road based on the proportion of heavy vehicles. The following is noted - The calculation is based on all vehicles using the section of road between - In 2020, Council identified that the Lake Vermont Project was impacting the section of Golden Mile Road between Lake Vermont Mine Access Road and Fitzroy Developmental Road by greater than 5% and requested a Deed of Variation to the compensation agreement. Lake Vermont declined Council's request		
18	Chapter 20: Transport	**Traffic volumes** The project identifies some background traffic however it has not considered the entire list of roads as identified in the comments included as part of the "Surrounding Road Network Details" feedback. It is also noted that the assessment fails to identify the percentage of traffic between Dysart and Lake Vermont Mine Access that is project related traffic The report does not confirm the percentage of project traffic impacting the section of Golden Mile Road between lake Vermont Access and Fitzroy Developmental.		

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19	Chapter 20: Transport	**Intersection and network performance** The assessment fails to evaluate all intersections along the proposed route. The assessment further fails to consider the **Road Safety issues** It is noted that in 2019/2020 Council commissioned a Road Safety Audit which identified a number of Road Safety risks associated with the Lake Vermont Mine Access Road Intersection. This was provided to the proponent in 2020, however the proponent has made no action in rectifying the identified issues. **Site Access** Refer comments regarding Road Safety issues	- To address current and emerging road safety concerns with the Project Access, the project fund a Road Safety Audit to be carried out by an authorised representative of Isaac Regional Council and undertake the recommended actions that are outputs of the audit. - In order to ensure ongoing accurate contribution percentages, the Project fund a permanent traffic monitoring device at the Lake Vermont Mine Access Intersection in accordance with Councils Cumulative Traffic Monitoring System; and - In order to mitigate the impacts of traffic on Local Government Roads, the project must vary or enter into a new infrastructure agreement that requires the project to contribute towards maintenance, renewal and upgrades of any road where the project traffic is identified to be greater than 5% as identified by the Council Cumulative Traffic Monitoring System - To address ongoing Road Safety Impacts, the proponent is to participate in Road Safe Moranbah and provide representative funding based on the regional cumulative impact. Road Safety Moranbah is a collective of industry, local government and Queensland police that seeks to implement road safety initiatives across the Isaac region to facilitate road safety with the intent on addressing the fatal 5 and reducing road fatalities.	A number of direct engagements have occurred between BBC and IRC since the comments on the EIS were received. This has resulted in an updated SIMP, which now includes significant further committments by the proponent, to support the management of social impacts. The following is a summary of the committments that have been presented/agreed with IRC in respect to traffic/transport matters: BBC are committed to supporting improvements to road safety conditions around the Lake Vermont Mine. In accordance with the January 2020 Road Safety Audit of the Mine Access Rd intersection (commissioned by IRC) BBC are committed to implementing Priority Actions A, B & C. BBC are proposing to manage the execution and delivery of these works – with Council supporting the provision of a Works on Road Corridor Approval. A new management measure has been included in the SIMP to reflect Jellinbah's commitment to implementing Priority Actions A, B & C as identified in the January 2020 Road Safety Audit commissioned by IRC. BBC acknowledge the value of having data to support an understanding of impacts to road infrastructure, with a view to improving road safety conditions. BBC are therefore comfortable to commit to funding of a monitoring device at the Mine Access Rd intersection (with Golden Mile Rd). If IRC can provide a suitable proposal for this work, BBC are committed to establishing an agreement with IRC to affect this commitment. A new management measure has been included in the SIMP to reflect Jellinbah's commitment to funding of a traffic monitoring device subject to further discussions/collaboration with IRC. BBC acknowledge this request and accept that contributions towards road infrastructure impacts (resultant of the operation of the Project) is appropriate. BBC is therefore committed to discuss terms of an appropriate agreement to effect this commitment. Given the data driven nature of this future agreement, BBC would like to ensure access to data/reports will be provided by IRC. A new management measure has been included in the SIMP to reflect engagement with IRC to develop an appropriate infrastructure agreement for the Project. BBC acknowledge the value in the Road Safe Moranbah initiative and are keen to participate. A new management measure has been included in the SIMP to reflect Jellinbah's commitment to participate in Road Safety Moranbah.
20	Chapter 20: Transport	**Active transport** It is noted that the project is expected to impact Dysart Bypass Road and Queen Elizabeth Drive, these sections of road have community active transport aspects that have not been assessed.		
21	Chapter 20: Transport	**Parking** It is noted that the project has identified that Dysart residents and workforce staying at the Lake Vermont WAV will be transported by Bus from the Lake Vermont WAV. It is noted that the proponent also owns the Lake Vermont WAV. Council has made representations over the last 3-5 years regarding the illegal parking opposite the lake Vermont WAV and subsequent damage to Councils Road infrastructure. The proponent has made representations that this will be alleviated with the re-development/upgrade of the Lake Vermont WAV, however timing has not been confirmed. The assessment does not consider the parking requirements for the intermodal transport requirements of its workforce.		
22	Chapter 20: Transport	**Operational details (including year of opening stage and any relevant catchment / market analysis)** Construction and operational traffic have been identified, however the assessment fails to consider the transitional traffic associated with the work force and operational transition associated with the transition from Lake Vermont to Lake Vermont Meadowbrook.		
23	Chapter 20: Transport	**Proposed Access** The project proposes to use the existing Lake Vermont Access. It is noted that in 2019/2020 Council commissioned a Road Safety Audit which identified a number of Road Safety risks associated with the Lake Vermont Mine Access Road Intersection. This was provided to the proponent in 2020, however the proponent has made no action in rectifying the identified issues.		
24	Chapter 20: Transport	**Traffic generation** The traffic trip generation has been provided, however it fails to identify the component of existing traffic associated with the Lake Vermont project that the assessment has considered as background traffic that will transition to the Meadowbrook project as part of the workforce transition. The project further identifies nominated routes (refer Figure 2.3), however the generation of traffic has not been considered across the full extent of the route or the dimensional restrictions imposed on the projects nominated route. The assessment also includes a number of flawed assumptions regarding the origin/destination of project components such as concrete being received from Mackay. The assessment identified that quarry material will be received via internal access road from the quarry located on Tay Glen. Council is investigating if there is approval for the quarry to operate and, since the publishing of the report, BHP has constructed a haul road connecting Saraji and Saraji South Project. Can the proponent confirm if there is permission to cross the BHP haul road.		
25	Chapter 20: Transport	**Trip distribution & Development traffic volumes on the network** The traffic trip generation has been provided, however it fails to identify the component of existing traffic associated with the Lake Vermont project that the assessment has considered as background traffic that will transition to the meadowbrooke project as part of the workforce transition. The project further identifies nominated routes (refer Figure 2.3), however the generation of traffic has not been considered across the full extent of the route or the dimensional restrictions imposed on the projects nominated route. The assessment also includes a number of flawed assumptions regarding the origin/destination of project components such as concrete being received from Mackay. The assessment identified that quarry material will be received via internal access road from the quarry located on Tay Glen. Council is investigating if there is approval for the quarry to operate and, since the publishing of the report, BHP has constructed a haul road connecting Saraji and Saraji South Project. Can the proponent confirm if there is permission to cross the BHP haul road		
26	Chapter 20: Transport	**With and without development traffic volumes** The assessment fails to consider the traffic component that is currently incorporated as baseline traffic associated with the Lake Vermont Traffic that will transition across to the Meadowbrook project.		

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27	Chapter 20: Transport	**Construction traffic impact assessment and mitigation (if applicable)** The project discusses project traffic associated with construction.		
28	Chapter 20: Transport	**Road safety impact assessment and mitigation** Minimal assessment has been undertaken within the assessment including consideration of Road Safety Audits provided previously to the proponent		
29	Chapter 20: Transport	**Access and Frontage Impact assessment and mitigation & Intersection delay impact assessment and mitigation** The proponent has assessed the existing Lake Vermont intersection, however has failed to consider previous advice from council in the form of Road Safety Audits		
30	Chapter 20: Transport	**Road link capacity assessment and mitigation** The assessment fails to consider the full extent of the route that the Lake Vermont project is currently impacting or across the nominated route (Figure 2.3)		
31	Chapter 20: Transport	**Pavement impact assessment and mitigation** The assumptions that form the basis of the pavement impact assessment are not conclusive to the full extent of the projects impact and accordingly the Pavement Impact assessment needs to be reconsidered		
32	Chapter 20: Transport	**Transport infrastructure impact assessment and mitigation** This has not been considered for example, there is no consideration as to the impact that the project may have on bridges or culverts. This is supported by the fact that the assessment does not consider dimensional restrictions along the nominated route within the Figure 2.3		
33	Chapter 20: Transport	**Summary of impacts and mitigation measures proposed** It is noted that the assessment has failed to fully evaluate the full extent of the impacts associated with the project given that the assessment including the traffic associated with the existing Lake Vermont Project as background traffic and not considered as part of the impacts associated with the Meadowbrook Traffic. Council also notes the existence of an existing agreement that provides for contribution to Council based on the percentage of project impact for the section of Golden Mile Road between Dysart and Lake Vermont Access Intersection. Council requests the following conditions be imposed on the Project/Proponent.		

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General requirements				
1	General	If all drinking water is extracted, treated and used within the mining lease area, the mine owner/operator is exempt from registering as a water or sewerage service provider under the Water Supply (Safety and Reliability) Act 2008 (the Act). In the event that another entity owns or operates water infrastructure and intends to charge for their service, in connection with these processes, or the mine owner/operator supplies water to another entity and intends to charge for that service, there may be obligations under the Act.	-	Noted.
2	General	All local governments within the northern components of the Fitzroy River catchment area, including the Isaac, Conners, Mackenzie and Nogoa River systems, as well as the lower Fitzroy upstream of the Fitzroy Barrage in Rockhampton, are to be notified of any accidental mine water release to watercourses and are kept informed in regard to any potential flooding impacts.	-	Noted.
3	General	It is noted the effluent irrigation area, located in the north of the MIA, is nearby the raw water dam (potable water source).	-	Noted.
4	Appendices and Chapters related to this EIS submission	Any new information, change to findings and or change to conclusions that occur from addressing these comments must be reflected in the relevant appendices and chapters.	Update appendices and chapters to address all new information, findings and conclusions that have changed as a result of addressing the comments listed above.	Noted.
Chapter 7 – Groundwater Appendix E - Groundwater Impact Assessment				
5	Appendix E Executive Summary	(Pages vii - xi) A key statement made in the Executive Summary is that enhanced recharge occurs along creek lines to Quaternary alluvium and into Tertiary. This conceptualisation is not represented in the groundwater model used to develop the predictions. In the groundwater model, all tributaries to the Isaac River are treated as horizontal drains - such as not downward recharge.	Provide details on how the predictions and water balance are affected when the tributaries are not treated as drains in the model.	It is noted that the Groundwater Assessment Report (in particular, the Executive Summary) identifies that enhanced recharge from tertiary sediments to coal seams may occur where the coal seams subcrop beneath surface water drainage (refer page vii). Enhanced recharge to quaternary alluvium and tertiary alluvium along creeklines, is not differentiated from the recharge to quaternary and tertiary outside of creeklines in the Executive Summary. The creek lines (Isaac River Tributaries) are ephemeral systems and recharge via the creeks is not specifically modelled. The systems are modelled as drains to allow water to leave the model via these features if/as required. Recharge is applied to Layer 1 of the model and seepage from Layer 1 to underlying layers will be available to recharge the coal seams in the areas where they subrcop beneath Cainozoic sediments. In this repsect the modelling of recharge to the subcropping coal seams occurs in the same manner as it is conceptualised. It is noted that the groundwater model included a recharge zone for alluvium (which included Boomerang Creek, Phillips Creek, and One Mile Creek) (refer Section 2.4.3 of Attachment A to the Groundwater Impact Assessment). Rates of recharge in recharge zones were calibrated against chloride mass balance calculations from site water quality results (refer Section 3.6 of Attachement A of the Groundwater Impact Assessment). The groundwater model aims to be a representation of the groundwater system, and the recharge rates included in the model are considered the most representative of the reality of the site.
6	Appendix E Section 5.6	(Page 89) “It is concluded that groundwater models tend to over estimate the volume of mine inflows to underground workings when compared to actual inflows observed during the mining process.” This statement may be made to support the use of the minimal fracturing scenario for determining impacts, and the term ‘concluded’ is a generalised statement. Measurement of actual groundwater inflows to underground workings is not a common occurrence in Queensland coal mines.	Provide details on preparation of an UWIR for the project.	An UWIR will be prepared prior to any take of underground water, separate to the EIS process. EIS Chapter 7 (Groundwater) Section 7.4.1 has been updated to capture this work. Further, EIS Chapter 22 (Proposed Environmental Management & Monitoring Committments) has also now been updated to capture this committment.
7	Appendix E Section 5.6.1 dot point four	(Page 89) “The predicted groundwater inflow rates include predicted inflow from the formations adjacent to and overlying the mining areas; these rates can be used as required to inform the groundwater take for the Project’s Associated Water Licence under s1283 of the Water Act 2000”. The Associated Water Licence (AWL) 620850 for the existing Lake Vermont mine relates specifically to ML70528. This AWL will not apply to new tenures associated with the project. The exercise of underground water rights associated with the project will be subject to Chapter 3 of the Water Act 2000 (Water Act) which includes the requirement for an underground water impact report (UWIR).	Further information is required to support the specified use of the term ‘concluded’. Provide details on how groundwater inflows to underground mining will be measured to determine if the selected limited fracturing scenario is appropriate as the project’s underground mining progresses.	This sentence has been revisited and updated (EIS Appendix E, Section 5.6.1) based on the comment received. The word "concluded" in the report has been changed to the word "judged" as it is conceded that the statement it is more a matter of professional opinion than assessment of data. An UWIR will be prepared prior to any take of underground water, separate to the EIS process. EIS Chapter 7 (Groundwater) Section 7.4.1 has been updated to capture this work. Further, EIS Chapter 22 (Proposed Environmental Management & Monitoring Committments) has also now been updated to capture this committment.

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8	Appendix E Section 5.6.1 Figure 5.11 and Table 5.2	(Pages 90-91) The section discusses predicted mine inflows to underground workings between the base case (fracture to surface) scenario and limited two order of magnitude fracturing scenario. The base case has significantly higher predicted mine inflows. Average total inflows under base case are 717ML/y and 204ML/y under the limited fracturing scenario. The limited two order of magnitude fracturing scenario is the scenario used for the project approval predictions.	Provide an aquifer level breakdown of total underground inflows for both Figure 5.11 Predicted and Design Allowance Inflow Rates to Underground Workings and Table 5.2 Predicted and Design Allowance Inflow Rates to Underground Workings.	Prediction of the drawdown of tertiary aquifer is provided (refer Figure 5-4 for predicted drawdown and Figure 5-8 for difference between base-case and fractured scenario). The predicted drawdown is scenarios have been used for, and are suitable for assessment of impacts to groundwater values and groundwater dependent values. The UWIR will provide breakdown of inflows from each affected aquifer (in accordance with the UWIR Guideline document).
9	Appendix E Section 5.6.2 Table 5.3 and Figure 5.12	(Pages 93-94) The total volume of water removed from the formation during the active mining phase is calculated at 2,086ML.	Provide an aquifer level breakdown of total pit inflows for Table 5.3: Predicted Inflow Rates to Meadowbrook Open Cut – Active Mining Phase and Figure 5.12: Groundwater Inflow Rate to Meadowbrook Open Cut. This information will assist in understanding loss of groundwater from the Tertiary during the mining phase.	Refer to comment above.
10	Appendix E Section 6.6.2	(Page 102) The statement, "It is interpreted that surface water systems in the area of the groundwater drawdown impact from mining are not maintained or influenced by groundwater flow. Therefore, groundwater impacts to surface water are not predicted to occur", conflicts with the outputs of the predictive water balance results of the groundwater model report 1 which shows groundwater baseflow to the Isaac River in all scenarios. There is an average 1.38ML/day loss of baseflow predicted between the Null scenario and active mining (project and cumulative) scenarios.	The groundwater model report should be built to represent the conceptualisation set out in the groundwater assessment. It should address knowledge gaps in the groundwater assessment report and reconcile the groundwater model construction to appropriately address these changes.	The model (as reported in SLR 2022) contains three model scenarios: 1) The null run, which assumes no mining in the region; 2) The Base Case, which includes all mining (including Lake Vermont), but excluding Meadowbrook; and, 3) The Cumulative Case, which the Base Case mining plus mining at Meadowbrook (underground + satellite pit) The modelling report (Table 4-2 of the SLR report) shows outflow from the model to the Isaac River (i.e. base flow) of 4.65 ML/day. The Base Case (all mining except Meadowbrook) shows outflow from the model to the Isaac River of 3.27 ML/day, a loss of baseflow of 1.38 ML/day. The Cumulative Case (Meadowbrook included) shows outflow from the model to the Isaac River of 3.27 ML/day, i.e. the same as the Base Case. Therefore, it is concluded that mining at Meadowbrook does not result in any loss of baseflow to the Isaac River. This interpretation is consistent with water level drawdown information shown in Figure 4-9 of the SLR report (where the incremental drawdown that is due to mining at Meadowbrook, i.e. the difference between the Base Case and the Cumulative Case) for the regolith (Layer 2) does not extend to the Isaac River (nor does drawdown from any other layer). Review of Figure 4-13 of the SLR report (Cumulative drawdown in Layer 2 Regolith) does show drawdown beneath the Isaac River, but it is interpreted that this drawdown (and subsequent reduction in Isaac River baseflow) is due to mining at the Willunga Open Pit and the Olive Downs South Mine (refer Figure 2-1 of SLR report for mine locations). It is noted that this was also discussed with DRDMW during a meeting on 03 October 2023.
11	Appendix E Section 6.2.5	(Pages 105-106) This section indicates the presence of GDEs was determined based on a desktop review of data within the Queensland Government Wetlands Mapping System. It indicates no mapped surface expression of terrestrial GDE within the area potentially impacted by the Lake Vermont Meadowbrook project (the project). It is noted a project specific GDE investigation was undertaken, and the findings outlined in Appendix I: Groundwater Dependent Ecosystem Assessment. The GDE assessment report identified the presence of GDEs within the project area and the source of groundwater reliance.	All content related to GDEs in the groundwater assessment report in Appendix E - Groundwater Impact Assessment should be updated to incorporate the findings in Appendix I - Groundwater Dependent Ecosystem Assessment.	The Groundwater Assessment Report (EIS Appendix E) provides a summary of the findings of the GDE Assessment Report. It is noted that in the interests of completeness, as the GDE values overlap with terrestrial ecology values, the outcome of the GDE Assessment Report is provided in EIS Chapter 10 (Terrestrial Ecology). Text has now been added to EIS Appendix E (Groundwater Impact Assessment) Section 6.2.5 to identify the location of this more detailed content.

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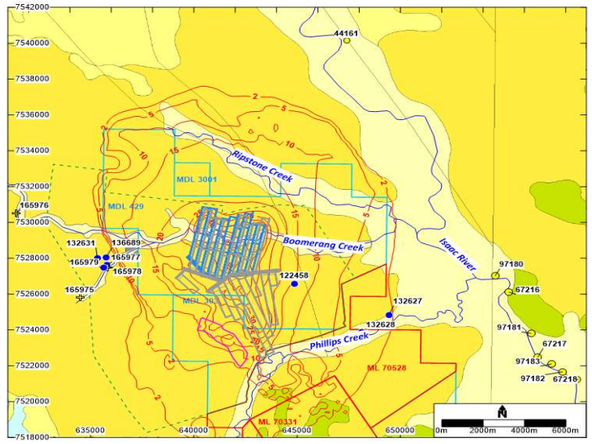
12	Appendix E Section 6.2.6	(Pages 108-109) With respect to impacts to groundwater users in the Cainozoic (Quaternary and Tertiary) sediments, there is one licence for domestic supply and irrigation from the Isaac River Alluvium (Auth 44161U / 65 ML) that could be impacted at an incremental or cumulative level by the project.	Provide details on the extent to which this licenced groundwater (Auth 44161U / 65 ML) user could be impacted from either the base case or limited fracturing scenario.	The location for Water Licence Authority 44161U corresponds with the location of registered irrigation bore 44161 (refer adjacent figure), which is upstream of the Project area. The maximum extent of drawdown contours (shown on the figure) do not extend to this bore location. As noted from the response to (10) above, the Project is not predicted to have any impact on the Isaac River, therefore there are no predicted impacts to this water licence location. 
13	Appendix E Section 6.2.9 Table 6.1	(Page 121 row four, Residual Risk) “Assessed to be limited risk to GDEs as it is interpreted that the HES wetlands in the Project area are not groundwater dependent.” This risk assessment does not incorporate the findings of the GDE assessment in Appendix I: Groundwater Dependent Ecosystem Assessment, which identifies the presence of GDEs on Boomerang and Ripstone Creeks. This would change the findings of the risk assessment.	Update the risk assessment in Appendix E – Groundwater Impact Assessment, Table 6.1: Potential Impacts from Mining to incorporate the findings in Appendix I - Groundwater Dependent Ecosystem Assessment.	The Groundwater Dependent Ecosystems Assessment (EIS Appendix I) provides the assessment of impacts to ecological values from groundwater changes resultant of the Project. This assessment required specialist assessment methods, and the outcomes of the assessment are presented in EIS Chapter 10 (Terrestrial Ecology), as this primarily relates to terrestrial ecology values (which happen to be groundwater dependent). Appendix E assesses impacts to environmental values resulting from groundwater changes, with the exception of ecological values. In Appendix E, the impacts to HES wetlands are assessed with regard to the wetlands themselves as surface water features, and the assessment of the ecological values of the wetlands is separately assessed in Appendix I (noting that, for instance, it is possible that groundwater changes could impact a wetland directly, or could impact the vegetation of a wetland if it were groundwater dependent). There is no benefit to duplicate the details of the assessment of Appendix I within Appendix E which rely on separate methodologies. The inclusion of the separate GDE Assessment is introduced in the EIS Introduction Chapter. A footnote has now been added to EIS Appendix E (Groundwater Impact Assessment) Table 6.1, to help clarify this approach.
14	Appendix E Section 6.2.9 Table 6.1	(Page 121) Table 6.1 does not address impacts to the Isaac River. The Water Balance in the Model report Appendix E, indicates there is a loss to baseflow from the Null case to the active mining case.	Update the risk assessment in Appendix E – Groundwater Impact Assessment, Table 6.1: Potential Impacts from Mining to include the impact on surface water and groundwater connectivity for the Isaac River.	Refer to the response to DRDMW comment #10. Modelling does not identify Project impacts to the Isaac River baseflow. It is noted that this was also discussed with DRDMW during a meeting on 03 October 2023.
15	Appendix E Attachment A Section 2.3 Figure 2-2	(Page 7) Digital Elevation Model (DEM) data in Figure 2-2 shows where high-resolution and low-resolution digital elevation data was used to build model surfaces. 25m DEM data obtained from Geoscience Australia was used for the project area. 1m DEM data is publicly available from Elevation Information System.	It is recommended fine resolution DEM data is used instead of the coarse resolution DEM data.	EIS Appendix E (Groundwater Impact Assessment) Attachment A, Section 2.3 (page 6) provides that: "High resolution (1 m) Digital Elevation (DEM) Model data, provided by Jellinbah, was used to define local surface elevation within the Project area. Outside the extents of the DEM dataset for the Project, LiDAR data from the Moorvale South Project, Winchester South Project, Caval Ridge Mine, and the Olive Downs Project were used to define surface elevation, where available. Public domain 25 m DEM data sourced from Geoscience Australia (with 3m subtracted for consistency between datasets) was used to define topography in the remainder of the model domain." This is beleived to be a sufficient data set to define surface features for the purposes of groundwater modelling.

Issue #	Topic, EIS section, and Terms of Reference (ToR) section	Issue/Comment	Recommendation	Summary of changes made / response to item
16	Appendix E Attachment A Section 2.4.2 Figure 2-6	(Page 8) Tributaries to the Isaac River within the project area are treated as horizontal drain. For example no surface water groundwater connectivity. Ripstone Creek, Boomerang Creek and One Mile Creek are poorly represented by the model cells, particularly within the mining lease boundaries. The treatment of Boomerang Creek and Ripstone Creek in the model conflicts with the conceptualisation presented in Figure 4-26: Pre-mining Conceptual Groundwater Model on page 71 within Section 4.7: Conceptual Groundwater Model – Pre Mining	Update the model to – 1. Provide more detail on Boomerang Creek, Ripstone Creek and One Mile Creek. Allow vertical recharge into layer one from these creeks consistent with the hydrogeological conceptualisation.	Boomerang Creek, Ripstone Creek and One Mile Creek are highly ephemeral. Flow events are limited to 'days' after heavy rainfall and do not hold water for continued recharge to groundwater. The model hydrogeological conceptualisation is consistent with this characteristic of these creeks. EIS Appendix E (Groundwater Impact Assessment) Figure 4.26 has now been updated to clarify this.
17	Appendix E Attachment A Section 4.2 Figure 4-2, Table 4-3, and Table 4-4	(Page 48) The water balance suggests a reduction in flow to the Isaac River. Null case indicates 4.65ML/d outflow to Isaac River. Under base case and cumulative case baseflow are reduced to 3.27ML/d, an average daily loss of flow to the Isaac River of 1.38ML/d. This would be considered a surface water take and requires a licence under the Water Act.	To establish if a licence to take surface water is required for the predicted losses from Isaac River, please contact the Department of Regional Development, Manufacturing and Water (DRDMW) via email GroundWater@rdmw.qld.gov.au.	EIS Chapter 8 (Surface Water) Section 8.3.8.1 has now been updated/expanded to justify why a water licence should not be applied here, for the take of overland flow. In short; it is noted that no works are proposed by the Project, for the purposes of capturing overland flow. Indeed, proposed works are only designed to limit the accumulation of overland flow. Further, since the time of the public notification of the EIS, an additional commitment has now been made to limit the volume of water retained in subsided depressions (by pumping water from subsided depressions into downstream flow paths). EIS Appendix E (Groundwater Impact Assessment) Section 6.2.2 has also now been updated, providing further detail in respect of potential impacts to surface water systems.
18	Appendix E Attachment A Section 4.5	(Page 65) The average total inflow for both the satellite pit and Meadowbrook underground is 685.6ML/y over the entire prediction period. Paragraph four states: “Planned mining operations will not intercept Quaternary Alluvium. As such, all direct groundwater take predicted by the model is from Groundwater Unit 2. This means the model predicts alluvial groundwater will not enter the mine workings.” Based on the model prediction outputs, the exercise of underground water rights would not include any direct take from Groundwater Unit 1 (GMU1) – the alluvium. It is not clear what the incremental and cumulative indirect groundwater take look like for the Alluvium and also subsequent stream flow. There are also inconsistencies between the hydrogeological conceptualisation and the groundwater model - particularly around impacts to the Isaac River Alluvium. The model set-up and outputs suggest no downward leakage of groundwater from the Alluvium (GMU1) to the Tertiary and Permian aquifers (GMU2), however the conceptualisation clearly states that the surface water features are focused recharge areas.	1. Provide the model outputs for incremental indirect loss from the alluvium (GMU1) (via downward leakage) and indirect loss to surface water flows. 2. Rectify inconsistencies between the hydrogeological conceptualisation and the construction outputs of the numerical groundwater model.	EIS Appendix E (Groundwater Impact Assessment) Attachment A, Section 4.6.1 provides that "Over the extent of Quaternary alluvium, there is a predicted average loss of 0.01 ML/day from the alluvium as a result of exercising the underground water rights for the Project. Interference of the alluvial groundwater largely relates to increased leakage to the underlying Permian coal measures that are depressurised as a result of the Project, which is distinct from direct interception of alluvial groundwater within the proposed pit." In regards to the open cut satellite pit, EIS Appendix E (Groundwater Impact Assessment) Attachment A, Section 4.5 provides that the "Planned mining operations at the Project will not intercept Quaternary alluvium at any of the proposed pits. As such, all direct groundwater take predicted by the model is from Groundwater Unit 2. This means the model predicts alluvial groundwater will not enter the mine workings. If any changes are predicted in alluvial groundwater systems, it will be due to the Permian strata becoming depressurised due to mining and the corresponding changes in volume of groundwater flowing from the Quaternary alluvium to the Permian units." Notwithstanding this, this matter will be further considered through the preparation of an UWIR for the Project (including the provision of a detailed breakdown on groundwater contribution from each groundwater unit). An UWIR will be prepared prior to any take of underground water, separate to the EIS process. EIS Chapter 7 (Groundwater) Section 7.4.1 has been updated to capture this work. Further, EIS Chapter 22 (Proposed Environmental Management & Monitoring Committments) has also now been updated to capture this committment.
19	Appendix E Attachment A Section 4.6.1	(Page 66) The section states project impacts will include 0.01ML/day from the alluvium as a result of exercising underground water rights. Interference relates largely to increased leakage to underlying Permian coal measures. This conflicts with the statement made in Section 4.5 Predicted Groundwater Inception on page 65 with Attachment A .	Provide details on the progressive modelled incidental loss to the alluvium from the current project and the cumulative impact.	Refer above.
20	Appendix E Attachment A Section 4.6.2	(Pages 66-67) The section states river leakage due to the project was calculated for the Isaac River and shows leakage from Isaac River to the alluvium is insignificant. This contradicts the water balance that suggests there will be an average daily loss of 1.38ML/day.	Provide details on the volumes of leakage from Isaac River over the period of mining for: 1. The project. 2. Existing project activities. 3. Cumulative mining.	Refer to response to comment #10 above.
21	Appendix E Attachment A Section 8 Table 8.1	(Pages 99-101) Table 8.1 (Type – Structural/Conceptual; Part – Layers): comment in row three indicates the model is fit for purpose and top of layer incorporates site LiDAR data. For the project area, coarse and poor quality 25m DEM is used.	Revise Layer 1 for the project area to reflect LiDAR has not been used and specify that coarse and poor quality 25m DEM has been used. Alternatively, revise and assess if this is still warranted for the purpose specified.	Refer to repsonse to comment #15 above.
22	Appendix E Attachment A Section 8 Table 8.1	(Pages 99-101) Table 8.1 (Type – Structural/Conceptual; Conceptualisation – GDE’s): comment in row five indicates fit for purpose. It appears the model has not incorporated the findings of the GDE assessment. Representation of Boomerang and Ripstone Creeks in the model is sparse. GDEs have been identified in Appendix I: Groundwater Dependent Ecosystem Assessment, with evidence of reliance on tertiary groundwater.	Update Table 8.1 Groundwater Model and Data Limitations to incorporate the GDE findings of Appendix I: Groundwater Dependent Ecosystem Assessment into the model.	Refer to response to comment #13 above. The status is true for the context of the report, noting that additional GDE assessment provided in Appendix I. The drawdown data from the groundwater model was supplied for the GDE assessment and the assessment took into consideration the extent and magnitude of drawdown.

Issue #	Topic, EIS section, and Terms of Reference (ToR) section	Issue/Comment	Recommendation	Summary of changes made / response to item
Chapter 8 – Surface Water Appendix F – Surface Water Assessment Report				
23	Section 8.3.7and 8.3.8.1	(Pages 8-19 & Pages 8-22) Proposed subsidence and residual ponding effects within the floodplains demonstrate that overland flow water will be captured. The construction of minor drainage channels between subsidence panels will reduce ponding effects, however overland flow water will remain within panels where drains will not convey water. The capture or take of overland flow must be in accordance with the Water Plan (Fitzroy Basin) 2011.	Section 110 of the Water Plan (Fitzroy Basin) 2011 provides limitations on the take of overland flow. The works that allow the taking of overland flow, unless it is to satisfy the requirement of an Environmental Authority (EA) issued under the Environmental Protection Act 1994, must have a capacity of not more than 50ML. Subsidence panels are considered to be works that take overland flow and must be allowed to freely drain. Diversion works to facilitate the conveyance of overland flow must be constructed in subsidence panels within the floodplains between Boomerang and One Mile Creeks, where it is demonstrated that panels will regularly intercept out of channel flows, particularly from Boomerang Creek.	Correspondance with DRDMW regarding this issue resulted in the proposal to address the potential trigger of capture of >50 ML by mititgating the volume of water retained intermittanly retained in subsided depressions with the pumping of water out of subsided depressions into downstream flowpaths. Refer to Section 8.3.8.1 for additional explanation of the proposed mitigation. This matter is also discussed in detail in EIS Chapter 8 (Surface Water) Section 8.3.8.1.
24	Appendix F Section 2.2.2	(Page 13) DRDMW administers the Water Act.	Replace the reference to Department of Resources and Department of Energy and Water Supply with Department of Regional Development, Manufacturing and Water.	Updated.
Appendix B Progressive Rehabilitation and Closure Plan (PRCP)				
25	Section 3.5.9.1	(Pages 99-101) The Mine Infrastructure Area Dam (MIA Dam) is proposed to be retained at mine closure for the purposes of supplying water for stock. While not implicitly stated, the MIA Dam is presumed to capture overland flow water post mining. The capture or take of overland flow must be in accordance with the Water Plan (Fitzroy Basin) 2011.	Post mine, an EA will no longer apply that allowed the take of overland flow within dams designed with a capacity to adhere to the relevant EA guidelines and regulatory requirements. The MIA Dam is proposed to remain post mine closure and has been designed with a maximum volume of 440ML. As per section 110 of the Water Plan (Fitzroy Basin) 2011, works that take overland flow may only have a capacity of not more than 50ML. The MIA Dam if capturing or taking overland flow water will need to be reconfigured to the maximum volume permissible within the Water Plan (Fitzroy Basin) 2011, for either stock or for another purpose.	The MIA dam is a turkey's nest design which is not designed to capture overland flow. As discussed in Chapter 3, Section 3.5.5, the site drainage system will be configured to minimise the area captured and direct clean runoff from undisturbed parts of the MIA away from the dam during the detailed closure design phase. The dam will also be subject to detailed closure design in which dam walls may be lowered and spillways constructed as required to limit the capture of overland flow (if/as necessary).
26	Section 3.5.10.3	(Page 109) Proposed subsidence and residual ponding effects within the floodplains demonstrate that overland flow water will be captured. The construction of minor drainage channels between subsidence panels will reduce ponding effects, however overland flow water will remain within panels where drains will not convey water. The capture or take of overland flow must be in accordance with the Water Plan (Fitzroy Basin) 2011.	Section 110 of the Water Plan (Fitzroy Basin) 2011 provides limitations on the take of overland flow. The works that allow the taking of overland flow, unless it is to satisfy the requirement of an EA issued under the Environmental Protection Act 1994, must have a capacity of not more than 50ML. Subsidence panels are works that take overland flow and must be allowed to freely drain. Diversion works to facilitate the conveyance of overland flow must be constructed in subsidence panels within the floodplains between Boomerang and One Mile Creeks, where it is demonstrated that panels will regularly intercept out of channel flows, particularly from Boomerang Creek. Ensure works capture the take of overland flow is in accordance with the Water Plan (Fitzroy Basin) 2011, and amendments made to the progressive rehabilitation and closure plan.	EIS Chapter 8 (Surface Water) Section 8.3.8.1 has now been updated/expanded to justify why a water licence should not be applied here, for the take of overland flow. In short; it is noted that no works are proposed by the Project, for the purposes of capturing overland flow. Indeed, proposed works are only designed to limit the accumulation of overland flow. Further, since the time of the public notification of the EIS, an additional commitment has now been made to limit the volume of water retained in subsided depressions (by pumping water from subsided depressions into downstream flow paths). This is in conjunction with exisiting commitments to construct mitigation drains and mitigation bunds, to limit the incidental capture of overland flow (refer EIS Chapter 9, Flooding & Regulated Structures, Section 9.4.4.3).

Issue #	Topic, EIS section, and Terms of Reference (ToR) section	Issue/Comment	Recommendation	Summary of changes made / response to item
Chapter 8 - Surface water				
1	8.3.11 Regional Water Availability	The project is intended to source raw water from an extension of the Eungella Water Pipeline Southern Extension which will be co-located with Powerlink easement and infrastructure. The construction of this pipeline will need to consult with Powerlink as this will directly affect our infrastructure.	We recommend that this pipeline is installed underground, given the restrictions on future maintenance and operation of the network above ground installation would have on our existing infrastructure.	The Project proposes to build a raw water supply pipeline from the existing Lake Vermont Mine water management system and it is noted that the pipeline will be located within the infrastructure corridor (which will also contain the ETL). The pipeline will be installed underground where practicable to simplify maintentance of the infrastructure corridor components.

Issue #	Topic, EIS section, and Terms of Reference (ToR) section	Issue/Comment	Recommendation	Summary of changes made / response to item
Terms of Reference				
1	Hazard, health and safety Section 9 Project specific matters Section 9.1 Climate Natural Hazard – Bushfire	The TOR has objectives and assessment criteria for project specific matters, except for Climate.	- Suggest including “Objectives” and “Impact assessment” subheadings - Consider relocating the assessment criteria for current and future risk for bushfire, to Section 9.10 Hazards and safety	The EIS is at the final approval stage and as the ToR has been finalised in previous stages in 2020, it's not open to changes anymore. However we appreciate that QFES provided submissions for the project.
2	Hazard, health and safety Section 9 Project specific matters Section 9.10 Hazards and safety Natural Hazard – Bushfire	Environmental objective and outcome The construction and operation of the proposed project should ensure: • the storage and handling of hazardous materials are appropriately located, designed and constructed to minimise health and safety risks to communities and individuals and adverse effects on the environment.	Suggest change to include ‘development’, meaning for carrying out building work, plumbing or drainage, or operational work: Environmental objective and outcome The construction and operation of the proposed project should ensure: • **developments involving** the storage and handling of hazardous materials are appropriately located, designed and constructed to minimise health and safety risks to communities and individuals and adverse effects on the environment.	The EIS is at the final approval stage and as the ToR has been finalised in previous stages in 2020, it's not open to changes anymore. However we appreciate that QFES provided submissions for the project.
3	Hazard, health and safety Section 9 Project specific matters Section 9.10 Hazards and safety Natural Hazard – Bushfire		Update the website reference link to the risk assessment, change to: **Impact assessment** Describe the potential risks to people and property that may be associated with the proposed project in the form of a risk assessment for all components of the proposed project and in accordance with relevant standards. The assessment should address the following matters: • consider geophysical risk management such as earthquakes. The **State Earthquake Risk Assessment** includes probabilities of major seismic events for all local government areas and should be used to inform risk consideration and management	The EIS is at the final approval stage and as the ToR has been finalised in previous stages in 2020, it's not open to changes anymore. However we appreciate that QFES provided submissions for the project.
4	Hazard, health and safety Section 9 Project specific matters Section 9.10 Hazards and safety Natural Hazard – Bushfire		Update the website reference link to the SPP, change to: **Impact assessment** Describe the potential risks to people and property that may be associated with the proposed project in the form of a risk assessment for all components of the proposed project and in accordance with relevant standards. The assessment should address the following matters: As part of the emergency response plan include: ii. mitigation strategies to achieve the relevant development outcomes in Part E of the **State Planning Policy - Natural Hazards, Risk and Resilience** (DILGP 2017)	The EIS is at the final approval stage and as the ToR has been finalised in previous stages in 2020, it's not open to changes anymore. However we appreciate that QFES provided submissions for the project.
5	Hazard, health and safety Section 9 Project specific matters Section 9.10 Hazards and safety Natural Hazard – Bushfire	Impact assessment Describe the potential risks to people and property that may be associated with the proposed project in the form of a risk assessment for all components of the proposed project and in accordance with relevant standards. The assessment should address the following matters: As part of the emergency response plan include: • a bushfire management plan, certified by a suitably qualified person, in consultation with the Queensland Fire and Emergency Services addressing construction and operations, including the following information at a minimum: i. a bushfire hazard analysis ii. mitigation strategies to achieve the relevant development outcomes in Part E of the State Planning Policy– Natural Hazards, Risk and Resilience (DILGP 2017) iii. provides details of the proposed ongoing management of fuel loads across the subject site through grazing or mechanical means including the asset protection zone proposed	Update the bushfire management plan with guidance on environmental offsets and bushfire risk as per DES guidance and the Environmental Offsets Policy, change to – **Impact assessment** Describe the potential risks to people and property that may be associated with the proposed project in the form of a risk assessment for all components of the proposed project and in accordance with relevant standards. The assessment should address the following matters: As part of the emergency response plan include: • a bushfire management plan, certified by a suitably qualified person, in consultation with the Queensland Fire and Emergency Services addressing construction and operations, including the following information at a minimum: i. a bushfire hazard analysis ii. mitigation strategies to achieve the relevant development outcomes in Part E of the State Planning Policy– Natural Hazards, Risk and Resilience (DILGP 2017) iii. provides details of the proposed ongoing management of fuel loads across the subject site through grazing or mechanical means including the asset protection zone proposed **iv details of any planned burning programs to achieve the objectives in Section 9.6, including reference to fire management of offset areas in the General guide for the Queensland Environmental Offsets Framework, and consider consultations with organisations involved in fire management.**	The EIS is at the final approval stage and as the ToR has been finalised in previous stages in 2020, it's not open to changes anymore. However we appreciate that QFES provided submissions for the project.

Issue #	Topic, EIS section, and Terms of Reference (ToR) section	Issue/Comment	Recommendation	Summary of changes made / response to item
6	Hazard, health and safety Section 9 Project specific matters Section 9.10 Hazards and safety Natural Hazard – Bushfire	Impact assessment Describe the potential risks to people and property that may be associated with the proposed project in the form of a risk assessment for all components of the proposed project and in accordance with relevant standards. The assessment should address the following matters: • address the risk to the proposed project from other natural events such as cyclone and severe wind hazard, heat and heatwave risk drought, flooding, bushfire and implications related to climate change and adaptation with reference the Queensland Emergency Risk Management Framework, the State Heatwave Risk Assessment, and Natural Hazard Risk and Resilience spatial layer	Information for assessment of bushfire implications relating to climate change and adaptation can be derived from Bureau's (BOM) Special Climate Statements that provide a detailed summary of significant weather and climate events. QFES and CSIRO have also developed the document Changes to Fire Weather in Queensland (2019) Information for assessment of severe wind hazard implications relating to climate change and adaptation can be derived from the Severe Wind Hazard Assessment for Queensland (SWHA(Q)) Suggest change to include bushfire risk – Impact assessment Describe the potential risks to people and property that may be associated with the proposed project in the form of a risk assessment for all components of the proposed project and in accordance with relevant standards. The assessment should address the following matters: • address the risk to the proposed project from other natural events such as cyclone and severe wind hazard, heat and heatwave risk drought, flooding, bushfire and implications related to climate change and adaptation with reference the Queensland Emergency Risk Management Framework, the State Heatwave Risk Assessment, Natural Hazard Risk and Resilience spatial layer, **Bureau's (BOM) Special Climate Statements, and Changes to Fire Weather in Queensland (2019)**.	The EIS is at the final approval stage and as the ToR has been finalised in previous stages in 2020, it's not open to changes anymore. However we appreciate that QFES provided submissions for the project.

Lake Vermont Meadowbrook Project: Responses to Submissions - Responses to objections

Issue #	Topic, EIS section, and Terms of Reference (ToR) section	Issue/Comment	Recommendation	Summary of changes made / response to item	123 Environmental Advocacy in Central Queensland	129 Mackay Conservation Group	130 Lock the Gate Alliance	132 Capricorn Conservation Council	133 Ember	135 Environment Council of Central Queensland	136 Queensland Conservation Council	138 The Australia Institute	139 Individual comments
1	Federal Environmental Minister Reconsideration of the project	The Project is a controlled action (EPBC 2019/8485) under the Environment Protection and Biodiversity Conservation Act 1999, with the controlling provisions listed as: ● listed threatened species and communities (section 18 and section 18A); ● listed migratory species (section 20 and section 20A); and ● a water resource in relation to a large coal mining development (section 24D and 24E). In parallel to the EIS process, the Project is one of the 14 fossil fuel projects that federal environment Minister Tanya Plibersek has agreed to reconsider following a request by the Environment Council of Central Queensland. This reconsideration is in relation to the substantial new information about the impacts of climate change on Matters of National Environmental Significance (MNES). Minister Plibersek is yet to make a decision on her reconsideration of the Project and hence it would be premature to endorse this draft EIS as it is not yet clear whether the Project will still be considered acceptable under the EPBC Act, and what further information may be required from the proponent.	123 EnvA & 132 Capricorn Conservation Council: That the Department delay any decision on the draft EIS until the Federal Environment Minister has made a decision on the reconsideration of the Project under the EPBC Act. 130 Lock the Gate Alliance: 1. The Department should pause the EIS process until the Federal Minister for the Environment has finalised her reconsideration of the Project. 2. The Department should recommend against the grant of an environmental authority for the Project, on the grounds that it would have an unacceptable impact on the climate and, by extension, all environmental values protected under the EP Act. 3. If the proponent still wishes to proceed with the Project, it should be required to prepare the following supplementary documents, which should be exhibited for public comment prior to any further decision process: a. An assessment of the Project's compatibility with the emissions reduction required to meet Queensland and Australia's emissions targets, and with emissions scenarios in which the Paris Agreement targets are met. b. An assessment of the impacts of climate change on environmental values protected under the EP Act. c. An assessment of the social costs of the Project's greenhouse gas emissions. d. A greenhouse gas management and mitigation document that complies with the requirements of the ToR, and further assesses the implications of Queensland's emission reduction targets and the decarbonisation plan policy commitment. e. A revised surface water impact assessment that fills the gaps identified in section 3 of this submission. 4. If recommendation 1 is not followed, an environmental authority should only be granted subject to the following conditions: a. The proponent must prepare a greenhouse gas mitigation assessment, in which: i. Methane mitigation options are specifically considered, including ventilation air methane capture and oxidisation; ii. All technically viable emissions mitigation measures are included; and iii. The potential abatement of each measure is quantified. b. The assessment should be verified by an independent expert to ensure all possible measures have been included. c. The proponent must propose and commit to a credible plan to achieve zero scope 1 and 2 emissions by 2050, which: i. Involves the implementation of all viable mitigation measures identified in the GHG assessment ii. Sets interim emissions targets; and iii. Reflects the mitigation hierarchy. d. The proponent must report annually on its progress against the Project emission targets and mitigation plan, and failure to achieve targets will result in the suspension of the Project environmental authority.	It is noted that the submission by the ECoCeQ to the federal government which proposed the reconsideration of climate change impacts on all MNES has been dismissed (Federal Court of Australia, 11 October 2023), setting a precedent for affected projects. The EIS addresses the Terms of Reference in accordance with the EP Act. A draft Decarbonisation Plan, which aims to meet the requirements of the as yet to be released QLD Decarbonisation Plan Guideline, has also been prepared for the Project and is provided with the revised EIS (as Appendix A3).	✓		✓	✓					
2	Federal Environmental Minister Reconsideration of the project	This mine is one of 11 projects being reconsidered by the Federal Environment Minister Tanya Plibersek. On the strength of evidence gathered by the Environment Centre of Central Queensland and Environmental Justice Australia, demonstrating the climate impacts on a huge range of threatened and iconic species and ecosystems, Plibersek agreed to consider whether climate impacts should be part of these approvals.	The Queensland Government should not make a decision on the EIS until the Federal Minister has handed down her decision.	It is noted that the submission by the ECoCeQ to the federal government which proposed the reconsideration of climate change impacts on all MNES has been dismissed (Federal Court of Australia, 11 October 2023), setting a precedent for affected projects. The EIS addresses the Terms of Reference in accordance with the EP Act.							✓		
3	Terrestrial ecology - vegetation	The Proponent has identified 15 regional ecosystems across the study area of which four are listed as 'endangered' and six are listed as 'of concern'. • 177 ha of endangered brigalow (RE 11.3.1, 11.4.8 and 11.4.9), • 110.3 ha of high-quality regrowth of endangered brigalow • 21.3 ha of endangered Palustrine swamp with fringing Blue Gum woodland in depressions on Cainozoic sand plains and remnant surfaces (RE 11.5.17), • 1,150 ha of of concern eucalypt woodland on alluvials (RE 11.3.2, 11.3.3 and 11.3.4), • 1,865.6 ha of eucalypt woodland ecosystems of least concern, • 135.8 ha of riparian vegetation (RE 11.3.25), and • 21.7 ha of least concern wetland ecosystems. The Proponent has identified that the Project would require the clearance of approximately 12.2 ha of remnant vegetation, and the subsidence ponding areas are predicted to affect approximately 96.9 ha. The direct clearing and subsidence ponding will impact on: • 24.3 ha of 'endangered' brigalow; • 33.2 ha of 'of concern' eucalypt woodland; • 2.5 ha of wetlands, • 6.7 ha of riparian vegetation, • 20.6 ha of 'least concern' eucalypt woodland. These vegetation communities have been subject to historic clearing for agriculture and mining. The cumulative impacts of the removal of over threatened vegetation communities must be considered clearly inappropriate.	123 EnvA & 132 Capricorn Conservation Council: That the EIS be rejected on the basis of that the Project is clearly unacceptable in respect to the direct and cumulative impacts on threatened species and communities. In the alternative, the Proponent must be required to provide a through assessment of the cumulative impacts of remnant vegetation clearing and disturbance and outline a more appropriate rehabilitation plan which reinstates critical habitat and movement corridors. 135 Environment Council of Central Queensland: ECoCeQ urges you to reject this EIS proposal. At a minimum, we urge you to delay until the proposal that is currently being reconsidered by the Federal Environment Minister, pursuant to a request made by ECoCeQ under section 78A of the EPBC Act is determined. That reconsideration is occurring on the basis of substantial new information put before the Federal Minister about the impacts of the proposal on matters protected under the EPBC Act. DES should not approve EIS while this process is in progress (see, by way of relevant comparison, p 11 of the EPBC Act Policy Statement: Reconsideration on the relationship between reconsideration and the Federal approval process).	The assessment of cumulative impacts to terrestrial ecology values (including vegetation) is provided in Chapter 10, Section 10.5.4, with the cumulative impact assessment included for each MNES (Sections 10.6.1 to 10.6.9) and the assessment of impacts to MSES (Section 10.7). Offsets, as legally required, are proposed for significant impacts (refer Section 10.9), and the proposed rehabilitation of the Project area is provided in Chapter 6. With regard to movement corridors, it is noted that the impact assessments take an extremely conservative approach, in that all subsidence areas modelled to experience increased intermittent ponding are considered equivalent to a significant impact to vegetation, despite no proposed clearing. These areas are expected to continue to provide dispersal habitat function post mining, retaining all existing movement corridors. It is noted that the submission by the ECoCeQ to the federal government which proposed the reconsideration of climate change impacts on all MNES has been dismissed (Federal Court of Australia, 11 October 2023).	✓	✓	✓	✓		✓			
4	Terrestrial ecology - fauna	This Project will have some impact on 167 native fauna species through the loss and fragmentation of important habitat. Of significance is the impact to the habitat of conservation significant species including: • 207.1 ha of ornamental snake (Denisonia maculata) habitat, • 100.6 ha of greater glider (Petauroides volans) habitat, • 109.2 ha of koala (Phascolarctos cinereus) habitat, • echidna (Tachyglossus aculeatus), • 15.5 ha of squatter pigeon (Geophaps scripta scripta), • white-throated needletail (Hirundapus caudacutus), and • 38.4 ha of Australian painted snipe (Rostratula australis) habitat. The EIS acknowledges the highly cleared and fragmented vegetation in the Bowen Basin but fails to acknowledge the high functional significance of all vegetation on the project site, including non-remnant and regrowth vegetation that provides linkages for wildlife movement between areas of remnant vegetation. All remaining vegetation, remnant or regrowth, is significant to species survival in such a landscape and this is well recognised in the scientific literature. In support of the value of regrowth vegetation, specimens of the endangered (NC Act) Solanum adenophorum were identified in brigalow regrowth within the project area as was the ornamental snake, Denisonia maculata.	123 EnvA & 132 Capricorn Conservation Council: That the EIS be rejected on the basis of that the Project is clearly unacceptable in respect to the direct and cumulative impacts on threatened species and communities. In the alternative, the Proponent must be required to provide a through assessment of the cumulative impacts of remnant vegetation clearing and disturbance and outline a more appropriate rehabilitation plan which reinstates critical habitat and movement corridors. 135 Environment Council of Central Queensland: ECoCeQ urges you to reject this EIS proposal. At a minimum, we urge you to delay until the proposal that is currently being reconsidered by the Federal Environment Minister, pursuant to a request made by ECoCeQ under section 78A of the EPBC Act is determined. That reconsideration is occurring on the basis of substantial new information put before the Federal Minister about the impacts of the proposal on matters protected under the EPBC Act. DES should not approve EIS while this process is in progress (see, by way of relevant comparison, p 11 of the EPBC Act Policy Statement: Reconsideration on the relationship between reconsideration and the Federal approval process).	As above	✓	✓	✓	✓		✓			
5	Terrestrial ecology - Cumulative impacts on threatened species and communities	The assessment of the cumulative impacts on threatened species and communities is misleading and does not adequately demonstrate that the cumulative impacts are "minimal and not significant". The pre-clearing cover for the Isaac-Comet Downs subregion is estimated at approximately 2,693,397 ha compared to 574,501 ha of remnant vegetation (Accad et al. 2021). 78.7% of vegetation cover has already been cleared in this Brigalow Belt subregion which means that every extra of habitat clearing and disturbance is highly likely to impact on threatened species and ecosystems. This Project will result in the disturbance of 562 ha, including direct disturbance to 109.1 ha of remnant vegetation. At the same time, further clearing and disturbance within the subregion include the Olive Downs Coking Coal Project and the Vulcan Coal Complex Project are currently occurring, with the proposed Saraji East Project and the Winchester South Projects under assessment at present. In the last two years, the koala and greater glider have been reclassified from vulnerable to endangered, largely due to the loss and fragmentation of habitat, and the impacts on climate change and the consequent severe weather and fire events. With less than 574,500 hectares of fragmented remnant vegetation in the Isaac-Comet Downs subregion, along with the contribution of this Project to greenhouse gas emissions (see emissions section below), a more thorough assessment of the cumulative impacts is required before even more of our Queensland ecosystems and species are added to the endangered list, or worse, they make the extinct list.	123 EnvA & 132 Capricorn Conservation Council: That the EIS be rejected on the basis of that the Project is clearly unacceptable in respect to the direct and cumulative impacts on threatened species and communities. In the alternative, the Proponent must be required to provide a through assessment of the cumulative impacts of remnant vegetation clearing and disturbance and outline a more appropriate rehabilitation plan which reinstates critical habitat and movement corridors.	As above	✓		✓	✓					
6	Flora and Fauna - unacceptable impacts on central Queensland	The Bowen Basin is a highly fragmented and cleared landscape, as is much of Australia. In the last two years, this fragmentation has led to the koala and greater glider being reclassified from vulnerable to endangered, due to the impacts on climate change and the consequent severe weather and fire events, as well as direct clearing. In the Bowen Basin, the destruction is stark. 78.7% of vegetation has already been cleared in the Isaac-Comet Downs Brigalow Belt subregion (Accad et al. 2021). This Project will result in the disturbance of 562 ha, including direct disturbance to 109.1 ha of remnant vegetation, and more than 100 ha of habitat loss for each of the endangered species: ornamental snake, greater glider and koala. Further clearing and disturbance is already occurring at the Olive Downs Coking Coal Project and the Vulcan Coal Complex Project, with the proposed Saraji East Project and the Winchester South Projects under assessment at present. The EIS assessment of the cumulative impacts on threatened species and communities is misleading and does not adequately demonstrate that the cumulative impacts are "minimal and not significant". A more thorough assessment of the cumulative impacts is required before even more of our Queensland ecosystems and species are added to the endangered list, or worse, they make the extinct list.		As above							✓		

Lake Vermont Meadowbrook Project: Responses to Submissions - Responses to objections

Issue #	Topic, EIS section, and Terms of Reference (ToR) section	Issue/Comment	Recommendation	Summary of changes made / response to item	123 Environmental Advocacy in Central Queensland	129 Mackay Conservation Group	130 Lock the Gate Alliance	132 Capricorn Conservation Council	133 Ember	135 Environment Council of Central Queensland	136 Queensland Conservation Council	138 The Australia Institute	139 Individual comments
7	EPBC Act flaw - not including climate change and the effects	While 'climate change' and the effects are not specifically noted in the Environmental Protection and Biodiversity Conservation Act (EPBC) or the Environmental Protection Act (EPA) the evidence is clear that drought and flood and fire that we import at the same time as we export coal and gas do have a devastating effect on Matters of National Environmental Significance (MNES) and Matters of State Significance (MSES) that are specifically noted in these Acts. It is a flaw in these Acts that Climate impacts are not included, and a travesty that that our MNES and MSES are not protected because of the faulty system. However the Coordinator has the discretion to remedy this.	135 Environment Council of Central Queensland: ECoCeQ urges you to reject this EIS proposal. At a minimum, we urge you to delay until the proposal that is currently being reconsidered by the Federal Environment Minister, pursuant to a request made by ECoCeQ under section 78A of the EPBC Act is determined. That reconsideration is occurring on the basis of substantial new information put before the Federal Minister about the impacts of the proposal on matters protected under the EPBC Act. DES should not approve EIS while this process is in progress (see, by way of relevant comparison, p 11 of the EPBC Act Policy Statement: Reconsideration on the relationship between reconsideration and the Federal approval process).	It is noted that the Project is included in the submission by the ECoCeQ to the federal government which proposed the reconsideration of climate change impacts on all MNES. It is also noted that this legal challenge has been dismissed (Federal Court of Australia, 11 October 2023). It is currently expected that approval under the EPBC Act will be considered in respect of existing statutory provisions, guidelines and policies.					✓			
8	Offsets	Offsets are typically of minimal success, short duration, and certainly do not address the cumulative impacts from the loss and disturbance of habitat in areas such as the Bowen Basin. The significant biodiversity impacts are proposed to be dealt with through offsets as set out in the 'MNES Biodiversity Offsets Strategy'. EnvA is concerned that the proposed offsets are not suitable for the following reasons: • The proposed offset area is on the same property as the Project and represent an area that has been subject to timber harvesting, vegetation clearing and cattle grazing. It has been over-sown with buffel grass which is known to reduce re-establishment of native vegetation and increases the risk of hot bushfire. • The proposed management of the area is minimal and includes introduction of a managed fire regime to allow for understory vegetation development, additional fencing and water infrastructure to allow the continuation of managed grazing, thinning of poplar box and some additional pig control. • The proposed internal fencing is of concern in limiting the ability for some species to be able to move freely through the landscape and involves a risk to fauna of entrapment. • The quality of the habitat is not forecast to significantly improve for at least 10 years under the proposed management actions. • The Proponent has identified connectivity corridors from the offset area as principally riparian corridors associated with Boomerang Creek, Hughes Creek, One Mile Creek and Phillips Creek. Of these connections, only Boomerang Creek directly connects within the proposed offset area. There will be constraints for fauna accessing the other creek corridors due to the existing Lake Vermont mine and the disturbance footprint of the underground coal component and infrastructure corridors of this proposed Project. • There is recognition that there will need to be an additional offsets for the open-cut pit mine, but this will be negotiated at Stage 4 of the Project scheduled for 2045. • The proposed offsets appear to involve 'averted loss' offsets, whereby areas of existing habitat are allegedly preserved to compensate for the destruction of habitat elsewhere. Such averted loss offsets are widely considered to be ineffective and have recently been explicitly rejected by the Federal Government. EnvA believes that this is an unsuitable offset that does not effectively provide for quality habitat for threatened ecosystems and species and has limited connectivity to other suitable habitat.	123 EnvA & 132 Capricorn Conservation Council: That the Proponent is required to prepare a detailed and justified offset management strategy which adequately compensates the significant loss of threatened species and communities, and the fragmentation of movement corridors along waterways.	The Biodiversity Offsets Strategy is provided in Appendix K and the proposed offsets described in EIS Chapter 10 (Terrestrial Ecology) Section 10.9. It is noted that all significnat impacts, including to habitat providing dispersal ecological function and connectivity (as an MSES) are addressed by the offset strategy through proposed offsets, or identification of required offsets prior to impact. In repsonse to specific comment details: • An offset area adjacent to the impact area is the preferred model of offset provision (DCCEEW - Identifying suitable offsets https://www.dcceew.gov.au/environment/epbc/approvals/offsets#identifying-suitable-offsets) • The proposed offset area management is for the improvement of habitat quality. • Fencing will be limited to that required for the maintenance of habitat quality. • The connectivity with identified connectivity corridors is via habitat outside the offset areas, it is noted the connectivity value of the impacted areas is also via the same habitat external to the Project area.	✓		✓	✓					
9	Offset - averted loss offsets	Of particular concern are the offsets proposed to deal with the significant residual impacts on these species. The proposed offset strategy appears to use 'averted loss' offsets, where areas of existing habitat are preserved to compensate for the destruction of habitat elsewhere. Such offsets are widely considered to be ineffective and have recently been explicitly rejected by the Federal Government. Even within this there is no effective management strategy proposed to deal with weeds, fire risk and fauna movement through these offsets areas. These offsets do not effectively provide quality habitat for threatened ecosystems and species, and do not offset the significant impacts described above.		The Biological Offsets Strategy meets the requirements of the EPBC Act Environmental Offsets Policy (refer Appendix K, Biodiversity Offsets Policy). The proposed management of the offset areas is described in Appendix U, Offset Area Management Plan.							✓		
10	Greenhouse gas emissions and climate change - inconsistent with Paris Agreement and fail to fulfill ToR	Queensland communities and iconic environments such as the Great Barrier Reef and Wet Tropics World Heritage Area, are already suffering climate impacts. The Great Barrier Reef has suffered four devastating bleaching events in just seven years, including in a La Nina cycle. In 2019, at the end of the last El Nino cycle, bushfire penetrated the Wet Tropics. Thousands of Queenslanders are still rebuilding after destructive floods in 2021 and 2022. The latest Intergovernmental Panel on Climate Change (IPCC) report gathered more evidence about the escalating impacts, particularly to the Great Barrier Reef, likely if we exceed 1.5 degrees of warming. To have a chance of saving the Great Barrier Reef, we need the Queensland Government to reach our international obligations under the Paris Agreement to limit warming to 1.5 degrees. The Project would create over 294 million tonnes of downstream emissions, or nearly 8 million tonnes per year if approved. That's almost twice the annual impact of Australia's domestic aviation industry in 2021 (4.4 Mt CO2e). The International Energy Agency is unequivocal: we cannot build new coal if we are to keep warming below 1.5 degrees. The Terms of Reference require the EIS to 'identify and describe the values that must be protected for all the relevant matters, including environmental values specified in the EP Act'. Under Section 9 of the EP Act, an 'environmental value' includes a 'quality of physical characteristic of the environment that is conducive to ecological health or public amenity or safety'. Keeping greenhouse gasses below the 1.5 degree threshold required to maintain a safe climate meets the definition of a 'physical characteristic of the environment' that is 'conducive to ecological health' and public safety. Greenhouse gas levels must be considered an environmental value for the purposes of the EP Act. The EIS therefore fails to fulfill the ToR by not assessing the impacts of the Project on all environmental values, including a description of nature and scale of each impact, its intensity and duration, the cumulative effects of the Project in combination with other developments, and the potential for secondary, permanent and/or irreversible impacts.	This mine cannot be approved if Queensland is to maintain consistency with its 1.5 degree commitments.	A draft Decarbonisation Plan, which aims to meet the requirements of the as yet to be released QLD Decarboniation Plan Guideline, has been prepared and is provided with the revised EIS (Appendix A3). The Project proponent has committed to work within statutory requirements in respect of managing and mitigating GHG emissions.							✓		

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11	Greenhouse gas emissions and climate change - global GHG emissions, State decarbonised economy, State and National reduction targets	The Project will make a significant contribution to global greenhouse gas emissions, especially methane emissions, and will make the task of decarbonising Queensland's economy materially more difficult. Approximately 2.5Mt CO2-e must be cut from Queensland's annual emissions inventory between now and 2030 to meet the state's emissions reduction target. Scope 1 and 2 emissions The existing Lake Vermont coal mine already reports its annual scope 1 and emissions to the Clean Energy Regulator as it produces more than 100,000t CO2e p/a and triggers reporting obligations under the NGER scheme's Safeguard mechanism (SGM). The 2021-22 SGM facility data records that Lake Vermont coal mine reported 369,934t CO2e emissions in the reporting period. It also records Lake Vermont coal mine baseline as 394,117t CO2e. Appendix L to the EIS is the Air Quality and Greenhouse Gas Assessment details the project's estimated scope 1 emissions on a year-by-year breakdown alongside the emissions from the existing Lake Vermont mine. The vast majority of scope 1 emissions are anticipated to come from fugitive emissions. Some key points from the estimates provided in Table 12 are: • The estimated Scope 1 emissions from the proposed extension only are estimated to be as high as 829,373 t CO2e in year 12 of the project. This is more than double the currentSGM baseline. • Even when averaged over the 20 years, the annual emissionsfrom the proposed extension are estimated at to average 303,200t CO2e per year. This accounts for 77% of the current baseline. • Scope 1 emissions from the Lake Vermont project (the existing mine and the proposed Meadowbrook extension project) are estimated to peak in year 12 of the project at 1,187,029t CO2e. This is more than three times the current baseline. • Even when averaged over the 20 years, (the existing mine and the proposed Meadowbrook extension project) are estimated to average 552,778t CO2e per annum. This is 1.4 times higher than the current baseline. These figures suggest that Lake Vermont's SGM baseline will need to significantly increase and that scope 1 and 2 emissions from the project would make a significant contribution towardsthreatening the 'hard cap' on emissions. Given the existing scope 1 & 2 emissions profile of the Lake Vermont mine (260,325 - 455,483t CO2e/year), winding down the mine instead of extending its life could deliver virtually the entire emissions reduction needed to meet Queensland's 2030 target. In contrast, proceeding with the Project would use up just over 5Mt or 25% of Queensland's entire remaining emissions budget for the 2030 target. The bulk of additional emissions from the Project will occur after 2030, during the period in which Queensland - along with the rest of the world - will be attempting to reduce its emissions to net zero by 2050. These emissions will make that task significantly more difficult. Scope 3 emissions The Project will contribute to over 294 million tonnes of scope 3 greenhouse gas emissions over its life, averaging about 7.8Mt per year for 35 years. For comparison, that's almost twice the annual emissions impact of Australia's entire domestic aviation industry as reported in 2021 (4.4Mt CO2-e). The latest analysis from the Global Carbon Project found that to have a 50% chance of limiting global warming to 1.5°C, the total remaining carbon budget was 380Gt CO2 (as of 2022), with an annual reduction of 1.4Gt CO2 required to reach zero emissions by 2050. Australia, and of particular concern to EnvA, Central Queensland (where this mine is proposed), is already experiencing climate change impacts that include an increased frequency and severity of coral bleaching, storms, heat waves and wildfires, and an increase in the number of endangered species and ecosystems. If warming increases to 1.5°C and above, these impacts will increase in severity. In a recent Queensland Land Court decision, Land Court President Fleur Kingham, found that as a matter of law, GHG emissions can be taken into account in applying the principles of ecologically sustainable development and in considering whether the applications are in the public interest. Wherever the coal is burnt the emissions will contribute to environmental harm, including in Queensland. This same court decision notes that the climate science demonstrates that the remaining carbon budget for keeping temperatures to 1.5°C in 2100 will be exhausted in 8 years at the current rate of emission, and to keep temperatures to well below 2°C by 2100, will be exhausted in 15.5 years. This proposal will contribute to an increase in the current rate of emissions and consequently will result in a failure of Australia and Queensland to meet emission reduction targets and our responsibilities under the Paris agreement. Therefore, it is our submission that the GHG emissions of this Project, and the warming effect of those GHG emissions, will have a significant impact on the environment at the regional, state and country level, including significantly impacting on the Great Barrier Reef, most listed threatened species and communities, migratory species and wetlands.	123 EnvA & 132 Capricorn Conservation Council: That this Proponent be required to prepare a detailed decarbonisation plan that meets the ToR and which includes at a minimum: • Identification of mechanisms, and committing to taking action, to reduce Scope 1 and 2 emissions including a credible plan to achieve zero emissions by 2050, • An assessment of the Project's compatibility with the emissions reduction required to meet Queensland and Australia's emissions targets, • An assessment of the impacts of climate change on all matters of State and National Environmental Significance, and • A meaningful analysis of the economic, social and environmental cost-benefit of this project to justify the project proceeding given the significant contribution to emissions to accelerating climate change induced weather events.	A decarbonisation plan is not required by the Terms of Reference. However, a draft Decarbonisation Plan, which aims to meet the requirements of the as yet to be released QLD Decarboniation Plan Guideline, has been prepared and is provided with the revised EIS (Appendix A3).	✓			✓					
12	Greenhouse gas emissions and climate change - global GHG emissions and decarbonised economy	The Project will, as currently planned, make a significant contribution to global greenhouse gas emissions, especially methane emissions, and will make the task of decarbonising Queensland's economy materially more difficult.	123 EnvA & 132 Capricorn Conservation Council: That this Proponent be required to prepare a detailed decarbonisation plan that meets the ToR and which includes at a minimum: • Identification of mechanisms, and committing to taking action, to reduce Scope 1 and 2 emissions including a credible plan to achieve zero emissions by 2050, • An assessment of the Project's compatibility with the emissions reduction required to meet Queensland and Australia's emissions targets, • An assessment of the impacts of climate change on all matters of State and National Environmental Significance, and • A meaningful analysis of the economic, social and environmental cost-benefit of this project to justify the project proceeding given the significant contribution to emissions to accelerating climate change induced weather events.	A decarbonisation plan is not required by the Terms of Reference. However, a draft Decarbonisation Plan, which aims to meet the requirements of the as yet to be released QLD Decarboniation Plan Guideline, has been prepared and is provided with the revised EIS (Appendix A3).		✓	✓						

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13	Greenhouse gas emissions and climate change - global GHG emissions and reductions targets and commitment to agreements	We are strongly opposed to the Project because of the serious and unwarranted impacts it would have on the local environment, the global climate, and the regional economy. The Project would produce enormous amounts of scope 1 and 2 methane and carbon dioxide pollution, pollution which the proponent has proposed virtually no measures to address. Methane pollution from Queensland's coal industry is already a major obstacle threatening the effective decarbonisation of the state's economy, and adding the enormous fugitive emissions from this project to the inventory will make that task materially harder - and unfairly increase the reduction burden placed on other sectors. 1.1. The Project will have a significant greenhouse gas impact, which will make a tangible contribution to climate change and make it harder to decarbonise Queensland's economy. Every tonne of greenhouse gas pollution makes an immediate and tangible contribution to the global warming that is threatening Queensland's ecosystems and livelihoods. Every new coal project approval makes avoiding catastrophic climate change and the task of transforming Queensland's economy materially more difficult. The world has already warmed to the extent we are now experiencing more frequent and intense natural disasters, and there is a finite volume of additional greenhouse gas pollution that can be emitted before tipping points are reached and the stability of the global climate is permanently undermined. This remaining carbon budget is precious and must not be wasted on avoidable methane and other greenhouse gas pollution from new coal projects. 1.1.1. The Project's scope 1 and 2 domestic emissions are significant and would more than double the size of the annual emissions reduction task required to meet Queensland's 2030 target. The anticipated emissions impact from the new mine workings alone is almost 13 million tonnes of greenhouse gas pollution over the life of the Project, an average of 346,461t CO2-e per year. The true impact of the Project is best considered through the combined emissions of the existing Lake Vermont mine and the proposed additional workings, given that the core purpose of the Project is perpetuating the prolonging the life of the existing mine. If the Project goes ahead, the total scope 1 and 2 emissions impact of the Lake Vermont mine will - from 2022 onwards, not including the pollution created to date - amount to over 26 million tonnes CO2-e, adding an average of 651,995 tonnes of avoidable greenhouse gas emissions to the atmosphere every year until 2061 (assuming the Project commences as planned). Approximately 2.5Mt CO2-e must be cut from Queensland's annual emissions inventory between now and 2030 to meet the state's emissions reduction target. 1 This equates to a remaining total carbon budget of 20Mt, or an annual reduction of 312,500t CO2-e every year between 2023 and 2030 (assuming a linear reduction trajectory). Given the existing scope 1 & 2 emissions profile of the Lake Vermont mine (260,325 - 455,483t CO2-e/yr), winding down the mine instead of extending its life could deliver virtually the entire emissions reduction needed to meet Queensland's 2030 target. In contrast, proceeding with the Project would use up just over 5Mt or 25% of Queensland's entire remaining emissions budget for the 2030 target. The average annual emissions from the extended mine would be approximately 648,117t between 2023 to 2030, over double the linear emissions reduction of 312,500t/yr required to meet the target. The total emissions reduction task thus required to be fulfilled by Queensland households and other industries would thus increase by, on average, close to 50%, from 312.5kt CO2-e up to 960.6kt/year. This information is completely omitted from the EIS, yet comprises a significant economic impact on the regional and state economy. The bulk of additional emissions from the Project will occur after 2030, during the period in which Queensland - along with the rest of the world - will be attempting to reduce its emissions to net zero by 2050. These emissions will make that task significantly more difficult, as illustrated in the below graph, which compares the anticipated emissions impact from the extended mine with the annual emissions reduction required to meet the 2050 target (assuming a linear reduction trajectory). This graph also illustrates the scale of the existing emissions reduction challenge, emphasising how problematic adding even more emissions to Queensland's inventory by approving this mine would be. Critically, the bulk of emissions associated with the Project comprise methane, a much more potent greenhouse gas than carbon dioxide over the short-term. The greenhouse gas assessment for the Project uses the 100-year factor to convert these methane emissions into a CO2-e figure, but given the short period remaining before dangerous climate tipping points are reached, a 20-year GWP factor is more appropriate. Applying this factor, a more accurate understanding of the Project's impact on global warming can be attained. 1.1.2. The description of the emissions arising from the Project is misleading and understated. The section on greenhouse gas emissions in Chapter 13 of the EIS compares the expected emissions from the Project (new development only) to Australia and Queensland's 2019 emissions inventories. This presentation is misleading in three respects. First, the EIS refers to the maximum annual expected emissions from the new mine workings only, excluding the emissions from the existing development. However, the purpose and nature of the Project is to extend the life of the existing mine; the counterfactual scenario would see the Lake Vermont mine instead wind down and cease production (though no timeline is given for this in the EIS). This means that the relevant impacts to be considered are those of the new workings together with the existing mine - this is the environmental impact that would be caused by the Project and should thus be the subject of the environmental authority decision process. The appropriate maximum annual emissions figure to consider is therefore 1.3Mt CO2-e, which represents 0.88% of Queensland's 2019 inventory and 0.23% of the 2019 national inventory. Considering that this is just one project from just one industry, and the fact that both Queensland and Australia's emissions inventories are already much higher than they need to be to avoid catastrophic climate change, this is a material difference. Second, the EIS draws on outdated emissions inventory data, thus further misrepresenting the scale of the Project's potential impact on Queensland and national emissions. According to the latest UNFCCC reporting data, Australia's emissions in 2021 amounted to 454.9Mt and Queensland was responsible for 135.6Mt CO2-e. This means that the maximum annual emissions caused by the Project would in fact represent a 0.28% increase to Australia's national reported emissions, and a 0.96% increase to Queensland's total. Again, this is materially different to the EIS's misleading assessment of the Project's impact. Importantly - yet not mentioned in the EIS - as other sectors and households continue to take efforts to reduce their emissions, the proportion of Queensland's emissions footprint represented by the pollution from this project will increase. For example, if Australia achieves its target and annual emissions for 2030 are 354Mt, the Project's footprint would increase to 0.36% of that inventory. Third, putting aside the above discussion, the comparison of the Project's expected emissions to Queensland and Australia's recent emissions inventories is irrelevant and misleading. Presenting the Project's emissions as a tiny fraction of the Queensland and Australia totals is meaningless, partly because the Project's domestic emissions are negligible compared to its downstream impact, and partly because it is not the scale of the Project with respect to existing inventories that matters but the effect the Project will have on Queensland and Australia's ability to reduce emissions and thus reduce the severity of climate change impacts. As set out in earlier sections of this comment, the scenario encapsulated by the Project is materially different from the scenario in which Australia and Queensland achieve stated emissions reduction targets, as the emissions profile of the Project would significantly increase the reduction task required, endangering the targets or increasing the burden on other sectors (or both). 1.1.3. The Safeguard Mechanism does not regulate methane and is unlikely to have any effect on the mine's methane footprint in the short- to medium-term. Importantly, it must be noted that even though the extended Lake Vermont mine would be covered by the Safeguard Mechanism and required to comply with a baseline set by the Clean Energy Regulator, there are no specific methane reduction requirements under the Mechanism, nor any limit on the proportion of baseline compliance that can be achieved through the surrender of carbon credits. This means that there is no guarantee that the Project's damaging methane emissions would be reduced by virtue of the Safeguard Mechanism, nor that any offsets purchased would reduce the Project's impact on Queensland's emissions inventory (as credits could be generated elsewhere in Australia). The above gaps in regulation at the federal level make it all the more problematic that the proponent has failed to propose any tangible emissions abatement measures for the Project, as discussed further below. The result is that, if the Project is granted an environmental authority and approved to proceed (against the clear imperatives of climate science) without strong mitigation conditions requiring concrete methane management, there will be no direct and effective regulation on the enormous and dangerous methane footprint of the mine. 1.1.3. The downstream emissions impact from the Project is enormous and is not compatible with limiting global warming to Paris Agreement objectives. According to the greenhouse gas assessment included at Appendix L to the EIS, the Project could create over 294 million tonnes of downstream greenhouse gas emissions over its life, averaging about 7.8Mt per year for 35 years. For comparison, that's almost twice the annual emissions impact of Australia's entire domestic aviation industry as reported in 2021 (4.4Mt CO2-e). The latest analysis from the Global Carbon Project found that to have a 50% chance of limiting global warming to 1.5°C, the total remaining carbon budget was 380Gt CO2 (as of 2022), with an annual reduction of 1.4Gt CO2 required to reach zero emissions by 2050. If the Project proceeds as planned, it would use up 0.08% of the world's entire remaining carbon budget to avoid catastrophic climate change. Although that figure looks small, considered on a global scale and in light of the many alternative options for Queensland's medium to long-term economic development, this is an extraordinary amount of damage for just one project to cause. Meanwhile, its annual downstream impact would represent a 0.57% step away from the reduction trajectory required for the world's economy to achieve zero emissions by 2050. Again, while the figure seems small, considered against the sheer number of projects across the entire global economy, it is a material and entirely avoidable impediment to the essential decarbonisation of the world's economy.		A decarbonisation plan is not required by the Terms of Reference. However, a draft Decarbonisation Plan, which aims to meet the requirements of the as yet to be released QLD Decarboniation Plan Guideline, has been prepared and is provided with the revised EIS (Appendix A3).			✓						

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14	Greenhouse gas emissions and climate change - State and National emission reduction targets	The project would make the task of achieving Australia and Queensland's emission reduction goals materially more difficult for the reasons listed: ●An annual reduction of 2.1Mt/yr is required to meet Queensland's 2030 target. The annual domestic emissions from the expanded mine over the 7 years from project start to 2030 (678,070t) would be a 32.15% step in the wrong direction every year. ●An annual reduction of 16.75Mt is required to meet Australia's 2030 target. This project would represent a 4.05% step in the wrong direction. ●The project would use up 0.09% of Australia's entire remaining emissions budget to achieve the 2030 target (4.14Mt of 4,381Mt remaining). ●The EIS does not assess the project's compatibility with Queensland's emission reduction targets nor the goals of the Energy and Jobs Plan.		A draft Decarbonisation Plan, which aims to meet the requirements of the as yet to be released QLD Decarbonisation Plan Guideline, has been prepared and is provided with the revised EIS (Appendix A3).		✓							
15	Greenhouse gas emissions and climate change - emission reductions are not prioritised	The Terms of Reference require the proponent to 'propose greenhouse gas abatement measures'. However, the EIS section 'GHG mitigation and management' only presents generic points about the decarbonisation of the resource sector, most of which have already been presented in Queensland Government documents. The 'commitments' made in the EIS are predominantly cost savings for the proponent through efficiency and coordinated planning. There are no clear commits to reduce methane on site beyond vague proposals to 'acquire carbon credits' or flare coal mine waste gas 'when practicable'. There is no further detail on what 'practicable' means here or how it would be assessed. The failure of the Proponent to propose meaningful emissions reductions shows that the project is not in line with the Queensland Resources Industry Development Plan (QRIDP) which committed to develop a decarbonisation plan application to resources projects including coal mines, to drive reductions in Scope 1 and 2 emissions in line with Queensland's climate ambitions. The project proposed no credible mitigation measures or alignment with Queensland's emissions targets or decarbonisation policies so must be refused.		A draft Decarbonisation Plan, which aims to meet the requirements of the as yet to be released QLD Decarbonisation Plan Guideline, has been prepared and is provided with the revised EIS (Appendix A3).						✓		
16	Greenhouse gas emissions and climate change - achieving State emission reduction targets and economic impacts	Queensland's 30% emissions reduction target by 2030 on track to net zero by 2050 is deeply inadequate and not aligned with a 1.5 degree trajectory. Approving this mine will make it even harder for Queensland to meet even these weak targets. If the Project goes ahead, the total scope 1 and 2 emissions from the expanded Lake Vermont mine will average more than 650,000 tonnes of avoidable greenhouse gas emissions, every year until 2061. This includes nearly 350,000 tonnes from the new mine workings, totalling 13 million tonnes over the life of the Project. This means that Queensland households and other industries will have to reduce emissions by an additional 350,000 tonnes per year, if the Project goes ahead. This will have a significant economic impact on the regional and state economy. Beyond 2030, the picture becomes even grimmer, as Queensland and the rest of the world attempt to reduce emissions to net zero by 2050. On a linear path from 30% reduction in 2030 to net zero by 2050, Queensland will have to reduce emissions by nearly 7,000,000 tonnes per year. The additional emissions from the Project would add 5% to our annual emissions reduction challenge between 2030 and 2050. If instead, this mine was not approved and the existing Lake Vermont project allowed to close in a way that is well managed and planned with the community, the emissions reduction task will reduce by nearly 5%.		A draft Decarbonisation Plan, which aims to meet the requirements of the as yet to be released QLD Decarbonisation Plan Guideline, has been prepared and is provided with the revised EIS (Appendix A3).						✓		
17	Greenhouse gas emissions and climate change - State emissions targets or the decarbonisation plan	1.4. If the proponent is unable or unwilling to effectively manage its methane footprint, the Project is not compatible with Queensland's emissions targets or the decarbonisation plan commitment, and its environmental authority should be refused. The ToR for the Project were finalised in 2020, after the Queensland Government committed to its 2030 and 2050 emissions reduction targets. Reflecting these commitments, the ToR required the proponent to include proposals to mitigate the emissions from its Project, 11 which the proponent has failed to do. As it stands, the Project would not be compatible with the decarbonisation of Queensland's economy, and its environmental authority application should be refused. Furthermore, since the ToR were published but before the EIS was submitted, the Queensland Resources Industry Development Plan ('QRIDP') was released. The QRIDP included a commitment to develop a 'decarbonisation plan policy' applicable to resources projects including coal mines which would see 'substantial and consistent reductions in Scope 1 and 2 emissions' and substantial improvements to emissions reporting. This policy is still under development, but it is clear from the terms of the QRIDP that resources proponents will be required to identify and implement measures to reduce the direct emissions footprint of their projects. Even though the decarbonisation plan policy commitment had not been made when the ToR for this EIS were finalised, it was announced a year before the EIS was finalised and submitted, and its implications should have been acknowledged in the EIS documents. The proponent has referred to more recent documents - for example, a 2022 report entitled 'A Queensland zero net emissions economy: Resources' - so it is unclear why the QRIDP has been excluded. Without any evidence to the contrary, the failure of the proponent to propose any meaningful emissions mitigation measures indicates that it is either unwilling or unable to effectively manage its methane and CO2 footprint. This means, in turn, that the Project will not be compatible with achieving Queensland's emission reduction targets, the decarbonisation plan policy (when implemented), and/or the critical decarbonisation of the Queensland economy. The only acceptable decision, in this context, must be to refuse to grant an environmental authority for the Project.		A decarbonisation plan is not required by the Terms of Reference. However, a draft Decarbonisation Plan, which aims to meet the requirements of the as yet to be released QLD Decarbonisation Plan Guideline, and which addresses methane, has been prepared and is provided with the revised EIS (Appendix A3).			✓					
18	Greenhouse gas emissions and climate change - ToR requirements	1.2. The EIS does not identify the environmental values associated with a stable climate or the risks posed to those values by the additional emissions produced by the Project. The ToR stipulates that the EIS must 'identify and describe the values that must be protected for all the relevant matters, including environmental values specified in the EP Act…'.3 Under section 9 of the EP Act, an 'environmental value' includes a 'quality or physical characteristic of the environment that is conducive to ecological health or public amenity or safety'. The absence of excessive greenhouse gases in the atmosphere, leading to the preservation of stable climate conditions, clearly meets the definition of a 'physical characteristic of the environment' that is conducive to ecological health' and to public safety. Accordingly, we submit that atmospheric greenhouse gas levels are an environmental value for the purposes of the EP Act. The ToR require the EIS to assess the impacts of the Project on environmental values, including a description of the nature and scale of each impact, its intensity and duration, the cumulative effects of the Project in combination with other developments, and the potential for secondary, permanent and/or irreversible impacts. The EIS does not recognise the environmental value of a stable climate, nor does the proponent describe the impact the emissions from its project will have on this value. There is no description of the risks climate change poses to Queensland's ecosystems, industries and communities, despite Queensland being in store for the largest increase in costs stemming from climate-related natural disasters.5 There is also no acknowledgement of the link between continued fossil fuel production and the increasing severity and frequency of climate impacts. There is no assessment of the risk that continued fossil fuel production and use pushes the global climate over irreversible 'tipping points', permanently damaging the health and stability of ecosystems and biodiversity in Queensland and around the world. As a result of these omissions, the EIS fails to meet the requirements of the ToR, and does not provide sufficient information to enable an informed decision on the environmental authority.		The Project impacts to climate change are addressed in Chapter 13, Section 13.3, Additionally, A draft Decarbonisation Plan, which aims to meet the requirements of the as yet to be released QLD Decarbonisation Plan Guideline has been prepared and is provided with the revised EIS (Appendix A3).			✓					

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19	Greenhouse gas emissions and climate change - ToR requirements	The EIS fails to properly describe the climate impacts of the Project and no tangible mitigation measures are proposed to address these impacts, meaning that multiple aspects of the EIS Terms of Reference ('ToR') have not been met. Inconsistencies with the Terms of Reference The Terms of Reference (ToR) require the EIS to assess the impacts of the Project on environmental values, including a description of the nature and scale of each impact, its intensity and duration, the cumulative effects of the Project in combination with other developments, and the potential for secondary, permanent and/or irreversible impacts. The EIS does not recognise the environmental value of a stable climate, nor does the proponent describe the impact the emissions from its project will have on this value. There is no description of the risks climate change poses to Queensland's ecosystems, industries and communities, despite Queensland being in store for the largest increase in costs stemming from climate-related natural disasters. There is also no acknowledgement of the link between continued fossil fuel production and the increasing severity and frequency of climate impacts. There is no assessment of the risk that continued fossil fuel production and use pushes the global climate over irreversible 'tipping points', permanently damaging the health and stability of ecosystems and biodiversity in Queensland and around the world. The ToR required the proponent to 'propose greenhouse gas abatement measures', including 'preferred and alternative measures to avoid and/or minimise greenhouse gas emissions directly resulting from activities of the proposed project'. The EIS should have included an 'assessment of how the preferred measures minimise emissions and achieve energy efficiency', a comparison of the preferred measures with best practice, and a description of opportunities for offsetting. The section of the EIS devoted to 'GHG mitigation and management' consists almost entirely of a list of generic points about ways the resources sector could, possibly, contribute to economic decarbonisation copied directly from various Queensland Government documents. This is patently inadequate. The proponent states that it will 'investigate' preferred and alternative measures to contribute to the emission reduction target, rather than identifying the preferred and alternative measures to avoid or minimise greenhouse gas emissions. The potential 'measures' listed as candidates for this investigation appear to merely replicate a generic list of actions suggested by the Queensland Government and do not include technologies to actually reduce the emissions impact of the Project, beyond the potential to produce energy on-site. The proponent does 'commit' to implement some initiatives, none of which entail anything other than standard business efficiencies. Maintaining equipment, efficiency-focussed procurement and planning logistics to minimise fuel consumption can hardly be claimed as anything more than cost minimisation for the proponent. These proposals are hardly proportionate to the enormous scale of climate damage set to be caused by the Project. As a result of these omissions, the EIS fails to meet the requirements of the ToR.	123 EnvA & 132 Capricorn Conservation Council: That this Proponent be required to prepare a detailed decarbonisation plan that meets the ToR and which includes at a minimum: • Identification of mechanisms, and committing to taking action, to reduce Scope 1 and 2 emissions including a credible plan to achieve zero emissions by 2050, • An assessment of the Project's compatibility with the emissions reduction required to meet Queensland and Australia's emissions targets, • An assessment of the impacts of climate change on all matters of State and National Environmental Significance, and • A meaningful analysis of the economic, social and environmental cost-benefit of this project to justify the project proceeding given the significant contribution to emissions to accelerating climate change induced weather events.	A decarbonisation plan is not required by the Terms of Reference. However, a draft Decarbonisation Plan, which aims to meet the requirements of the as yet to be released QLD Decarbonisation Plan Guideline has been prepared and is provided with the revised EIS (Appendix A3). It is noted that the submission by the ECoCeQ to the federal government which proposed the reconsideration of climate change impacts on all MNES has been dismissed (Federal Court of Australia, 11 October 2023), setting a precedent for affected projects, including Meadowbrook Project. Assessment of impacts to climate change are provided in Chapter 13, Section 13.3. Assessment of the economic impacts are provided in Chapter 19, and assessment of social impacts provided in chapter 18, in addition to the other environmental impacts provided in the EIS.	✓			✓					
20	Greenhouse gas emissions and climate change - mitigation	1.3. The proponent proposes no credible mitigation measures to address the emissions from the Project, nor is the impact management hierarchy applied to emissions mitigation. The ToR required the proponent to 'propose greenhouse gas abatement measures', including 'preferred and alternative measures to avoid and/or minimise greenhouse gas emissions directly resulting from activities of the proposed project'. The EIS should have included 6 an 'assessment of how the preferred measures minimise emissions and achieve energy efficiency', a comparison of the preferred measures with best practice, and a description of opportunities for offsetting. None of these requirements are met in the EIS. The section of the EIS devoted to 'GHG mitigation and management'7 consists almost entirely of a list of generic points about ways the resources sector could, possibly, contribute to economic decarbonisation copied directly from various Queensland Government documents. This is patently inadequate. There is also a series of unjustified contentions such as 'the Project is an example of the attraction of investment and efforts to facilitate growth in the interests of realising opportunities, optimising skilled labour and infrastructure to mitigate climate change risks'.8 There is no explanation for this statement at all, and it is extremely hard to see how a proposal to extend the life of a coal mine by 30 years and produce 294 million tonnes of avoidable greenhouse gas emissions could possibly be interpreted as an effort to mitigate climate change risks. The proponent states that it will 'investigate' preferred and alternative measures to contribute to the emission reduction target,9 ignoring the fact that - as set out in the ToR - this 'investigation' is supposed to have already occurred, with the results set out in the EIS. Further, the potential 'measures' listed as candidates for this investigation appear to merely replicate a generic list of actions suggested by the Queensland Government and do not include technologies to actually reduce the emissions impact of the Project, beyond the potential to produce energy on-site. The proponent does 'commit' to implement some initiatives, none of which entail anything other than standard business efficiencies or vague promises to look into mitigation further down the track, which is barely a 'commitment' at all. Maintaining equipment, efficiency-focussed procurement and planning logistics to minimise fuel consumption can hardly be claimed as anything more than cost minimisation for the proponent. These proposals are hardly proportionate to the enormous scale of climate damage set to be caused by the Project. Further, instead of actually defining and committing to 'GHG reduction opportunities' as part of the approval process, the proponent merely promises to regularly assess, review and evaluate such opportunities - incredibly, it does not even promise to actually implement any reduction measures after such 'evaluations' occur, raising the obvious question of what the point of these reviews would be and why the Department or the public should draw any comfort from this 'commitment' whatsoever. Similarly vague and noncommittal are the proposals to 'acquire carbon credits … where practicable', to flare coal mine waste gas 'when practicable' and to 'assess' on-site power generation from coal mine methane 'should it prove practical and economically viable'.10 Putting aside the fact that the question of whether these measures are practicable should already have been undertaken as part of preparing the EIS, there is no assessment of what 'practicable' means in this context, or how it would be determined in future. There is no attempt in the EIS to quantify or otherwise describe the emissions abatement likely to be achieved through these measures, presumably because their effect is so negligible and/or uncertain as to make such quantification impossible. This is hardly an acceptable basis upon which to grant an environmental authority. There is also no evidence that the Department's impact management hierarchy, as described in the ToR, has been applied to the GHG management proposals, such as they are. This represents another clear and material failure of the EIS to meet the requirements of the ToR.		A draft Decarbonisation Plan, which aims to meet the requirements of the as yet to be released QLD Decarboniation Plan Guideline, has been prepared and is provided with the revised EIS (Appendix A3).			✓						
21	Greenhouse gas emissions and climate change - mitigation	The proponent makes no concrete commitment to mitigate greenhouse gas emissions beyond standard business procedures such as maintaining equipment and not wasting diesel. There is no detail nor timeframe provided for the suggested mitigation avenues, including the proposed 'investigation' of an emissions target and seeking renewable energy. It is unclear what acquiring carbon credits 'where practicable' means. There is no mention of available technologies to reduce methane emissions from the underground mine. This includes whether these issues were considered nor why they were not pursued.		A draft Decarbonisation Plan, which aims to meet the requirements of the as yet to be released QLD Decarboniation Plan Guideline, has been prepared and is provided with the revised EIS (Appendix A3). It is expected the Project will be able to meet its obligations under the Safeguard Mechanism when requirements are advised by the Clean Energy Regulator.		✓							

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22	Greenhouse gas emissions and climate change - emission	The EIS submitted by the proponent was meagre, and failed to address the significant Greenhouse Gasses (GHG) the proposal will emit. Greenhouse gas emissions • Scope 1 (project + existing mine): o Average annual - 552,778t o Total over life of mine - 22,111,122t • Scope 1 + 2 (project + existing mine): o Average annual - 651,995t o Maximum annual - 1,300,546t o Total over life of mine: 26,079,792t • Scope 3: o Total for life of mine - project only - 294,385,123t o Total for life of mine - project + existing mine - 750,505,733t o Average annual - 7,965,355t Australia has joined the Global Methane Pledge, a non-binding agreement to reduce methane (CH4) emissions by 30% by 2030 to keep global heating below 1.5°. Methane is a particularly potent greenhouse gas, which has the heating potential up to 120 times greater than CO2. Methane is considered responsible for 1/3 of global temperature rise and is particularly potent within a 20 year time frame. A report from Energy and Resource Insights (ERI) notes that 'Around nine-tenths of methane emitted from the energy sector is released as fugitive emissions from coal, oil and gas. Most of Australia's reported coal mine methane (58.9%) is released from the Bowen Basin'. Queensland regulators of mines have yet to properly consider and regulate coal mine methane (CMM), which are the bulk of the Scope 1 emissions. While underground mines have better processes for capturing the emitted methane, the proponent undertakes only the 'assessment, review and evaluation of GHG reduction opportunities'. A report from EMBER has found that in their study, CMM emissions are both under estimated, and under reported. Queensland mines are huge contributors to climate change both locally and globally. EMBER estimates that the methane from the Lake Vermont Meadowbrook proposal are actually double their estimates. With the failure of the proponent to properly address the GHG's, it is imperative that the EIS Coordinator considers the climate impacts, and how this proposal will affect the 2030 emissions reduction target set by Queensland. The target requires a reduction of 2.1 million tons CO2 e per year. This proposal will liberate 26 million tons (guesstimate) of scope 1 and 2 emissions over the 20 year lifetime of the mine, with ~680,000 tons released to 2030. The proposal is incompatible with achieving the Qld target, while inclusion of the Scope 3 emissions of 750 million tons is incompatible with keeping global heating below 1.5° which Australia has agreed to under the Paris accord. Breaking news from the UN this afternoon predicts the 1.5° agreed to at Paris will be breached in the next few years. Countries and governments have made declarations, but their lack of action on stopping new fossil fuel proposals belies their lip service. We are actually fiddling while Rome burns – though it is the world that is burning this time.	135 Environment Council of Central Queensland: ECoCeQ urges you to reject this EIS proposal. At a minimum, we urge you to delay until the proposal that is currently being reconsidered by the Federal Environment Minister, pursuant to a request made by ECoCeQ under section 78A of the EPBC Act is determined. That reconsideration is occurring on the basis of substantial new information put before the Federal Minister about the impacts of the proposal on matters protected under the EPBC Act. DES should not approve EIS while this process is in progress (see, by way of relevant comparison, p 11 of the EPBC Act Policy Statement: Reconsideration on the relationship between reconsideration and the Federal approval process).	It is noted that the Project is included in the submission by the ECoCeQ to the federal government which proposed the reconsideration of climate change impacts on all MNES. It is also noted that this legal challenge has been dismissed (Federal Court of Australia, 11 October 2023), setting a precedent for affected projects. It is expected the approval under the EPBC Act will be in accordance with existing statutory provisions, guidelines and policies.						✓			
23	Chapter 13 Air Quality and Appendix L Air Quality and Greenhouse Gas Assessment	We are concerned that the climate impacts of the methane emissions from Lake Vermont have not been adequately estimated or assessed in the EIS. Our analysis has found that: ● Methane emissions from the Lake Vermont Extension and existing mine are likely to be more than double EIS estimates. This would result in lifetime emissions of up to 100 million tonnes of CO2-e (20 year GWP), the equivalent to Australia's total reported annual coal mine methane emissions; and ● The proponent has not credibly attempted to estimate the likely methane emissions or mitigation opportunities from the project. It has not demonstrated global best practice and transparent methane emissions modelling and measurement, or committed to a credible methane mitigation plan. Based upon the inadequate methane pollution estimates and lack of onsite mitigation, Ember advises against approving the Lake Vermont Extension. The project does not currently demonstrate integrity in the estimation, or management of methane emissions.	1 The Lake Vermont Extension should not be approved because the current methane emissions estimates contained in the EIS do not adhere to best practice methods for estimating coal mine methane emissions and are highly likely to be significant under-estimates. The regulator should, at a minimum, request further information from the proponent in accordance with s 56A of the Environmental Protection Act 1994 (Qld). 2 The proponent be required to submit new estimates of the methane emissions of the Lake Vermont Extension project (pursuant to s 56AA of the Environmental Protection Act 1994 (Qld)), based upon the following: ● Measurements of geotechnical cores to establish the methane content across all the gas bearing strata, combined with field coal gas models, to derive a site-specific emission factor for the proposed open cut operations, which are verified by an independent body. From this modelling, the proponent should then estimate the likely emissions from the proposed open cut mining operations; and ● Conducting sample measurements and modelling to inform methane emissions estimates for the proposed underground coal mining operations, which are verified by an independent body. The sampling method, results and modelling should be explicitly described in the resubmitted EIS. 3 If the Lake Vermont Extension is approved, the following environmental approval conditions should be imposed: ● Prior to the commencement of the action, the environmental authority holder shall commission an independent and qualified third party to undertake a feasibility study into methane pre-drainage for all proposed open cut operations; ● Prior to the commencement of the action, the environmental authority holder shall commission an independent and qualified third party to undertake a feasibility study into methane drainage and ventilation air methane abatement measures for all proposed underground for all proposed underground operations; ● Prior to the commencement of the action, the environmental authority holder shall incorporate the above two feasibility studies into a Methane Emissions Mitigation Plan that must include: 1) Detailed modelling of the likely underground and open cut coal mine emissions generated by the action; and 2) Include measures to manage and destroy pre-drainage and post-drainage methane and mitigate ventilation air methane emissions; ● Prior to commencement of the action, the Methane Emissions Mitigation Plan in its entirety must be verified by an independent and qualified third party, who did not undertake the feasibility studies; and ● The environmental authority holder shall not vent drainage methane. All drainage methane gas must be captured and destroyed or utilised, and any flaring of methane gas must be at an efficiency rating of at least 98%.	Calculation of greenhouse gases, including methane is described in Appendix L, Air Quality and Greenhouse Gas Assessment. It is noted that the Project greenhouse gas emissions are calculated using the methods described in the following resources: • Australian National Greenhouse Accounts, National Greenhouse Accounts Factors, August 2021 (Australian Government, Department of Industry, Science, Energy and Resources, 2021) • National Greenhouse and Energy Reporting Regulations 2008 (NGER Regulations) • National Greenhouse and Energy Reporting (Measurement) Determination 2008 (Australian Government, Department of Industry, Science, Energy and Resources, 2021) • The Greenhouse Gas Protocol (WRI/WBCSD,2004). A draft Decarbonisation Plan, which aims to meet the requirements of the as yet to be released QLD Decarboniation Plan Guideline, has been prepared and is provided with the revised EIS (Appendix A3). The Decarbonisation Plan addresses methane emissions. It is also expected the Project will be able to meet its obligations under the Safeguard Mechanism when requirements are advised by the Clean Energy Regulator. Given the assessment of greenhouse gas emissions followed the appropriate methodology and the Decarbonisation Plan provides for the mitigation of potential climate change impacts in line with policy requirements, the estimation and mitigation of Project greenhouse gases are considered suitably addressed.					✓				
24	Greenhouse gas emissions and climate change - methane is not accurately forcast	The figures above are based on emissions reported in the EIS. However, most of these emissions are methane leaking from the mine site. Methane is a much more potent greenhouse gas than carbon dioxide, particularly in the short term. The EIS uses the 100-year factor to convert methane to carbon dioxide equivalent (CO2-e), at 30 times more potent than carbon dioxide, but the 20 year factor is 82, more than three times higher. The EIS should include a more accurate calculation of global warming likely to be caused by the mine in the time frame of Queensland's emissions targets, using the 20 year factor. Ember's 2022 research further showed the significant underestimation of methane from coal mines in Queensland. The EIS should include more detail on how the site has been assessed to determine likely methane levels, and improved measurement techniques.		Calculation of greenhouse gases, including methane is described in Appendix L, Air Quality and Greenhouse Gas Assessment. It is noted that the Project greenhouse gas emissions are calculated using the methods described in the following resources: • Australian National Greenhouse Accounts, National Greenhouse Accounts Factors, August 2021 (Australian Government, Department of Industry, Science, Energy and Resources, 2021) • National Greenhouse and Energy Reporting Regulations 2008 (NGER Regulations) • National Greenhouse and Energy Reporting (Measurement) Determination 2008 (Australian Government, Department of Industry, Science, Energy and Resources, 2021) • The Greenhouse Gas Protocol (WRI/WBCSD,2004). A draft Decarbonisation Plan, which aims to meet the requirements of the as yet to be released QLD Decarboniation Plan Guideline, has been prepared and is provided with the revised EIS (Appendix A3). The Decarbonisation Plan addresses methane emissions. It is also expected the Project will be able to meet its obligations under the Safeguard Mechanism when requirements are advised by the Clean Energy Regulator. Given the assessment of greenhouse gas emissions followed the appropriate methodology and the Decarbonisation Plan provides for the mitigation of potential climate change impacts in line with policy requirements, the estimation and mitigation of Project greenhouse gases are considered suitably addressed.							✓		

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25	Ground and surface water - impacts on local and regional ecosystems	The EIS describes potential physical consequences of the Project on surface waterways, but does not assess how these impacts will affect local and regional ecosystems. This means that the EIS does not provide sufficient information to support an informed decision on the environmental authority. Examples of this incomplete approach to the required impact assessment are found throughout the sections of the EIS discussing water impacts. For example: • The EIS describes the level of subsidence modelled to occur under the floodplains of the various creeks crossing the project area, and notes that this will increase floodplain storage and reduce downstream flows but does not describe how this may affect fauna or flora inhabiting the surrounding or downstream areas. • Similarly, the EIS notes that subsidence will reduce flood flow velocities across these floodplains, and that this will increase the deposition of sediment, but does not assess the flow-on impacts of this sedimentation to local or surrounding ecosystems. • The EIS does not assess whether the downstream impacts of subsidence on flows into the Isaac River could be worsened in changing climate scenarios, such as after periods of sustained drought.	123 EnvA & 132 Capricorn Conservation Council: That the Proponent is required to provide additional information in relation to the impact of the changed surface water flows on the ecological values in the surrounding and downstream areas as outlined above.	The information regarding surface water impact assessment is provided in the EIS, with reference to the sub-comments: • The assessment of subsidence impacts is provided in Chapter 10, Section 10.5.2 (for terrestrial ecology values) and Chapter 11, Section 11.5.2 for aquatic ecology values. In addition, the subsidence impacts are addressed for the significant impact assessment of matters of national environmental significance (refer Sections 10.6 and 11.6). The predictions of impact are informed by hydraulic modelling, with conservative assumptions and the estimation of impacts, particularly to terrestrial ecology values are very conservatively based on the assumption of impacts equivalent to direct clearing for vegetation and fauna habitat dependent on vegetation for all predicted ponding areas. Given the actual impacts to ponding areas may be minor and the ponding areas will continue to provide habitat value, this represents a very conservative outcome and the resulting provision of offset areas represents a very positive environmental outcome for the region. • It is noted that the sedimentation raised in the comment refers to deposition in subsidence troughs, not the export of sediment downstream to surrounding ecosystems. The environmental values in these subsidence troughs (identified as ponding areas) are addressed in the EIS (refer to Chapter 10 Section 10.5.2, and EIS Chapter 11, Section 11.5.2). • Climate change sensitivity of hydraulic modelling was assessed, refer to EIS Appendix F, Section 4.1.2 for overview of the sensitivity modelling. Four representative future climate partitions were assessed which represent the Consistent Climate Scenarios project provided by the Department of Environment and Science and are derived from 19 separate global climate models. The assessment of impacts under these representative partitions are included within the EIS.	✓	✓	✓	✓					
26	Ground and surface water - groundwater drawdown impacts on wetlands and Subsidence - impacts on wetlands	The EIS also notes that there are wetlands in the vicinity of the Project, including some that are within the areas expected to be affected by subsidence or groundwater drawdown, but does not identify the environmental values of these wetlands or how these values could be affected by subsidence/drawdown.	123 EnvA & 132 Capricorn Conservation Council: That the Proponent is required to provide additional information in relation to the impact of the changed surface water flows on the ecological values in the surrounding and downstream areas as outlined above.	The aquatic ecology environmental values of wetlands is described in EIS Chapter 11, Section 11.4.2. The potential impacts to wetlands, including from subsidence is addressed in Section 11.5.1. It is noted that some wetlands in the Project area are likley groundwater dependent. The terrestrial ecology environmental values of groundwater dependent wetlands is described in EIS Chapter 10, Section 10.4.7 and impacts assessed in Section 10.5.2.3. It is noted that the impact assessment of wetlands are informed by hydraulic modelling (refer EIS Appendix F, Surface Water Assessment), Groundwater modelling (refer EIS Appendix E, Groundwater Assessment Report) and the Groundwater Dependent Ecosystem Assessment (EIS Appendix I). The findings of these technical reports were used to assess potential impacts to wetlands.	✓	✓	✓	✓					
27	Ground and surface water - inadequate description of impacts on ecosystems	A mere description of the physical consequences of the Project gives only a partial understanding of the ways in which the Project could be expected to harm affected ecosystems and is not sufficient to inform proper decision-making on whether the Project has either adequately minimised environmental impacts.	123 EnvA & 132 Capricorn Conservation Council: That the Proponent is required to provide additional information in relation to the impact of the changed surface water flows on the ecological values in the surrounding and downstream areas as outlined above.	The potential Project impacts to surface water is assessed in EIS Appendix F (Surface Water Assessment); EIS Appendix W (Geomorphological Assessment Report); EIS Appendix Y (Site Water Balance and Water Management System Report); EIS Appendix Z (Flood Modelling Assessment Report). The outcomes of these assessment reports, which draw on extensive hydraulic modelling of Project impacts, are presented in EIS Chapter 8 (Surface Water) and EIS Chapter 9 (Flooding). All terms of reference requirements for surface water impact assessment have been met.	✓	✓	✓	✓					
28	Water - unacceptable impacts on central Queensland	The EIS does not provide sufficient information on the consequences of the impacts on surface waterways on local and regional ecosystems. For example, the EIS models subsidence likely to occur but does not describe how this is likely to affect fauna, flora and flood flows on surrounding ecosystems and downstream areas. The EIS also notes that there are wetlands in the vicinity of the Project, including some that may be affected by subsidence or groundwater drawdown, but does not identify the environmental values of these wetlands or how these values could change. This does not give sufficient information on whether the Project has adequately minimised environmental impacts or should be granted an environmental authority.		Subsidence impacts to terrestrial ecology values are assessed in EIS Chapter 10, Section 10.5.2.1 and in each significant impact assessment for ecology values (Sections 10.6 and 10.7). Subsidence impacts to aquatic ecology values, including wetlands is presentned in EIS Chapter 11, Section 11.5.2. Subsidence impacts to surface waters, including flows is assessed in Section 11.5.2.2 and the assessment is based on hydraulic modelling provided in EIS Appendix F. It is noted that the aquatic ecological values are described in Section 11.4, with wetlands described specifically in Section 11.4.2.							✓		
29	Social and Economic impacts	The EIS falls short in adequately addressing the possible social impacts and lacks evidence that the Project's negative social effects have been avoided or reduced. This inadequacy arises from the EIS's failure to consider the social costs of exacerbating climate change and its failure to offer strategies to mitigate the Project's climate-related impacts. This mine will add to global climate change, which is already affecting Central Queensland in the form of increased temperatures. This risks the health of all people in our region, especially outdoor workers and those who have underlying health issues. Those emissions will impact on the health of Queenslanders regardless of where the coal is burned. Further, the EIS fails to acknowledge the social impacts of the Project's role in increasing the emissions reduction burden placed on other sectors of Queensland's economy. The cost of emitting greenhouse gases, regardless of where the coal is burned, will impact on Queenslanders. The Project stands to make a material and avoidable contribution to climate change, which will, in turn, have a variety of serious adverse consequences for Queensland's communities, industries and ecosystems.	130 Lock the Gate Alliance: An assessment of the social costs of the Project's greenhouse gas emissions.	A draft Decarbonisation Plan, which aims to meet the requirements of the as yet to be released QLD Decarboniation Plan Guideline, has been prepared and is provided with the revised EIS (Appendix A3). The Project is also expected to meet future obligations under the Safeguard Mechanism. Given all obligations relating to greenhouse gas emissions have been met, it is considered the Project is able to adequately manage the corresponding social impacts of greenhouse gas emissions.		✓							

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30	Social and Economic impacts	The EIS fails to describe all potential social impacts and does not demonstrate that adverse social impacts from the Project are avoided or mitigated because it fails to assess the social cost of worsening climate change and does not propose any measures to mitigate the climate impacts of the Project. Further, the EIS fails to acknowledge the social impacts of the Project's role in increasing the emissions reduction burden placed on other sectors of Queensland's economy. 2.1. The EIS fails to assess the social costs of climate change, as exacerbated by the Project. The Project stands to make a material and avoidable contribution to climate change, which will, in turn, have a variety of serious adverse consequences for Queensland's communities, industries and ecosystems. Accordingly, the social costs of the greenhouse gas emissions associated with the Project are an indirect impact which should have been assessed in the EIS, as per the ToR. In a 'social cost of carbon' analysis, the community-borne damage flowing from each additional tonne of greenhouse gas pollution is translated into monetary form by (in simple terms) modelling the potential economic effects of an incremental increase in CO2 emissions. This approach is used by governments around the world to obtain a more comprehensive understanding of the costs of proposed developments, and as a way to more readily compare those costs with the project's purported benefits. For example, the US Federal Government uses a social cost of carbon of US$51/t CO2 to weigh the costs and benefits of proposed laws and policies. A recent study co-authored by a large group of climate, public health and statistics academics published in Nature drew on updated modelling and the latest data about the costs of recent climate-related disasters to provide a new estimate of the social cost of carbon: US$185/t CO2. At current exchange rates, that equates to about AU$280. Applying this to just the estimated domestic (scope 1 and 2) emissions for the Project gives an extraordinary $7,302,341,760 in social costs, which helps to put the $1,334,500 in expected royalties to the Queensland Government into perspective. Failing to include any assessment of the impacts of the Project's greenhouse gas emissions on community health, agricultural productive, natural disaster damages, etc., in the EIS at all means that the proponent has failed to properly consider the environmental impacts of its proposal, and has presented a misleading picture of the comparative costs and benefits of the Project. 2.2. The failure to propose meaningful GHG mitigation measures means that the EIS does not demonstrate that adverse social impacts from the Project are avoided or mitigated. Given the clear social impacts this Project would have on Queensland by virtue of the additional (and avoidable) greenhouse gas pollution it would create, the failure of the proponent to propose any meaningful measures to reduce the scale of that pollution means that the EIS does not demonstrate that the adverse social impacts from the Project have been avoided or mitigated. This means that the ToR have not been met but, more importantly, that the proponent has not taken appropriate measures to ensure that its development is responsible and in the best interests of Queensland's community or economy, providing yet another reason why the environmental authority should be refused. 2.3. The 'project alternatives' section of the EIS does not describe the potential adverse impacts of the Project on central Queensland and the State's broader economy. The ToR required the EIS to include an assessment of alternative means of conducting the Project, as well as the consequences of not proceeding at all. This assessment was required to 'describe and evaluate the comparative environmental, social and economic impacts of each alternative (including the option of not proceeding)'. The section of the EIS responding to this requirement does not meet the ToR. No environmental impacts from not proceeding are described and only a subset of the potential social and economic consequences are included. The following reasonably foreseeable consequences of the Project not proceeding are completely omitted from the EIS: - The substantial amount of greenhouse gas emissions that would not be produced, and the material difference this would make to the emissions reduction task faced by other sectors, to decarbonising Queensland's economy and to reducing the severity of climate change; - The enormous social, ecological and economic costs that would be avoided by virtue of the greenhouse gas emissions that would not be produced; - The opportunity cost of delaying the inevitable work to support coal workers to retrain and find new employment, and to develop alternative and more diverse inputs for the region's and Queensland's economy; - The opportunity cost of destroying valuable agricultural land, including 896ha of the Golden Mile Important Agricultural Area; and - The impacts to surface waterways and groundwater systems that would not occur, and the destruction of wetland and other habitats that would be avoided.		It is noted these review comments (2.1 to 2.3) related to project climate change impacts. A draft Decarbonisation Plan, which aims to meet the requirements of the as yet to be released QLD Decarbonisation Plan Guideline, has been prepared and is provided with the revised EIS (Appendix A3). The Project is also expected to meet future obligations under the Safeguard Mechanism. Given all obligations relating to greenhouse gas emissions have been met, it is considered the Project is able to adequately manage the corresponding social impacts of greenhouse gas emissions.			✓					
31	Economic impact assessment - understating the costs and overstating its benefits, not considering social costs, carbon price based on ACCUs, error in the net present value, offset price	The economic assessment of the Lake Vermont project heavily understates its costs and overstates its benefits. At the USA Environmental Protection Agency's central social cost of carbon estimate, the cost of the direct emissions alone is $4.1 billion, greater than the estimated royalty revenue - $1.1 billion. The AEC Group assessment heavily understates the costs of the greenhouse gases (GHGs) that the project would emit, suggesting a cost of $121.3 million. This is expressed as a present value, discounted at 7%. There are numerous problems with this estimate. First, a carbon price of $30.5/t is used, based on the spot price of Australian Carbon Credit Units (ACCUs). ACCUs are plagued by controversy around their integrity, with legitimate concern as to whether they actually abate emissions. The former chair of the Federal Government's Emissions Reduction Assurance Committee has labelled the methodologies behind ACCU development "largely a sham".2 ACCUs cannot be considered to fully offset emissions and, by using an ACCU price as a basis for carbon pricing, AEC Group understate the climate costs of the project. Even using this cost, there seems to be an error. Applying this cost to the greenhouse emissions estimates in the EIS documents results in a net present value of $168.7 million, $47.4 million more than AEC Group's estimates. More importantly, the use of an offset price for this calculation is inappropriate. The relevant cost of GHGs for use in cost benefit analysis is the social cost of carbon. In most cases an offset price does not represent the social cost of carbon but rather the conditions in that particular offset market. The integrity issues of many offsets further undermines their price as a proxy for social cost of carbon. Most estimates of social cost of carbon are substantially higher than the ACCU spot prices: • Academic estimates of the social cost of carbon range from $AUD235 - $AUD1,069/t. This is not an exhaustive survey and is now four years old. • UK government guidance on the social cost of carbon ranges from $AUD216 - $AUD652. • USA EPA has proposed a central value of US$190/t, approximately AUD$248 in 2020 and increasing to USD$350 in 2060. At the US EPA's social cost of carbon, the climate damage of the project's approximately 12.8 million tonnes of scope 1 and 2 emissions is $4.1 billion, or in present value terms $1.7 billion. This is greater than the projected NPV of the entire project, $968 million,8 or the proponent's estimate of royalties, $1,119 million (apparently undiscounted). Therefore, using a social cost of carbon well within academic and regulator estimates, the cost of the project's scope 1 and 2 emissions outweighs the key financial benefits of the project. Climate policy such as the reformed Safeguard Mechanism will affect the Lake Vermont project, but what impacts this will have is unclear because both the economic assessment and GHG assessment predate these recent reforms.		Noted. The Project expects to meet its obligations under the future Safeguard Mechanism.								✓	
32	Economic impact assessment - omitting scope 3 emissions	Another way that AEC Group understate the climate impacts of the project is by omitting scope 3 emissions. The recent Land Court of Queensland judgement relevantly states: Whatever might be the practice for a CBA using the NSW or other Guideline, in assessing the public interest in the mine being approved, it is appropriate to consider the impact of GHG emissions caused by the combustion of the coal, there being no other purpose for the coal being extracted. (par 1194) Applying the US EPA's draft estimate of the social cost of carbon of AUD$248 per tonne (increasing over time) to the scope 3 emissions of the project, estimated at 294 million tonnes,9 gives a total cost of $94.3 billion, or $39.9 billion in present value terms. This huge cost, dwarfing the benefits of the project, should be considered by decision-makers, as it has been by the Land Court of Queensland.		The Economic Impact Assessment (EIS Appendix Q) uses greenhouse gas emission predictions from the Air GHG Impact Assessment (EIS Appendix L) which are are calculated using the methods described in the following resources: • Australian National Greenhouse Accounts, National Greenhouse Accounts Factors, August 2021 (Australian Government, Department of Industry, Science, Energy and Resources, 2021). • National Greenhouse and Energy Reporting Regulations 2008 (NGER Regulations). • National Greenhouse and Energy Reporting (Measurement) Determination 2008 (Australian Government Department of Industry, Science, Energy and Resources, 2021) • The Greenhouse Gas Protocol (WRI/WBCSD,2004). The GHG assessment, and the inter-related Economic Impact Assessment are therefore considered consistent with applicable guidelines.								✓	
33	Economic impact assessment - scope of cost benefit analysis	Despite including an appendix titled Cost benefit analysis methodology (Appendix D, p79) that begins with "Step 1: Define the scope and boundary", AEC Group fail to define the scope and boundary of their analysis. Their analysis is global, meaning that NPV estimates include profits going offshore to multinational owners of the project that include Japan's Marubeni and Sojitz, and the tax haven-based AMCI Group.11 This approach may be a good first step in cost benefit analysis, but AEC Group make no attempt to quantify net benefits to Queensland or Australia, as is common practice in the assessment of mining projects in Queensland and New South Wales and is of more use to decision-makers in state jurisdictions. AEC Group provide Queensland's decision-makers with no information as to whether the project will leave the Queensland community, or the wider Australian community, better or worse off. There is no discussion of how costs and benefits would be distributed within the community.		The government revenue including the additional revenue to both the Australian Government and the Queensland Government are provided in EIS Appendix Q, Economic Assessment, Table ES.1 and benefits to labour is presented in Table ES.4.								✓	

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34	Economic impact assessment - discussion of government revenues	The main benefit to the Queensland and Australian communities of any coal mine is royalty and tax revenue. Yet this is not quantified in the cost benefit analysis being included only in the amalgamated NPV figure. The results in Table 5.1 are misleading because: • They are an aggregate of taxes estimated from the broader economic impacts of the mine based on an input-output model (see below). They are not an estimate of the taxes that would be paid by the project. • None of the figures seem to be discounted, so cannot be compared to the cost benefit analysis results. • Royalty estimates are based on an unpublished, unworked estimate from the proponent. • The inclusion of payroll tax and personal income tax implies that the project will increase overall employment in the state and in Australia. This is contrary to standard economic practice and was discussed in the recent Queensland Land Court Case, Waratah Coal Pty Ltd v Youth Verdict Ltd & Ors (No 6)[2022] QLC 21.		The government revenue including the additional revenue to both the Australian Government and the Queensland Government are provided in EIS Appendix Q, Economic Assessment, Table ES.1.								✓	
35	Economic impact assessment - emphasis on input-output modelling	Input-output modelling is mathematically certain to overstate the economic impacts of the project. The well-known limitations of these models are listed only in Appendix B on page 76 and even there the implications for the analysis are not spelled out. In short, input-output models assume there are infinite resources in an economy and available to the project. There are no constraints on the labour market or the market for any other input, and there is no environmental impact, no climate policy or any other limit. It is for these reasons that the Australian Bureau of Statistics (ABS) describes such modelling as "biased" and does not plan to release data that facilitates this modelling due to "the purposes to which they were most commonly applied, that is, to produce measures of the size and impact of a particular project to support bids for industry assistance of various forms." The economic impact estimates based on this modelling, including tax payments, should be considered unsuitable for decision making in relation to the Lake Vermont-Meadowbrook project.		Noted.								✓	
36	Economic impact assessment - biodiversity offsets within the cost benefit analysis	The cost benefit analysis includes only the cost of establishing offsets, based on a cost of $2,000 per hectare. This assumes that the offsets will work perfectly, permanently, instantly offsetting any impact on threatened species, ecosystems and the wider environment. Given the findings of various official audits and reviews that biodiversity offset programs rarely achieve such results, this results in understating the costs of the project.		Offsets are proposed in accordance with the Environment Protection and Biodiversity Conservation Act 1999 (Cth) and Environmental Offsets Act 2014 (Qld). The Project has confidence in the functioning of the offset provision legislation.								✓	
37	Project information	1. Please accept this submission from the submitter in relation to the Lake Vermont Meadowbrook Project (Project), proposed by Bowen Basin Coal Pty Ltd (Bowen Basin Coal), which is 70% owed by Queensland mining company Jellinbah Group Pty Ltd. 2. The Project will expand mining operations at Lake Vermont Mine (project area) until 2055. The key components of the Project will include: (a) an underground longwall coal mine; (b) three small-scale 'satellite' open-cut pits; and (c) an associated infrastructure corridor linking the new mining area to the existing infrastructure. 3. The timeline for the Project is: (a) in-seam development of the underground headings up to the commencement of longwall extraction (commence at year 1 and 2); (b) longwall mining operations (commence at year 3); and (c) mining of the Project open-cut satellite pit (commence at year 20 for 11 years).		Noted.									✓
38	EIS information - project classification	4. In the EIS material the Project is classified as an open cut mine, however, the Project has been incorrectly classified because it is a longwall mine for the first 20 years and then the open cut mining activities will commence for the next 11 years.		The Project includes underground single and dual-seam longwall mining, open-cut mining activities and development of supporting infrastructure. This information is provided in EIS Chapter 3, Section 3.1.4.									✓
39	Project information	5. The Project will enable continued production of coal at the current rate of 9Mtpa product coal for an additional 20 years, extracting 122Mt of run-of-mine coal in total over the extended life of the mine (51 years in total). The mining operation primarily produces hard coking coal and PCI coal, exported for use in steel production. 6. Previously, coal construction commenced in 2009 and allowed for the extraction of 5 million tonnes per annum. The initial project expansion occurred in 2012 and allowed for an estimated product output of 9 Mtpa. Pending approvals, construction of surface and seam access infrastructure will commence at the end of 2024 with full underground mine production scheduled for late 2028 with the commencement of longwall operations.		Noted.									✓
40	EIS information - inadequate measures proposed to minimise adverse impacts	7. Based on the material provided by the proponent, the EIS fails to provide enough information to fulfil the purposes of the EIS process under the Environmental Protection Act 1994 (EP Act), in particular, the failure to adequately describe the measures proposed to minimise any adverse impacts of the project. 8. The EIS assessment report should recommend that the Project be refused because of its contributions to greenhouse gas (GHG) emissions and consequent climate impacts, its impacts to biodiversity, human rights and to groundwater and surface water. 9. If the project is not refused now, then a range of additional assessments and studies are required to more accurately and properly quantify the impacts as part of a revised EIS		It is noted that Project impacts to climate change, biodiversity, groundwater and surface water are assessed and mitigation measures are proposed in Chapters 13, 10, 7 and 8 respectively. Project impacts to human rights are considered to be mitigated through the assessment of impacts, mitigation and offsets in accordance with relevant legislation. The proponent is commited to working within statutory requirements regulating GHG emissions.									✓
41	Inconsistent with legislative criteria	10. The EIS assessment report should recommend that the Project be refused as the Project is inconsistent with the: (a) standard criteria under Schedule 4 of the EP Act, particularly criteria (a)(i)-(iii), (b), (e) and (i); and (b) human rights required to be protected under the Human Rights Act 2019 (Qld) (HR Act). 11. The facts and circumstances supporting these reasons, which are outlined in more detail below, include that: (a) the Project will contribute to climate change through greenhouse gas emissions; (b) the Project will negatively impact surface and groundwater in the region; and (c) the Project will adversely affect biodiversity and conservation values.		This comment refers to subsequent comments 12. to 32. Responses are provided to these comments below.									✓
42	Inconsistent with precautionary principle - standard criteria (a)(i)	12. The precautionary principle provides that "where there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation". 13. The impacts of climate change contributed to by the Project's continued accretion of GHG emissions, the impacts of the Project on biodiversity, and the impacts of the Project on groundwater and surface water present a real risk of serious or irreversible environmental damage, such that approval of the Project would be inconsistent with the precautionary principle.		The impact assessments were conducted according to the significant impact guidelines, which address scientific uncertainty and application of the precuationary principle. The rigorous survey and modelling effort provided the degree of scientific certainty for assessment of Project impacts. The precautionary principle has been applied where any scientific uncertainty is encountered.									✓
43	Inconsistent with the principle of intergenerational equity - standard criteria (a)(ii)	14. The impacts of climate change contributed to by the Project's continued accretion of GHG emissions, the impacts of the Project on biodiversity, and the impacts of the Project on groundwater and surface water, would have adverse effects on present and future generations, and as such approval of the Project would be inconsistent with the principle of intergenerational equity. 15. The economic benefits of the Project are overstated and do not outweigh the adverse impacts of the Project on present and future generations.		The EIS is consistent with legislative requirements for assessment of Project impacts, including climate change impacts. The legislative requirements for these impacts address the requirements for potential adverse effects on present and future generations.									✓
44	Inconsistent with the principle of the conservation of biological diversity - standard criteria (a)(iii)	16. The principle of the conservation of biological diversity is drawn from the Convention on Biological Diversity (Biodiversity Convention), which defines 'biological diversity' in art 2 as: "The variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part: this includes diversity within species, between species and of ecosystems." 17. The impacts of climate change contributed to by the Project's continued accretion of GHG emissions, the impacts of the Project on biodiversity, and the impacts of the Project on groundwater and surface water would have adverse effects on biological diversity, such that approval of the Project would be inconsistent with the principle of conservation of biological diversity.		The statutory requirements of impact assessment for environmental values, including under obligations of the Convention on Biological Diversity, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the Convention on Conservation of Nature in the South Pacific (Apia Convention) or other relevant international conventions, is provided in impact assessments (refer EIS Chapter 10, Sections 10.6, Statutory Requirements).									✓
45	Inconsistent with Commonwealth and State plans - standard criteria (b)	18. The impacts of climate change contributed to by the Project's continued accretion of GHG emissions, the impacts of the Project on biodiversity, and the impacts of the Project on groundwater and surface water are inconsistent with the following Commonwealth and State government plans, standards, agreements and requirements about environmental protection and ecologically sustainable development: (a) The Intergovernmental Agreement on the Environment (Intergovernmental Agreement); (b) The National Strategy for Ecologically Sustainable Development (National Strategy); (c) Australia's Strategy for Nature 2019–2030; (d) The Queensland Climate Action Plan 2030; and (e) Australia's Long Term Emission Reduction Plan. 19. Approval of the Project would be inconsistent with the above plans, standards, agreements, and requirements.		The proposed Project is consistent with all applicable legislative requirements related to greenhouse gas emissions. The Porject is compatible with the Queensland Climate Action Plan and it is noted that a draft Decarbonisation Plan, which aims to meet the requirements of the as yet to be released QLD Decarbonation Plan Guideline, has been prepared and is provided with the revised EIS (Appendix A3). It is noted that the Project is positioned to meet obligations under the Safeguard Mechanism when they apply.									✓

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46	Adversely affect the character, resilience and value of the receiving environment - standard criteria (e)	20. The impacts of climate change contributed to by the Project's continued accretion of GHG emissions, the impacts of the Project on biodiversity, and the impacts of the Project on groundwater and surface water, would have adverse effects on the character, resilience and value of the receiving environment including: (a) the ecosystem and communities of the region; (b) the natural and physical resources of the region; (c) the qualities and characteristics of the region that contribute to its biological diversity and integrity; (d) the intrinsic or attributed scientific value or interest of the region; (e) amenity, harmony and sense of community; and (f) the social, economic, aesthetic and cultural conditions that affect, or are affected by other aspects of the environment. 21. Approval of the Project would adversely affect the character, resilience and value of the receiving environment.		The climate change impacts of the Project area assessed in EIS Chapter 13, Section 13.3. Impacts will be addressed in accordance with applicable legislative requirements. It is noted a draft Decarbonisation Plan, which aims to meet the requirements of the as yet to be released QLD Decarbonisation Plan Guideline, has been prepared and is provided with the revised EIS (Appendix A3). It is noted that the Project is positioned to meet obligations under the Safeguard Mechanism when they apply.									✓
47	Contrary to the public interest - standard criteria (i)	22. In the context of the EP Act, the public interest is primarily that embodied in section 3 of the EP Act, namely the public interest in ecologically sustainable development, or the protection of Queensland's environment while allowing for development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends. 23. In the context of the HRA, we argue that the approval of the Project would limit human rights to the extent that is more than is justified in a free and democratic society, based on human dignity, equality, and freedom. The rights that will be limited include the right to life and the right to enjoy human rights equally. 24. The impacts of climate change contributed to by the Project's continued accretion of GHG emissions, the impacts of the Project on biodiversity, and the impacts of the Project on groundwater and surface water are inconsistent with the maintenance of the ecological processes on which life depends, and as such approval of the Project would be contrary to the public interest.		A draft Decarbonisation Plan, which aims to meet the requirements of the as yet to be released QLD Decarbonisation Plan Guideline, has been prepared and is provided with the revised EIS (Appendix A3). It is noted that the Project is positioned to meet obligations under the Safeguard Mechanism when they apply. Given the Project is expected to meet all legal greenhouse gas obligations, it is considered to be compatible with the public interest and human rights associated with potential climate change impacts.									✓
48	Not compatible with human rights	25. The decision maker must not act or make a decision in a way that is not compatible with human rights or that does not give proper consideration of human rights. 26. The contribution of the Project to the continued accretion of GHGs in the atmosphere and the resulting impacts of climate change will limit, beyond the extent that is reasonable and demonstrably justifiable in accordance with section 13 of the HR Act, the following rights of people in Queensland protected under that Act: (a) the right to life of people in Queensland (s 16); (b) the rights of First Nations Peoples (s 28); (c) the rights of children (s 26); (d) the right to property (s 24); (e) the right to privacy and home (s 25(a)); and (f) the right to enjoy human rights without discrimination (s 15(2)). 27. The Project should be refused because the decision maker owes a duty of care to Australian children with respect to the potential personal injury harms that will result from climate change, to which this project will contribute. 28. In the decision of the Queensland Land Court of Waratah Coal Pty Ltd v Youth Verdict Ltd & Ors (No 6) [2022] QLC 21 (Waratah), President Kingham found that the link between the approval of Projects which contribute to climate change and the impact of that harm on human rights is sufficiently connected so as to enliven consideration of the HR Act. 29. More specifically, in Waratah President Kingham indicated that based on the climate science before the court there is "a clear and pressing threat to the right to life that is now experienced by people in Queensland and will only be exacerbated by increasing emissions." 30. An appeal of Waratah was withdrawn this year meaning that President Kingham's recommendations were followed by the DES. One 3 April 2023, DES refused the EA Application. The Project presents analogous risks to human rights due to its contribution to climate change and the increase in GHG emissions if the extension is approved. 31. Based on the above, EIS Approval by the administering authority would unreasonably limit those human rights and the EA should be refused.		A draft Decarbonisation Plan, which aims to meet the requirements of the as yet to be released QLD Decarbonisation Plan Guideline, has been prepared and is provided with the revised EIS (Appendix A3). It is noted that the Project is positioned to meet obligations under the Safeguard Mechanism when they apply. Given the Project is expected to meet all legal greenhouse gas obligations, it is considered to be compatible with human rights associated with potential climate change impacts.									✓
49	Greenhouse gas emissions - inconsistent with State and National emissions reductions targets and commitment to the Paris Agreement	32. The following facts and circumstances are relied upon in support of the grounds listed above. 33. The Project would produce an average of 5.5 million tonnes per year of saleable coal over its 20 year life. 34. The anticipated scope 1 and 2 GHG emissions of the Project are: (a) 362,942 million tonnes of CO2-e per year until 2061; and (b) 7,258,841 CO2-e over the life of the mine. 35. The anticipated emission for scope 3 GHG emissions of the Project are: (a) 15,088,700 tonnes of CO2-e per year; and (b) 301,772,000 CO2-e over the life of the mine. 36. The Project has the potential to emit 7.3 million tonnes of direct (scope 1 & 2) emissions and 302 million tonnes of scope 3 emissions. Emissions from the project would be inconsistent with State and Federal emissions reductions targets and Australia's nationally determined contribution under the Paris Agreement. 37. For the Queensland Government to achieve their GHG emission reduction targets, approximately 2.5Mt CO2-e annually must be cut from Queensland's emission output before 2030. This equates to a remaining total carbon budget of 20Mt, or an annual reduction of 312,500t CO2-e every year between 2023 and 2030. The approval of the Project (extension) would account for over 5Mt or 25% of Queensland's entire remaining emissions budget for the 2030 target.		Comments 33 to 35: Noted. Comments 36 and 37: A draft Decarbonisation Plan, which aims to meet the requirements of the as yet to be released QLD Decarbonisation Plan Guideline, has been prepared and is provided with the revised EIS (Appendix A3). It is noted that the Project is positioned to meet obligations under the Safeguard Mechanism when they apply.									✓

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50	Greenhouse gas emissions - the impacts of the continued accretion of GHG emissions in the atmosphere	38. The scientific consensus is clear that expansion of fossil fuel production must be stopped in order to reduce global GHG emissions and avoid the potentially catastrophic impacts of unmitigated global warming and climate change. 39. 197 countries, including Australia, agreed under the Paris Agreement to limit 'the increase in the global average temperature to well below 2°C above pre-industrial levels and pursu[e] efforts to limit the temperature increase to 1.5°C above pre-industrial levels'. 40. The Paris Agreement also recognises (our emphasis) 'the need for an effective and progressive response to the urgent threat of climate change on the basis of the best available scientific knowledge'. 41. To meet a 2°C carbon budget, a very rapid phase out of all fossil fuel usage globally is required by 2050 at the latest. The 1.5°C budget is smaller, requiring an even more rapid global phase out of fossil fuel usage. 42. As of 2022, approximately 380 billion tonnes of CO2 emissions remain in the global carbon budget if humanity wishes to limit global warming to 1.5°C with 50% probability.15 At the current rate of global emissions, that will be exhausted in eight years. 43. The accretion of GHGs in the atmosphere as a result of human activities has already caused changes in the climate system with tangible impacts, including in Queensland: (a) exacerbation of heatwaves; (b) long-term increase in extreme fire weather and length of the fire season; (c) changes in rainfall patterns resulting in severe flooding events; (d) mass bleaching of the Great Barrier Reef; and (e) worsening drought conditions. 44. Approximately 2.5Mt CO2-e must be cut from Queensland's annual emissions inventory between now and 2030 to meet the state's emissions reduction target.18 In the Waratah decision, the impacts of climate change in Queensland are already felt, they include: "In Queensland, there have been more heatwaves, a long-term increase in extreme fire weather, increased likelihood and severity of heavy rainfall, mass coral bleaching of the Great Barrier Reef, increased ocean acidity, sea level rises along coast and islands, and worsening drought conditions." 45. Of particular importance to this Project is the disproportionate cost that the Queensland community will face from increased GHG emissions. 46. The relationship between GHG emissions and climate change in Australia was recognised in the 2021 State of the Environment Report, which stated that: "Warming of the Australian climate, and associated changes in the climate system, are driven by increased concentrations of greenhouse gases in the atmosphere. Changes to the climate are inevitable, based on greenhouse gases that have already been emitted, but further changes in the second half of the 21st century will depend on the level of future global emissions." 47. On current trajectories, the impacts of the changes in the climate system will be significantly exacerbated. The Federal Court in Sharma v Minister for the Environment accepted evidence put forward in respect of the future impacts of climate change and found: "It is difficult to characterise in a single phrase the devastation that the plausible evidence presented in this proceeding forecasts for the Children … The physical environment will be harsher, far more extreme and devastatingly brutal when angry. As for the human experience – quality of life, opportunities to partake in nature's treasures, the capacity to grow and prosper – all will be greatly diminished. Lives will be cut short. Trauma will be far more common and good health harder to hold and maintain. None of this will be the fault of nature itself. It will largely be inflicted by the inaction of this generation of adults, in what might fairly be described as the greatest inter-generational injustice ever inflicted by one generation of humans upon the next." 48. The economic benefit of any development is also vulnerable to climate change impacts itself, including the risk that it may not be able to operate at optimal levels for its full expected lifespan due to factors including increased frequency of extreme weather events and changes to water availability as a result of prolonged droughts. The risks of any fossil fuel based-development's assets becoming stranded will likely continue to increase throughout the development's lifespan as a result of global policies and international action on climate change. 49. The financial, legal, and fiscal risks and costs of climate change have also been well articulated. Further emissions of GHGs into the atmosphere will cause financial, legal, and fiscal risks and costs, which must be set off against any economic benefits of any development that will further contribute to the accretion of GHGs into the atmosphere.		Comments 38 to 47: Noted. 48. Assessment of the impact of future climate conditions on the Project is provided within EIS Chapter 4, Section 4.3 and Appendix V, Climate Change Assessment. 49. Greenhouse gas impacts are also included in the Project Economic Assessment , refer Appendix Q, Section 8.2.1.6.								✓
51	Greenhouse gas emissions - methane emissions	Potency of methane emissions 50. A large extent of the emissions associated with the Project comprise methane, a much more potent GHG than carbon dioxide. Methane is a potent and fast-acting greenhouse gas, which is 82.5 times more powerful than carbon dioxide over 20 years, making the task of reducing methane levels even more important in the near-term. Underreporting of methane emissions 51. In 2019, coal companies reported via the Australian Greenhouse Emissions Information System (AGEIS) that their mines leaked 898,000 tonnes of methane into the atmosphere, representing 5% of Australia's total GHG emissions.22 It is evident that the under-reporting or of methane emissions is a key contributing factor to Australia's GHG emission profile. 52. The IEA recently increased their estimate of Australia's methane emissions by 59%. This is after new evidence from satellites measuring methane emissions over the Bowen Basin. Their calculations suggest that Australia's methane emissions were 1.8Mt in 2021, twice that reported by the Government. 53. Following the emergence of the satellite-based methane emissions analysis DES was prompted to review its existing methods for the estimation of fugitive methane emissions from Queensland open cut mines. The under reporting of methane emissions was highlighted in the National Greenhouse and Energy Report (NGER) Scheme 2023 Proposed Amendments. 54. The proponent has relied upon the soon to be replaced state-based factors to calculate the extent of methane emission. To calculate methane emission output from the Project, the proponent applied the emission factor of 0.023 tonnes CO2-e per tonne of run-of-mine coal extracted (EIS chapter 12, table 13.10). The proponent estimates that the lifetime methane emissions of the mine could be 13 million tonnes of CO2-e. 55. Notably, Ember estimates that the lifetime methane emissions of the mine could be between 78 – 100 million tonnes of CO2-e (20yr GWP). This submission is based on the GWPs contained in the IPCC's latest emissions metrics, to express methane in CO2-equivalent emissions. Ember has calculated that the methane emissions could be between 2.2 and 2.5 times higher than the company estimates. 56. If the Project is approved, it will inevitably impact the Safeguard Mechanism, and make it more difficult for the Australian and the Queensland governments to achieve their climate target. 57. I recommend that if a revised EIS is likely to be required, the proponent must reassess and record accurately their methane emission output that is compliant with the NGER measurement requirements.		Comments 50 to 57: A draft Decarbonisation Plan, which aims to meet the requirements of the as yet to be released QLD Decarboniation Plan Guideline, has been prepared and is provided with the revised EIS (Appendix A3). It is noted that the Project is positioned to meet obligations under the Safeguard Mechanism when they apply.								✓

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52	Economic costs and benefits	58. We consider that the economic assessment is deficient on numerous grounds. No new coal mine extensions should be approved 59. Internationally, a key milestone identified by the EIA in the Pathway to Net Zero Emissions 2050 is that there should be no new oil and gas fields approved for development and no new coal mines or mine extensions are required.26 60. A Professor, from the University of Queensland, has provided me with analysis of this project application and supports the position that no new coal projects, including metallurgical coal projects should be approved. He draws on key developments which include: (a) the adoption at COP 26, of commitments to phase out or phase down the use of coal. The adoption of a coal-specific commitment is a new development in the UNFCCC process. It extends existing commitments made by national and subnational governments in the Powering Past Coal alliance. (b) Decisions by financial institutions to end backing for new and existing coal projects. (c) rapid development of alternative steelmaking technologies which do not rely on metallurgical coal. 61. The Professor argues that over the course of 2022, the movement for a transition away from reliance on metallurgical coal has accelerated. The Professor explains that this is particularly pertinent for most major European steel producers. In relation to the steel producers in Japan and South Korea, the target markets for metallurgical coal, the following developments are particularly noteworthy: (a) Primetals Technologies and South Korean leading steel producer POSCO signed a Memorandum of Understanding (MOU) to develop a demonstration plant for hydrogen-based hot metal production in South Korea.27 (b) Japan is aiming to accelerate technology innovation for hydrogen-based steelmaking, in efforts to help the country's steel industry catch up globally and take the lead in a growing green steel market.28 (c) New threat to Queensland coal as Nippon Steel shifts to hydrogen.29 62. As stated above, the EIS material states that the Project will primarily produce hard coking coal and PCI coal. However, an Energy Finance Analyst at the Institute for Energy Economics and Financial Analysis, challenges this notion and has provided me with an analysis of the application, and notes: "Given that some coals are interchangeable between the thermal and PCI markets it seems possible that some thermal coal could be redirected to the PCI market as thermal coal demand declines. In my experience though, coal miners have a history of promising their new mines will produce a high percentage of metallurgical coal, which then produce very little when they go into production. It's also quite hard to say what the PCI market will look like going forward." 63. In relation to what the coal market look like going forwards, the Analyst made the following remarks: (a) China looks like it will import increasingly smaller amounts of Australian met coal into the future as its steel demand declines and it becomes self-sufficient for coal. (b) India has already taken over as the world's largest importer of metallurgical coal and will to a large extent set the outlook. There are a lot more blast furnaces in the Indian project pipeline, so demand is likely to rise further. Indian steelmakers are price sensitive so may eye use of PCI to keep overall coal costs down. However, India is also happy to import PCI from Russia. (c) In the longer term, CCS looks like it will get left behind in the steel industry as it has been in other sectors. The prospects of retrofitting blast furnaces with CCS look low so decarbonisation will involve a switch away from blast furnaces and met. coal towards scrap steel recycling and DRI-based steelmaking. 64. These international developments clearly signify that it would not be an economically viable decision to continue to approve new coal projects, including metallurgical coal projects such as this Proposal. Inaccurate cost-benefit analysis 65. The EIS states that the Project will have a number of economic benefits. The cost-benefit analysis fails to include any assessment of the impacts of the Project's GHG emissions on community health, agricultural productivity or worsening natural disasters. 66. In the cost-benefit analysis, there has also been no consideration of the cost of the downstream emissions from burning the coal produced as a result of approving this Project. This omission is fundamentally flawed, as all emissions, direct and indirect from the project, will contribute equally on a tonne-per-tonne CO2e basis to climate changes impacts, and hence costs, to the state. Those costs are incurred in Queensland and should be assessed as part of the economic assessment. 67. Notably, the project is based on a flawed assumption that global thermal and metallurgical coal demand and prices will remain largely unchanged till 2050, which flies in the face of all other available evidence, and which essentially assumes that the world will face catastrophic global warming of more than 2 degrees. It fails to assess the project against the IEA's sustainable development scenario or against the IEA's more recent Net Zero by 2050 Roadmap. Social cost of carbon 68. The ACT Climate Change Council have defined the term social cost of carbon to mean: "The net damage caused by adding carbon dioxide into the atmosphere. It recommended the social cost of carbon be applied in any CBAs used to inform public investments or policy and regulatory decisions in the ACT."30 69. The value of the damage caused to society by each metric tonne of GHG emissions emitted was estimated in Nature to be US$185/t CO2, which equates to AU$280/t CO2. Applying this rate to the estimate GHG emissions (scope 1 and 2 only), will result in $7,302,341,760 in social costs if the Project is approved. In contrast to the estimated net economic benefit to be $968.2 million. If properly costed, the Scope 1 & 2 emissions alone dramatically undermine the economic case for the project. Evidently, the project's greenhouse emissions alone are likely to negate any financial benefit to Australia. The potential alternative of not proceeding not properly assessed 70. In accordance with the requirements of the ToR, an assessment of the consequences of not proceeding at all was required to be included in the EIS in relation to the environmental, social and economic impacts. There is no consideration of the positive environmental impacts if the project did not proceed. 71. In addition, other benefits that are omitted from the EIS include: (a) The benefit of a reduction in GHGE emissions to decarbonising Queensland's economy and to reducing the severity of climate change; (b) the enormous social, ecological and economic costs that would be avoided by virtue of the greenhouse gas emissions that would not be produced; (c) the opportunity cost of delaying the inevitable work to support coal workers to retrain and find new employment, and to develop alternative and more diverse inputs for the region's and Queensland's economy; (d) the opportunity cost of destroying valuable agricultural land; (e) the impacts to surface waterways and groundwater systems that would not occur, and the destruction of wetland and other habitats that would be avoided; and (f) the benefits of investing the financial resources into renewable energy projects.		Comments 58 to 64 are noted. 65. Greenhouse gas emissions are assessed in the Economic Assessment (Appendix Q, Section 8.2.1.6). 66. Economic impacts of greenhouse gas emssions assesment is based on calculation of greenhouse gases as described in EIS Appendix L, Air Quality and Greenhouse Gas Assessment. It is noted that the Project greenhouse gas emissions are calculated using the methods described in the following resources: • Australian National Greenhouse Accounts, National Greenhouse Accounts Factors, August 2021 (Australian Government, Department of Industry, Science, Energy and Resources, 2021) • National Greenhouse and Energy Reporting Regulations 2008 (NGER Regulations) • National Greenhouse and Energy Reporting (Measurement) Determination 2008 (Australian Government, Department of Industry, Science, Energy and Resources, 2021) • The Greenhouse Gas Protocol (WRI/WBCSD,2004). This is the appropriate approach for determining the emissions attributable to the Project. 67 to 69. Noted. 70 and 71. Project alternatives are presentned in Chapter 3, Section 3.6.7. It is noted that not proceeding with the Project would prevent Project impacts.									✓

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53	Social impacts	72. The social impacts of the project will also result in temporary increases in rental prices due to perceived economic uplift in Dysart (the town located close to the Project area). 4.6% of rental households are experiencing 'housing stress' greater proportionately to other regions across the Isaac LTG (18.2.2.2, chapter 18). 73. To mitigate these negative impacts, the proponent will provide small financial contributions that are demonstrably inadequate, including just $80,000 p/y to address the housing crises over the life of the project (20 years). 74. The rates of employment were classified 'high' and of particular concern were women, Aboriginal and Torres Strait Island and young people. To encourage workforce participation in the mining industry, an insignificant transitional payment amount of $130 p/w has been offered.		EIS Chapter 18, Table 18.3 identifies the potential impact of the temporary increases in rental prices on stakeholders. Management measures have been proposed to mitigate impacts on the affected groups. Through consultation with IRC, IAHT and the OCG, it is noted that access to affordable housing is a regional concern. Despite the Project not directly impacting access to affordable housing in Dysart, Bowen Basin Coal has committed to collaborating with IAHT and providing a significant annual financial contribution to the IAHT. This management measure aims to mitigate the potential impact of increases in rental prices on low-income residents. Details of the measure are provided in Section 18.4.3.3. The proponent will also ensure the provision of quality accommodation for non-local workforce. New commitments have been made which can be found in Appendix T Section 4.3. In addition, the proponent commits to collaborate with relevant Queensland Government departments and Issac Regional Council to manage cumulative impacts on the local and regional housing market. The proponent commits to maximising the employment opportunities for the under-represented groups. Initiatives and programs were developed to promote employment. Examples include continuously implementing the Equal Employment Policy, the Sister in Mining initiative, and a pre-employment program for Indigenous women. Details of these management measures are provided in Table 18.2. An aspirational target regarding the employment rate of under-represented groups has also been included in Appendix T Social Impact Management Plan.								✓
54	Groundwater and surface water impacts	75. The Project consists of both open cut and underground long wall mining and is located within the Isaac-Connors sub-catchment of the greater Fitzroy Basin. The Isaac River is the main watercourse. The proposed open-cut operations are between Phillips Creek and One Mile Creek. 76. The basin is being used for agricultural, fishing, tap water and irrigation purposes. Notably, there is the potential to impact to all the environmental values reliant on creek water if the hydrology of the streams will be impacted. 77. Water usage for the Project, which is estimated to be between 200 to 400 ML per annum. According to the ToR, the current water supply agreement in place between SunWater's Eungella Water Pipeline Pty Ltd and Bowen Basin Coal is for the annual supply of 1,500 ML, of which the existing Lake Vermont Coal Mine uses approximately 970 ML. 78. The Project involves longwall mining resulting in the following impacts to surface water: (a) erosion and sedimentation; (b) uncontrolled water releases; (c) mine drainage from waste rock emplacements; (d) final rehabilitated pit landform seepage and overflow; and (e) litter, waste and spills. 79. There is the potential for subsidence related impacts to Phillip Creek and Boomerang Creek, as both streams run through project area and there is proposed longwall mining directly beneath the streambeds. The extent of subsidence above the longwall has simply been uniformly assumed (Section 7.3.2.7); therefore, there is little detailed understanding of what potential impacts could be. Under the best case scenario, there will be projected drawdown of 10 m below Boomerang Creek, which will have consequences for the period and magnitude of flow in the creek, for the resulting flow from Boomerang Creek, and for the wetlands at the confluence between Boomerang Creek and the Isaac River. These potential impacts to the wetlands are not discussed. For the worst case, in which cracking from the longwalls to the surface occurs, the projected drawdown more than doubles; this direct connection between the longwalls and the surface is likely to also incur impacts on water quality. 80. GDEs are acknowledged to exist within the project area (Section 7.3.3.2). However, these are neither plotted in figures, nor are the potential impacts of subsidence on them adequately explored. Even a subsidence of 10 m would be sufficient to kill most trees, as vegetation relies on moisture within the top ~10 m. 81. Subsidence troughs are expected to rapidly aggregate sediment into Boomerang Creek, impacting the land within the project area. This will not only impact hydrological processes within the creeks but will also impact the riparian ecosystems of these creeks, both within and beyond the project area. The proposed subsidence would also result in 8 main troughs in the One Mile Creek and impacts to the floodplains would result. As per section 7.3.2.7 of the EIS subsidence cracks are predicted this will lead to excessive soil compaction and implications for agricultural productivity. 82. There would also be direct impacts to One Mile Creek. The watercourse will be intercepted by the proposed mine water management system within the levees to protect the mine pit and sediment dams. The effectiveness of the Subsidence Management Plan is unknown at this stage. 83. Other impacts will result from the reductions in streamflow including impact to the downstream reach of One Mile Creek in minor runoff events, loss of catchments areas of both One Mile Creek and Phillips Creek during operations and surface subsidence cracks in the proposed longwall mining areas. 84. The proposed monitoring regime of water quality in the storages and sediment dams is also inadequate. More frequent monitoring is warranted. Based on the EIS assessment, there has been no water monitoring or modelling since 1996. Therefore, it is difficult to accurately ascertain the quality in the alluvium. The limited sampling of the water quality is set out in (section 7.2.6.1 of the EIS). 85. The risks to groundwater include dewatering of bores and potential direct or indirect drawdown of aquifers including the Isaac River alluvium. These impacts will disproportionately impact agricultural uses on the land, as was discussed in the nearby Olive Downs Project because of the implications on farming activities in the Bowen Basin area that relies upon groundwater from the Isaac River. 86. The groundwater model used for this EIS is a massive model developed for previous mining applications, and most of the assumptions used for this EIS have been simply transferred from the previous versions without further data collection.31 For example, faults are assumed to be barriers to flow, although the faults in the project area have not been the subject of field studies. Enhanced seepage from the tertiary aquifer to the coal seams is acknowledged in Figure 7.6, but the outcome of disrupting surface water groundwater interactions in the creeks is not discussed further. These recharge mechanisms will be disrupted permanently, causing irreversible changes to groundwater and surface water flow. 87. The model domain is massive, acknowledged by HydroAlgorithmics to be on the limit of unwieldy. Calibration of the model appears to be relatively weak within parts of the project area, casting high uncertainty on the predicted levels of drawdown.32 Peer review of the model says that impacts on the creeks and the Isaac River will be minimal based on the fact that the creeks and ephemeral and generally disconnected from the groundwater. 88. However, it has been widely shown groundwater can play an important role in supporting the riparian ecosystems even in ephemeral rivers, and a more detailed investigation of combined surface water groundwater impacts is merited.33 Cumulative impacts to groundwater are only cursorily assessed, in that a large groundwater model was used to estimate impacts to groundwater levels from the project, and that model also includes multiple mines in the region (Section 7.3.6). 89. However, the overall changes to groundwater flow, groundwater quality, and regional hydrogeology overall are not discussed in any detail. It is insufficient to simply point the finger at other mining operations in the region and attribute the cumulative impacts to them without acknowledging the synergistic role of the Project in disrupting local hydrology. The importance of groundwater and surface water 90. Water is a precious commodity in Australia. It is also an essential part of connection to Country for First Nations, with water having significant spiritual, ceremonial, social and economic values.34 Groundwater provides essential support to a range of different ecosystems and supplies a significant amount of water for human use. 91. However, the State of the Environment Report 2021 found that both surface water and groundwater 'are coming under increasing pressure as temperatures increase and rainfall patterns are affected by climate change'.35 The state of surface water and groundwater in Australia was assessed as poor and deteriorating		Comments 75 to 78 are noted. 79. The potential impacts to wetlands are informed by the hydraulic modelling (both surface water and groundwater). Refer to Chapter 11, Section 11.5.1. Connective fracture scenarios are assessed, refer to Appendix E, Section 5.5 for the assessment scenarios. It is noted that the groundwater assessment identifies that "models tend to over-estimate the volume of mine inflows to underground workings when compared to actual inflows observed during the mining process" (Appendix E, Section 5.6.1) and the as modelled connective cracking scenarios are considered unlikley. 80. The GDE Assessment Report (EIS Appendix I) identifies the location of likely GDEs. The location of these areas are shown on Figure 32 of the report and also Figure 10.13 of EIS Chapter 10. Assessment of potential impacts are provided in the report and Chapter 10, Section 10.5.2.3. 81. The impacts of subsidence trough are assessed in Section 10.5.2.1. Offsets are proposed for signifcant impacts identified as resulting from subsidence, refer Sections 10.61 to 10.6.8. 82. A draft Subsidence Management Plan is now provided (Appendix A2). 83. Assessment of impacts to streamflow is provided in Section 11.5.2.1. 84. Section 7.2.6.1 identifies the landowner bores within the potential Project impact area. Groundwater quality monitoring has been conducted and the monitoring results are summaried in Section 7.2.5. It is noted that additional baseline monitoring has occured since the EIS draft submission and groundwater trigger levels have been calculated and are now provided in Appendix A7. 85. Impacts to groundwater users and the required mitigation have been identified in Section 7.3.2.6. Groundwater drawdown is not predicted to impact the Isaac River (refer Appendix I, "Cumulative drawdown contours for the Tertiary sediments extend beneath the Isaac River alluvium, but none of this drawdown is attributable to the Meadowbrook Project".). 86 to 89. Baseline groundwater modelling was conducted to inform the prediction of groundwater impacts (refer Section 7.4.2), in addition to the large model used. The regional groundwater model provides confidence in assessment of cumulative impacts from mining operations. Enhanced recharge to coal seams was identified and incorporated into the model, model predictions are representative of the modelled groundwater recharge. The overall changes to groundwater flow, groundwater quality, and regional hydrogeology overall are discussed in detail (refer Chapter 7, Section 7.2 to 7.3 and Appendix E.								✓

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		deteriorating. The impacts of gas mining on groundwater and surface water 92. Unconventional gas mining can adversely impact on both groundwater and surface water in a range of ways. For example, de-watering occurs during the coal seam gas mining process to help the gas flow more freely, while hydraulic fracturing requires significant amounts of water to be pumped into open fractures at high pressure. Water produced or used during unconventional gas mining contains chemicals and very high levels of salt, and must be desalinated and de-contaminated before it can be reused or disposed of. 93. The Interim Report of the Select Committee on Unconventional Gas Mining found that many landholders no longer used groundwater affected by coal seam gas mining, for fear of toxins and dangerous chemicals, and many advised that their bores were depleted, and their remaining water was contaminated.											
55	Biodiversity	94. The Project will result in the clearing of approximately 12.2 ha of remnant vegetation, and the subsidence ponding areas are predicted to affect approximately 96.9 ha of vegetation within the development footprint. The removal of this extent of vegetation will have significant biodiversity and environmental impact on the area. 95. There were 15 remnant regional ecosystems identified, comprising of four 'endangered' and six 'of concern.' The direct clearing and subsidence ponding will impact on: (a) 24.3 ha of 'endangered' brigalow; (b) 33.2 ha of 'of concern' eucalypt woodland; (c) 2.5 ha of wetlands; (d) 6.7 ha of riparian vegetation; and (e) 20.6 ha of 'least concern' eucalypt woodland. 96. Offsets will be required for the significant residual impacts to: (a) 8.1 ha of Endangered REs which is not subject to offset conditions for the Brigalow TEC (b) 18.89 ha of Of Concern REs. Unacceptable impacts to remnant vegetation 97. A total of 12.2 ha of remnant vegetation is proposed to be cleared for the Project, and a further 96.8 ha of remnant vegetation is predicted to be substantially impacted by residual ponding including Endangered and Of Concern regional ecosystems (REs) and is comprised of: (a) 16 ha of Endangered REs (RE 11.3.1 and RE 11.4.8) (b) 63.2 ha Of Concern REs (RE 11.3.2 and 11.3.4) (c) 29.8 ha of Least Concern REs (REs 11.3.9, 11.5.3, 11.3.25, 11.3.27b, and 11.3.27f). 98. The northern portion of the study area contains a large contiguous area of remnant vegetation that will be subject to small (and temporary) areas of disturbance for gas drainage works. This does not include indirect impacts on GDE's. This is a significant amount of native vegetation clearing, which can be avoided only through non-approval of the mine. 99. It is estimated that of remnant vegetation of REs within the defined distance of VM Act watercourses in the study area that will be cleared or impacted by predicted periodic ponding for areas that exceed the threshold include 8.0 ha of RE 11.3.1 and 6.1 ha of RE 11.3.25. The cumulative impacts are unacceptable 100. The cumulative impacts of native vegetation removal from adjacent coal mines have not been addressed. This proposed clearing could be the tipping for many MNES and protected species that are currently unassessed in the EIS. Furthermore, the proponent does not discuss nor consider the cumulative impacts to these species if the action is approved, given the wide extent of impact from the Project. 101. The Scoping Document for the EIS states that "any feasible alternatives to the action to the extent reasonably practicable, including if relevant, the alternative of taking no action a comparative description of the impacts of each alternative on the MNES above, and sufficient detail to make clear why any alternative is preferred to another." 102. The feasible alternatives section of the EIS (chapter 21.8) does not address the impacts to biodiversity in the following ways: (a) It fails to address the options of a smaller scale mine nor the environmental or economic benefit of in the mine not progressing. Only the current-day economic costs to the local community are discussed if the project does not proceed. (b) The economic benefits of retaining the native vegetation planned for removal in terms of an offset site are not discussed nor the ultimate economic benefit of sourcing the power generated from the coal through renewal energy. These are realistic alternatives that are not discussed.		94. to 99. Noted. 100. The assessment of cumulative impacts to terrestrial ecology values (including vegetation) is provided within EIS Chapter 10, Section 10.5.4, with the cumulative impact assessment included for each MNES (Sections 10.6.1 to 10.6.9) and the assessment of impacts to MSES (Section 10.7). Offsets for significant impacts are proposed for significant impacts (refer Section 10.9). It is noted that the provision of offsets within the Project land parcel represents a significantly positive outcome for the protection of affected vegetation types for the region. 101. The project alternatives and explanation of 'why an alternative is preferred to another' is described in Section 3.6. It is noted that the proposed Project is the result of a downsizing of the plan due to environmental constraints. 102. It is noted that all identified Project impacts are a result of the proposed Project, and under the alternative of 'project not progressing' would not result in Project impacts. Similarly, it is noted that reduction of Project scale will reduce potential impacts. The landuse of the Project area is grazing and under the the alternative of not proceeding with the Project, continued grazing is likely.									✓
56	The Federal assessment	103. On 22 November 2019, the Commonwealth Environmental Department (DCCEEW) determined the proposed action to be a controlled action under the EPBC Act and provided comments on the MNES which should be addressed through the EIS. 104. Chapter 10 of the EIS (Terrestrial Ecology) does not include a discussion on the following MNES which were recommended when assessed by DCCEEW: (a) Curlew Sandpiper (Calidris ferruginea) – Critically Endangered (b) Red Goshawk (Erythrotriorchis radiatus) – Vulnerable (c) Painted Honeyeater (Grantiella picta) – Vulnerable (d) Star Finch (Eastern) (Neochmia ruficauda ruficauda) – Endangered (e) Northern Quoll (Dasyurus hallucatus) – Endangered (f) Ghost Bat (Macroderma gigas) – Vulnerable (g) Corben's Long-eared Bat (Nyctophilus corbeni) – Vulnerable (h) Grey-headed Flying Fox (Pteropus poliocephalus) - Vulnerable (i) Cycas ophiolitica – Endangered (j) Quassia (Samadera bidwillii) – Vulnerable (k) Yakka Skink (Egernia rugosa) – Vulnerable (l) White-throated Snapping Turtle (Elseya albagula) – Critically endangered (m) Dunmall's Snake (Furina dunmalli) – Vulnerable (n) Retro Slider (Lerista allanae) – Endangered (o) Fitzroy River Turtle (Rheodytes leukops) – Vulnerable (p) Natural Grasslands of the Queensland Central Highlands and northern Fitzroy Basin threatened ecological community – Endangered.		EIS Chapter 10 should be read in conjuntion with EIS Appendix G (Terrestrial Ecology Assessment). It is noted that Appendix E of of EIS Appendix G provides an assessment of the 'liklihood of occurrence' of all fauna species of conservation significance. Appendix D of of EIS Appendix G provides an assessment of the 'liklihood of occurrence' of all flora species of conservation signifiicance.									✓

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57	Offset Strategy is insufficient	105. Given the extent of biodiversity loss explained above, the Offset Strategy proposed is insufficient and does not ensure that the MNES that will be significantly impacted will be protected. 106. The location of the offsets adjacent to the working of the coal mine and downstream of Boomerang Creek presents an unacceptable risk to the long-term conservation of the MNES which are supposed to be protected. The offsets would be better sourced from an area which is not deeply embedded with coal mines and purchased off the property. 107. There hasn't been enough consideration about the connectivity corridors from the offset area. Boomerang Creek directly connects within the proposed offset area. There will be constraints for fauna accessing the other creek corridors (Hughes Creek, One Mile Creek and Phillips Creek) due to the existing Lake Vermont mine and the disturbance footprint of the underground coal component and infrastructure corridors of this proposed Project. 108. In the EIS material, the additional offsets for the open-cut pit mine have not yet been assessed. 109. The proposed offsets appear to involve 'averted loss' offsets, as opposed to 'like for like offsets' in accordance with DCCEEW's offset strategy. The proposed offset is unsuitable because the quality of the habitat is not of the same ecological value. The essential role of biodiversity 110. Human beings are a part of, and reliant on, biological diversity. 111. The integral role played by biodiversity was recognized in the Biodiversity Convention, ratified by Australia in 1993, which has the objectives of 'the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources'. 112. The preamble to the Biodiversity Convention also showed an awareness by the Contracting Parties signing in 1992 that human beings are a part of, and reliant on, biological diversity: for example, the preamble stated that the Contracting Parties were conscious of 'the importance of biological diversity for evolution and for maintaining life sustaining systems of the biosphere'. 113. In the Australian context, it was observed by Beach J in Minister for the Environment v Sharma [2022] FCAFC 35 at [579] that 'biodiversity is not just some intellectual fancy or aesthetic pleasure. It is important to the sustainability of humans'. Australia's biodiversity crisis 114. Australia and its surrounding seas support between 600,000-700,000 native species, with a high proportion of these found nowhere else in the world. It is estimated that about 70% (or 400,000) of all Australian species of plants, animals, fungi and other organisms are yet to be discovered, documented, named and classified. 115. However, there is a national crisis of biodiversity in Australia. The State of the Environment Report 2021 graded Australia's biodiversity as poor and deteriorating. Threatened plant and animal species are generally in a poor and deteriorating state due to increased land clearing, urban expansion and invasive species. 116. Over the past two centuries, Australia has lost more mammal species than any other continent. More than 1,900 Australian species and ecological communities are known to be threatened or at risk of extinction, with the number of threatened species listed under the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) rising by an average of 8% in the past five years. 117. The number of nationally listed threatened ecological communities under the EPBC Act has also risen by 20% over the past 5 years, with approximately half of these communities being listed as Critically Endangered. 118. In the past decade, climate change in the form of more severe drought, extreme weather events, fire and habitat modification is also becoming a new driver for habitat change and species loss.		105. The Biodiversity Offset Strategy prepared for the Project meets all relevant statutory, policy and guideline requirements. While significantly impacted MNES values are proposed to be offset, mitigation and management measures are proposed to reduce impacts as far as practicable. The establishment of offsets is also designed to recognise this impact, and 'offset' it through the protection of larger areas of equivalent habitat, which will be actively managed as habitat. 106-107. Offset areas are outside the direct disturbance areas and the indirect disturbance subsidence footprint area and therefore separate from these potential direct and indirect Project impacts. Spatial location of offsets close to impact areas is also desirable under relevant offset guidelines. 108. The full extent of potential significant residual impacts on prescribed environmental matters (for the entire project) are presented in EIS Chapter 10 (Terrestrial Ecology) Table 10.32. Stage 4 impacts are also included within impact assessments undertaken within Chapter 10, through sections 10.6 to 10.7. In contrast, it is acknowledged that Stage 4 MNES offsets are not proposed at present. MNES impacts are identified (through Table 10.33) however proposed MNES offsets are not provided for Stage 4 of the proposed Project. Stage 4 is the final Project stage (being the satellite open cut pit) and is proposed to commence in Project Year 20 (circa 2045). Given the distant timing of this stage of the development, uncertainty exists in regards to whether this Stage of the Project will ultimately occur. For the proponent to manage this risk, it is proposed that offsets for Stage 4 are deferred (to be established prior to any future commencement of Stage 4). This is proposed to be managed through Commonwealth Project approval conditions. In this regard, it is noted that the impact of Stage 4 development on MNES values has been assessed and can be conditioned as part of this EIS process. Further, it is noted that Appendix K (Biodiversity Offsets Strategy) provides that: "Offsets for significant impacts associated with development of Stage 4 will be proposed within a subsequent offset strategy, to mitigate the impacts to MNES contemplated in the EIS. The Stage 4 offset strategy would provide: - detail of the environmental offset for the stage 4 significant impacts, - justification that the proposed offsets satisfy the requirements of the EPBC Act Environmental Offsets Policy 2012, - evidence of the offset area connectivity to dispersal habitat and fauna habitat corridors, - the means of legally securing the proposed offset area." In the interim, proposed offsets are established for Stages 1-3 of the Project (representing the life of the underground development). 110-118. Noted									✓
58	Federal Environment Minister reconsideration of the Project	119. The Project is a controlled action (EPBC 2019/8485) under the Environment Protection and Biodiversity Conservation Act 1999, with the controlling provisions listed as: (a) listed threatened species and communities (section 18 and section 18A); (b) listed migratory species (section 20 and section 20A); and (c) a water resource in relation to a large coal mining development (section 24D and 24E). 120. In parallel to the EIS process, the Project is one of 19 fossil fuel projects that the Federal Minister for the Environment Minister Tanya Plibersek has agreed to reconsider following a reconsideration request under section 78A of the Act by Environmental Justice Australia (EJA) on behalf of the Environment Council of Central Queensland Inc (ECCQ). 121. Under section 78A of the EPBC Act, the Minister must reconsider the controlled action decision and either confirm the decision or revoke the decision if it can be demonstrated that there was substantial new information about the impacts that the Project will, or is likely to, have on matters protected under the EPBC Act. 122. Here, the reconsideration request is based on recent IPCC documents that have illustrated the effects of climate change.44 EJA have argued that given this information, the Minister's delegate did not properly consider, or consider at all, the adverse impacts of the mine's greenhouse gas emissions and worsening effects of climate change. 123. The matters raised in the reconsideration request lodged by EJA should guide the EIS assessment approach, in particular taking into account the impacts on MNES. 124. Minister Plibersek is yet to make a decision on her reconsideration of the Project and hence it would be premature to endorse this draft EIS as it is not yet clear whether the Project will still be considered acceptable under the EPBC Act, and what further information may be required from the proponent.		It is noted that the submission by the ECoCeQ to the federal government which proposed the reconsideration of climate change impacts on all MNES has been dismissed (Federal Court of Australia, 11 October 2023), setting a precedent for affected projects. The EIS addresses the Terms of Reference in accordance with the EP Act.								✓
59	Conclusion	125. The EIS claims the Project will provide a net economic benefit of $968.2 million to the Queensland economy, in contrast to an astronomical social cost of $7,302,341,760. 126. In the face of declining future coal demand this claim verges on either amazing or absurd. For much the same reasons as the Queensland Land Court recommended refusal of the Waratah mining approval, this Project should be rejected. 127. Further, rejection is required where the cost of increased GHG emissions (particularly methane emissions) have been under-valued, the extent of biodiversity loss is unacceptable, and the surface and ground water impacts are irreversible.		Noted.								✓

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1	Economic	Positive impact on the economy by putting money into the local economy through wages, services and supply contracts and providing millions of dollars to State and Federal Governments in taxes and royalties.		The Project is proud to be able to provide tangible and longlasting positive impacts on the local, regional and national economies. As part of the proposed Project, significant social investment is being commited by the Proponent, which will provide a much needed boost for the town of Dysart. It is also incredibly positive to report that 91% of ALL submissions received, were in SUPPORT of the proposed Project.
2	Social	Positive impact on the local community by creating job opportunities for local people.		
3	Project justifiication	The project will have less disturbance than an open cut mine and be much easier to rehabilitate at the end of the mine life. The high quality metallurgical coal is in high demand globally. The project surface footprint is small, will use significant local infrastructure thus has minimal impact on the local environment.		
4	Climate change and GHG	The coal will be used for steelmaking, which will be needed to transition to net zero. Innovative mining practices (e.g., electrification) help with reducing emissions. The proponent proposes to take steps to limit methane emissions from the project, noting that gas drainage and flaring will take place wherever possible. This will also reduce impacts on local air quality.		
5	Rehabilitation	The project may deliver a better rehabilitation outcome in the long term by allowing the filling of voids at the former mine with reject stone and rock.		

Nil Comments	
Reference Number	**Submitter**
2	Department of Children, Youth Justice and Multicultural Affairs
3	Powerlink
4	Department of Employment, Small Business and Training
5	Department of Tourism, Innovation and Sport
6	Department of Energy and Public Works
31	Gladstone Ports Corporation Limited
137	Department of Communities, Housing and Digital Economy